Audit of Public Works Maintenance

Streets & Drainage

Funding for both streets and drainage infrastructure maintenance is likely inadequate to meet service level goals economically; however, neither Division is currently able to optimize existing resources.

While the Streets Division regularly assesses asset conditions, basic project cost planning information has not been created, hindering resource optimization. A complete inventory of drainage assets does not exist, making maintenance prioritization and planning difficult. Work order documentation for both Divisions is inconsistent.

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Audit at a Glance

Why we did this Audit:

Since 2005, Denton residents have authorized over $443 million in streets & drainage improvements. These assets must be maintained to ensure residents receive the full benefit of their investment.

What we Recommend:

Recommendations 1 & 2
Improve street asset condition monitoring.

Recommendations 3, 4, 5, & 6
Develop systematic street maintenance work planning tools.

Recommendations 7, 8, & 9
Explore options to supplement street maintenance funding.

Recommendations 10, 11, 13, & 16
Systematically inventory and monitor drainage assets & develop service level goals to inform maintenance prioritization, planning, and funding.

Recommendations 12, 14, & 15
Develop performance standards for drainage asset inspections, cleanings, repairs, & storm checks.

Recommendations 17, 18, 19, & 20
Improve Drainage fund transparency & increase revenue.

Recommendations 21 & 22
Improve invoice verification.

Recommendations 23, 24, & 25
Improve public communication for public works maintenance projects.

What we Found:

This audit generally evaluated the efficiency, effectiveness, and economy of City maintenance activities for two types of public works—streets and drainage—including monitoring asset condition, prioritizing, planning, and funding maintenance projects, and ensuring maintenance quality and timeliness. Our findings are summarized below:

Streets Maintenance. An inventory of streets has been established, and conditions are regularly assessed, but some critical data is still missing. Service level goals have been identified but not formally adopted. Basic project cost planning information has not been created, hindering resource optimization. While applied maintenance is generally cost-effective, documentation of activity selection and repair work details could be improved.

Streets Funding. Continued reliance on debt funding street reconstructions to achieve service-level goals is not sustainable. While additional revenue sources are needed to increase maintenance activities, the Streets Division is currently likely unable to optimize available resources due to variable funding levels.

Drainage Maintenance. A complete inventory of drainage assets does not exist; systematic processes to identify missing assets have not been developed. Existing assets are not systematically inspected to assess condition and identify maintenance needs. The Division began inspecting pipes for the first time in 2024—about 61% of pipes inspected to date are likely to fail. Resource usage could be further optimized and work order documentation improved.

Drainage Funding. Drainage is fairly funded through a user fee, but fees have not been updated in over 20 years; revenue is likely inadequate to meet potential service-level goals. Drainage revenues and expenses could be reported more transparently. Drainage fees are applied inconsistently, further reducing resources.

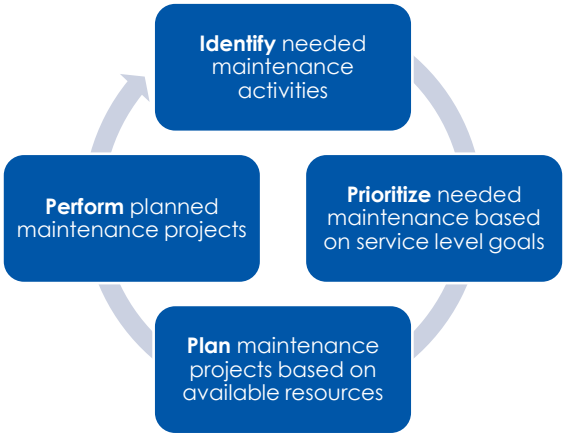
Administrative Activities. Invoice processing and public communication could be improved.

Audit report translations may be requested by emailing InternalAudit@CityofDenton.com.

Detailed Findings & Analysis

Generally, public works encompass a variety of infrastructure projects built for community use. Governments are typically responsible for maintaining these assets to ensure the community continues to benefit from the infrastructure as long as possible. Taxes or user fees must be levied to build and maintain this infrastructure. The general public infrastructure maintenance process is illustrated in Figure 1.

Figure 1: Public Works Maintenance Process



This audit focused on the maintenance of two types of public works in the City of Denton: streets and drainage. This audit generally evaluated the efficiency, effectiveness, and economy of City maintenance activities for two types of public works—streets and drainage—including monitoring asset condition, prioritizing, planning, and funding maintenance projects, and ensuring maintenance project quality.

Streets Maintenance

The City of Denton's Streets Division is responsible for maintaining about 1,500 lane miles of roadway, which are all generally available for community use. A street consists of three layers (see Image 1), which must be built and maintained correctly to ensure it continues to be useful for as long as possible—generally referred to as the "useful life". The pavement surface of a street is typically built from one of two materials described in Table 1.

Image 1: Simplified Street Cross Section

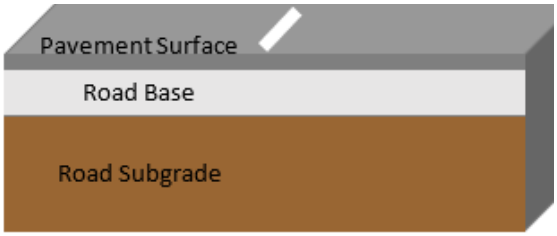
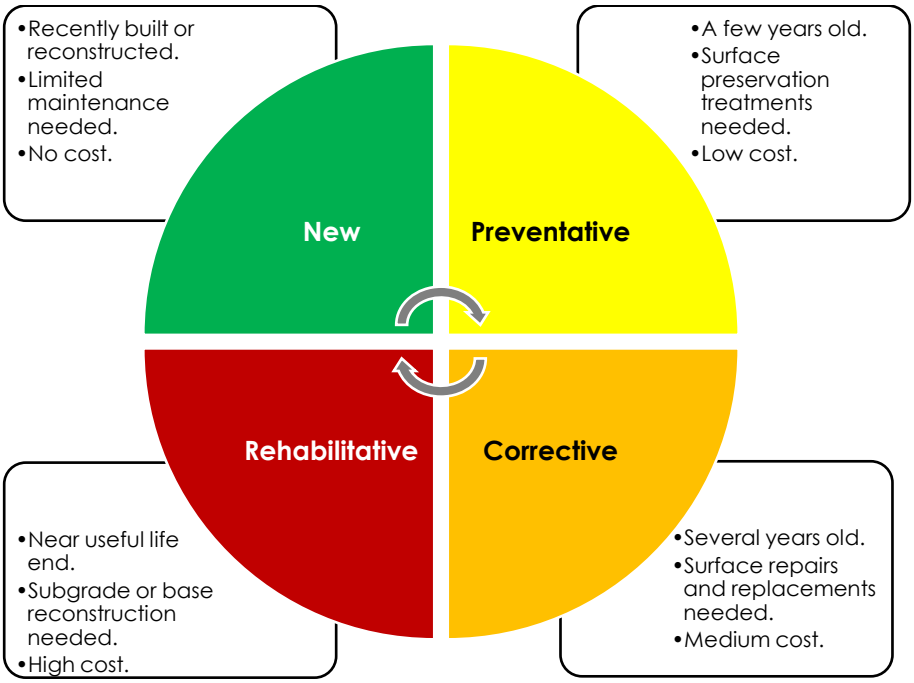


Table 1: Types of Pavement Surface

Attribute	Asphalt	Concrete
Useful Life	20 Years	30 Years
Maintenance Needs	Higher	Lower
Upfront Cost	Lower	Higher

There are generally four condition phases over a street's useful life during which different maintenance techniques are needed as described in Figure 2.

Figure 2: Street Condition Lifecycle



Street Maintenance Projects Are Generally Cost-Effective; Long-Term Planning Is Limited; Quality Assurance Documentation is Inconsistent

As previously discussed, the public works asset maintenance process generally includes four steps. For streets, these are further described below:

1. **Identify** maintenance needs based on assessed pavement condition: requires an inventory of street assets, usually in an asset management system, with a numerical condition score that correlates to maintenance types as summarized in Figure 2.
2. **Prioritize** maintenance activities to meet service level goals: requires formally adopting service standards such as an average street condition score and determining the most cost-effective method of meeting those goals. Prioritization generally requires long-range planning (i.e., three to five years) since streets have decades-long useful lives.
3. **Plan** prioritized maintenance activities based on available resources: requires an understanding of time, labor, equipment, and material costs by project type and size compared to available resources, including staff, equipment, and money. Planning on this scale is typically done in the short-term (i.e., one year) to optimize resource usage.
4. **Perform** maintenance activities: requires documentation of who, what, when, where, how, and why the work was performed, typically through a work order system, and appropriate oversight to ensure quality and timeliness standards were met. Performance of maintenance should feed into pavement condition information to keep asset conditions up-to-date.

To be cost-effective, best practices recommend that certain maintenance techniques only be applied to a roadway when it is in a certain condition phase; otherwise, the benefits of the maintenance may not be completely realized. These techniques are categorized by asset condition phase in Table 2. While most street maintenance techniques are planned, repairs are reactive and therefore require prioritization and timely response.

Table 2: Street Maintenance Technique Summary[1]

	New	Preventative	Corrective	Rehabilitative
Condition	Excellent to Very Good	Very Good to Good	Fair	Poor
Asphalt Maintenance	• None	• Crack Sealing • Micro Sealing • Thin Overlays	• Mill & Overlay	• Reconstruction
Concrete Maintenance	• None	• Crack Sealing • Joint Sealing	• Panel Replacement	• Reconstruction
Repairs	• None	• Pothole Filling • Patching	• Pothole Filling • Patching	• Pothole Filling • Patching

What We Found

- The Streets Division has established a process to regularly assess asset conditions that are used to identify maintenance needs. However, some critical data on street assets continues to be missing or incorrect.
    - As reported in the 2019 Audit of Roadway Quality Management, the City has implemented a pavement management system that contains records of (1) each street asset by segment and (2) maintenance work orders. Historically, Streets has hired a contractor to score the condition of each street segment using an overall condition index, or OCI, every three to five years. The pavement management software then adjusts these scores periodically based on useful life expectations. Streets Division staff use these OCI scores to identify street segments that potentially need maintenance.

      Still, staff indicated concerns about the accuracy of estimated OCI scores and stated they have begun using a "field verification form" to document when an estimated OCI differs from the actual OCI; however, based on a review of 100 concrete and 100 asphalt work orders no field verification forms were identified making it difficult to evaluate this issue. Regardless, the City hired a new contractor with advanced pavement assessment technology in 2024, which has begun providing updated road condition scores.

[1] Crack Sealing and Joint Sealing: Application of sealing material directly into cracks of the road surface to prevent moisture damage.
Mirco Sealing: Application of a sealing material to the pavement surface to fill small defects and to restore skid resistance.
Thin Overlay: Removal of a portion of the pavement surface, typically about two inches, and laying of new asphalt in its place.
Mill & Overlay: Removal of a deeper portion of the pavement surface, typically four to six inches, and laying of new asphalt in its place.
Reconstruction: Removal of the pavement surface and road base to allow for regrading and road base stabilization before laying of a new pavement surface

  - Some critical asset data continues to be incorrect or missing. Specifically, about 25 percent of install or replacement dates are missing, many of which are likely newer roads based on OCI score, and almost eight percent of street segments are missing a pavement type. These issues hinder effective maintenance planning and were noted in the 2019 Audit of Roadway Quality Management as well as a 2023 consultant report regarding Roadway Funding Strategies.
  - The pavement management system positively updates asset OCI when maintenance is performed. As discussed in the Audit of Roadway Quality Management, these generally seem appropriate; however, the system does not currently account for the degradation caused by utility cuts.[2]
  - Further, Streets staff reportedly document observed needed work on a "future task list." For example, when repairing a pothole staff may note that the road needs more extensive patching due to a base failure and will add the segment to the list. Review of 80 repairs found seven that had notes indicating staff observed the segment needed additional maintenance, yet these roads were not consistently observed on the future task list.

- The Steets Division has not formally adopted maintenance prioritization service level goals, hindering long-term maintenance prioritization.
  - However, in 2023 a consultant recommended that the City adopt three street service level goals summarized in Table 3. In addition, the consultant's report recommended the number of lane miles that should receive different maintenance types for the next forty years beginning in 2023.

Table 3: Service Level Goals and Outcomes

Metric	Informal Goal	2019 Est.	2025 Est.
Average OCI	>70	63.5	69.5
Lane Miles in Rehabilitative Condition	<10%	20.3%	19.8%

  - While these goals have not been formally adopted in a policy or plan, Streets staff indicated that they used the maintenance recommendations from the consultant's report to plan their Fiscal Year 2026 workload.

[2] Because utility lines are typically placed alongside or under the City's roadways, it is occasionally necessary for utilities to excavate a part of the City's roadway to reach this infrastructure.

- Current project planning practices are complicated by the Streets maintenance funding structure, only extending to the near future, hindering the Division's ability to optimize resource use.
    - Historically, Streets management have not formalized annual project work plans that tie workload targets for the year to available funding and resources. Instead, projects are identified using OCI-based candidate lists as resources become available. The Division has developed a rolling quarterly schedule to assign projects to crew leaders and track completion.
    - This issue is due in part to the Division's funding structure, which is based on a variable revenue source that Streets receives inconsistently, making it difficult for the Division to predict its available resources. The Streets maintenance funding structure is discussed further in the next section.
    - Additionally, Streets management has not established baseline costs for specific project types that they typically perform such as staffing level options, equipment requirements, time budgets, or material needs. The lack of project cost expectations hinders the Division's ability to plan projects because a clear understanding of resource needs is lacking.

- Streets Division staff generally appear to apply cost-effective maintenance techniques based primarily on the asset's current condition as suggested by best practices; however, documentation could be improved to support maintenance techniques applied to roads outside the appropriate condition phase.
    - Planned maintenance is focused on cracksealing, microsealing, and some mill and overlay projects.
    - Of the 136 street segments that received cracksealing or microsealing in 2024, about 93 percent were completed on road segments that were likely in the New or Preventative condition phase.

Table 4: Est. Condition of 2024 Cracksealed and Microsealed Street Segments

Est. Condition	Crackseal	Microseal	Percent
New	14	41	40.4%
Preventative	8	63	52.2%
Corrective	1	3	2.9%
Rehabilitative	0	1	0.7%
Unknown[3]	0	5	3.7%

[3] These tasks were attached to road segments that did not have enough historic OCI data to assess a 2024 road condition.

Still, about four percent of these tasks were performed on roads in the Corrective or Rehabilitative condition and there was no documentation to verify that staff completed visual assessments to verify appropriateness.

- Of the 50 mill and overlay projects completed in 2024, about 45 percent were on roads in the Corrective condition phase. Further, staff reported that they perform thick overlays instead of thin overlays due to the quality of previously built roads. While this does not necessarily align with best practices, this technique is lower risk when applied to Corrective or 'lower' Preventative condition roads. Based on this, about 65 percent of mill and overlay projects appeared to be appropriate based on their estimated OCI rating. However, the remaining 22 tasks were either completed due to specific circumstances that were not documented in the asset management system, such as a drainage pipe buckling, or staff reportedly adding some better condition road segments to nearby projects.

Table 5: Est. Condition of 2024 Mill & Overlay Street Segments

Est. Condition	Mill & Overlay	Percent
New	4	7.8%
Preventative	10	19.6%
Corrective	23	45.1%
Rehabilitative	5	9.8%
Unknown	9	17.6%

- No joint seal tasks were shown as completed in 2024 despite most concrete lane miles being in the Preventative condition phase. However, there was evidence that the Division paid for concrete sealing, indicating this might have been a documentation issue.

- The Streets Division uses the pavement management system to assign and document work performed; however, work order documentation methods are inconsistent, limiting the usefulness of this data.
  - Most work orders completed by the Streets Division are for repairs, which are typically initiated by a report from the public as summarized in Table 6. Formal guidance on what information should be included in a work order has not been established and work is not formally prioritized, even for repairs. Further, timeliness goals for repairs have not been formally established. Streets management reported that supervisors will investigate emergent issues such as debris blocking the road as soon as received; however, this expectation has not been documented.

Table 6: Summary of Work Orders by Maintenance Type (2024)

Maintenance	Work Orders
Preventative	136
Corrective	97
Repairs	574
Rehabilitative	42
Not Street Maintenance	108

- A sample review of 80 repairs found that pictures are sometimes attached to the task allowing for work quality verification. As shown in Table 7, material costs are typically recorded; however, there was limited information available to verify totals and ensure all costs were listed since neither invoices nor receipts were typically available.

Table 7: Sampled 2024 Repair Work Order Documentation[4]

	Yes	No	N/A
All Direct Street Maintenance?	72	6	2
All Material Cost Recorded?	55	12	13
Invoice Attached?	0	42	38
Onsite Pictures Attached?	45	33	2
Crew Leader Onsite?	48	30	2
Crew Leader Entered	70	8	2

- Six of the 80 reviewed repairs did not appear to be related directly to field maintenance and included debris transportation and training, further highlighting documentation inconsistency.
- Four repairs that were opened in 2024 had not been closed yet even though two tasks showed some work time had been completed on the associated asset.
- Some repairs were entered into the asset management software system by a staff member who was neither onsite nor the assigned crew leader.

Why It Matters

Timely, appropriate maintenance is critical to preserving the usefulness of a street, including minimizing overall costs, increasing roadway lifespan, and positively influencing public perception of road conditions. To do this effectively, road OCI scores must accurately reflect the road's condition. The absence of a utility cut degradation rate or formula increases the risk of OCI scores being incorrect as utility cuts always damage a road on some level. Additionally, the

[4] Sample included potholes, base failures, and debris removal.

outdated or missing asset data has been a repeated issue with the pavement management system and limits the usefulness of the database.

While the Division has generally completed cost-effective maintenance on streets, further improvements in documentation of street selection would help verify the actions taken by staff. Specifically, Streets staff should use the previously developed assessment form and save the form directly into the asset management system to demonstrate what work is needed and general visual observations.

As recommended by best practices, staff should use multiple factors when planning the annual budget such as established baseline costs for typical projects, long-term goals, and past budgets. Though Streets has started using the budget planning tools provided by the consultant in 2023, the other factors have not been formally added to the budget review process. The variability of street maintenance funding has complicated planning efforts.

Staff do not have a concise method for listing and tracking pending projects. A formalized tracking method that all staff use could help reduce the risk of missing needed projects and assist with long-term planning.

The usefulness of work orders depends upon consistent and well-developed practices. Work orders should provide documentation that allows for tracking equipment performance, repair actions taken, and generally help ensure efficiency, prevent delays, and minimize long-term costs. Lack of consistent information on a work order could cause poor communication between the staff who create the work order and those who conduct the labor which may result in the laborer lacking critical pieces of information. Lack of a clear prioritization system increases the risk of not completing repairs promptly. Clear notation from all those involved in the work order process helps to improve the overall maintenance strategy of an operation. Overall, effective work order usage helps ease operations, reduce repair delays, and improve overall maintenance performance tracking.

Recommendations:

1. Ensure street asset data is updated consistently within the asset management system and all available data for assets are updated within the system.

   ***Public Works Comments**: Public Works staff will coordinate with the GIS Division to populate missing installation dates for older street infrastructure using available historical GIS data. While install dates provide helpful context, pavement condition assessments—conducted regularly through the City's pavement management program—are the primary basis for maintenance prioritization and planning. Given the time-intensive nature of retroactively*

populating this data and other competing priorities, staff will incorporate these updates as time allows.

2. Update street condition scores when a utility street cut is made. This will require establishing a degradation formula for utility street cuts.

   ***Public Works Comments**: Staff will develop a process and work plan to incorporate utility cut degradation impacts into the asset management system's street condition scores. Street staff currently receive information on internal utility cuts and will coordinate with Right-of-Way (ROW) Inspection staff to obtain a complete list of all utility cuts citywide.*

   As part of this process, staff will work to distinguish between longitudinal (parallel to the roadway centerline) and transverse (perpendicular) cuts, as their impact on pavement performance and degradation rates can differ significantly. This differentiation will allow for more accurate adjustments to street condition scores and better alignment with pavement management best practices.

   Once integrated into the asset management system, this information will provide a more accurate reflection of roadway condition and help inform future maintenance and rehabilitation planning.

3. Formalize the criteria for maintenance activities and document the reasoning and approval for any treated roads that are outside the established criteria within the asset management software.

   ***Public Works Comments**: Staff currently conduct field assessments before performing any maintenance work. When the recommended maintenance activity differs from what is suggested by the asset management system or falls outside the established criteria, a field assessment form is completed and reviewed by a supervisor. To formalize this process, staff will develop a standard operating procedure (SOP) and ensure all relevant personnel are trained to consistently apply it across all maintenance activities.*

4. Centralize staff's observations and notes of needed future work and ensure this information is trackable within the asset management software.

   ***Public Works Comments**: Staff will add designated fields within the asset management system to flag and track observations related to future maintenance needs. This will allow staff to centralize notes and ensure that follow-up work is easily identifiable and incorporated into future planning efforts.*

5. Establish baseline cost estimates for typical projects, including staffing levels, equipment requirements, material needs, and time budgets.

   Public Works Comments: *Staff will develop baseline cost estimates for common project types, including typical staffing levels, equipment needs, materials, and time requirements. While many variables—such as soil conditions, utility conflicts, and street age—can significantly impact individual project costs, establishing standard estimates will provide a useful high-level tool for planning, budgeting, and evaluating service levels.*

   These estimates will serve as a starting point for resource forecasting and long-term program development, but they will remain flexible to account for the variability and complexity inherent in street maintenance and repair activities across different areas of the City.

6. Formalize an annual work plan based on street service-level goals and estimated project cost information. Service level goals should be formalized, or reaffirmed, at least annually in the work plan.

   Public Works Comments: *Public Works currently utilizes an internal work plan and informal service level goals—such as maintaining an average Overall Condition Index (OCI) of 70—to guide street maintenance activities and prioritize projects. These goals, outlined in the Draft Denton Roadway Funding Strategies Report, have provided a consistent benchmark for planning and resource allocation.*

   While effective internally, these goals have not been formally adopted by the City Council. Presenting them for Council adoption would establish an official policy framework, allowing the annual work plan to be updated with approved service levels, available funding, and project cost estimates, ensuring transparency and accountability in meeting roadway maintenance objectives.

Long-term, Sustainable Funding Is Needed For The City to Maintain Quality Roads

The Government Finance Officers Association, or the GFOA, recommends that governments establish a system for assessing their capital assets to plan and budget for any capital maintenance and replacement needs. According to the GFOA, funds to pay for these needs should be levied fairly.[5] In general, there are

[5] Ensure Fairness is one of six "First Principles of Public Finance" released by the GFOA in June 2025.

two approaches to funding public services fairly that are more efficient in different circumstances:

1. The Benefit Approach: the individual user of the public benefit or service pays the cost. More efficient when direct usage can be easily measured.
2. The Ability-to-Pay Approach: individuals with greater resources subsidize the cost of public benefits or services for those with fewer resources. More efficient when direct usage can't be easily measured.

In addition, the GFOA stresses that future generations should not be responsible for paying for benefits received in the past, such as issuing debt with payback periods longer than the asset's useful life. In practice, street costs are paid through several methods that generally allocate the cost over the benefit period as summarized in Table 6. Notably, these funding methods assume that the full community should fund street construction and maintenance because the community collectively benefits from the roadway network.

Table 6: Typical Street Cost Funding Methods

Cost	Benefit Period	Typical Funding Method
New Construction	30-50 Years	Tax-Backed Debt, Impact Fees
Reconstruction	30-50 Years	Tax-Backed Debt
Corrective Maintenance	15-30 Years	Property Tax, Sales Tax, User Fees
Preventative Maintenance	5-15 Years	Property Tax, Sales Tax, User Fees
Repairs	Immediate	Property Tax, Sales Tax, User Fees

What We Found

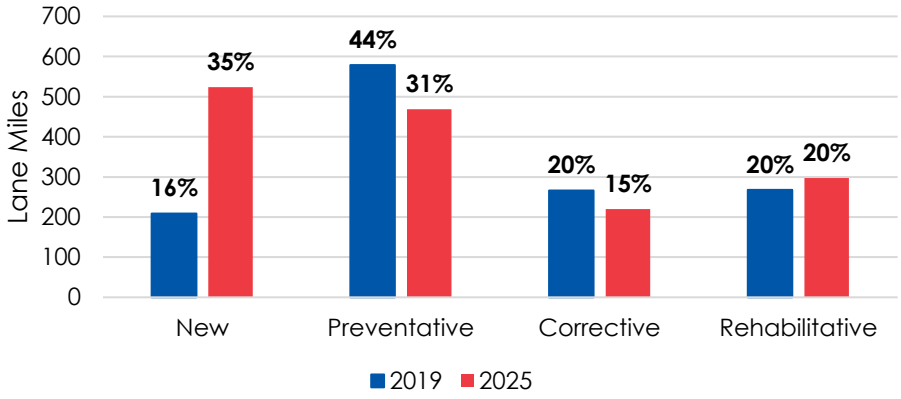
- Significant investment in street infrastructure has improved the condition of many lane miles of road. However, current maintenance funding levels do not appear to be sufficient to achieve recommended condition goals and continued reliance on debt funding street reconstructions to meet these goals is not sustainable.
    - Over the last 20 years, City of Denton voters approved the issuance of almost $309 million to be invested in street and transportation improvements as part of five different bond programs. Two of these programs were completed by the end of 2019. These investments appear to have primarily focused on arterial and collector roads while most new lane miles are arterial or residential as outlined in Table 7.

Table 7: Summary of Street Bond Programs Impact (2019 to 2025)[6]

	Percent of Lane Miles Built New	Percent of Lane Miles Reconstructed	Percent of 2025 Lane Miles
Arterial	12%	39%	17%
Collector	5%	33%	18%
Residential	12%	21%	65%
All:	11%	26%	NA

- About 87 percent of new lane miles constructed between 2019 and 2025 were built with a concrete surface, which typically have lower maintenance needs; however, 74 percent of reconstructed lane miles were built with an asphalt surface.
- As reported in Table 3 on page 8, over the last six years, these investments have allowed the City to increase its average OCI score by about six points from 63.5 in 2019 to 69.5 in 2025. Still, over this time the percentage of lane miles in the Rehabilitative condition has remained similar as shown in Figure 3. This illustrates the need for additional preventative and corrective maintenance as the City cannot reconstruct streets fast enough to outpace natural degradation without this maintenance.

Figure 3: Change in Predicted Lane Mile Maintenance Needs



- Specifically, about 23 percent of the City's lane miles dropped at least one condition level between 2019 and 2025, 50 percent stayed at the same condition level, and 27 percent increased a condition level as shown in Table 8. As reconstruction slows down, fewer lane miles will increase in condition level, making it more critical for lane miles to

[6] Arterial streets are designed to carry high volumes of through traffic and link major activity areas. A collector street intercepts traffic from intersecting local streets and expedites the movement of this traffic in the most direct route to an arterial street or other collector street. Residential streets are within a neighborhood or limited residential district.

remain in their current condition level as long as possible through maintenance only; however, maintenance cannot legally be funded through debt.

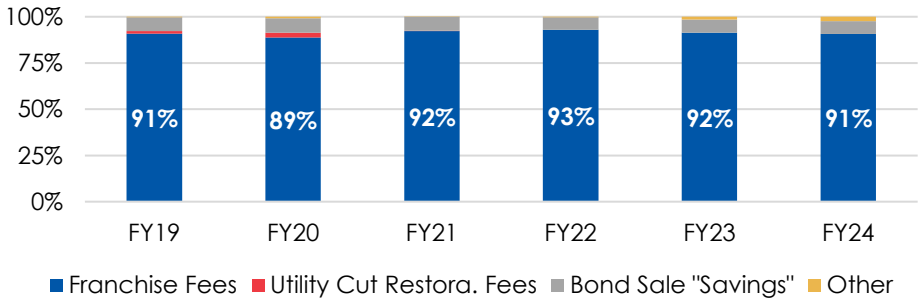
Table 8: Existing Street Lane Mile Avg. Condition Change

		2025 Condition			
		New	Preventative	Corrective	Rehabilitative
2019 Condition	New	3%	4%	1%	0%
	Preventative	8%	31%	10%	2%
	Corrective	3%	7%	9%	7%
	Rehabilitative	4%	3%	2%	7%

- Further, in Fiscal Year 2018, Streets Division staffing was reduced from 46 personnel in Fiscal Year 2018 to 41 staff members, reducing the Division's ability to perform preventative and corrective maintenance.

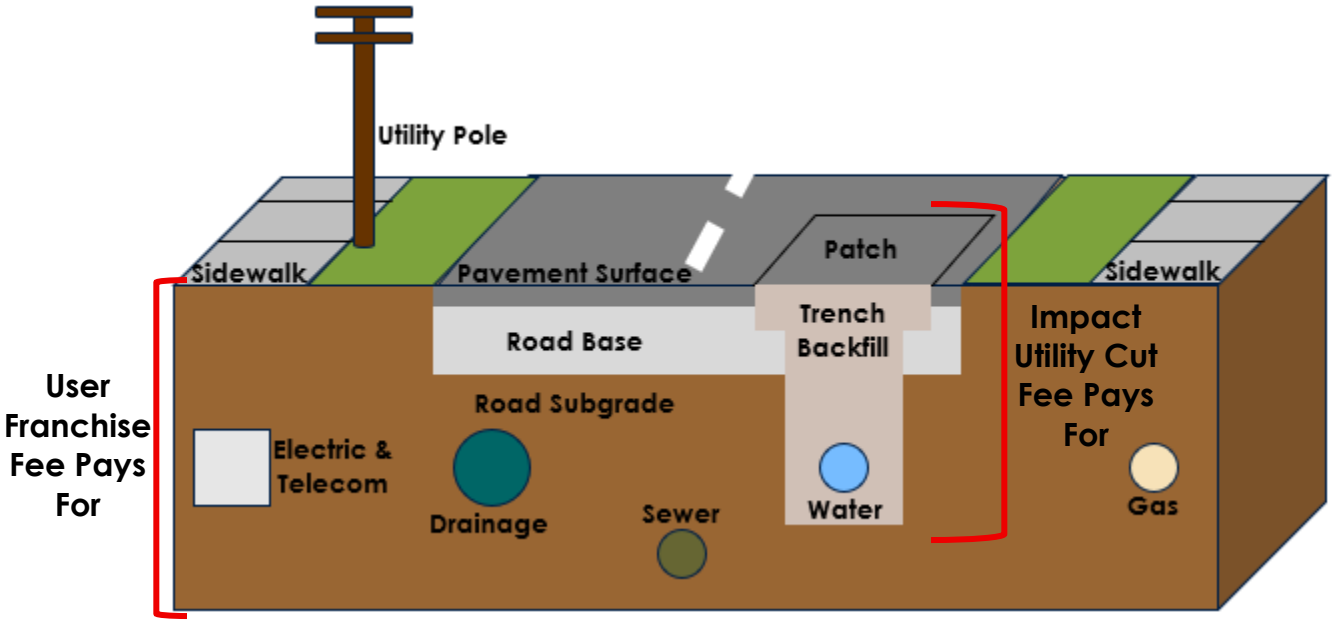
- Street maintenance is almost completely funded by revenue from the City's franchised utilities. While these funding mechanisms are being used based on City Council direction, they hinder street maintenance budgeting and do not clearly align with government funding fairness principles.
  - Historically, the City has almost completely funded street maintenance activities with a portion of revenue from its franchise utility customers as shown in Figure 4.

Figure 4: Street Maintenance Funding Sources



  - Franchise fees are payments made by a utility for using the City's right-of-way (illustrated in Image 2) to operate, like paying rent. While utilities operate in the right-of-way, they do not necessarily use the City's street infrastructure more than other residents unless they make a utility cut. Based on this, use of only franchise fees to fund street maintenance does not clearly align with either the Benefit or Ability-to-Pay approaches for funding government services fairly.

Image 2: Right-of-Way Illustration[7]



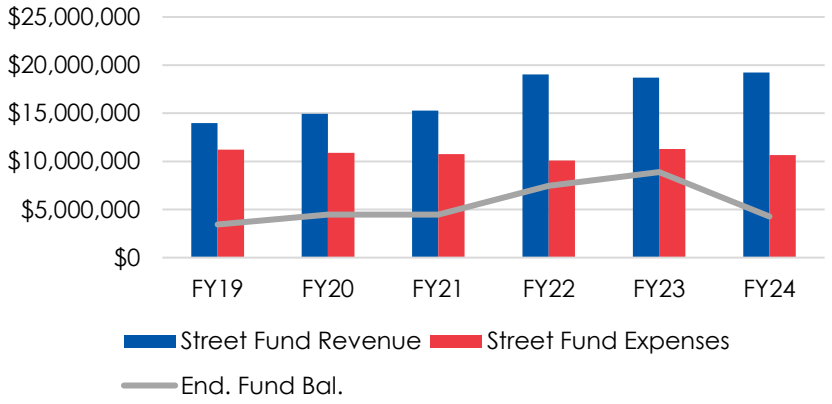
- Franchise fees are equal to a certain percentage of a utility's gross revenue earned within the municipality as reported in the Audit of Franchise Fee Collections. Since utility revenues are generally based on user consumption—and the City's budgeting practice is to transfer only a certain percentage of franchise fee revenue to Streets—this variability makes predicting available resources for street maintenance difficult.
- As reported in the Audit of Utility Street Cuts, a street cut will always reduce the structural integrity of the pavement because it introduces weaknesses that accelerate the deterioration of the street. While the City charges a right-of-way permit fee, this fee covers the cost of right-of-way inspectors and does not recoup the cost of this deterioration in any way. Historically, Streets charged utilities a fee for restoring these cuts; however, this fee was discontinued in Fiscal Year 2022 and only recouped the costs of patching the cut, not the increased funding needed due to the accelerated degradation caused by the cut.
- Finally, one of the City's street maintenance funding mechanisms increases the City's tax-backed debt burden. Specifically, the City currently issues debt for its utilities as certificates of obligation instead of the typical revenue bonds to take advantage of lower interest costs. The utilities then annually transfer this estimated difference (i.e., the "savings") between these amounts to fund street maintenance. This

[7] The utility cut illustrated here is for a water line, however, utility cuts may be made for any underground utility.

funding mechanism results in several things: (1) the City's utilities, and so its utility customers, do not benefit from this "savings" because the full cost of the debt is still paid; (2) seven percent of funding for street maintenance, about $1.2 million annually, is dependent on the City continuing to issue debt; and (3) the City's tax-backed debt burden is increased for all residents even though the debt only benefits utility customers. This practice raises issues of fairness as the City's utility customers are thus responsible for subsidizing street maintenance for non-City utility customers, and some revenue is tied to debt issuance, which has a longer payback period than the benefit period of most asset maintenance.

- While additional revenue is needed to ensure roadways are adequately maintained, currently, the Streets Division is likely not optimizing available resources.
    - As previously discussed, the Streets Division has not historically established an annual work plan or basic project cost planning tools, limiting longer-term planning and project prioritization.
    - As shown in Figure 5, revenue dedicated to street maintenance unexpectedly increased in Fiscal Year 2022 while expenditures remained the same, resulting in revenue exceeding expenses by about $8 million for each of the last three fiscal years.

Figure 5: Street Improvement Fund Balance History



    - About 96 percent of this revenue was ultimately transferred to the Capital Improvement fund to supplement roadway reconstruction costs instead of being used for preventative or corrective maintenance or repairs.

- Additionally, more predictable funding sources for street maintenance are available, but have not been implemented.

- In 2023, a consultant presented roadway funding strategies to the City Council. This presentation included three scenarios to meet the recommended street service-level goals as shown in Table 9.

Table 9: Streets Funding Scenario Options from Consultant Report

Scenario 1	Scenario 2	Scenario 3
$225 million in GOs No Change to Revenue	$150 million in GOs Add $5 million to Revenue	$225 million in GOs Add $5 million to Revenue
Avg. OCI Drops Below Goal in 2060 Backlog Goal: 2047	Maintains Avg. OCI Goal Backlog Goal: 2041	Maintains Avg. OCI Goal Backlog Goal: 2033

- To increase revenue, the consultant recommended the City implement a roadway user fee, which would be based on traffic patterns associated with a property's land use (e.g., residential, industrial, office, etc.). This fee generally aligns with the Benefit Approach to fairly financing public services. Other options included increasing property taxes, designating a portion of sales taxes, and increasing the franchise fee percentage.[8]
- Based on a comparison with five benchmark cities, two have implemented a roadway maintenance fee to fund their maintenance program.
- During the consultant's presentation, the City Council gave staff direction to proceed with Scenario 3; however, a source for the needed additional $5 million in annual revenue was not identified, meaning that the City is currently operating in Scenario 1.

Why It Matters

The City has only recently established goals for its street maintenance program and has generally not planned for long-term maintenance needs. This has led to significant investment in street reconstruction over the last ten years, improving street conditions overall. Still, without additional, appropriately used maintenance funding, a large investment will be needed again in 15 to 20 years; however, at that time, the City may not be able to make such large investments due to the significant amounts of debt it has issued in recent years.

While more street maintenance funding is needed, it is critical that this funding is sourced fairly and optimized by the Streets Division. For this reason, a street user fee and utility cut degradation fee should be considered to supplement existing

[8] While increasing the franchise fee percentage was included as an option, renegotiation of non-City franchise fee percentages only happens every few decades, most of which were renewed with the same rate in the last five years. Further, a portion of franchise fees rates are set by the State and so cannot be increased by the City.

funding as they align with the Benefit Approach to funding public services fairly. Similarly, budgeting a set amount of property or sales tax revenue for street maintenance instead of a percentage of franchise fee revenue would create a more consistent, predictable funding source for needed maintenance, facilitating improved planning practices.

Recommendations:

7. Consider budgeting a set amount of property or sales tax revenue for street maintenance annually instead of a portion of franchise fees to improve predictability and fairness. This should have a limited impact on available resources for the general fund because previously allocated franchise fee revenue would instead be recognized in the general fund.

   Public Works Comments: *Staff concurs with the recommendation to explore a more stable and transparent funding source for street maintenance, such as dedicating a set portion of property tax or sales tax revenue. This approach would improve long-term planning and predictability compared to relying on franchise fees, which can fluctuate and are not directly tied to infrastructure service levels.*

   Implementing such a change would require policy direction and approval from the City Council, and depending on the structure—particularly in the case of dedicating sales tax revenue—could also require voter approval. Staff is prepared to support further analysis and discussions with the City Council to evaluate the fiscal impacts, legal considerations, and implementation options associated with this recommendation.

   Finance Comments: *The City does not currently commit property or sales tax revenues in the General Fund for any specific department. The unrestricted nature of the funding currently allows flexibility should financial needs arise throughout the City.*

8. Explore options for establishing utility cut fees based on estimated degradation levels to help recuperate unexpected rehabilitation costs.

   Public Works Comments*: Staff concurs with this recommendation and supports exploring the implementation of utility cut fees based on estimated pavement degradation. As noted in the audit and supported by industry best practices, street cuts—particularly on newer pavements—can accelerate roadway deterioration and lead to premature rehabilitation needs.*

   As outlined in Recommendation 2, staff are developing a process to document and account for the impacts of utility cuts in the asset management system, including differentiating between longitudinal

(parallel) and transverse (perpendicular) cuts. This data will provide the foundation for establishing a degradation-based fee structure that reflects actual impacts on pavement condition.

Implementing such a fee would require a cost study to determine equitable rates based on cut type, size, and location. This change would also necessitate an update to the City's Right-of-Way (ROW) ordinance, which was last updated in 2022 and is currently under revision. The next update is planned to go to the City Council in Fall 2025. If the cost study cannot be completed in time, staff will target inclusion of the fee in the subsequent ROW ordinance update, anticipated in 3 to 5 years.

Staff will coordinate with Finance, Legal, and Right-of-Way Inspection to ensure that any fee structure aligns with ordinance requirements, Council direction, and best practices from peer cities.

9. Reevaluate implementing a roadway maintenance fee.

Public Works Comments: *Staff plans to pursue an extension of the original roadway user fee contract, thoroughly evaluate a fee. The City is considering a mobility fee model that would support all forms of mobility infrastructure—not just streets—while also providing a more reliable and flexible funding source.*

Establishing a steady, dedicated revenue stream would strengthen the City's position when pursuing competitive federal grants. In past conversations with federal funding agencies, staff have received feedback that ongoing local commitment—beyond franchise fee allocations—is a key criterion for funding eligibility. A mobility-focused road user fee could help fulfill that requirement while supporting long-term asset management goals.

Drainage Maintenance

Stormwater consists of surface waters derived from rain and snowmelt. When land is undeveloped, most stormwater soaks into the soil and is naturally infiltrated before reaching streams and rivers; however, land development creates impervious surfaces,[9] such as parking lots or rooftops, that cannot readily absorb stormwater, creating a high volume of runoff that can cause flooding. Stormwater drainage systems are built to carry rainfall runoff and other drainage through underground pipes or ground-level channels into local streams, rivers, and other surface water bodies to prevent flooding. This process is described below and illustrated in Image 3:

1. Rain falls on impervious surfaces like rooftops, parking lots, or driveways;
2. Stormwater runs off impervious surfaces into drainage inlets;
3. Stormwater runoff moves through the City via underground pipes or ground-level channels;
4. Stormwater runoff is emptied into natural waterways.

Image 3: Simplified Drainage System Stormwater Flow

In addition to controlling the flow of stormwater, drainage systems are designed to prevent illicit discharge such as oil, grease, trash, chemicals, or coarse sediment from entering wetlands and other natural ecosystems. For these reasons, a properly maintained drainage system is a critical component of public health and public safety. There are generally five types of drainage assets as outlined in Figure 7.

[9] Defined under the City of Denton Code of Ordinances Article VII, Sec. 26-235, as "any surface through which water cannot pass, or through which water passes with great difficulty."

Figure 7: Drainage Asset Types

Inlets
- Where stormwater enters the underground drainage system.
- Usually located on streets or in basins and includes control devices to block or trap illicit discharge.

Pipes
- Moves stormwater towards basins or waterways.
- Includes manholes that allow access for repairs.

Outlets
- Where stormwater exits the underground drainage system.
- May exit to channels, basins, or directly to waterways.

Channels
- Collects and moves water at ground-level towards basins or water ways.
- Includes bridges that allow for movement over stormwater flows.

Basins
- Collects, slows, or stops stormwater flow to reduce erosion and flooding.
- Includes dams that slow or redirect water flow.

Incomplete Drainage Asset Information Hinders Maintenance Prioritization & Planning; Quality Assurance Documentation is Limited

As previously discussed, the public works asset maintenance lifecycle generally includes four steps. For drainage, these are further described below:

1. **Identify** maintenance needs based on assessed asset condition: requires an inventory of drainage assets, usually in an asset management system, with regular visual inspections to identify asset integrity issues.
2. **Prioritize** maintenance activities to meet service level goals: requires formally adopting service-level standards such as annual performance goals for inspections and cleanings or a system renewal rate measured in decades and determining the most cost-effective method of meeting those goals. Prioritization generally requires long-range planning (i.e., three to five years) since drainage assets have decades-long useful lives.
3. **Plan** prioritized maintenance activities based on available resources: requires an understanding of time, labor, equipment, and material costs by activity type and size compared to available resources including staff, equipment, and money. Planning on this scale is typically done in the short-term (i.e., one year) to optimize resource usage.
4. **Perform** maintenance activities: requires documentation of who, what, when, where, how, and why the work was performed, typically through a work order system, and appropriate oversight to ensure quality and timeliness standards were met.

There are generally three types of maintenance activities for drainage assets as described below:

- Inspections: Includes routine inspections of inlets, outlets, manholes, channels, bridges, basins, and dams to identify any cleaning or repair needs. Underground pipes should be regularly videoed by certified operators and defects coded using a standard system. Storm checks should be performed on high-risk drainage assets before storms to help prevent flooding.
- Cleaning: Includes debris control through sediment removal, pipe flushing, and regular street sweeping based on expected illicit discharge levels.
- Repairs: Includes erosion control projects, blockage clearing, pipe replacements, crack- and joint-sealing of concrete assets, and more.

What We Found

- While Drainage has implemented an asset management system, it is incomplete and missing some key data, hindering drainage maintenance

prioritization, planning, and performance. Prioritization and planning are further hindered by divided responsibilities across multiple departments.

  - A comprehensive inventory of drainage assets has never been conducted, and not all drainage-related assets, specifically dams, are listed within the asset management system.
  - Most assets are missing key data points such as install date, asset type, and other engineering information such as material, dimensions, etc.
  - Currently, one Drainage staff member will occasionally survey and map missing assets into the asset management system; however, there is no systematic procedure to identify missing assets, document new asset information, or communicate with the asset management system support team to ensure newly identified assets are entered into the system. Further, the Division cannot obtain older drainage asset engineering information because a central repository of public works as-built plans was not maintained by the City until recently.
  - While the City's Drainage Division of the Wastewater Department is generally responsible for maintaining most drainage assets, basins are maintained by the Watershed Division of the Environmental Services Department, dams are informally inspected by the Parks & Recreation Department, and the asset management system is maintained by the Business Services Division of the Finance Department.

- The City has formally adopted some drainage service-level goals due to regulatory requirements.
  - Denton has developed a Stormwater Management Plan as required by the State of Texas, which outlines the goals, strategies, and programs used to improve water quality, address existing and future conflicts between flooding and development, and preserve and enhance valuable natural resources.
  - While some current permit requirements are met some are not. For example, while street sweeping is performed as required by the permit, City-owned drainage infrastructure does not appear to be routinely inspected as summarized in Table 9.
  - According to staff, the Watershed Division submitted a new Stormwater Management Plan to the State, which has not yet been approved. This Plan has increased maintenance and inspection requirements.

- A plan to systematically inspect drainage assets has not been developed, hindering maintenance prioritization and planning processes and

increasing the risk of asset failure. Further, standard inspection procedures and a method to track noted issues have not been developed, limiting the Division ability to ensure quality inspections are conducted and repairs are performed timely.

- Drainage Division management has not established Division-specific service level goals for routine asset inspections. Further, written standard operating procedures or other guidance for performing routine inspections have not historically been used. Electronic inspection forms have recently been developed and will reportedly be implemented in Fiscal Year 2025. Asset data, including material compositions and dimensions, could be updated using these inspection forms.
- Drainage management indicated that their practice is to routinely inspect four asset types: inlets, manholes, outlets, and channels; however, of 400 assets randomly selected for review, 100 of each type, only one showed a 2024 inspection. Further, only about 17 percent of the assets sampled showed any inspection in their asset management history as summarized in Table 10.

Table 10: Drainage Asset Inspection

Asset Category	Total Assets	Asset Type Documented	Inspected in 2024	Inspected Since 2019
Inlets	8,583	76%	0%	23%
Manholes	2,672	47%	1%	32%
Outlets	1,748	30%	0%	0%
Channels	2,428	79%	0%	11%

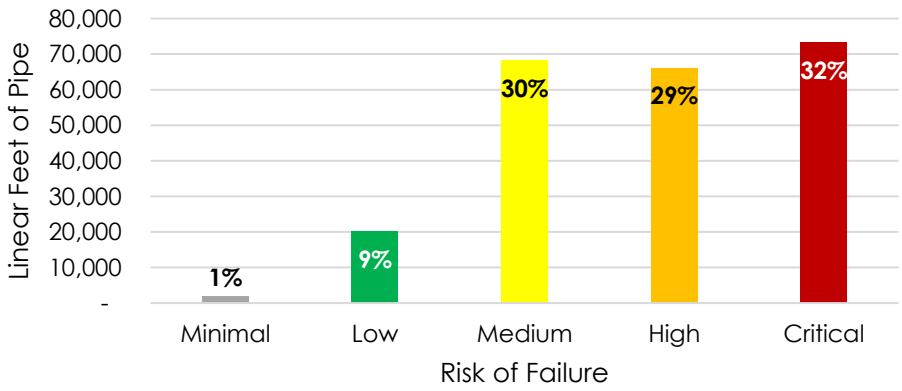
- Some bridge assets are inspected by the State every four years, and any noted issues are communicated to the Drainage Division;[10] however, Drainage staff indicated that they did not have a system to track these issues to ensure issues were addressed, though a process was developed during the audit.
- Parks Division staff assist with dam maintenance but are primarily focused on vegetation management. Still, Parks does have a short dam inspection checklist, which suggests that Parks staff review some non-vegetation-related items. The need to formalize the handling of dams was noted in a 2023 consultant report.
- In 2022, the City hired a contractor to assess the drainage system to better understand the Drainage Division's needs and focus areas to assist in developing a stormwater master plan. Staff reported that due

[10] The State performs bridge asset inspections biannually but only inspects bridges over 20 feet and does not inspect every one each review.

to the results of this needs assessment, the Division purchased a camera-equipped van and heavy-duty flusher truck to allow staff to complete pipe inspections and cleanings.

- Historically, pipe assets have not been inspected, so limited information about pipe conditions is available, hindering prioritization of repair work. In addition, opportunities exist to further optimize staff resources during pipe inspections.
    - The City began inspecting drainage pipes for the first time in the City's history in 2024. Pipe inspections are completed via video camera by City staff and a contractor and are automatically rated using an industry standard coding system to assess a "likely to fail" score based on the observed defects. Pipe segments receive a score from one to six with six being the most likely to fail and one being the least; industry standards suggest that any pipe rated four or over is high risk.
    - Between February 2024 and June 2025, almost 230,000 linear feet of drainage pipe were surveyed and rated. Of this amount, 61 percent scored over a four or above indicating most of the City's drainage pipes are currently at high risk of failure as illustrated in Figure 8. It should be noted that a significant portion of drainage pipes have not yet been inspected. Though staff do not know the exact length of the drainage pipe system, staff estimate that at the current inspection pace it will take seven more years to completely inspect all pipes.
    - This issue is further complicated by 17 percent of New or Preventative condition street lane miles having drainage pipes with a high or critical risk of failure within 50 feet of them. Appendix B includes GIS maps that illustrate these New and Preventative condition streets that are near "likely to fail" pipes.

Figure 8: Known Drainage Pipe Conditions

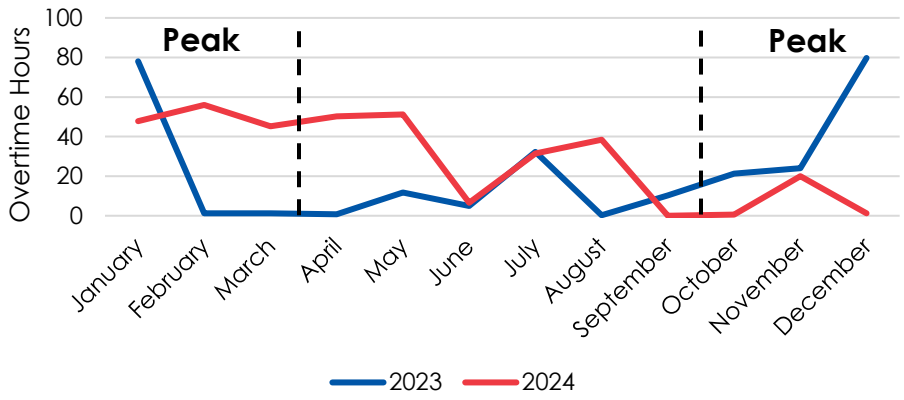


  - In addition, despite needing to remove manhole covers to inspect pipes, staff do not inspect manholes while performing pipe inspections as recommended by best practices.

- Due to incomplete asset information and limited inspections, the Drainage Division does not develop an annual work plan. Instead, work is primarily reactive, hindering the Division's ability to optimize resource usage and increasing the risk of flooding.
  - Pipe flushings typically occur when issues are noted during video inspections and channels are typically cleaned of sediment when concerns have been noted rather than due to regular inspections or a planned maintenance schedule.

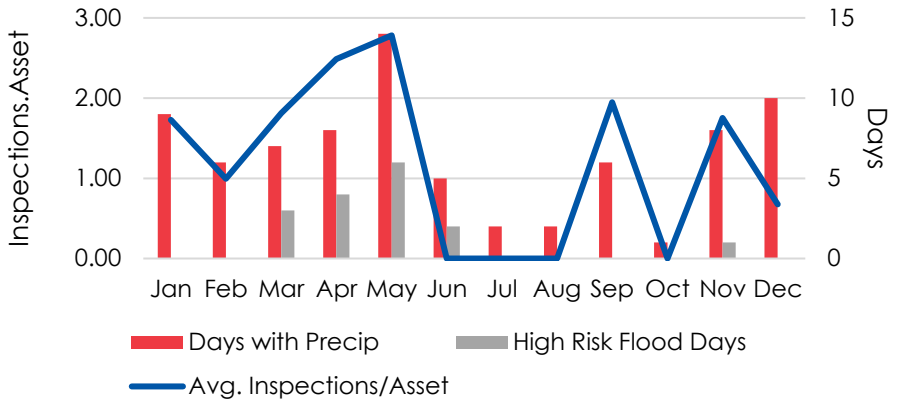
- Street sweeping is completed, but the program needs to be formalized to enhance the operation.
  - Currently, no standard operating procedures, policies, expectations, or other performance metrics have been established for the street sweeping program, including disposal techniques.
  - The amount of swept roads does appear to fulfill State permit requirements.
  - Sweeping routes have been established in a route tracking system; however, they are not proactively adjusted based on network additions, season, or debris amounts as recommended by best practices. Further, the route tracking system was not connected to the asset management system until 2025, previously requiring staff to manually enter sweeping tasks.
  - Sweeping trucks must complete higher speed "exercise" trips due to their diesel engines; however, expectations for how frequently these trips occur have not been established, increasing the likelihood of maintenance issues. GPS information for sweeping trucks showed exercise trips were completed sporadically, and Division Management reported these trips were completed at the drivers' discretion based on the vehicle's notification system.
  - Staff reported overtime hours are typically required for sweepers during peak debris times, typically from November through March, due to falling leaves. However, a review of street sweeper overtime indicated that there is not a significant difference between the average overtime hours during peak months and non-peak months.

Figure 9: Street Sweeper Overtime Hours



- Storms checks are generally occurring during rainier periods; however, further written guidance and direction could optimize and streamline the process.
    - While Drainage Division does have a storm response plan that contains some of the necessary elements for preparing for and responding to a weather event, this document was last updated in 2022. Review found that this plan was outdated, and staff reported this plan is not currently followed. Overall, management has not established criteria to trigger storm checks such as predicted rainfall or number of rainy days. According to staff, predicted rainfall information is received from the City's Emergency Management Program Manager and that is used to determine when checks are needed, and staff will check the informally identified flooding "hot spots" rather than use the outdated September 2022 high water districts map presented in the storm response plan.
    - A comparison of completed 2024 storm checks and historic precipitation data found these checks were typically completed more frequently in months with large amounts of precipitation. However, as shown in Figure 10 about 50 percent of storm check inspections occurred during months with zero high-risk flood days.

Figure 10: Relationship between Storm Checks & Precipitation (2024)[11]



- Of the City's 170 bridge assets, 29 did not receive a storm check during 2024. Staff reported these 29 assets were previously excluded from routine storm checks due to unique features not specifically listed in the asset management system. Storm check work orders are recorded in the drainage asset management system for bridge assets; however, documentation methods limit the ability to verify if the labor hours were needed or what was specifically completed while onsite (i.e., cleaning, visual check, etc.).
- Storm checks typically involve a quick visual drive-by inspection of the asset to identify any major blockages that could trigger flooding; if debris is found, it should be cleaned as soon as possible to reduce flood risk. Staff deployment during these events often included three employees in one light-duty truck to ensure any observed debris could be immediately removed; however, available work order notes do not indicate three staff members are typically needed.

Why It Matters

The lack of a comprehensive inventory limits the ability to not only appropriately plan for preventative maintenance such as pipe flushings, which can mitigate major, costly repairs but also for major projects such as pipe replacements. Initial pipe inspection results indicate the City will likely need to replace many linear feet of pipe in the next few years, which means drainage will need to increase revenue to cover these necessary costs.

Additionally, the lack of a formal dam process hinders the ability to ensure dams lifecycles are optimized and increases the risk of missing a preventable major

[11] High-flood risk days were identified based on a combination of daily precipitation and continuous precipitation. For example, the auditor created flood risk assessment scheme identified a critical risk flood day on April 9, 2024, because 2.47 inches of rain fell on April 8 and 0.99 inches of rain fell on April 9.

repair or drainage failure. The overall lack of standard operating procedures and specific written guidance on what assets the Drainage Division is responsible for increases the risk of necessary steps being missed or tasks not being completed.

The sweeping program appears ad-hoc and is not proactively adjusted based on new roadways, season, or debris amounts as recommended by best practices. Without route optimization, route adjustments, debris tracking, specific requirements, or goal expectations, overall comprehensive planning is limited for this activity.

Storm checks are an emergency response activity meant to minimize public safety risks. While the Drainage Division does complete checks during months with higher rainfall these are not clearly related to higher flood risk. Without clear guidance on what necessitates a storm check and what assets need to be prioritized, the risk of staff missing needed checks during critical times increases. Additionally, three staff members in one vehicle for a task that typically requires only visual inspection indicates some staff time devoted to these checks may not be economical.

Recommendations:

10. Formalize a systematic method for surveying and recording assets that are not currently listed in the asset management system. Continue developing a complete inventory of all Drainage assets for use in budgeting, prioritizing, and planning. Ensure the entire network of storm pipes are videoed, graded, and documented into the asset management system as quickly as possible. Add all dams within the City into the asset management system.

***Public Works Comments**: The City's stormwater infrastructure is aging, increasingly complex, and in many areas poorly documented due to historical development practices. As noted in the Stormwater Needs Assessment, there is a critical need to improve inventory, condition assessment, and long-term capital planning across the drainage system.*

Current efforts, including contracted GIS support and field inspections, are improving data accuracy, but existing staffing levels and inspection resources result in a 10–12-year cycle for systemwide condition assessments. Best practice recommends a 5-year cycle to proactively manage risk, prevent failures, and align with modern asset management principles. Achieving this goal will require a sustained investment in both staffing and technology, as well as continued development of the asset management system.

Staff will continue to build and refine a systematic approach that integrates asset condition, criticality, and capacity into the City's planning and prioritization processes.

11. Establish drainage system service-level goals and develop a comprehensive Drainage asset inspection program to achieve these goals. Drainage service-level goals typically include: a system renewal rate, monthly asset inspection goals, and cleaning and repair timeliness expectations.

***Public Works Comments**: Similar to the street system, the Drainage Division currently operates under informal service level expectations related to inspection frequency, cleaning cycles, and maintenance response times. While these internal targets help guide operations, they have not been formally adopted by the City Council.*

Staff is currently working with a consultant on a Drainage cost-of-service study to assess funding needs and recommend appropriate staffing levels to support the establishment of formal service goals. These goals would include system renewal rates, inspection and cleaning frequencies, and repair response times. Establishing and adopting formal service level targets is a foundational component of an effective asset management program, as recognized by the Institute of Asset Management, and will improve transparency, support long-term planning, and enhance performance tracking.

As noted in the Stormwater Needs Assessment, the City historically lacked dedicated equipment for stormwater pipe inspection and cleaning. Within the last 18 months, Drainage acquired its first CCTV inspection cameras and flushing/vacuum truck, enabling the launch of a formal, condition-based inspection program for the first time. While still in the early stages, this program represents a major step toward a comprehensive asset management approach. Continued investment in system upgrades, data collection, and interdepartmental information sharing—across Drainage, Streets, and Water/Wastewater—will be essential to achieving and sustaining effective service levels.

12. Create written guidance on completing inspections, cleaning, and repairs for all drainage assets based on work order best practices. Work with the Watershed Division and the Parks & Recreation Department to ensure drainage assets not managed by the Drainage Division are appropriately inspected and needed repairs are completed timely.

***Public Works Comments:** Staff concurs with this recommendation and is actively working to develop formal Standard Operating Procedures (SOPs) for inspection, cleaning, and repair activities across all drainage assets. This*

effort supports both internal consistency and is a key component of the City's pursuit of APWA accreditation, which emphasizes documented procedures and best practices.

The need for formalized guidance was also highlighted in the Stormwater Needs Assessment, which identified a lack of standardized documentation as a barrier to effective tracking, training, and service delivery. The SOPs will help define clear processes for completing and documenting work orders, ensuring accountability and enabling more accurate performance measurement.

In addition, staff will coordinate with the Watershed Division and Parks & Recreation Department to ensure that drainage assets outside the direct control of the Drainage Division are also regularly inspected and maintained. Clear ownership and communication protocols will be incorporated into the SOP framework to support timely repairs and comprehensive asset management.

13. Begin developing a drainage system capital improvement plan based on system renewal service-level goals and existing asset conditions documented from inspections. Consider prioritizing cleaning for high-risk pipes under New and Preventative condition roads, and replacement for high-risk pipes under Rehabilitative roads.

***Public Works Comments**: Staff concurs with this recommendation and has begun developing a drainage system Capital Improvement Plan (CIP) informed by asset condition data and aligned with future service level goals. A priority rating system is being established to evaluate and rank drainage projects based on risk, probability of failure, and consequence of failure, while also seeking opportunities to coordinate with street, utility, and developer projects to maximize efficiency and reduce rework.*

To date, approximately 14% of the City's stormwater system has been inspected, with 60% of those inspected segments identified in critical condition. This underscores the urgency of a data-driven approach to capital planning. However, developing a fully scoped CIP requires engineering services to prepare reliable opinions of probable cost. With current staffing, the Drainage Division can assess and prioritize assets based on condition and criticality, but engineering support is needed to translate those priorities into cost estimates and fully developed projects.

As inspection coverage expands, staff will continue identifying high-risk segments and implementing interim measures—such as increased inspection intervals, targeted cleaning, or minor repairs—to maintain functionality until

permanent replacements can be funded and completed. The integration of inspection results, engineering cost estimates, and available funding will be essential to advancing a comprehensive, prioritized drainage CIP.

14. Implement written standard operating procedures for the street sweeping program, including service level goals, street prioritization guidance based on expected pollutants, route design guidance based on debris levels, trip documentation requirements, and a specific schedule for exercise trips based on discussions with the Fleet Division. Develop a method to track the amount of debris collected for each route and use this data to adjust route priorities as needed.

***Public Works Comments**: Staff concurs with this recommendation and is actively working to finalize a Standard Operating Procedure (SOP) for the City Street sweeping program. A draft SOP has been developed and is currently under review, with a focus on formalizing documentation, improving tracking, and integrating processes into the City's asset management system.*

Although formal service level goals have not been adopted by the City Council, internal goals are in place. Currently, the City aims to sweep all public streets on a two-month cycle, which satisfies the requirements of the City's MS4 permit and supports systemwide pollutant removal efforts.

Staff acknowledges the importance of route optimization but notes that prioritizing based on specific pollutant types is difficult to operationalize. The current strategy prioritizes comprehensive coverage to remove debris and pollutants uniformly across the system. However, staff will review industry best management practices to identify potential refinements to route prioritization and scheduling.

Importantly, debris volume is currently tracked in the asset management system by route. Staff will work to develop a reporting tool that enables this data to be pulled easily and used to inform decision-making, including identifying high-debris areas and adjusting sweeping frequencies as needed.

Staff also perform regeneration trips as needed when sweepers indicate DPF (diesel particulate filter) regeneration requirements. These are handled through higher-RPM driving intervals on an as-needed basis. Staff will coordinate with the Fleet Division to establish consistent guidance for regeneration practices and incorporate this into an SOP.

15. Update the storm response plan to include rainfall criteria to trigger storm checks, asset prioritization based on flood-risk factors, current "hot zone" map, documentation expectations based on work order best practices, and

repair tracking and timeliness goals. Use historic precipitation data and flooding information to inform storm response plan expansion.

***Public Works Comments**: The Drainage Division has a High-Water Response Policy, last revised in 2022, which outlines procedures for monitoring known flood-prone areas before, during, and after storm events. While the core intent of the policy remains relevant, field practices have evolved as staff have adapted to changing conditions, infrastructure improvements, and updated operational needs. As a result, the policy is now being re-evaluated to better align with current practices, reflect changes in runoff patterns, and ensure that documented procedures match the methods currently used in the field.*

As part of the City's broader effort to improve documentation and adopt best management practices, staff are developing formal Standard Operating Procedures (SOPs) across both the Drainage and Streets Divisions. The storm response plan will be incorporated into this effort, with updated guidance to include rainfall thresholds for triggering inspections, prioritization of assets based on flood risk, and expectations for documentation, repair tracking, and response timelines.

Staff will also coordinate with the Emergency Management Center to align the storm response plan with the City's broader emergency response framework. Feedback from emergency management staff will help ensure efficient implementation, integration with real-time weather monitoring, and appropriate scaling of response actions..

16. Optimize staff resource usage by adjusting resource deployment including completing corresponding manhole inspections whenever a storm pipe segment inspection begins, deploying employees in separate trucks for storm checks, and ensuring street sweeper overtime is only accrued when debris levels warrant it.

***Public Works Comments**: Staff concurs with this recommendation and has already taken steps to implement several of the suggested optimizations. As part of the City's evolving stormwater inspection program, manhole inspections are now conducted in conjunction with storm pipe segment inspections to maximize efficiency and minimize return trips. Staff is currently developing a streamlined documentation process to input this data into the asset management system more easily, with a full rollout to follow.*

For storm event checks, it is standard practice to deploy multiple staff members in the same vehicle to improve efficiency, especially when addressing small blockages that can be cleared immediately without additional equipment. If debris is too large to be handled during these

checks, the issue is documented, and a follow-up work order is generated for appropriate crew response.

Regarding street sweeper operations, overtime has been suspended across the program. However, overtime may be reassessed during leaf season, when debris accumulation increases significantly, and sweepers fill quickly. During these peak periods, limited overtime may be necessary to maintain route schedules and MS4 permit compliance. Staff will continue to monitor debris levels and operational needs to ensure overtime is only used when justified.

Drainage Fund Structure Limits Financial Visibility; Current Rates Do Not Provide Adequate Revenue

As previously discussed, the GFOA recommends that governments establish a system for assessing their capital assets to plan and budget for any capital maintenance and replacement needs and that the funds to pay for these needs should be levied fairly. In practice, drainage costs are paid through several methods that generally allocate the cost over the benefit period as summarized in Table 11. Notably, these funding methods assume that only users of the drainage system should fund drainage construction and maintenance because they receive the benefits of the drainage system.

Table 11: Typical Drainage Cost Funding Methods

Cost	Benefit Period	Typical Funding Method
New Construction	50-70 Years	Rev.-Backed Debt, Impact Fees
Replacement	50-70 Years	Rev.-Backed Debt
Cleaning	1-5 Years	User Fees
Repairs	Immediate	User Fees

Further, best practices suggest that user fees be authorized by the policy-setting body and that accurate fee information be easily available to the public. User fees should be based on the actual cost of providing services, and should be reviewed and updated periodically, typically every three to five years, to ensure fairness.

What We Found

- Drainage system maintenance is generally funded fairly, but revenues and costs could be reported more transparently.
    - In 2002, the City Council created a drainage user fee that is charged to City utility customers monthly based on the impervious surface area

of each land parcel unless they do not use the drainage system.[12] The current fee structure is outlined in Table 12.

Table 12: Current Drainage User Fee Structure

Residential Square Ft. of Impervious Surface	Charge	Commercial
0-600	$0.50	$0.00186 per Square Ft.
601-1,000	$1.00	
1,001-2,000	$3.35	
2,001-3,000	$5.45	
3,001-4,000	$7.60	
4,001-5,000	$9.75	
5,001-6,000	$12.00	
Over 6,000	$15.50	

- The revenues from this fee are accounted for in the City's Wastewater Fund but are used by the Drainage Division of the Public Works Department and the Watershed Division of the Environmental Services Department. This structure limits visibility of drainage maintenance revenues and expenses, increasing the risk of insufficient funding, and hinders the City's ability to intentionally save money for drainage infrastructure needs by tying available funding to the Wastewater Department's fund balance.
- According to staff, this is because the City Council historically determined that Drainage should operate as a "quasi-utility" within the Wastewater Utility; however, the Drainage Division follows the requirements of the Texas Municipal Drainage Utility Systems Act.[13] Overall, it is not clear what benefits the City receives from structuring its drainage program in this manner as it reduces visibility of drainage system revenues and costs.

- Drainage fee rates have not been updated in over 20 years and is likely not adequate to meet the City's potential service-level goals.

  Current fee revenue is likely not enough to fund all needed work, including a completely mapped asset inventory, periodic asset condition inspections, regular asset cleanings, street sweeping, repairs, storm checks, and watershed protection. For example, the City has spent about $3.7 million on drainage maintenance annually for the last six fiscal years; however, the City has spent about $8.2 million on

[12] Exceptions include: (1) properties that maintain their own City-certified, private drainage system; (2) property in its natural state; and (3) unimproved subdivided lots until a certificate of occupancy is issued.
[13] Texas Local Government Code Title 13, Subtitle A, Chapter 552 Subchapter A

wastewater collection system maintenance. As wastewater and drainage pipes are similar this indicates that the City is likely significantly underfunding drainage infrastructure maintenance.

- During Fiscal Year 2020-2021 Drainage Division staffing was reduced from 20 to 15 personnel even though four of those positions were added in the prior fiscal year to create a new team within drainage. Staffing has not yet returned to previous levels. A review of similar cities found that for every five square miles of Denton there was a single drainage employee, while similar cities had an average ratio of one employee for every three-square miles, indicating that the Drainage team may be understaffed.
- Unlike benchmark cities, Denton has never updated the fee even though at least one consultant suggested progressive increases to the fee in 2008, and other cities show regular review and updates of their fee. Benchmark review found that the drainage operation is not typically contained within another utility.
- Benchmark review also found that the City's current fee structure is generally less than other cities reviewed particularly for those who established their fees to cover all costs of the drainage and stormwater program.
- Finally, a contractor is currently completing a cost-of-service assessment for multiple Public Works divisions, which will reportedly include an assessment of the drainage fee.

- Drainage fees are likely applied inconsistently. The billing process needs refinement, including further written instructions to ensure all applicable accounts are being billed.
  - There is no written guidance for Customer Service staff on how to determine if a utility account should be charged a drainage fee or how that fee should be calculated or identified, especially for service addresses that are not in Denton. Accounts are not clearly labeled or notated to indicate if a drainage fee should be applied.
  - Drainage fees are charged to roughly 40,000 utility accounts; however, there are about 7,600 accounts that are not charged a drainage fee. Only about 570 of the accounts were clearly exempt from the fee by State law or City ordinance.
  - Of the remaining accounts reviewed, about 2,200 were determined to be high risk and should be reviewed as soon as possible to ensure the City is receiving the correct fee. An additional 2,200 were determined to be at medium risk, while the remaining 2,500 were low risk.

- About 100 accounts with no drainage fee attached to them were associated with either Denton County, the Denton County Transportation Authority, or Denton Independent School District. Both State and City legal guidance state these are optional exemptions, and Denton has no written requirements stating these entities are exempt, indicating that they are not exempt. Yet in 2023, nearly $270,000 was refunded due to staff determining some charged drainage fees were invalid; these entities received a large portion of the credits. Further, due to the operational nature of these organizations they likely have large impervious surface areas, thereby having a larger impact on the drainage system than most parcels.
- There is currently no method to reconcile the actual impervious surface of a property to the charged drainage fee since Drainage does not have a complete inventory of property impervious surfaces available.

Why It Matters

Adequate controls over the billing and collections of revenue are an indispensable component of any government program, especially revenues generated by user fees. Since the current drainage fee is not sufficient for all future drainage operational needs including field services and watershed protection it increases the risk of a weakened drainage system and watershed operation, placing the City at a higher risk of flooding and polluting local waterways.

The process of billing drainage fees is challenging due to the quickly developing City and lack of comprehensive inventory of impervious surface areas and overall lack of clear guidance and notation on the billing process. Additionally, the complicated billing structure has likely increased the number of accounts with incorrect or missing drainage fees, which may have resulted in lost revenue. Adequate processes are needed to ensure the billing of drainage fees is consistent and needed funds are available to both the Drainage and Watershed Divisions based on service-level goals.

Recommendations:

17. Establish Drainage as an independent utility and account for drainage fee revenue in an independent enterprise fund to increase visibility, transparency, and accountability.

***Public Works Comments**: Establishing Drainage as an independent utility and transitioning the existing drainage fee revenue into a dedicated enterprise fund would enhance visibility, transparency, and accountability for stormwater operations and capital planning.*

This recommendation was also included in the Stormwater Needs Assessment, which identified the current lack of separation as a barrier to long-term financial sustainability and strategic investment in the drainage system. Most peer cities have already adopted this structure, and it is widely considered a best practice in stormwater utility management.

Under the current structure, any debt issued for drainage projects directly impacts the City's tax-supported debt rate. While issuing debt can be necessary to fund critical projects, it must be approached carefully to protect the City's long-term financial health and ability to meet its obligations. Maintaining or improving the City's bond rating through prudent financial management can lower borrowing costs and improve access to capital markets, ultimately benefiting both the drainage program and the City as a whole.

Implementing this change would require City Council direction and potentially policy action to formally designate Drainage as a utility. Staff is prepared to support further discussions with Council on the implications, benefits, and potential timeline for making this transition, should Council choose to move forward.

***Finance Comments**: Finance will work with the department to research the potential implications of an independent utility.*

18. Update the drainage fee to ensure current Drainage and Watershed operations and maintenance needs are met based on service level goals. Consider simplifying the fee structure to allow for easier understanding and price verification. Establish a process to periodically review the cost of service and adjust the drainage fee as needed.

***Public Works Comments**: A cost-of-service study is currently underway that includes both the Drainage and Watershed Divisions. This study will evaluate current operations, long-term staffing needs, and funding gaps, with a focus on updating the drainage fee to better reflect the true cost of maintaining and improving the stormwater system.*

As noted in the Stormwater Needs Assessment, the existing drainage fee—implemented in 2002—is significantly outdated and does not reflect the current scale of the system, service expectations, or regulatory responsibilities. The assessment also highlighted that the City's drainage fee is low compared to peer communities, creating a structural funding shortfall that limits the City's ability to proactively maintain and upgrade stormwater infrastructure.

In addition to evaluating the appropriate funding level, staff will also explore

simplifying the fee structure to make billing clearer and easier for customers to understand and verify. The City will also establish a process for the periodic review and adjustment of the drainage fee to ensure it continues to meet future system needs and service level goals.

***Finance Comments**: Drainage is included in the Cost-of-Service study that was kicked off in June. We anticipate that Raftelis' recommendations will consist of a simplified rate structure, as well as rates that cover the cost of service for Drainage. The study has a tentative completion date of November 2025, with presentations to the PUB and Council to follow. As part of the study, we have contracted with Raftelis to provide updates for the next five years with growth and expansion in mind.*

19. Implement drainage fee assessment guidance that describes impervious surface area calculation or identification methods and approved drainage fee exemptions, including when properties with Denton service addresses should not be charged and when properties marked with out-of-city service addresses should be charged.

***Public Works Comments**: As part of the ongoing cost-of-service study, the consultant will provide recommendations related to impervious surface assessment methods and billing policies. However, formal guidance will ultimately be developed by City staff, informed by those recommendations and by reviewing best management practices (BMPs) and policies from peer cities.*

Currently, the City's drainage billing is based on impervious surface estimates provided by the Denton Central Appraisal District for residential customers and disclosed on permit applications for commercial customers. However, the methodology used to calculate or update those estimates is not clearly documented. Staff will work to formalize a clear and consistent process for calculating impervious area to improve billing accuracy, transparency, and customer service.

In addition, staff will develop documented guidance on drainage fee exemptions, including:
• When Denton service addresses should not be charged (e.g., tax-exempt or public properties),
• And when "out-of-city" addresses should still be charged due to receiving City stormwater services.

This effort will help standardize assessments, reduce billing discrepancies, and ensure fair and equitable application of the drainage fee across all customers. Staff will consider and implement feasible recommendations from

the cost-of-service study, BMPs, and other successful utility models to strengthen this process.

20. Review accounts that are not being billed a drainage fee to determine if a fee should be charged. Notify Customer Service promptly if accounts are identified that need a drainage fee added.

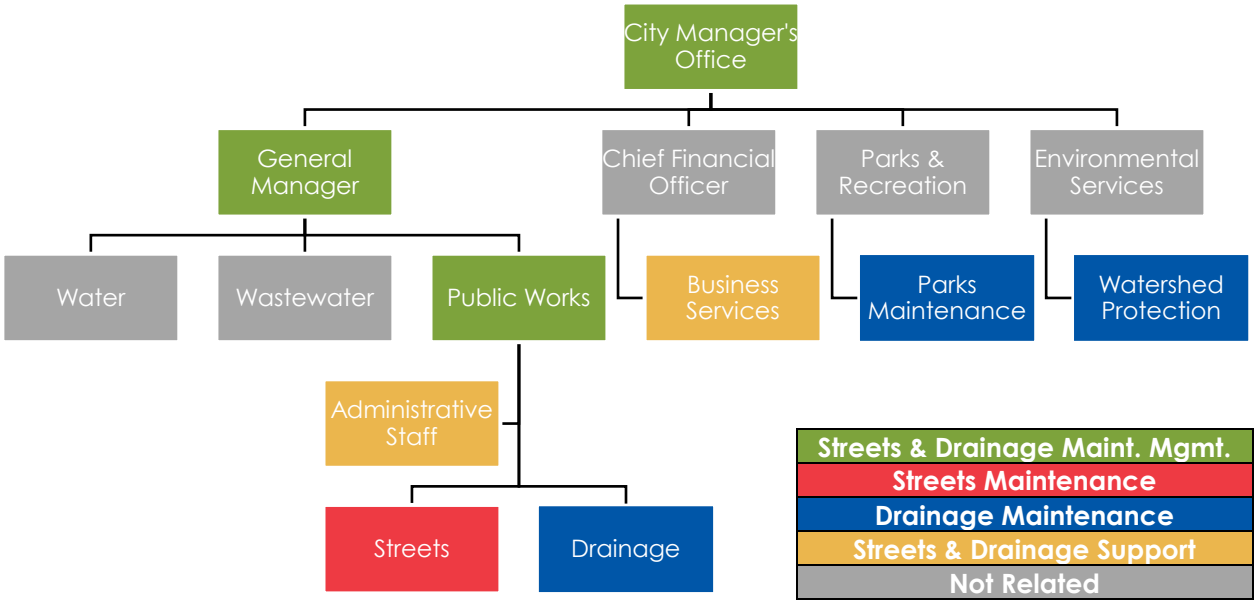
***Public Works Comments**: Drainage and Customer Service will work together to review all utility accounts and ensure accurate drainage fee billing. While Customer Service currently manages billing operations, Drainage staff will assist by reviewing account data to help identify any properties that may be incorrectly excluded or misclassified.*

This effort will include pulling a complete list of accounts and verifying which customers are currently being charged, which are not, and whether those billing decisions align with upcoming guidance and exemption criteria. As noted in Recommendation 19, formal standards are being developed to clarify when fees should or should not apply.

Public Works Administrative Activities

The City of Denton's Public Works Department includes the Streets and Drainage Division as well as administrative staff that support these operations. This Department recently began reporting to the General Manager of Water Utilities and Street Operations as illustrated in Figure 11.

Figure 11: Functions Involved in Streets & Drainage Maintenance (2025)



Administrative services for this Department reviewed as part of this audit include contract management and public communication efforts.

Contractor Management Needs to Be Revised To Ensure City is Only Paying For Quality Services at the Agreed Upon Rates

Contract management is the process of ensuring that the parties to a contract fulfill their promises, which generally include: (1) delivering goods or services within a set time, (2) meeting the quality standards in the agreement, and (3) paying for the goods or services at the agreed-upon rate. As part of this process, organizations should establish controls over payments to ensure that a purchase is authorized, received, and billed accurately before a payment is made using the three-way match concept. This concept relies on individuals separately verifying that what was ordered was received and billed accurately using different documents as outlined in Table 13 and helps minimize incorrect payments and reduce the risk of fraud.

Table 13: Three-Way Match Control Summary

Document Type	Quantities	Price
Purchase Order	Included	Included
Receiving Document	Included	
Invoice		Included

What We Found

- While a system to track invoice review and approvals has been developed, written guidance on processing invoices including verifying quantity and price has not been developed.
    - Neither the Streets nor the Drainage Division have written standard operating procedures or instructions on processing invoices or any quality verification expectations.
    - While both the Streets and Drainage Division save invoices electronically, information about which projects or maintenance activities an invoice is related to is not added or documented, limiting the Division's ability to track costs or match work orders to project or maintenance quality documentation.
    - Both the Streets and Drainage Division have implemented a spreadsheet workflow system that tracks standard invoice payment details such as the amount charged, the contractor's name, payment numbers, and an approver; however, quantity or quality verification data is not recorded.

- According to Streets Management, field crew leaders maintain physical logbooks where they record quality observations or verified measurements of a completed projects such as a concrete panel size. However, the Division does not require crew leaders to record this information or provide guidance

on what information should be recorded. Further, logbooks are not regularly reviewed by Streets management or administrative staff involved in the invoice verification process. Audit staff requested to see logbook information related to contractor payments; however, this documentation was not provided, limiting the ability to verify that quality and quantity assurance activities are completed.

- The Streets Division often needs hot-mix asphalt to complete projects; however, the tracking of the amount of asphalt used is limited.
    - When picked up the asphalt plant provides a quantity ticket for every truck. The drivers will reportedly turn the tickets over to the project's crew leader, who submits the tickets to administrative staff. One staff member retains the tickets in a physical folder and acts as the verifier of the invoice and the second individual who approves the invoice cannot duplicate the verification since these tickets are not centrally located.

- A review of the Streets' Division processed invoices found that staff generally approved invoices that were permissible per contracted costs.
    - However, there was an invoice paid in July 2024 for a mircosurfacing service totaling about $13,500 that was not clearly approved by the contract nor any amendment.

- Drainage has recently been exploring different invoice verification processes and have recently found a method that will likely decrease the likelihood of paying for incorrect invoices.
    - Drainage leadership recently began requiring one contractor to send text time stamps of their locations at the start and end of their shifts. This allowed the contractor to start their day at the work location and allowed an easier method to track the hourly billed totals.
    - Although there is evidence that Drainage staff repeatedly sent invoices back to contractors for corrections some invoices were approved for payment without out clear documentation that the invoice price matched the services rendered. Specifically, two subscription prices were charged for pipe rating services that were not clearly approved by the contract nor was any amendment documentation available. An additional two invoices were paid for monthly pipe rating services, yet the total amount rated did not match the contractor's software system with one of the two resulting in a possible overpayment of roughly $45. Staff are currently working with the contractor to determine what the underlying cause of these

discrepancies are and reported they plan to adjust their invoice verification process accordingly.

Why It Matters

Ensuring organizations maintain updated standard operating procedures detailing the vendor management and invoice processing ensure consistency and improved practices by all staff members. Effective invoice processing practices ensure the City is only paying for services received and the process can also help ensure quality standards are maintained. Generally, improving the process can ensure improved cash flows, reduce ineligible costs, and overall position the Department for sustained success in contractor management.

Both the Streets and Drainage Divisions have implemented some basic invoice tracking and general verification process. Further improvements such as verifying field logbook information for Street-related tasks or enhancing the documentation of contracted would help ensure projects are completed per the City's quality standards. Overall, invoice verification processes could be enhanced with more detailed notes on how the completed work was verified and documented in written instructions or guidance to ensure consistent practices.

Recommendations:

21. Develop and implement a written invoice verification process including the requirement to record visual observations and any receipts in a shared location. This information should be reviewed before approving and processing payment. Payment should be delayed until quality assurance is verified.

***Public Works Comments**: Staff will develop a written Standard Operating Procedure (SOP) for invoice verification and approval. Currently, all invoices are reviewed by a supervisor and/or manager within the department to verify that the services or materials billed were properly received. Approvals are typically issued via email confirmation.*

However, staff recognize that email-based approvals can be difficult to track and audit over time. As part of the updated process, Drainage will implement a more structured approach that includes:
• Requiring visual confirmation or other supporting documentation (e.g., receipts, delivery tickets, or photos),
• Storing this documentation in a shared location accessible to relevant staff,
• Ensuring all supporting documentation is reviewed before payment is approved.

22. Continue using location timestamps for tracking pipe inspection contractors onsite and consider implementing this procedure for all contractors.

***Public Works Comments**: The use of location-based timestamps has worked well with the current inspection contractor and has improved tracking, accountability, and documentation of work completed in the field.*

Staff will evaluate the feasibility of expanding this practice to other contractors on a case-by-case basis, considering the type of work performed, contractor capabilities, and available technology. This review will help determine where timestamp tracking can be effectively implemented across additional areas of the department to improve oversight and ensure consistent field verification practices.

Additional Details about Public Works Projects could be Provided to the Public

Open, clear communication is key to keeping the public informed about public works maintenance projects. Organizations should use multiple methods to inform the public about projects impacting them, including both physical and digital methods. Organizations should develop communication plans for maintenance projects that include notifying the affected parties often by informational fliers or fact sheets and document all efforts made. Notices should be provided timely and contain concise details.

Public Works related items often receive many complaints or suggestions and like any other work order or request for service these should be recorded consistently to allow for general tracking purposes and verification that staff are responding to and if applicable, correcting the issue.

What We Found

- Both the Streets and Drainage Divisions' overall communication methods could be improved to help ensure the public is informed of projects that may affect them.
    - The City does have some standard communication methods established for capital improvement projects, but not for smaller maintenance projects. There is no established guidance for communicating information on maintenance projects to the public.
    - Staff reported that door hangers are the primary communication method for maintenance projects. Based on review, the Streets' Division's hanger focuses on road construction and directs readers to the Improve Denton page, which can be cumbersome since this

website is primarily focused on capital projects. The hangers do include a link for the 'Weekly Street Closure Report' which displays City-managed projects with temporary lane and street closures; however, upon review of the link it directs readers to a document repository with a bulk list of street closure reports with no directions on how to find current information.

  - The Drainage Division's hangers can provide detail information on the project if appropriately completed by staff and hangers have information available in Spanish and English.
  - A review of similar cities found communications practices vary, though most do not include information on maintenance projects on their websites. However, the City of Waco appeared to be implementing a plan to provide detailed information on all projects, including an interactive map for website visitors.

- Comments or requests for services are generally responded to in an effective manner, however improvements could be made in process and general public communication could be increased on the City's public websites.
  - The are no written policies or standard operating procedures on staff expectations and timeliness requirements of response to requests or comments from the public.
  - A sample of 60 Drainage-related requests received in 2024 were reviewed, however only 41 were available in Engage Denton. Of the 41 available, 35 clearly showed a reply was provided to the submitter. Six did not show a reply to the submitter when the request was closed yet four were anonymous so any potential reply would have only been received by two of the submitters.
  - A sample of 80 Streets-related requests received in 2024 were reviewed however only 76 were available in Engage Denton. All 76 requests showed a reply to the submitter when the request was closed.
  - Review of the City's public website found that there is a 'Resident' tab that offers the option to 'report a concern' which eventually allows the user to select pothole and input comments and location information. Additionally, there is a direct 311 link from the Streets department page; however, there is no specific language stating that concerns or comments related to Streets should be submitted via 311.
  - The Drainage webpage is difficult to find as it is a subpage within the Water & Wastewater utility webpage and is not directly linked from the main public website. This subpage does not provide any information on current projects or Drainage operations.

- On the City's public website there is a link to the City's Strategic Plan dashboard which provides performance measurements on multiple departments including Public Works. However, this link is not available on the main Steets or Drainage subpages and the available data listed within the database may not display the correct totals for all reported activities.

Why It Matters

Effective communication is essential for any project to be successful. Communication plays an important role in ensuring that all stakeholders, including contractors, residents, and local authorities, are well-informed about the progress and potential impacts of work being carried out in the area. The public should be able to easily reach and understand this information. Current communication practices could be enhanced to ensure public-facing websites provide details about Public Works projects and more information on Drainage operations. Improvements could also be made to the weekly street closures report by making it more reader friendly.

Further, the public should always be able to reach out and receive a timely response to their question, comment, or request for service. Creating a formal 311 ticket or request would benefit the public by providing a complete record from the date the complaint or inquiry to the final resolution and help staff track timeliness. Overall, an engaged, informed public can help ensure the public is informed on topics that matter to them and help build trust between a city and the public it serves.

Recommendations:

23. Implement a comprehensive written standard operating procedure or process regarding community outreach including, what type of communication should be provided for common projects, what information should be listed on door hangers, and when they should be provided. Ensure all provided communication is also available in Spanish.

***Public Works Comments**: Staff concurs that a comprehensive Standard Operating Procedure (SOP) for community outreach and communication related to drainage and streets projects is needed. The SOP will outline communication expectations for various types of work (e.g., maintenance, inspections, capital projects), including the appropriate timing, method of delivery (such as door hangers or mailers), and key information that should be included.*

Staff will also coordinate with the City's Marketing and Communications Department to ensure messaging is clear, professional, and consistent with

citywide standards. In alignment with the City's commitment to accessibility and inclusivity, all public-facing communications will also be provided in Spanish.

24. Establish a written process for receiving and processing public comments, complaints, or requests for service including timeliness expectations for staff. Ensure all requests are recorded in 311 to ensure complete records are available for every received complaint or inquiry.

***Public Works Comments**: Staff concurs with this recommendation and will develop a written Standard Operating Procedure (SOP) for receiving, processing, and responding to public comments, complaints, and service requests. This SOP will establish internal procedures that align with the City's 311 response standards, which currently require a response to the customer within three business days.*

While staff already aim to respond within two business days, at minimum by evaluating the concern and determining next steps, staff will formalize this goal as part of the SOP. This internal documentation will help ensure consistent handling of requests, clear communication, and appropriate routing of work.

25. Consider updating both the Streets and Drainage webpage to include all current projects not just major infrastructure projects and providing a more direct link to the Drainage subpage from the City's main public site to allow for easy accessibility.

***Public Works Comments**: Public Works will work closely with the City's Marketing and Communications Department to review and update the Streets and Drainage webpages, ensuring alignment with citywide web standards and communication guidelines.*

Currently, the department tracks and publishes a range of key performance indicators (KPIs) through the City's website using the Envisio platform. These include:
• Streets: Overall Condition Index (OCI), crack seal, surface treatment, street reconstruction, potholes filled, ADA transition plan repairs, concrete panel and sidewalk repairs, and resident satisfaction survey results.
• Drainage: Earth and concrete channel inspections, pipe and inlet inspections, junction box and creek crossing inspections, stormwater maintenance (sweeping, cleaning, reshaping), and drainage satisfaction metrics.

While major infrastructure projects are currently highlighted, staff will explore

options to include a broader range of current projects, including smaller or routine maintenance efforts, to provide the public with a more comprehensive and transparent view of ongoing work.

Additionally, staff will evaluate how to create a more direct and accessible link to the Drainage subpage from the City's main website to improve visibility and ease of use for residents seeking information about stormwater services and projects.

Audit Project Background

The Internal Audit Department is responsible for providing: (a) an independent appraisal[14] of City operations to ensure policies and procedures are in place and complied with, inclusive of purchasing and contracting; (b) information that is accurate and reliable; (c) assurance that assets are properly recorded and safeguarded; (d) assurance that risks are identified and minimized; and (e) assurance that resources are used economically and efficiently and that the City's objectives are being achieved.

Auditing Standards

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Management Responsibility

City management is responsible for ensuring that resources are managed properly and used in compliance with laws and regulations; programs are achieving their objectives; and services are being provided efficiently, effectively, and economically.

Objectives, Scope, and Methodology

The City Auditor's Office has completed an audit of the City's Public Works operations, including maintenance process, contractor management, and public communication methods. This report is intended to provide assurance that the City has adequate controls to ensure Public Works is the effectiveness of streets and drainage asset maintenance activities including monitoring asset condition, prioritizing and planning maintenance projects, and ensuring maintenance project quality.

Audit fieldwork was conducted during January, February, March, April, May, June, and July 2025. The scope of review varied depending on the procedure being performed. The following list summarizes major procedures performed during this time:

[14] The City of Denton Internal Auditor's Office is considered structurally independent as defined by generally accepted government auditing standard 3.56.

- Reviewed documentation to develop criteria including documented policies, industry standards, State of Texas regulations, City requirements, and best practices;
- Developed process narratives to identify current control activities in the street maintenance, drainage maintenance, and contracted work processes;
- Interviewed staff from the Public Works Department, Watershed Division, Procurement Department, Customer Service Division, and Finance Department;
- Conducted onsite visits of street and drainage maintenance projects in February 2025, and a ride-a-long with Drainage staff in March 2025;
- Assessed current staffing levels, examined annual vehicle utilization, and reviewed benchmark city staffing;
- Compared benchmark cities streets & drainage operations to Denton's including budget practices and fee usage. Compared FY12-13 Public Works budget to FY24-25 to assess overall revenue growth in comparison with expenditures;
- Selected a sample of 100 concrete street segments and 100 asphalt street segments to assess completed maintenance conducted and overall asset data;
- Reviewed all available ROW permits conducted by the utility cut contractor and assessed inspection results;
- Selected a random sample of 80 Streets responsive tasks conducted in 2024 to assess general process;
- Reviewed Street related 2023 consultant and 2019 audit reports and assess recommendation statuses;
- Selected samples of channels, junction boxes, inlets, outlets totaling 100 each to assess if inspections were completed annually and reviewed the recently developed electronic inspection forms;
- Reviewed the State's 2020 Off-System Bridge Inspection for Denton County report;
- Reviewed established sweeping routes, vehicle's GPS data, overtime hour utilization obtain an overview of the program and staffing needs;
- Compared completed storm checks to bridge assets and historic precipitation data;

- Reviewed all accounts not currently being billed a drainage fee and compared those to State and Local exemption requirements to assess the risk of possible missing drainage fee;
- Reviewed 2023 refunded drainage fees to assess appropriateness;
- Reviewed list of current vehicle assets assigned to Public Works and utilize GPS data to assess utilization rates;
- Reviewed the current Public Works contracts and invoices from 2024 and 2025 to assess billing rates and overall invoice verification process;
- Obtained public-facing website for both Drainage and Street's to assess public notification of projects and general information provided to the public.

Appendix A: Management Response Summary

The following summarizes the recommendations issued throughout this report. The auditors found that staff and the Department were receptive and willing to make improvements to controls where needed. Management has provided their response to each recommendation.

1	*Ensure street asset data is updated consistently within the asset management system and all available data for assets are updated within the system.*		**Partially Agree**
Responsibility: Daniel Kremer	Deputy Director of Operations	Expected Completion:	**On going**
2	*Update street condition scores when a utility street cut is made.*		**Agree**
Responsibility: Jeremy Wilks	Streets Operations Manager	Expected Completion:	**Q2, 2026**
3	*Formalize the criteria for maintenance activities and document the reasoning and approval for any treated roads that are outside the established criteria within the asset management software.*		**Agree**
Responsibility: Jermey Wilks	Streets Operations Manager	Expected Completion:	**Q1, 2026**
4	*Centralize staff's observations and notes of needed future work and ensure this information is trackable within the asset management software.*		**Agree**
Responsibility: Jeremy Wilks	Streets Operations Manager	Expected Completion:	**Q3, 2026**
5	*Establish baseline cost estimates for typical projects, including staffing levels, equipment requirements, material needs, and time budgets.*		**Agree**
Responsibility: Jermey Wilks	**Streets Operations Manager**	Expected Completion:	**Q3, 2026**
6	*Formalize an annual work plan based on street service level goals and estimated project cost information.*		**Partially Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q3, 2026**
7	*Consider budgeting a set amount of property or sales tax revenue for street maintenance annually instead of a portion of franchise fees to improve predictability and fairness.*		**Agree**

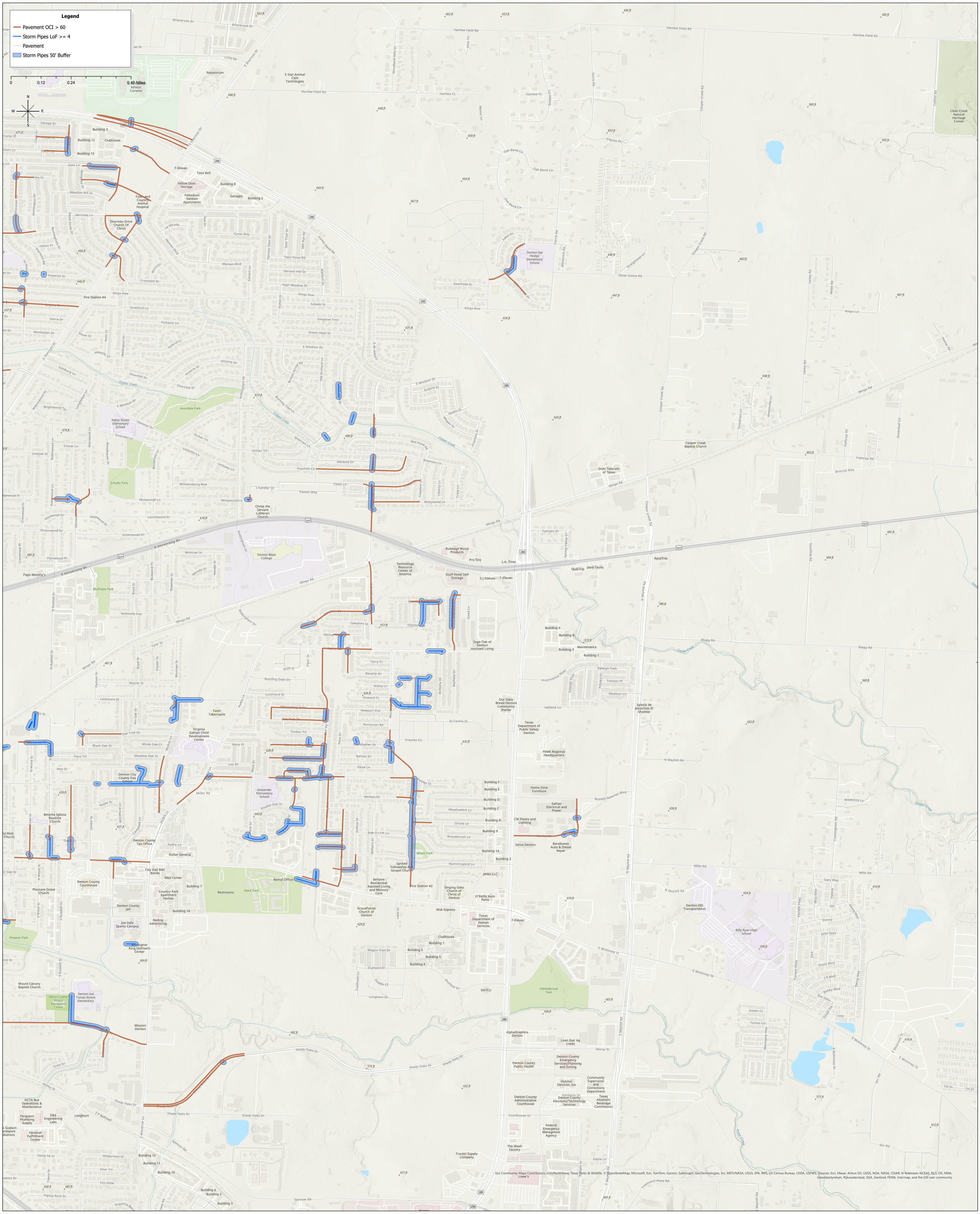
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2026**
8	*Explore options for establishing utility cut fees based on estimated degradation levels to help recuperate unexpected rehabilitation costs.*		**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2029**
9	*Reevaluate implementing a roadway maintenance fee.*		**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2026**
10	*Formalize a systematic method for surveying and recording assets that are not currently listed in the asset management system.*		**Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q4,2026/Ongoing**
11	*Establish Drainage system service level goals and develop a comprehensive Drainage asset inspection program to achieve these goals.*		**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q3, 2026**
12	*Create written guidance on completing and inspections, cleaning, and repairs for all drainage assets based on work order best practices.*		**Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q3,2026**
13	*Begin developing a drainage system capital improvement plan based on system renewal service goals and existing asset conditions documented from inspections.*		**Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q2, 2026**
14	*Implement written standard operating procedures for the street sweeping program including service level goals, street prioritization guidance based on expected pollutants, route design guidance based on debris levels, trip documentation requirements, and a specific schedule for exercise trips based on discussions with the Fleet Division.*		**Agree**

Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q2, 2026**	
15	*Update the storm response plan including rainfall criteria to trigger storm checks, asset prioritization based on flood-risk factors, documentation expectations based on work order best practices, and repair tracking and timeliness goals.*			**Partially Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q4, 2026**	
16	*Optimize staff resource usage by adjusting resource deployment including completing corresponding manhole inspections whenever a storm pipe segment inspection begins, deploying employees in separate trucks for storm checks trucks, and ensuring street sweeper overtime is only accrued when debris levels warrant it.*			**Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q3,2026**	
17	*Establish Drainage as an independent utility and account for drainage fee revenue in an independent enterprise fund to increase visibility, transparency, and accountability.*			**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2026**	
18	*Update the drainage fee to ensure current Drainage and Watershed operations and maintenance needs are met based on service level goals.*			**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2026**	
19	*Implement drainage fee assessment guidance that describes impervious surface area calculation or identification methods and approved drainage fee exemptions, including when properties with Denton service addresses should not be charged and when properties marked with out-of-city service addresses should be charged.*			**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2026**	
20	*Review accounts that are not being billed a drainage fee to determine if a fee should be charged.*			**Agree**

Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q4, 2026**
21	*Develop and implement a written invoice verification process including the requirement to record visual observations and any receipts in a shared location.*		**Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q4, 2026**
22	*Continue using location timestamps for tracking the pipe inspection contractors onsite and consider implementing this procedure for all contractors.*		**Agree**
Responsibility: Stephen Bonner	**Drainage Operations Manager**	Expected Completion:	**Q1, 2026**
23	*Implement a comprehensive written standard operating procedure or process regarding community outreach including, what type of communication should be provided for common projects, what information should be listed on door hangers, and when they should be provided. Ensure all provided communication is also available in Spanish.*		**Agree**
Responsibility: Jermey Wilks	**Streets Operations Manager**	Expected Completion:	**Q3, 2026**
24	*Establish a written process for receiving and processing public comments, complaints, or requests for service including timeliness expectations for staff.*		**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q3, 2026**
25	*Consider updating both the Streets and Drainage webpage to include all current projects not just major infrastructure projects and providing a more direct link to the Drainage subpage from the City's main public site to allow for easy accessibility.*		**Agree**
Responsibility: Daniel Kremer	**Deputy Director of Operations**	Expected Completion:	**Q3,2026**

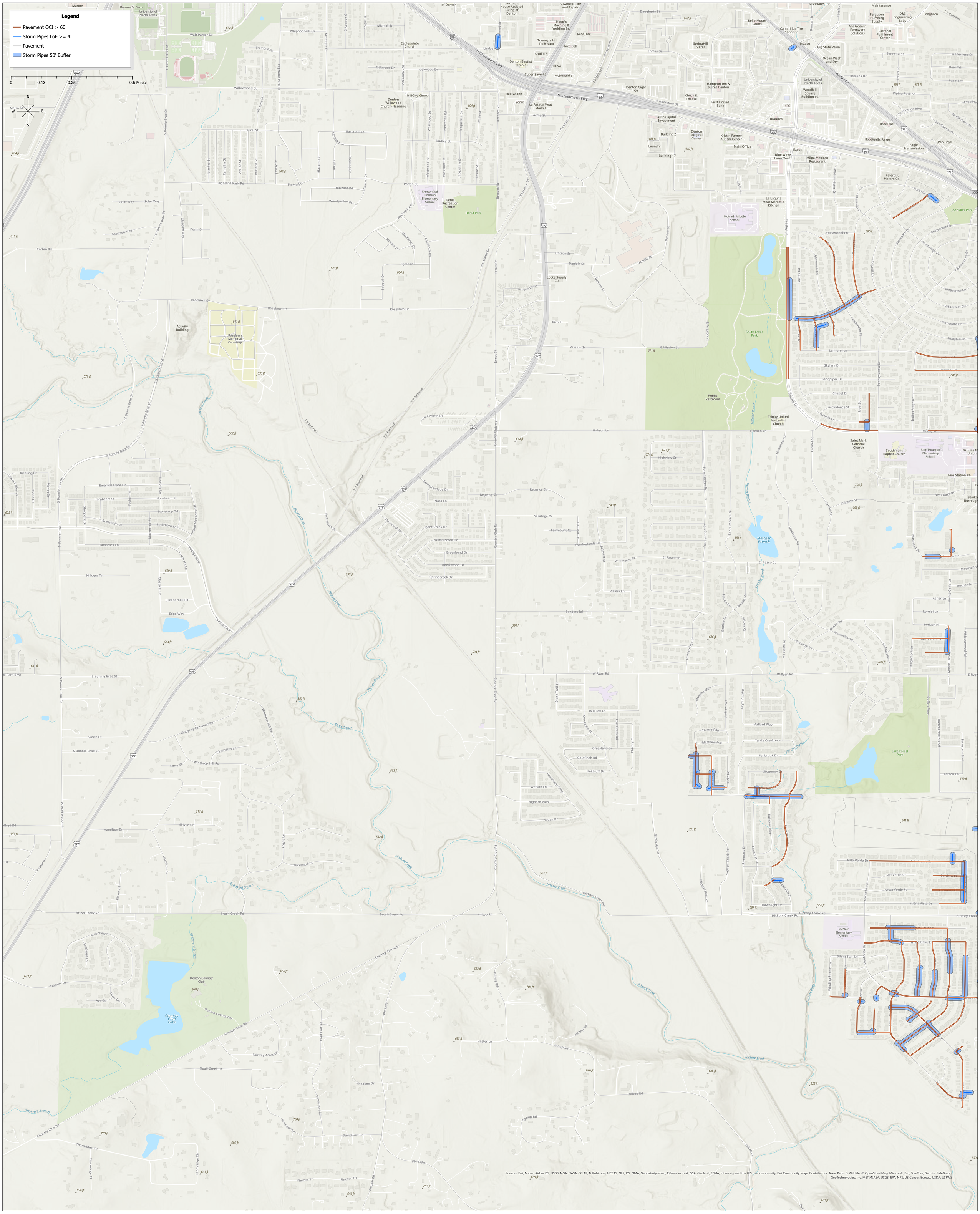
Appendix B: Drainage Pipe and Pavement Conditions

Storm Pipe and Pavement Conditions



Storm Pipe and Pavement Conditions

Storm Pipe and Pavement Conditions



Storm Pipe and Pavement Conditions