

Stormwater Utility Findings Report and Recommendations

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Table of Contents

Executive Summary4

1. Introduction and Background7

1.1. What is a SWU?7

1.2. Proposed SWU Boundary8

1.3. Purpose and Need10

1.3.1. Overview of Current Management Practices.....10

1.3.2. Overview of System Condition and Current Funding11

1.3.3. Lack of Comprehensive System Information11

1.3.4. Non-equitability of Current System.....12

2. Why a SWU?12

2.1. Other Funding Sources Considered12

2.1.1. Additional Bond Funding.....12

2.1.2. Development Impact Fees13

2.1.3. State and Federal Grants.....13

2.1.4. Revolving Funds13

2.2. Baseline Needs for a SWU.....13

2.3. Urgency and Potential Cost Savings.....14

2.4. Change in Design Rain Events14

3. Current Stormwater Infrastructure Mapping15

3.1. Description of Asset Mapping15

3.2. Limitations and Need for Additional Data.....15

4. System Condition Assessment.....16

4.1. Summary of Condition Assessment Process.....16

4.2. Summary of Condition Assessment Results.....18

4.3. Limitations and Need for Additional Work.....18

5. Current Management and Existing Levels of Service19

5.1. Alaska Department of Transportation and Public Facilities.....19

5.2. Anchorage Road and Drainage Service Area (Street Maintenance and PM&E)21

5.3. Limited and Rural Road Service Areas21

5.4. Private Maintenance Areas.....22

5.5. Watershed Management Services.....23

6. Current MOA Stormwater Expenditures.....24

7. Proposed Management and Utility Organization.....25

8. Proposed Levels of Service	26
8.1. Option 1: Maintain Existing Level of Service.....	26
8.2. Option 2: Moderate Level of Service (Recommended)	27
8.3. Option 3: Comprehensive Level of Service	28
9. Rate Structure Options.....	28
9.1. Equivalent Residential Unit (ERU) and Tiered ERU Fee	28
9.2. Flat Fee and Dual Fee	29
9.3. Residential Equivalence Factor (REF)	29
9.4. Rate Structure Summary and Recommendations	30
10. Legal Considerations.....	30
11. Stakeholder Engagement.....	30
12. Summary and Recommendations.....	32
12.1. Stormwater System Summary	32
12.2. Recommendations.....	33

List of Figures

Figure 1: Proposed SWU Boundary and Assembly Districts 9
Figure 2: MOA Storm Pipe Age Overview 17
Figure 3: Payers Current and Proposed25

List of Tables

Table 1: Condition Assessment Summary 18
Table 2: 2016 Anchorage Stormwater Expenditures24
Table 3: Example Tiered ERU Fees for Monroe, NC29
Table 4: Rate Structure Pros and Cons for Anchorage30

List of Appendices

- A. Stormwater Infrastructure and Management Assessment
- B. GIS Assessment Report for the Implementation of a Stormwater Utility for the MOA
- C. Analysis of Legal Authority for a Municipal Stormwater Utility
- D. Stakeholder Engagement Materials

Executive Summary

This Summary of Findings and Recommendations for future work is a result of a nine month effort undertaken by the Municipality of Anchorage to determine the need for and benefit of the formation of a Stormwater Utility (SWU) in Anchorage and to discuss key considerations and baseline needs for successful SWU implementation.

The work in phase 1 primarily focused on detailing the scope of activities required to form a utility and the steps to implement such formation. Additional phases are described under the Recommendations that act as “scoping documents” for subsequent activities.

The need for a SWU utility has been well-established in numerous reports, advisory groups, civic organizations, and again through this phase of work. A stand-alone SWU will be able to address the problem of incohesive, unorganized management, insufficient funding, inequitable financing, and overall system deterioration and poor general condition.

Advantages of a SWU include, but are not limited to:

- Provides a mechanism for cohesive drainage management and coordination to eliminate the shifting of drainage problems from one location to another;
- Provides for a dedicated revenue source for stormwater management, maintenance, and capital improvements;
- Provides an equitable distribution of the stormwater costs among stormwater system users and contributors; and
- Provides a way to incentivize good stormwater management practices, such as utilizing Green Infrastructure and onsite stormwater management techniques.

Additional Findings:

- The SWU should be implemented with a simple management structure that utilizes existing MOA departments and resources;
- State-owned assets should remain under state ownership to continue utilization of federal funding for these systems, and the MOA and DOT should develop an intergovernmental agreement which will outline the responsibilities of each party;
- The level of service for the proposed SWU will provide a functional and holistically managed stormwater program which will:
 - Allow for compliance with the MOA/PM&E Anchorage Stormwater Manual - Management and Design Criteria; and
 - Allow for increased development opportunities so developers will not bare the sole burden of downstream upgrades.
- The MOA Charter accepts the broad grant of home rule authority deriving from the Alaska Constitution and State law, and specifically contemplates the creation and regulation of MOA-owned utilities. The power to create and regulate municipal utilities such as the SWU is vested in the MOA Assembly.

Recommendations for Phase 2: Utility Formation

Upon acceptance of this Summary of Findings the following next steps are recommended to move the concept of a SWU to reality. While each step is discussed below, Phase 2 contemplates the following activities:

- Stormwater Infrastructure Masterplan
- Organizational Structure Determination
- Rate Structure Determination

Stormwater Infrastructure Masterplan

The Stormwater Infrastructure Masterplan should be able to define projects of immediate need through the condition assessment work. The utility, once active, will advance these immediate need projects and longer term projects through the natural course of its activities. The following items are components of the Stormwater Infrastructure Masterplan:

- *Inventory.* This will require creation of a functional database expanded to include all available desktop information, including MOA record drawings. This database should also include DOT information.
- *Expanded Condition Assessment.* The intent of an expanded condition assessment is to obtain a more comprehensive understanding of the infrastructure condition, including both physical condition and performance during heavy rain events. This information can be used to develop a list of prioritized projects with related high-level order of magnitude cost estimates.
- *Stormwater Capital Improvement Plan (CIP).* The expanded condition assessment should be used to develop a Stormwater CIP to prioritize replacement, repair, and upgrade of critical stormwater infrastructure over a specified period of time. This list should be categorized into well-defined, immediate need projects, longer term projects that require further analysis, and longer term visionary projects that require considerable analysis and would not be considered for work within 20 years of SWU activation.
- *Rate Study.* This rate study will utilize prioritized replacement, repair, and upgrade of critical infrastructure over a specified time period. This document will provide a reasonable estimate of SWU user fees. The rate study should be based on the results of the CIP and on current and projected stormwater costs. The rate study should consider both the current and future rate structures of the utility, as well as other potential income sources.

Organizational Structure Determination

While there are several possible organizational structures for a SWU, the final utility organization will be based on maximizing efficiency and utilizing available resources. The SWU should to the extent possible utilize other MOA functions, such as the billing system that AWWU operates and use of PM&E contract administration and project delivery.

The SWU will also develop additional intergovernmental agreements with the Alaska Department of Transportation and Public Facilities to outline how state-owned assets will be handled under the SWU and the associated responsibilities of each party. This type of agreement is common with Municipal owned utilities and can benefit both parties.

Rate Structure Determination

A SWU rate study based on the results of the Stormwater Master Plan will be completed to provide a reasonable estimate of SWU user fees. User fees for a SWU are very much driven by the level of service the utility provides. For an equitable, functional utility, the user fees need to be set to match the desired level of service. Selecting an appropriate rate structure and assigning rates to the structure is an integral part of a successful SWU.

The most commonly used rate structures are Equivalent Residential Unit (ERU) fee, Tiered ERU fee, Flat fee, and Residential Equivalence Factor (REF) fee. A description of each of these rate structures is provided in later sections.

1. Introduction and Background

The Municipality of Anchorage (MOA) is considering creating a Stormwater Utility (SWU) to improve stormwater management practices for the Municipality. This document has the following purposes:

- To discuss the why the MOA needs to improve current stormwater management practices;
- To present the background information and preceding work that has led to consideration of a SWU;
- To discuss why the MOA believes that a SWU is the best option for improvement of current stormwater management practices; and
- To discuss several key considerations for establishing a SWU in Anchorage including the current condition of Anchorage's stormwater infrastructure, current management structures and levels of service, and legal aspects.

1.1. What is a SWU?

A stormwater utility is an organization that handles the collection, treatment (as-needed), and disposal of excess stormwater resulting from rainfall runoff and from snowmelt runoff, which is most prevalent in Anchorage during spring breakup. SWUs are similar to drinking water and wastewater collection utilities in that that customers within the utility's service area pay a monthly fee for the services that the utility provides.

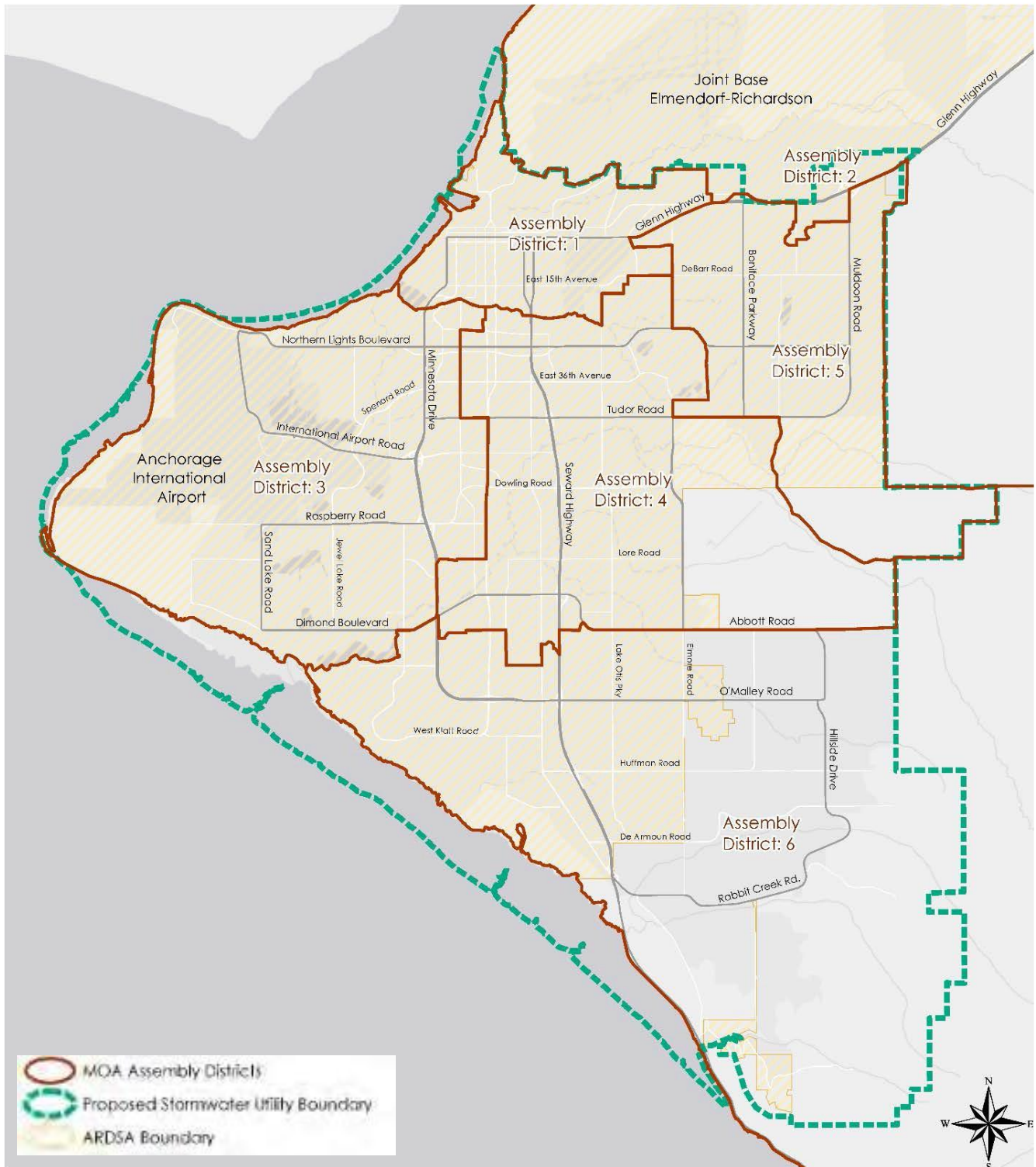


For many years, communities across the nation, including Anchorage, have had miles and miles of pipes, ditches, and streams that make up their stormwater system, but have not had dedicated stormwater departments or funding streams to operate, maintain, and replace these assets as they reach their design life. In addition, many communities, including Anchorage, are subject to federal regulations regarding stormwater management programs, but lack funding resources to comply with these regulations. For these reasons, stormwater has been often referred to as the “forgotten infrastructure” when compared to its potable water and wastewater infrastructure counterparts that nearly always have a dedicated funding source. In recognition of the significant investment needed to maintain and fund stormwater infrastructure, SWUs began forming in the US in the 1970s and 1980s. There are currently more than 1600 stormwater utilities in 39 states, demonstrating that many cities have recognized the need for and benefit of having an organization that is focused on stormwater-related needs and generating revenue for stormwater infrastructure.

1.2. Proposed SWU Boundary

The proposed boundary for Anchorage's SWU is shown in Figure 1. This boundary was selected to generally encompass the main Anchorage area including the Anchorage Hillside while generally following existing jurisdictional boundaries as much as possible. Eagle River, Chugiak, Girdwood, and other surrounding communities are not included in the proposed boundary, but could be added at a later time if desired.

Figure 1: Proposed SWU Boundary and Assembly Districts



1.3. Purpose and Need

Public stormwater infrastructure in Anchorage consists of a large network of pipes, open channels, streams, and various other types of facilities including oil and grit separators, manholes, infiltration facilities, and sedimentation ponds. Within the proposed SWU boundary, the system includes approximately 525 miles of storm drain pipe, over 300 miles of open channels, and over 150 miles of streams. The storm drain pipes and open channels collect excess stormwater runoff that is not absorbed into the ground and conveys it to local streams, which eventually flow into Cook Inlet.



Drainage infrastructure within the SWU boundary is generally owned by either the MOA or by the Alaska Department of Transportation and Public Facilities (DOT). Anchorage’s drainage system is not functionally separated by ownership, and water from MOA-owned conveyance systems regularly flows into DOT-owned conveyance systems and vice versa.

Neither the MOA nor DOT have meaningful or widespread data regarding the characteristics or condition of their existing stormwater infrastructure. Each entity responds to issues as they arise, and both lack a comprehensive stormwater capital improvement program or a stormwater infrastructure masterplan.

Within the proposed SWU boundary, there are 8 different watersheds. The drainage characteristics across these watersheds vary from rural and mountainous to flat and urban. Drainage management within these watersheds is complex and disconnected. The paragraphs below provide an overview of the current stormwater management practices and illustrate the shortcomings of the current approach.

1.3.1. Overview of Current Management Practices

Within the proposed SWU boundary, there are currently 24 different government-supported entities that are providing some type of roadway and/or drainage maintenance, along with a large section of the Anchorage Hillside that is outside of road service areas altogether and rely on private management groups. The different management entities provide varying levels of service, and each is described briefly below.

- DOT – The state maintains a wide variety of drainage facilities throughout the proposed SWU area, including both urban drainage and rural hillside drainage facilities.
- The Anchorage Road and Drainage Service Area (ARDSA) – Anchorage’s primary service area covers 45,600 acres within the proposed SWU boundary and encompasses most of the Anchorage Bowl. MOA-owned facilities within ARDSA are primarily managed by MOA Street Maintenance.
- Twenty-two Municipal Limited and Rural Road Service Areas (LRSA and RRSA) – Scattered across the hillside, these separate service areas range in size from 28 to 1,100 acres. RRSAs differ from LRSAs in that they are authorized to perform capital construction and can manage funding accordingly.

- Private Management Entities. There are approximately 8,200 acres of the Hillside that are within the proposed SWU boundary but are outside of any municipal road service area. Drainage in these areas is sometimes managed by private entities such as homeowner's associations.

As a result of having so many different management entities, drainage facility planning and management is not holistic. Each entity generally deals with facilities inside its boundary with little to no regard for how decisions may impact adjacent areas. This was reported as a problem by LRSA, RRSA, and Street Maintenance representatives that were interviewed for this project. Each group agreed that Anchorage needs holistic stormwater management across jurisdictional boundaries. The current disconnected approach to drainage management is inefficient and costly. When drainage problems are directed downstream for another management entity to correct, it blurs the boundaries of fiscal responsibility for responding to drainage issues. Additional information about the responsibilities and levels of service provided by the various management entities is provided in Section 5 of this document.

1.3.2. Overview of System Condition and Current Funding

The desktop condition assessment completed for this project (discussed in more detail in Section 4 and Appendix A) found that the physical condition of much of the existing stormwater system in Anchorage is rapidly deteriorating. The assessment identified approximately 300 known drainage problems and approximately 400 miles of piped storm drain that are expected to be failing or near failing. In addition to piped storm drain, many of the existing open channels require rehabilitation, though this number was not able to be quantified.

MOA PM&E roughly estimates that \$1 billion is needed to bring the existing MOA-owned stormwater system to acceptable conditions. (This does not include DOT-owned assets.) Currently, the MOA is spending approximately \$8 Million annually on stormwater-related capital improvements through annual bonding. With the continuing decline of the existing system, the investment into stormwater infrastructure is not adequate. If the current practice continues, the number and frequency of failures is expected to continue to increase, causing more cases of roadway "sinkholes", instability of roadway pavement and subbase, flooding, icing, and erosion. Additional information about current stormwater spending is provided in Section 6.

1.3.3. Lack of Comprehensive System Information

Neither the MOA nor DOT have thorough records and mapping of their stormwater system. The MOA maintains a comprehensive database of stormwater assets and their horizontal location, but the database generally does not include important



Roadway "sinkhole" at 71st and Cheryl St. caused by an aging storm drain pipe failure

characteristics such as pipe/channel size, type, elevation, capacity, or condition. This presents serious challenges for things like connecting new pipes to existing ones, upgrading existing pipes while ensuring that downstream systems are not overwhelmed, and identifying pipe failures to begin prioritizing repair/replacement needs. These issues adversely impact both public and private development projects, as each project is forced to deal with system capacity on a case-by-case basis. This approach is time-consuming, ineffective, and often produces incorrect results. The system needs to be analyzed holistically, on a watershed level.

1.3.4. *Non-equitability of Current System*

The MOA's current stormwater management practices are not equitable. Because the MOA's primary income source for the stormwater system is property taxes, there is no correlation between stormwater system impact and associated cost. For example, a large church building with a 2-acre, paved parking lot contributes a significant portion of stormwater runoff to the municipal stormwater system. But because the church is tax-exempt, it does not pay to help cover the burden to the system. Conversely, many of the high-value properties in Anchorage, such as multi-story buildings downtown with minimal parking, may contribute much less load to the stormwater system, but are contributing financially via property taxes. Establishing a SWU would provide an opportunity to ensure that the "cost-causer" is also the "cost-payer." It would also provide a platform to encourage better stormwater management practices and offer benefits for reducing impacts to the stormwater collection system.

2. Why a SWU?

Implementation of SWU has been discussed in Anchorage for several decades. Many stakeholder groups, particularly those concerned with fiscally sound development and holistic watershed management, have discussed the benefits of this approach in several different forums. In 2016, the Anchorage Economic Development Corporation (AEDC) Live.Work.Play group wrote a white paper addressing several barriers to adequate and affordable housing in Anchorage. Among these was lack of a comprehensive stormwater plan and uncoordinated management efforts across the many different management entities involved. The paper notes, "*The current uncoordinated approach offers no practical means to solve persistent problems caused by existing poorly designed or inadequate drainage facilities, nor does it plan for or construct new or upgraded systems to control increased runoff from upstream development.*" The paper proposes that a SWU is the logical path forward to start correcting these issues, and outlines a phased approach to implementing one.

2.1. Other Funding Sources Considered

The stormwater management issues discussed in Section 1.3 clearly point toward the need for an alternate approach to managing stormwater in Anchorage and the associated need for a dedicated stormwater revenue source. Several stakeholders have asked why the MOA thinks a SWU is the best option for increased revenue and what other alternatives the MOA has considered. A brief summary of the alternative revenue sources that the MOA has considered are discussed below. These options could be implemented as stand-alone alternatives, or could potentially be coupled with a SWU.

2.1.1. *Additional Bond Funding*

Bond funding based on revenue from property taxes is currently funding stormwater activities in Anchorage. The MOA has considered the feasibility of increasing the amount of bonds each year to provide an increased investment in stormwater infrastructure. This approach has several limitations.

- More bond funding would require an increase in property taxes or the institution of some other type of tax to provide revenue to pay for the bonds. Increased taxes or instituting new taxes rapidly becomes a complex political issue and the entire municipal budget is generally scrutinized. This stalls progress toward solving our critical stormwater infrastructure problem.
- Bond funding is not always reliable. It requires voter approval each year, and without assurance of future revenue, it is difficult to develop and implement much-needed stormwater capital improvement plans, masterplans, and long-range financial plans.
- Continued reliance on property taxes as the sole revenue source for stormwater is not equitable and does not provide a pathway for the MOA to offer incentives for better stormwater management practices.

2.1.2. Development Impact Fees

The MOA has considered institution of impact fees, which would be charged to developers when new or re-development projects contribute additional stormwater loads to the system. The idea is that the impact fees would offset the cost to maintain or upgrade the system to accommodate the new stormwater load. This may be a viable revenue source, but there are a few challenges. The largest challenge is that the basis for the impact fees needs to be defensible and based on the costs of actual expected impacts. Without a clear understanding of the condition and capacity of the existing system, quantifying the impacts is very difficult. Additionally, the MOA would need to establish a pathway for collecting and managing the impact fees to ensure that they are used for the intended purpose.

2.1.3. State and Federal Grants

In past years, state and federal grants have been used to support various types of stormwater projects and studies. While these are valuable sources of funding, they do not provide a practical option for long-term stormwater revenue. State grants have generally disappeared since the start of Alaska's economic recession in 2015. Federal grants are still available through various agencies, but they are often limited to specific federal interests, such as endangered species. Federal grants are also more difficult to obtain, as the competition for those funds is nation-wide. The MOA supports continued seeking of both state and federal grants for improvements to the stormwater system, but recognizes that this cannot replace a steady revenue source.

2.1.4. Revolving Funds

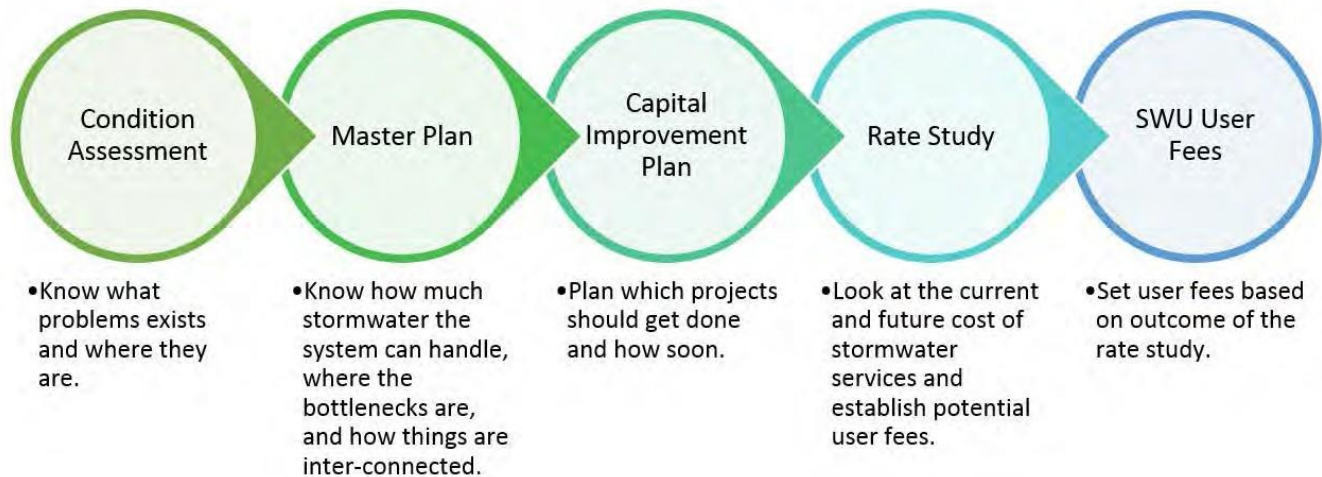
The EPA offers a Clean Water State Revolving Fund (CWSRF). The program is a partnership between the EPA and the states, and provides grant money to support low interest loans that fund many types of projects that improve water quality. The individual states operate their own CWSRF programs, and these function like infrastructure banks. Alaska's program is managed through the Department of Environmental Conservation. While this may be a good alternative to supplement other sources of income, it is generally not expected to be a reliable source of consistent stormwater revenue. This is expected to be a good resource for the SWU to fund priority capital improvements and help minimize the burden to the utility customers.

2.2. Baseline Needs for a SWU

While there are many possible configurations of a proposed stormwater utility, there are several baseline components that will provide the foundation for a SWU no matter how it is configured. These include:

1. A system condition assessment to identify areas most critical for upgrade or replacement.
2. A stormwater masterplan to demonstrate how the system functions hydraulically, where problems areas occur, and which portions should be prioritized for upgrade.
3. A stormwater capital improvement plan (CIP) based on the needs that result from the condition assessment and the masterplan.
4. A rate study that is based on both the CIP plan and the desired level of service of the utility.

These documents will become foundational, living documents that are maintained by the SWU.



2.3. Urgency and Potential Cost Savings

Both the MOA and DOT are responding to stormwater infrastructure needs on a reactionary basis. (This is discussed in more detail in Section 5.) The current management structure and budget of both entities allows little to no room for stormwater capital planning or preventative maintenance based on asset condition. As a result, problems are typically only discovered when they cause visible problems, such as a hole in a road or a flooded property. By this time, many lower cost repair options, such as slip-lining existing pipes, are no longer available due to the very poor condition of the failed pipe. Full pipe replacement is typically more expensive, and in many locations, not feasible within existing easements and rights-of-way. This further complicates the process of replacing failed systems. The sooner the MOA is able to identify system needs and start responding accordingly, ideally before full system failure, the more cost savings there will likely be.

2.4. Change in Design Rain Events

Stormwater facilities in Anchorage are designed to convey water from heavy rainfall events. The magnitude of those events is based on a statistical likelihood that the event will occur. Currently, most MOA-owned facilities are designed to convey stormwater generated from events up to and including the 10-year event. This event has a statistical likelihood of occurring once every 10 years or a 10% chance that it will occur in any given year. DOT-owned drainage facilities within the MOA are typically designed for either the 25-year event or the 50-year event. The 25-year event has a statistical likelihood of occurring once every 25 years or a 4% chance that it will occur in any given year. The 50-year event has a statistical likelihood of occurring once every 50 years or a 2% chance that it will occur in any given year.

The MOA recently adopted updated design storm events for Anchorage that were developed by the National Oceanic and Atmospheric Administration based on current rainfall data and a robust statistical analysis. The new design storms are generally 30 to 40 percent higher than the previous design storms. This means that drainage conveyance systems that were designed to convey runoff based on the old storm events, are now undersized. This problem is expected to impact the majority of drainage conveyances in Anchorage. This also poses challenges with connecting new or upgraded systems to existing systems. A masterplan that includes capacity analysis is needed to identify areas that are most critical for replacement (based on impacts of flooding and failure) and to begin to systematically plan for those improvements.

3. Current Stormwater Infrastructure Mapping

The MOA maintains a variety of stormwater-related information in various GIS layers. These include aerial imagery, LIDAR, roadways, parcels, watersheds, sub-basins, drainageways, drainage problem areas, Green Infrastructure locations, and flood hazard areas. A more detailed explanation of this data is provided in the GIS Assessment Report provided in Appendix B.

3.1. Description of Asset Mapping

Stormwater assets within the proposed SWU boundary are generally owned by either the MOA or DOT. The MOA drainageway mapping includes assets owned by both entities, and it generally encompasses pipes, open channels, and many types of stormwater structures such as manholes and catch basins. The mapping shows where features are located spatially and generally which direction drainageways are expected to be flowing. While the mapping does differentiate between open channel drainageways versus storm drain pipes, it generally does not provide important characteristics of the drainageways such as material type (for pipes), size, slope, elevation, condition, or capacity. A small portion of the mapped drainageways include some of these details (pipe type and size), but for most of the system, this information is unknown. The MOA also expects that the open channel mapping in the Anchorage Hillside is not fully complete and that additional drainageways exist along the hillside that have not been documented.

The MOA maintains a database of project record drawings, but it is poorly organized and difficult to use. The records are not tied to the GIS mapping, and locating information at a particular point of interest is often extremely difficult. Additionally, the data is not categorized by project type, so there is no way to isolate drainage-specific records.

The DOT maintains a database that links project record drawings to spatial location. The spatial detail is limited to simple lines, but the system is very effective for locating record drawings at a specific point of interest for DOT projects.

3.2. Limitations and Need for Additional Data

The overall lack of thorough stormwater asset system information within the MOA is problematic. Without knowledge of what assets exist today, how those assets are functioning, what condition they are in, and what hydraulic properties they possess, the MOA has limited capabilities to plan and implement proactive system upgrades. It is also very difficult for both public and private development projects to plan stormwater conveyance system tie-ins to existing systems without knowing the details of the existing systems. As the MOA moves forward with implementing a SWU, it will be critical to obtain more complete system information, as this will be the foundation data for a stormwater masterplan.

4. System Condition Assessment

This project included completion of a non-comprehensive, desktop condition assessment of stormwater drainageways within the proposed SWU area. The purpose of the assessment was to gather as much general information as the project budget would allow regarding the condition of stormwater infrastructure. Due to budget limitations, the assessment did not include actual field inspections and was limited to a non-comprehensive desktop evaluation. The assessment primarily focused on piped assets, due to lack of desktop information available for open channels. Detailed information regarding the condition assessment is provided in Appendix A and a summary is provided below.



4.1. Summary of Condition Assessment Process

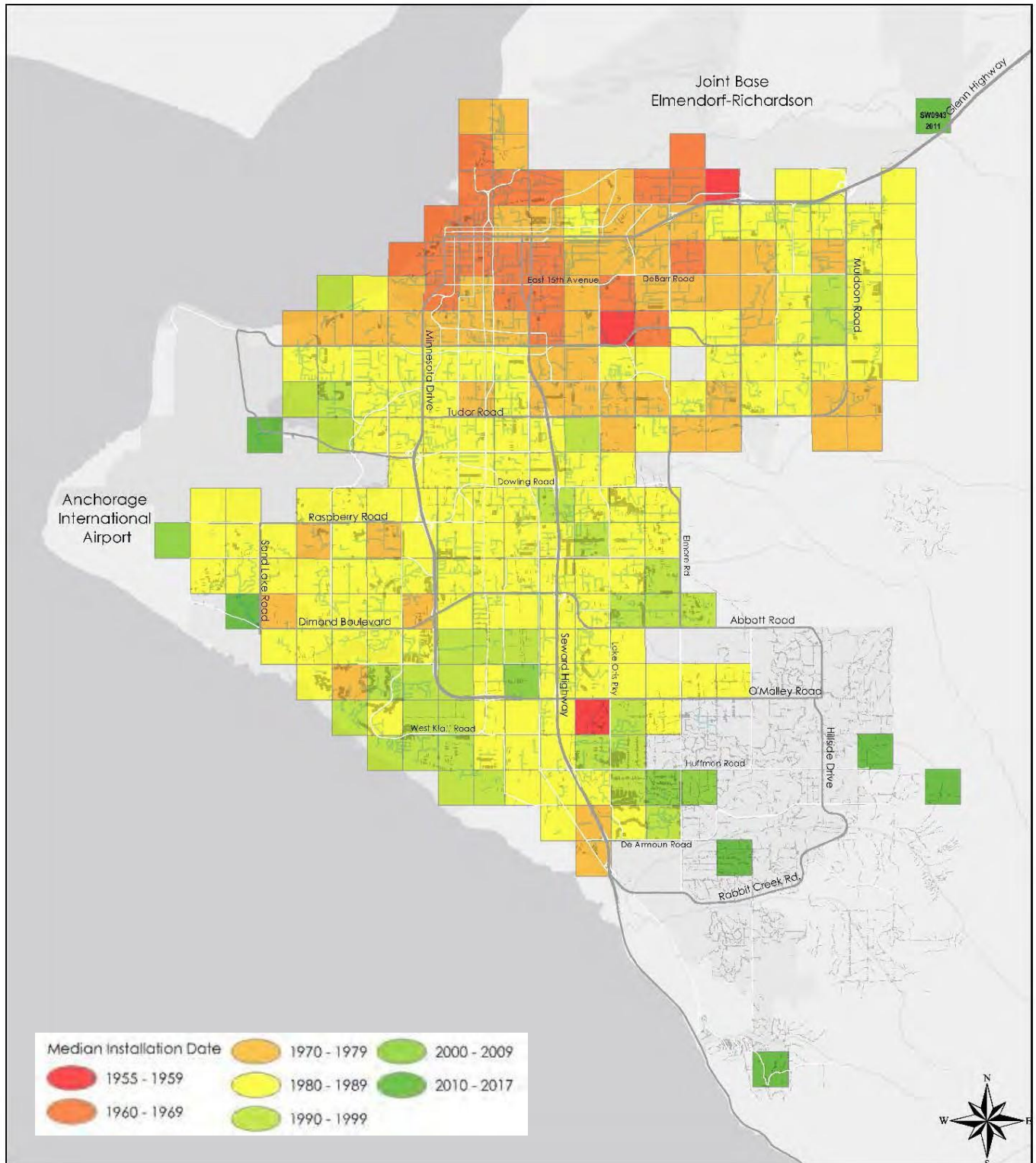
To complete the condition assessment, Anchorage was first broken into Assembly Districts and then into smaller zones based on the approximate decade that the area was initially developed. (Assembly districts are provided in Figure 1 on page 9. Detailed descriptions and figures of the zones are provided in Appendix A.)

Using ArcGIS, specific characteristics of each zone were compiled. This included infrastructure ownership, types of drainageways (e.g. open channels or pipes), pipe material (for piped drainageways), land use zoning, percent of historic wetlands, and approximate pipe age. Most of this information was extracted from the available GIS files, but separate analyses were completed to approximate pipe age and pipe material type, as these parameters were central to the condition assessment.

- Pipe age information was based primarily on a database obtained from the MOA finance/accounting department, though interpolation and extrapolation of this data was required. (This is discussed in more detail in Appendix A.) Figure 2 shows an overview of the age of MOA-owned piped storm drain in Anchorage. It is important to note that because age information was based on data from MOA accounting, it does not include DOT-owned pipes.
- Pipe material type was obtained from a combination of the MOA drainageway mapping and review of as-built records. Neither source was comprehensive. This project lacked the resources to thoroughly review all available as-built records, and many of the as-builts that were reviewed did not include pipe material type. In these cases, the project team assumed that pipe installed prior

to 1990 was likely to be metal pipe and pipe installed after 1990 was likely to be plastic pipe. This assumption was based on consultation with several long-term, knowledgeable MOA staff members.

Figure 2: MOA Storm Pipe Age Overview



4.2. Summary of Condition Assessment Results

The condition assessment found that nearly all metal pipe in Anchorage is expected to be failing or near failing. Plastic pipe was expected to be in better condition, given that it is generally much newer. Plastic is also less frequent throughout Anchorage than metal, as metal was used extensively in the 1970s and 1980s when much of Anchorage’s stormwater infrastructure was built. Table 1 below provides a summary of the condition assessment results in each zone, including the magnitude of pipe that is expected to be failing or facing imminent failure.

Table 1: Condition Assessment Summary

Zone	Primary Installation Decade	Primary Conveyance Infrastructure Type	Estimated % of Pipe Failing or Near Failure	Estimated Miles of Pipe Failing or Near Failure
1a	Pre 1970	Metal Pipe	85	68
1b	Pre 1970	Metal Pipe	Nearly all	6.5
2	Post 1980	Metal Pipe	Nearly all	3.8
3a/b	1980s	Metal Pipe	72	79
3c/d*	-	-	-	-
4a	1980s	Metal Pipe	72	110
4b*	-	-	-	-
5a	1970s & 1980s	Metal Pipe	77	64
5b*	-	-	-	-
5c	1980s & 2000s	Open Channel	**	**
6a	1980s & 1990s	Metal/Plastic Pipe	51	26
6b	1980s & 1990s	Metal/Plastic Pipe & Open Channel	45	19
6c	1970s	Open Channel	**	**
6d	1980s to 2000s	Open Channel	**	**
Total			75	376

* Zones not analyzed due to special land use and/or limited amounts of drainage infrastructure (e.g. park land).

** See specific sections of Appendix A for a general discussion of open channels.

4.3. Limitations and Need for Additional Work

As discussed above, this desktop condition assessment was not comprehensive. To be used as a basis for supporting a masterplan and a rate study, the assessment needs to be expanded to include all available desktop information, including both MOA and DOT record drawings. It is recommended that condition information be correlated to physical inspections and observations as much as possible. If funding constraints limit the amount of pipe inspection that can be completed in the near-term, it would be advantageous to identify key representative locations to inspect and extrapolate that data to surrounding locations as much as possible.



5. Current Management and Existing Levels of Service

As discussed in Section 1.3.1, there are multiple stormwater management entities within the proposed SWU. Sections 5.1 through 5.4 below provide a description of each primary management entity and a description of the level of service currently provided by that entity. Section 5.5 provides an overview of the watershed services currently provided for all management entities.

5.1. Alaska Department of Transportation and Public Facilities

The Anchorage-based DOT M&O group is responsible for maintenance of 140 miles of state-owned drainageways across the proposed SWU area. This includes drainage facilities on both major urban corridors like Minnesota Drive and the Seward Highway as well as hillside roads like Upper DeArmoun and Hillside Drive. The level of service that DOT provides throughout the area is generally reactionary. The maintenance group responds to drainage-related emergencies such as pipe failures, blockages, or icing issues, as they arise. M&O representatives estimate that they respond to one to two pipe-failure emergencies each summer, and multiple icing emergencies each winter. Scheduled maintenance of drainage facilities includes sweeping curbs and gutters four times each summer, annually inspecting storm drain structures, and cleaning storm drain structures and pipe, as needed. Maintenance-related video inspection of storm pipes is not typically performed, unless it is needed as part of a specific repair effort.

DOT is currently completing a video inspection and condition assessment project for storm drains on select National Highway Safety routes in Anchorage. This project is not yet complete, and is the first one of its kind.

Maintenance of drainage facilities is primarily state funded, though the state does utilize federal funding for select activities, such as cleaning structures on National Highway Safety routes. The current funding for maintenance activities is not adequate. Preliminary findings of the above-referenced project indicate that much of the storm pipe on the inspected routes is failing and in need of replacement/repair. DOT representatives expressed that more inspection of the existing system is needed to better understand the condition of the vast network of drainage infrastructure. Representatives also expressed continuously responding to drainage-related emergencies is detrimental to the limited M&O operating budgets.



DOT capital planning for storm infrastructure is not separated from capital planning for highway improvements. When highway projects are completed, drainage facilities are typically repaired or upgraded concurrently, as allowed by the scope of the project. Nearly all of the capital funding for highway projects is federal, and as such, federal dollars support nearly all of the capital costs for drainage facility construction or upgrades within DOT rights of way. DOT representatives indicated that this approach should continue, even in the event of an operational SWU. Representatives also suggested that both DOT and the MOA would benefit from integrating drainage planning with other types of coordinated planning efforts, such as the Anchorage Metropolitan Area Transportation Solutions. If drainage infrastructure needs were better documented and coordinated, projects that seek to upgrade or repair drainage facilities could benefit from cooperation with highway projects that do not include drainage, such as a pavement replacement project.

5.2. Anchorage Road and Drainage Service Area (Street Maintenance and PM&E)

Street Maintenance provides maintenance of drainage facilities within ARDSA, which encompasses most of the Anchorage Bowl and a portion of the Anchorage Hillside. Inside the proposed SWU boundary, the ARDSA area includes over 70 square miles of land and the majority of MOA-owned drainageways.

Street Maintenance provides routine cleaning and inspection of stormwater infrastructure and sweeping of curbs and gutters. Street Maintenance does have pipe TV-inspection equipment, but it is not currently operational. As a result, visual TV-inspection of pipes is typically not performed, unless it is a requirement of a specific project, and then it is done by hired contractors. Street Maintenance would be able to provide TV-inspections of pipes to aid with condition assessment if their TV equipment were repaired.

Similar to the level of service provided by DOT, the level of service provided by Street Maintenance is primarily reactionary. The group routinely responds to drainage-related emergencies across Anchorage including failed pipes causing holes in roadways, flooding caused by frozen conveyance systems or streams, failed structures, overflowing ditches, and erosion problems. Street Maintenance repairs the problems as much as possible and works with PM&E to plan capital projects for cases where a maintenance repair is insufficient. Unfortunately, the number of locations that need capital project repairs far exceeds the number of capital projects that are completed each year. As a result, much of the storm drainage system in ARDSA is deteriorating faster than it is being repaired or replaced. Street Maintenance reports that many problem areas are temporarily repaired by Street Maintenance multiple times. In some locations, "temporary" repairs have been repeated for over 20 years because there has not been available funding for a capital project to fully repair the issue.

It is not currently known how the cost of repeatedly providing temporary repairs compares to the costs of providing a full capital project improvement. But it is noteworthy that temporary repairs are costly, and this cost is expected to be substantial when added up over time.

Capital drainage projects are funded through the annual ARDSA bond funding. The bond amount is generally around \$30 million annually, and it covers much more than drainage projects. The bond funding is used for roadway upgrades, pedestrian facilities, lighting, transit improvements, traffic signals, etc. Of the \$30 million annually, MOA PM&E estimates that \$8 million is used for drainage-related improvements. PM&E also roughly estimates that at least \$1 billion dollars are needed to repair the entire storm drainage system. At only \$8 million per year being applied to the problem and system deterioration worsening each year, the current program is not able to meet the city-wide needs.

PM&E does not maintain a stormwater-specific capital improvement plan. Projects included in the annual bond package are generally selected from a long list of needed/requested projects, and this list is coordinated with many stakeholders including Street Maintenance and community councils. Final project selection requires Assembly approval.

Road projects and drainage improvement projects are routinely coordinated within PM&E to maximize available funding, and this is a practice that PM&E indicated should continue in the event that a SWU is successfully implemented, as it results in significant cost savings.

5.3. Limited and Rural Road Service Areas

Within the 22 limited and rural road service areas in the SWU boundary, there are approximately 150 miles of mapped drainageways and 30 miles of mapped streams. The rural nature of the drainage systems on

the Hillside present unique challenges. Most of the existing drainageways are open channels, and in many locations, the terrain is steep, causing fairly high velocity flow. When a drainageway becomes blocked or misdirected, the impacts to adjacent properties or to other infrastructure are often immediate, and repairs of the problem are required in very short time frames. In addition, groundwater commonly flows into drainageways which can cause notable winter icing problems.

The degree to which these challenges are managed and the resulting levels of service provided varies significantly across the road service areas. Several of the road service areas provide high levels of service and respond rapidly to drainage needs. Two examples are the Upper O'Malley LRSA and the South Golden View RRSA. Other road service areas are less active or may have less funding available to respond to drainage-related issues. In these cases, drainage issues are typically either unaddressed or are addressed by private groups or individuals.

Occasionally, Street Maintenance responds to large-scale drainage emergencies in LRSA or RRSA areas, outside of ARDSA. Although this is relatively infrequent, the practice is problematic due to the associated ARDSA resources that are dedicated to areas outside of ARDSA.

The LRSA and RRSA entities are expected to be the most impacted by the current lack of holistic drainage management. The Hillside's steep terrain causes water-related issues to move rapidly from one location to the next, and each relatively small service area has no authority over adjacent area drainage practices, even if the practices are causing adverse impacts. In addition to other LRSA/RRSAs, the road service areas are also impacted by drainage management within DOT rights-of-way and within private maintenance areas. When drainage efforts are not coordinated, the resulting impacts can force LRSA/RRSA management to become reactionary instead of proactive.

Similar to ARDSA, LRSA and RRSA maintenance funding is obtained through property taxes. The mill rates for each LRSA/RRSA varies and the levels of service provided are generally expected to vary accordingly. Each LRSA/RRSA elects a board of representatives who typically manages the entity's funding, determines which types of improvements are needed, and manages the entity's hired maintenance contractor. In the case of RRSAs, the board can also seek funding for capital projects and plan and direct those projects accordingly.



A creek washed out a portion of Porcupine Trail Drive on the Hillside, spurring emergency response from Street Maintenance, even though this was outside of ARDSA.

5.4. Private Maintenance Areas

There are approximately 13 square miles within the proposed SWU boundary that is outside of a municipal road service area. These areas contain over 100 miles of mapped drainageways and nearly 50 miles of

streams. Drainage facilities in these areas are either maintained by private entities or they are not maintained. The number of private management entities within these areas is not known. Additionally, there are also a number of private management entities within LRSA/RRSA areas, such as homeowners' associations. The responsibilities and levels of service provided by private management entities varies significantly based on location, type of organization, and amount of funding that the organization collects. For example, the Prominence Pointe homeowner's association is located in the South Golden View RRSA, and provides regular drainage maintenance and coordinates necessary upgrades for stormwater conveyance facilities (primarily ditches and culverts) associated with private roadways owned by the homeowners' association. Many other communities on the Hillside do not have formal homeowners' associations. For example, the Prator subdivision is not located within a LRSA or RRSA and does not have a formal homeowners' association. Instead, residents of that subdivision contribute annually to a minimalistic maintenance effort that is generally limited to snow plowing and basic surface repair of the unpaved roadways. Residents take turns volunteering to manage the road fund and coordinating with a contractor to complete the necessary work. This approach can present problems in cases where residents elect to not contribute to the maintenance fund. Since contribution is essentially voluntary, lack of contribution results in higher costs for other area residents. Roadway and drainage maintenance outside the road fund work is typically completed by impacted individuals.

5.5. Watershed Management Services

The MOA Watershed Management Services (WMS) group is a division of PM&E that provides watershed and drainage-related services to the entire MOA, independent of the drainage management areas discussed above. WMS provides the following programs and services:

- APDES Compliance - The MOA and DOT are co-permittees on an Alaska Pollutant Discharge Elimination System (APDES) permit that authorizes the permittees to discharge stormwater into local water bodies and ultimately into Cook Inlet. WMS manages the APDES permit for both the MOA and for DOT. DOT contributes funding to WMS for management of their portion of the permit.
- Mapping - WMS maintains the MOA GIS-based drainageway mapping discussed in Section 3 as well as GIS mapping of watersheds, subbasins, Green Infrastructure sites, wetlands, and snow disposal sites.
- Design and Development Criteria/Codes - WMS provides periodic updates of drainage and watershed-related design criteria and development codes.
- National Flood Insurance Program - The MOA participates in the Federal Emergency Management Agency's (FEMA) Flood Insurance Program, and WMS manages and facilitates this program.
- Stormwater Review for New and Redevelopment - WMS reviews permit applications and plat approvals for stormwater compliance.
- Watershed Plans, Drainage Studies, and Watershed Science - WMS completes a variety of studies to support drainage-related development or to help shape/modify APDES permit requirements.



6. Current MOA Stormwater Expenditures

To help establish a baseline correlation between level of service for stormwater management and the cost of that service, the MOA compiled the costs of stormwater-related activities for the fiscal year of 2016. Information presented in Table 2 was gathered from MOA debt service schedules and maintenance cost records reported to WMS.

Table 2: 2016 Anchorage Stormwater Expenditures

Stormwater Cost Description ¹	MOA	DOT	Combined Total
Street Cleaning	\$4,100,000	\$1,600,000	\$5,700,000
Storm System Cleaning	1,200,000	500,000	\$1,700,000
Drainage Maintenance ^{2,3}	2,800,000	2,800,000	\$5,600,000
Mapping, Spill Response, & Regulatory Admin	1,400,000	400,000	\$1,800,000
Subtotal: Stormwater O&M Costs	\$9,500,000	\$5,300,000	\$14,800,000
Storm Sewer Depreciation Expense	3,100,000	Unknown	\$3,100,000
CIP Debt Service Cost - 2016 estimation	8,700,000	FHWA ⁴	\$8,700,000
Total Stormwater Operating Expenses	\$21,300,000	\$5,300,000	\$26,600,000

1. Numbers in this table are rounded.

2. Includes the entire study area (ARDA & LRSAs).

3. DOT Maintenance costs are approximated.

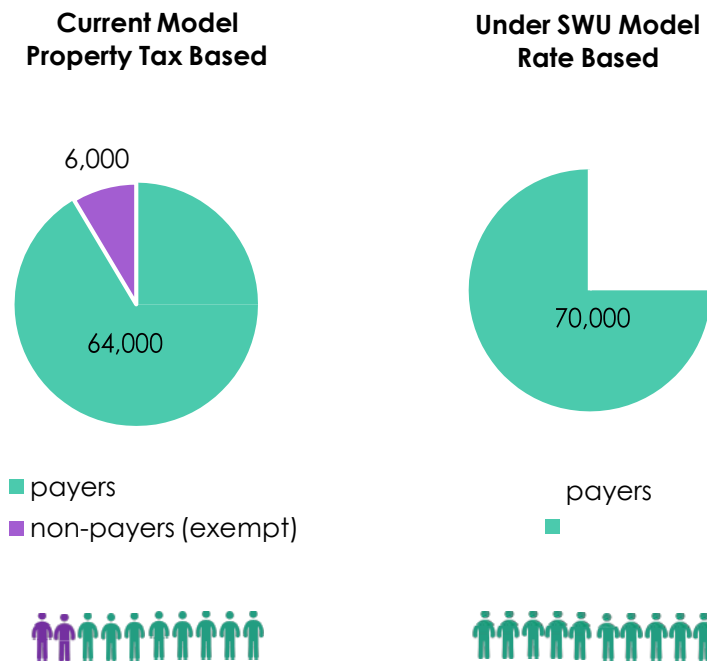
4. Most DOT capital funds for drainage are from the Federal Highway Administration and are not considered in this analysis.

In 2016, the MOA spent approximately \$9.5 million for drainage maintenance/operational activities and related mapping and regulatory expenses. MOA funding for these activities is from the Capital Improvement Program (CIP) and the Municipal General Fund which both receive revenue from property taxes. The MOA's annual capital investment in stormwater varies, but is expected to be around \$8-12 million. This is funded through municipal bonds, which is also property tax revenue. This means that under the current stormwater management set-up, only property tax payers are paying for stormwater services.

Under a rate-based SWU, the financial burden for stormwater management in Anchorage could be shared across all users, similar to other types of utilities such as, water, sewer, and electric utilities. This is shown graphically in Figure 3.

The DOT 2016 drainage maintenance expenditure was not available at the time of the report and was approximated to be the same as the MOA expenditure. Annually, costs are expected to vary based on availability of legislative funds for drainage-related projects.

Figure 3: Payers Current and Proposed



7. Proposed Management and Utility Organization

There are several possible organizational structures for a proposed SWU, and the final utility organization will be based on maximizing efficiency, utilizing available resources, and obtaining MOA Assembly approval. The recommended minimum organizational structure will focus on utilizing work flows, historic knowledge, and program management that already exist within the MOA to minimize the overall growth of government. It is recommended that existing MOA departments continue to provide the same services they are currently providing, including Street Maintenance, Watershed Management, and PM&E. PM&E will also continue coordinating drainage upgrade projects with roadway improvements, which saves money and minimizes construction disruption. The SWU may be able to utilize other MOA functions as well, such as the billing system that AWWU operates.

It is recommended that stormwater assets owned by DOT continue under state ownership. As discussed in Section 5.1, this is important for ensuring that drainage systems on state-owned highways can continue to benefit from federal funding and be included with highway improvement projects. The MOA should develop an intergovernmental agreement with DOT to outline how state-owned assets will be handled under the SWU and the associated responsibilities of each party. This type of agreement is very common with formation of SWUs, and the agreement can be tailored to benefit both parties.

8. Proposed Levels of Service

As discussed in Section 5, the MOA's current level of stormwater service is disconnected and reactionary, with no program planning based on a holistic understanding of the system. There are many options for proposed level of service under a new SWU, including maintaining the current level of service if the community decides this is acceptable/preferable. To make a determination on acceptable level of service, the community needs an understanding of the costs associated with various levels of service and an understanding of the short and long term impacts associated with the options. A general description of three potential tiers of service are provided below. It is important to note that each of these levels of service, including maintaining the existing level of service, requires completion of at least a baseline condition assessment and a stormwater masterplan with capacity analysis.

8.1. Option 1: Maintain Existing Level of Service

The proposed SWU could elect to continue general stormwater management as it is today with little to no change in the type or frequency of services that are being provided. (A description of the existing level of service is described in Section 5.) The existing level of service, under a proposed SWU is expected to have the following characteristics:

- Basic coordination among different management entities (ARDSA, DOT, LRSAs, etc.) and allowance of shared resources, as needed (new)
- Continue reactionary response to problems
- Continue scheduled inspections of stormwater structures only (no pipes)
- Continued lack of capital planning based on system-wide needs
- Continued investment that does not keep up with rate of deterioration/failure
- Continued minimum regulatory MS4 compliance
- Continued FEMA program participation
- Continued basic GIS mapping of stormwater features with minimal attribute data

Under the existing level of service, the overall stormwater expenditures would generally remain the same as under existing conditions. The revenue for these expenditures would shift to being fully or partially funded through user fees. The MOA could elect to fund only operational and maintenance costs through user fees and continue to fund capital improvements through bonds, or both types of expenditures could be funded through the SWU. In either case, the need to fund stormwater through property tax revenue would decrease or be eliminated. The revenue collected by the SWU would be allocated generally the same as it is today, as shown previously in Figure 3. There would be no change in regulatory compliance under this option, and MS4 activities would continue as-is.

While not fully quantified, it is expected that maintaining the current level of service will have adverse impacts. Opportunities to identify and correct issues before they become large-scale problems will be missed. The long-term cost to the public is expected to be high, based on the cost of repeatedly "patching" the same problem areas that have been known issues for decades, the ongoing roadway failures and property flooding that result from failing drainage infrastructure, and the increasing costs of construction with inflation.

To better understand the impacts of this level of service, the MOA needs to complete a baseline condition assessment and a simple masterplan/capacity analysis, as discussed in Section 2.3.



8.2. Option 2: Moderate Level of Service (Recommended)

A key goal of implementing a SWU in Anchorage is to improve the current level of stormwater service, and this moderate level of service option is the first step in that direction. This level of service would improve the current level of service by incorporating a basic level of stormwater program planning and preventative maintenance, and incorporating/expanding other key other stormwater functions. The details and extent of the services provided will vary based on the financial resources available to the utility. In addition to the services provided under the existing level of service, it is expected that a moderate level of service would include some or all of the following:

- Scheduled system inspections, including pipe inspections, to identify problems
- Completion of preventative maintenance and repair projects
- Increased understanding of system condition and capacity
- Expansion/maintenance of the system condition data and masterplan
- Expanded, holistic drainage management coordination that would begin incorporating other city-wide planning efforts such as the Anchorage Metropolitan Area Transportation Solutions.
- Implementation of a stormwater CIP to begin bringing the existing system to current, functional standards
- Regulatory compliance tailored to/based on local studies and data collection
- Expanded mapping services to include pipe/channel properties

Under a moderate level of service, the investment in stormwater infrastructure would increase compared to existing conditions. The revenue would be fully or partially based on user fees, reducing or eliminating the need to fund stormwater activities through property taxes.

An accurate estimation of the range of user fees associated with this level of service requires completion of the baseline assessments needed to support a full rate study. Potential rate structure options for this and other levels of service are discussed in Section 9.

8.3. Option 3: Comprehensive Level of Service

This level of service would provide comprehensive and detailed masterplanning and associated CIP development. This level of service cannot be achieved immediately, but could be a reasonable long-term goal for the SWU, if this is the community's preference. In addition to the services provided under a moderate level of service, a comprehensive level of service would generally include some or all of the following:

- Routine inspections and regular preventative maintenance
- Detailed and complete system condition data and masterplanning
- A more robust CIP with more projects completed each year
- Development and implementation of a long-range stormwater financial plan focused on bringing the entire system to current standards over a specified time period
- Proactive regulatory compliance based on local conditions and scientific study

9. Rate Structure Options

User fees for SWUs are very much driven by the level of service that the utility provides. For an equitable, functional utility, the user fees need to be set to match the desired level of service with minimal dependency on tax revenue. The 2016 Black and Veatch Stormwater Utility Survey states: *"A user fee funded stormwater program has a greater potential to build fiscal and operational resilience through revenue stability, dedicated funding stream, and a stronger nexus between stormwater management costs and user fees. However, for user fee funding to be effective and equitable, timely level of service assessments, financial planning and rate adjustments are necessary."* Selecting an appropriate rate structure and assigning rates to that structure is an integral part of a SWU success.

The most commonly used rate structures are Equivalent Residential Unit (ERU) fee, Tiered ERU fee, Flat/Dual fee, and Residential Equivalence Factor (REF) fee. A description of each of these rate structures is provided in the following sections. For any rate structure, the methodology for determining user fees must be clearly established so as to be "fair and equitable" to withstand scrutiny if challenged in court.

9.1. Equivalent Residential Unit (ERU) and Tiered ERU Fee

The ERU is the most widely used fee system in the US. Approximately 47% of the SWUs in the US use this fee structure. The fee is based on the average amount of impervious area on a single family residential parcel. This is typically calculated using aerial photography or impervious surface mapping to establish a reasonable average. This average impervious area is established as one ERU, and a fee is assigned to one ERU. Individual parcel rates are then established based on how their impervious surface compares to that of an ERU. For example, if an ERU is calculated to be 1500 sf of impervious surface, a commercial building with 4500 sf of impervious surface would pay the fee for 3 ERUs.

Some SWUs implement the ERU system using tiers. A tier system establishes a range of impervious area as one ERU. For example, 2,000 to 3,500 sf of impervious could be assigned as one ERU. An example of a tiered ERU system from Monroe, NC is provided in Table 3.

Table 3: Example Tiered ERU Fees for Monroe, NC

Description	ERU	Fee*
Single Family Detached (including mobile homes)		
<u>Tier – Impervious Area (square feet)</u>		
0 to 2,010 (Tier 1)	0.7 ERU	\$2.80/month
2,011 to 3,289 (Tier 2)	1.0 ERU	\$4.00/month
3,288 and beyond (Tier 3)	1.4 ERU	\$5.60/month
Other Residential Units (by dwelling unit)		
Town Homes	0.5 ERU	\$2.00/month
Condominiums	1.5 ERU	\$2.00/month
Multifamily (including apartment units)	1.6 ERU	\$2.40/month
Non-Residential Properties		
1 ERU per 2,618 Sq. ft. of Impervious Area	varies	\$4.00 per ERU/month

*These costs are for North Carolina. NOT based on Anchorage costs.

Basing the user fees on impervious surface the way the ERU system does provides several advantages, which is why this system is widely used. Correlating fees to impervious area provides an equitable approach to SWU revenue, ensuring that the costs are distributed more heavily to the users that cause the greatest impact. Similarly, this rate structure also provides a means to incentivize more responsible stormwater management, including promotion of Green Infrastructure and other onsite features that would reduce the overall runoff from the parcel.

One disadvantage to the ERU system is that it requires the community to maintain current impervious surface records, usually based on aerial imagery. This helps ensure that fees are accurate and that the community does not miss out on potential revenue.

9.2. Flat Fee and Dual Fee

The flat fee system is the second-most popular fee system. In this system, each parcel pays the same fee, regardless of size or amount of impervious surface.

Similar to the flat fee system, the dual fee system charges one amount for residential properties and another amount for nonresidential properties.

The flat or dual fee systems are preferred by some communities because of the ease of setting up the fee and minimal administrative upkeep. The most significant disadvantage of this system is that it is not based on equitably distributing the stormwater fees, and it does not provide opportunities to incentivize good stormwater management practices.

9.3. Residential Equivalence Factor (REF)

The REF fee system is based on the amount of runoff from a parcel compared to the average amount of runoff from a single family residential parcel. It is similar to the ERU fee system, but is based on volume of runoff instead of the impervious surface area. Runoff is usually calculated using the rational method or the curve number method for a chosen design storm, such as the 2-year 24-hour storm event.

This method offers many of the same benefits as the ERU system but is expected to be more complex to manage. In addition to knowledge about impervious surface (required for the runoff computations), this method introduces the potential for debate of the other parameters used to compute the runoff volume, and requires more work for each parcel than the ERU method.

9.4. Rate Structure Summary and Recommendations

A summary of the three basic types of SWU rate structures is provided in Table 4.

Table 4: Rate Structure Pros and Cons for Anchorage

Rate Structure	Pros	Cons
Equivalent Residential Unit (ERU) and Tiered ERU	<ul style="list-style-type: none"> - Provides equitable cost distributions - Offers opportunity to incentivize good practices - Simple to compute 	<ul style="list-style-type: none"> - Requires accurate and up to date impervious surface data
Flat and Dual Fee	<ul style="list-style-type: none"> - Easy to set up and simple to administer 	<ul style="list-style-type: none"> - Distribution of costs is less equitable than other methods - Offers less opportunity to incentivize better management practices
Residential Equivalent Factor	<ul style="list-style-type: none"> - Provides equitable cost distributions - Offers opportunity to incentivize good practices 	<ul style="list-style-type: none"> - Requires accurate and up to date impervious surface data - Requires establishment of other runoff computation parameters - Is generally more complex to compute

To meet the overall goal of providing equitability in the distribution of user fees, the long-term recommended rate structure for Anchorage is the ERU. However, in the short term, the flat/dual fee structure is expected to be easier and more practical to implement, as it requires very little site data. Once a revenue base is established, the utility's level of service and associated rate structure could be tailored accordingly. This type of evolution of SWU rate structure is common, as the needs of the community also change and evolve.

10. Legal Considerations

In order to create a SWU, state laws need to contain clear statutory authority language which permits communities to set up such a utility. Legal review of state and local legislation shows that the MOA has the authority to create a local SWU. A detailed description of the legal review is provided in Appendix C.

11. Stakeholder Engagement

During the development of this planning phase, the MOA has taken the lead in engaging a variety of stakeholders throughout the Municipality and the community who represent local and state agencies, industries, economic development, and citizen representatives. Representation included, but was not necessarily limited to: MOA Watershed Management, MOA Street Maintenance, MOA Traffic, MOA Parks & Recreation, DOT, Anchorage Home Builders Association (AHBA), Building Owners and Managers Association of Anchorage (BOMA Anchorage), Associated General Contractors, Anchorage Economic Development Corporation (with Live, Work, Play Committee), Upper O'Malley LRSA, South Golden View RRSA, and local citizen subject matter experts. This group formed a Steering Committee to provide input

and guidance to the MOA regarding the planning process and to act as liaison between the SWU planning process and the community and organizations they represent.

The Steering Committee's input notably shaped the direction of this project. The project originally intended to seek Assembly approval for formation of a SWU in early 2018, before significant planning and rate development had been completed. However, the Steering Committee members expressed that they were not supportive of this approach and instead recommended completion of an accurate study showing the proposed SWU rates and associated impacts to utility customers. Because both a condition assessment and a masterplan are required to support a rate study, this project shifted its focus toward resources needed to complete those documents.



As the project progresses, a strong public outreach program will be critical. A new SWU will cause some concern for residents, businesses, and other agencies regarding the cost impact to household and business budgets, capital improvement budgets impacts, and the need for other O&M functions throughout the community as infrastructure ages. The key to alleviating and mitigating these concerns is through education and information. A well-planned, organized, and continuous public outreach and education process will be critical for establishing a SWU and to support the utility during its first few years.

Appendix D provides detailed information regarding the Steering Committee meetings held to date, the MOA Assembly Enterprise Utility Oversight Committee workshop in October, and a draft framework for a SWU Public Involvement Plan. The key objectives of the Public Involvement Plan are the following:

- Assisting the MOA in developing a positive presence and targeted message for the SWU.
- Assessing community stakeholder perception, and increasing understanding and advancing community support for an acceptance of the SWU.

- Involving a broad group of stakeholders to gather information that will inform and educate in support of the creation of the SWU.
- Assisting the stakeholders/politicians/Steering Committee members in communicating information about the SWU to others.
- Stating how, when, and where people can be involved in the development of the MOA SWU.
- Responding to stakeholder input and concerns and providing timely and meaningful feedback.

12. Summary and Recommendations

This document was developed to present and discuss the need for and benefit of formation of a SWU in Anchorage and to discuss key considerations and baseline needs for successful SWU implementation.

12.1. Stormwater System Summary

The stormwater system in Anchorage includes over 500 miles of storm drain pipe, 300 miles of open channel, and 150 miles of streams. The system is owned primarily by the MOA (78%) and DOT (16%). The list below outlines several critical problems and key concerns with the current system, related to both physical condition and current stormwater management practices.

- Approximately 75% (376 miles) of the piped storm drain within the proposed SWU boundary is expected to be failing or near failing. Pipe failures result in a variety of adverse impacts to surrounding areas including roadway damage and "sinkholes", hazards to pedestrians and traffic, flooding and property impacts, and transporting large volumes of sediment into receiving water bodies.
- The current level of stormwater service in Anchorage is reactionary. Little to no stormwater planning, routine condition assessment (other than structures), or preventative maintenance is included, generally due to lack of funding. In addition, the continuous pipe failures are expensive, as emergency-response actions are detrimental to maintenance budgets and schedules. The MOA needs a stormwater-dedicated revenue source to begin to correct this rapidly escalating problem.
- The current drainage system in Anchorage is failing and deteriorating much faster than it is being upgraded or replaced. Current stormwater funding comes exclusively from bonds, which are funded through municipal property taxes. Not only is this funding inadequate, it is also inequitable, as the properties that pay the highest taxes are not necessarily the ones contributing the most runoff and/or pollutants to the stormwater system.
- There are 24 different government management groups within the proposed SWU boundary, and drainage is not coordinated across these jurisdictional boundaries. As a result, drainage-related issues are routinely shifted from one location to the next without looking at the drainage system holistically. This approach is very inefficient.

12.2. Recommendations

Formation of a SWU is recommended to meet the following needs:

- Provide a dedicated revenue source for stormwater management, maintenance, and capital improvements.
- Provide holistic drainage management and coordination and eliminate the shifting of drainage problems from one location to another.
- Provide an equitable distribution of the stormwater costs among stormwater system users/contributors.
- Provide a way to incentivize good stormwater management practices, such as utilizing Green Infrastructure and onsite stormwater management techniques.

Recommendations for Phase 2 are provided below.

- The baseline needs discussed in Section 2.3 should be completed as soon as possible. This includes the following:
 - Stormwater Masterplan. The MOA needs to complete a stormwater masterplan that includes hydraulic modeling and capacity analysis of the drainage system. A GIS-based model with robust hydraulic computational ability (i.e. SWMM 5.1) is recommended. The masterplanning should be done on a watershed level such that downstream impacts and changes due to developments can be evaluated.

The initial level of detail of the masterplan should be tailored to the available resources, and the document and associated model should be considered “living documents” to be regularly updated and improved upon as the system changes and as funding for increased levels of detail become available.
 - Expanded Condition Assessment. The condition assessment completed for this implementation plan needs to be expanded to include all available desktop information, including both MOA and DOT record drawings. This will require creation of a functional MOA record drawing database. It is recommended that condition information be correlated to physical inspections and observations as much as possible. If funding constraints limit the amount of pipe inspection that can be completed in the near-term, it would be advantageous to identify key representative locations to inspect and extrapolate that data to surrounding locations as much as possible. Condition assessment results, including drainageway



Pipe failure and sinkhole near Nichols St.

characteristics such as pipe size and material, should be incorporated into the MOA GIS drainageway mapping.

- Stormwater Capital Improvement Plan. The condition assessment and masterplan results should be used to develop a stormwater CIP that will prioritize replacement, repair, and upgrade of critical stormwater infrastructure over a specified time period. The stormwater CIP should be coordinated with both the MOA and the DOT roadway and highway CIPs. This will help maximize available funding.
- Rate Study. A SWU rate study should be completed that will provide a reasonable estimate of SWU user fees. The rate study should be based on the results of the CIP and on current and projected stormwater costs. The rate study should consider both the current and future rate structures of the utility, as well as other potential income sources. The rate structure should also clearly outline what services will be paid for under the proposed SWU, and whether or not any stormwater services will continue to require bond funding. (Operating the SWU independently of bond funding is recommended.)
- Organizational Structure Determination. While there are several possible organizational structures for a SWU, the final utility organization will be based on maximizing efficiency and utilizing available resources. The SWU should to the extent possible utilize other MOA functions, such as the billing system that AWWU operates and use of PM&E contract administration and project delivery.

The SWU will also develop additional intergovernmental agreements with the Alaska Department of Transportation and Public Facilities to outline how state-owned assets will be handled under the SWU and the associated responsibilities of each party. This type of agreement is common with Municipal owned utilities and can benefit both parties.

Appendix A
Stormwater Infrastructure and Management
Assessment

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Stormwater Infrastructure and Management Assessment

November 2017

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Table of Contents

1. Introduction and Background Information	1
1.1. Existing Infrastructure Overview.....	1
1.2. Existing Stormwater Management Overview	1
2. Data Used	2
3. Condition Assessment Process	4
3.1. Establishment of Zones.....	4
3.2. Data Analysis.....	4
3.3. Assessment Criteria.....	5
3.4. Limitations.....	6
4. Condition Assessment Results	7
4.1. Assembly District 1.....	7
4.1.1. Zone 1a.....	7
4.1.2. Zone 1b	9
4.2. Assembly District 2.....	10
4.3. Assembly District 3.....	10
4.3.1. Zones 3a and 3b.....	10
4.3.2. Zones 3c and 3d	13
4.4. Assembly District 4.....	13
4.4.1. Zone 4a.....	13
4.4.2. Zone 4b	16
4.5. Assembly District 5.....	16
4.5.1. Zone 5a.....	17
4.5.2. Zone 5b	19
4.5.3. Zone 5c.....	19
4.6. Assembly District 6.....	20
4.6.1. Zone 6a.....	20
4.6.2. Zone 6b	22
4.6.3. Zone 6c.....	25
4.6.4. Zone 6d	27
5. Management and Levels of Service	30
5.1. Current Management Structure.....	30

5.2.	Existing Levels of Service	31
5.2.1.	DOT&PF.....	31
5.2.2.	Anchorage Road and Drainage Service Area (PM&E and Street Maintenance)	32
5.2.3.	Limited and Rural Road Service Areas	33
5.2.4.	Private Maintenance Areas.....	34
5.3.	Municipal Separate Storm Sewer System Permit.....	34
6.	Summary.....	35

List of Images

Image 1: Zone 1a Problem Area Examples	9
Image 2: Zone 3a/3b Problem Area Examples	13
Image 3: Zone 4a Problem Area Examples	16
Image 4: Zone 5a Problem Area Examples	18
Image 5: Zone 6a Problem Area Example	22
Image 6: Zone 6b Problem Area Example	24
Image 7: Zone 6c Problem Area Examples	27
Image 8: Zone 6d Problem Area Examples.....	29

List of Tables

Table 1: LRSAs within the Proposed SWU Boundary	30
Table 2: RSAs within the Proposed SWU Boundary.....	31
Table 3: Zone Infrastructure Summary.....	35
Table 4: Levels of Service Summary	36

List of Attachments

Attachment 1: Figures

- Figure 1: Proposed Stormwater Utility Boundary and Assembly Districts
- Figure 2: Storm Pipe Age Overview
- Figure 3: Historical Wetland Locations
- Figure 4: Zones 1a and 1b
- Figure 5: Zones 3a and 3b
- Figure 6: Zone 4a
- Figure 7: Zone 5a
- Figure 8: Zone 5c
- Figure 9: Zone 6a
- Figure 10: Zone 6b
- Figure 11: Zone 6c
- Figure 12: Zone 6d

Attachment 2: Stakeholder Interviews and Meetings

1. Introduction and Background Information

The Municipality of Anchorage (MOA) is developing a plan for implementation of a Storm Water Utility (SWU) for the greater Anchorage Bowl area. The proposed stormwater utility is intended to improve drainage management, planning, and maintenance practices throughout its service area. As part of the Implementation Plan, AWR Engineering, LLC (AWR) is assisting the MOA and Stantec Inc. with a high-level stormwater infrastructure condition and management assessment. The purpose of this report is present the condition and management assessment process and results.

Figure 1 in Attachment 1 shows the proposed SWU service area and the existing Anchorage Assembly Districts.

1.1. Existing Infrastructure Overview

Public stormwater infrastructure in Anchorage consists of a large network of pipes, open channels, streams, and various other types of facilities including oil and grit separators, manholes, infiltration facilities, and sedimentation ponds. Within the proposed SWU boundary, the system includes approximately 525 miles of storm drain pipe, over 300 miles of open channels, and over 150 miles of streams.

Public infrastructure is generally owned by either the MOA or by the Alaska Department of Transportation and Public Facilities (DOT&PF). The system is not functionally separated by ownership, and water from MOA-owned conveyance systems regularly flows into DOT&PF-owned conveyance systems and vice versa.

Neither the MOA nor DOT&PF have meaningful or widespread data regarding the condition of their existing stormwater infrastructure. Each entity responds to issues as they arise, and both lack a comprehensive stormwater capital improvement program or a stormwater infrastructure masterplan.

The MOA maintains horizontal mapping of stormwater conveyance systems, including conveyance systems that are owned by DOT&PF. DOT&PF maintains a similar database of DOT&PF-owned infrastructure, though this database is much less comprehensive. Neither entity has records that include conveyance system details such as size, slope, pipe type, infrastructure age, open channel size, etc. A small portion of the MOA database includes pipe type for piped conveyance infrastructure.

Given the overall lack of detailed information regarding the existing stormwater infrastructure, completion of a detailed condition assessment was beyond the scope of this Implementation Plan phase of the SWU project. Instead, this project focused on completing a high-level condition assessment based on the limited available data and on information collected from project stakeholders. Details regarding the data used for this assessment are provided in Section 2.

1.2. Existing Stormwater Management Overview

Within the boundaries of the MOA and the proposed SWU, there are many different entities currently responsible for stormwater infrastructure management. The primary management entities are listed below along with a brief description of each.

- **Municipal Street Maintenance.** Street Maintenance is responsible for general maintenance and non-major repairs of stormwater infrastructure that is owned by the MOA and is within the Anchorage Roads and

Drainage Service Area (ARDSA). (See Figure 1 in Attachment 1) The ARDSA limits encompass much of what is considered the Anchorage Bowl area, but generally exclude the Anchorage Hillside. Street Maintenance is also responsible for roadway maintenance on MOA roads within ARDSA, including snow plowing, pavement maintenance/repair, sidewalk maintenance, and street light maintenance.

- **DOT&PF Maintenance and Operations.** DOT&PF Maintenance and Operations (M&O) is responsible for maintenance and non-major repairs of stormwater infrastructure on state-owned roadways throughout the MOA and the proposed SWU service area. DOT&PF M&O is also responsible for roadway maintenance on state roads, including snow plowing, pavement maintenance/repair, sidewalk maintenance, and street light maintenance.
- **Rural Road Service Areas and Limited Road Service Areas.** On the Anchorage Hillside outside of ARDSA, roadway and drainage maintenance are sometimes provided through a Limited Road Service Area (LRSA) or a Rural Road Service Area (RRSA). A LRSA is a service area that is generally authorized to do maintenance of roads and drainage facilities within the service area boundaries. There are 19 LRSAs within the proposed SWU area. A RRSA is a service area that has full maintenance and construction authority of the infrastructure within the service area boundaries. There are three RRSAs within the service area boundaries.
- **Privately Maintained Areas.** Approximately 50% of the Anchorage Hillside is outside of a municipal road service area. Roads and drainage facilities in these areas are maintained by private entities such as homeowners' associations or informal community groups.

2. Data Used

A variety of data were used in completion of this assessment, and these data are described below. AWR worked with Blue Skies Solutions and with Stantec to gather and compile these data.

- **MOA GIS Data.** The MOA provided the following GIS shapefiles and rasters that were used in this assessment:
 - Boundary of the Proposed SWU
 - Aerial Photography: The MOA provided access to orthorectified, historic aerial imagery from 1939, 1960, 1970, 1980, 1990, 2002, 2006, 2009, 2012, and 2015. Access was via the MOA GIS online organization.
 - Drainageways: The MOA drainageway mapping includes horizontal mapping of existing drainageways owned by both the MOA and DOT&PF. The mapping includes pipes, open channels, and streams. Approximately 20 percent of the available pipe data include pipe material, and these are typically newer pipes. The data do not include pipe or ditch sizes, slopes, or invert elevations.
 - MOA Land Use and Geographic Boundaries: The MOA's online ArcGIS server was used to obtain GIS files representing assembly districts, municipal grids, zoning designations, road service areas, and streets.
 - Historic Wetlands (1950s): This file depicts the location of wetlands in Anchorage in the 1950s.

- Existing Stream and Wetlands: These files provide mapping of existing streams and wetland locations within the MOA.
- Watersheds: This file provides basin delineation of the streams in Anchorage.
- **Existing Drainage Issues:** Information regarding the location and type of existing drainage issues was obtained from the following sources:
 - GIS data from Watershed Management. Street Maintenance worked with MOA Watershed Management Services (WMS) to catalog areas where drainage problems are known to exist. This data was provided in three shapefiles and the data include the location and general type of existing issue.
 - Photos and Conversations with Street Maintenance: Street Maintenance provided photographs and verbal descriptions of problem areas that they deal with on a regular basis. AWR estimated the location of each problem area via attributes of the photographs and/or descriptions from Street Maintenance and created GIS files of this information.
 - General Area Knowledge. AWR used general knowledge of known drainage issues in select locations to supplement information provided by other sources.
- **Record Drawings**
 - MOA Record Drawings: The MOA provided a copy of the database used to catalog municipal record drawings. The database is in Microsoft Access and it includes both record drawings and other property documents such as deeds and plats. The database is generally unorganized and difficult to use. Searching for record drawings of a particular location can take many hours and may be unsuccessful. Additionally, the record drawings are not organized by type (e.g. roadway reconstruction, resurfacing, drainage, etc.), so locating drainage-specific record drawings is difficult.
 - DOT&PF As-builts: The DOT&PF maintains an online record drawing database. (http://www.dot.state.ak.us/edocs_code/searches/combined_asbuilt_search.cfm) Blue Skies Solutions linked this online database to a copy of the DOT&PF GIS record drawing database to relate record drawing files to geographic locations.
- **MOA Fixed Asset Database.** Parrish, Blessing and Associates, Inc. provided a copy of the MOA's storm drain Fixed Asset Database dated September of 2017. The Excel database includes approximately 31,000 MOA-owned storm drain assets, including pipes and structures and provides asset information such as installation year and the grid in which each asset is located. It does not provide specific asset location.
- **Stakeholder Interviews.** AWR conducted interviews with the project stakeholders listed below. Records of each interview are provided in Attachment 2.
 - Tim Alderson of Upper O'Malley Limited Road Service Area (in person on October 13, 2017)

- Mark Schimscheimer of South Golden View Rural Road Service Area (via telephone on October 18, 2017)
- Gary Jones, Kent Kohlhase, and Russ Oswald of MOA Project Management and Engineering (PM&E), and Paul Van Landingham of MOA Street Maintenance (in person on October 23, 2017)
- Robert Anderson and Tom Grman of DOT&PF Maintenance via email correspondence dated November 3, 2017.

3. Condition Assessment Process

Given the limited available data discussed in Sections 1 and 2, the goal of the condition assessment was to compile and analyze relevant existing stormwater infrastructure information and use this information to draw conclusions regarding the likely condition of stormwater infrastructure.

3.1. Establishment of Zones

To process the existing information efficiently, the proposed SWU service area was divided into smaller areas for the condition assessment. The area was first divided into the existing Assembly districts one through six, and each Assembly district was further divided into zones. The establishment of zones was done early in the assessment process and was generally based on the approximate decade of original development. The decade of development was approximated through visual inspection of aerial imagery. For the purpose of this high-level assessment, the exact boundaries of the zones were not critical to the outcome. Rather, the intent was to group portions of Anchorage that were expected to have similar infrastructure characteristics and associated drainage issues. This process resulted in a total of 16 zones.

3.2. Data Analysis

Using ArcGIS, specific characteristics of each zone were compiled. This included infrastructure ownership, types of drainageways (e.g. open channels or pipes), pipe material (for piped drainageways), land use zoning, percent of historic wetlands, and approximate pipe age. Most of this information was extracted from the GIS files described in Section 2, using standard GIS processing tools. A separate analysis was completed to approximate pipe age and pipe material type, as described below.

Pipe Age. The approximate age of infrastructure for each zone was estimated based on the Fixed Asset Database described in Section 2. The Fixed Asset Database does not provide a specific location for each asset, but it does provide the municipal grid in which the asset is located. (For example, asset number 61359 is a 62-foot-long pipe located in grid NW0352.) Each municipal grid was referenced to a project zone based on spatial location. The Fixed Asset Database was then used to group and sum pipes constructed in each decade (e.g. 1960s, 1970s, 1980s, etc.) within each zone. It should be noted that the Fixed Asset Database is limited to MOA-owned infrastructure and does not reflect all of the infrastructure in each zone. Age information obtained from this database was generally assumed to reflect the entire zone to which it was applied. Figure 2 shows pipe age information obtained from this database.

Pipe age information was used to estimate remaining service life, and to help determine if pipes of unknown material types are more likely to be metal pipe or plastic pipe. This is discussed further below.

Pipe Material Type: The only known sources of pipe material information for stormwater conveyance pipe is what is contained in the MOA drainageways database discussed in Section 2, and information from record drawings. As discussed in Section 2, the MOA's record drawing database is difficult to use, and this project's scope did not allow for thorough review of all existing record drawings. Instead, as many record drawings were reviewed as the project scope would allow, resulting in review of 227 records. Selecting record drawings for review generally started with choosing a piped storm drain system from the MOA drainageways information. This initial selection was generally random other than selection attempted to achieve even coverage across each of the zones. The MOA and DOT record drawing databases were then used to search for record drawings, based on the infrastructure ownership. In many cases, record drawings could not be readily located in the MOA database through any of the available search criteria, in which case a different pipe in the zone was selected instead. Through this process, AWR reviewed record drawings for approximately 23 percent of the piped drainageways mapped by the MOA.

Many of the record drawings provided the material type for piped drainageways, such as corrugated metal pipe, plastic pipe, or concrete pipe. However, many of the records did not include pipe material information. In these cases, pipe material was estimated based on the age of the record drawing. Long-term employees of the MOA PM&E department explained that storm drains constructed in Anchorage prior to 1990 were primarily metal pipe. Construction of plastic storm drains started around 1990 and was prevalent by the mid-1990s. Based on this information, storm drain pipe constructed prior to 1990 was assumed to be metal and pipe constructed after 1990 was assumed to be plastic. This convention was only applied to record drawings where the type of pipe was not specified.

3.3. Assessment Criteria

Through review of the compiled data, interviews and discussion with key stakeholders, and completion of the analyses described in Section 3.2, primary criteria were identified that could be linked to the condition of infrastructure in each zone. The criteria included pipe age, pipe material, the locations of historic wetlands in Anchorage, locations of known drainage issues, and other types of condition information obtained from various stakeholders.

Most of the metal pipe in Anchorage was installed between 1960 and 1990, making it roughly 30 to 60 years old. The life expectancy of metal pipe is highly dependent on the corrosivity of the soil and water that the pipe contacts. Soils in Anchorage are expected to be relatively corrosive in many parts of town due to the widespread wetlands that were historically present in the area. Attached Figure 3 shows the locations of wetlands in Anchorage in the 1950s. Although this project did not find definitive data correlating historic wetlands to soil corrosivity, the local soil conditions are expected to contribute to a relatively short life expectancy of metal pipe in most parts of Anchorage. The majority of metal pipe in Anchorage is expected to be at or beyond its life expectancy.

Both MOA and DOT&PF maintenance groups concluded that nearly all of the metal pipe in Anchorage is near failing or has already failed. Maintenance groups have reported dozens of failures of metal pipe across Anchorage, and the actual number of failed pipes is expected to far exceed what the maintenance groups have observed. Because neither the MOA nor DOT&PF are routinely inspecting storm drain pipes, maintenance groups only become aware of issues when they cause an impact at the ground surface. This may be a "sinkhole" that forms in the street as the result of a failed pipe washing away earthen material, or it may be surface flooding due to broken or blocked pipes

or channels. Based on the high number of known issues, it is expected that the actual extent of the subsurface failures is much greater than what is visible at the surface.

Based on the general age of metal storm drain pipe in Anchorage and on the condition reports from maintenance groups, this assessment assumes that metal storm drain pipe with the proposed SWU boundary has failed or is near failure and requires replacement. The assessment also assumes that plastic storm drain pipe is generally newer and does not require immediate replacement. It is expected that there are select cases of both good-condition metal pipe and poor condition plastic pipe across the SWU area. However, based on the limited amount of existing pipe condition information available, this is expected to be a reasonable assumption for this level of assessment.

Assessment of the condition of other types of conveyance infrastructure, such as open channels, generally requires visual inspection which was outside of the scope of this project. The MOA and DOT&PF do not maintain records regarding the condition or function of open channels. Instead, the condition of open channels was generally assessed based on information obtained through discussions with maintenance groups and representatives from road service areas.

3.4. Limitations

This condition assessment was limited to a desktop analysis, and no physical or visual inspection was completed as part of this process. It is important to note that the assessment was limited to qualitative evaluation of the criteria described above with the overall intent of providing a basic understanding of the expected condition of stormwater conveyance systems with the proposed SWU area. This assessment does not include other types of stormwater facilities including but not limited to manholes, oil and grit separators, infiltration facilities, sedimentation facilities, and bridges. Additionally, there are many factors that influence condition of stormwater conveyance infrastructure that were not considered in this analysis due to scope limitations. These include but are not limited to hydraulic capacity, stormwater sediment loading, impacts of system failure, structural loading, soil chemistry, water chemistry, and specific material properties such as pipe metal thickness and type of coatings.

4. Condition Assessment Results

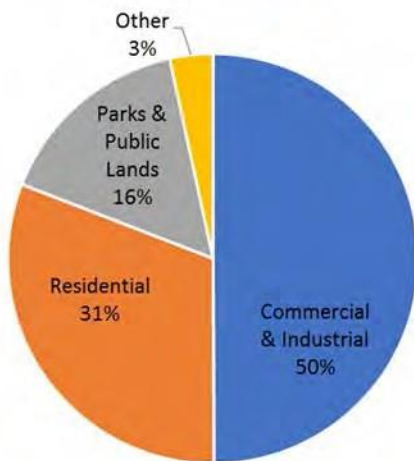
The infrastructure in each zone was evaluated based on the primary assessment criteria discussed in Section 3.3 above, and the results are presented below for each Assembly District and zone.

4.1. Assembly District 1

Assembly District 1 is located in north Anchorage and encompasses the downtown region. All of District 1 is located within the proposed SWU boundary. District 1 was divided into two zones. Zone 1a encompasses most of the district, and Zone 1b includes the area around the Port of Anchorage. Zones 1a and 1b are shown on Figure 4 in Attachment 1.

4.1.1. Zone 1a

Zone 1a includes most of Assembly District 1 and is approximately 6.2 square miles. The area has mixed land use with approximately 50% commercial and industrial use, 31% residential use, and 19% that is a mix of public lands and transition zoning.

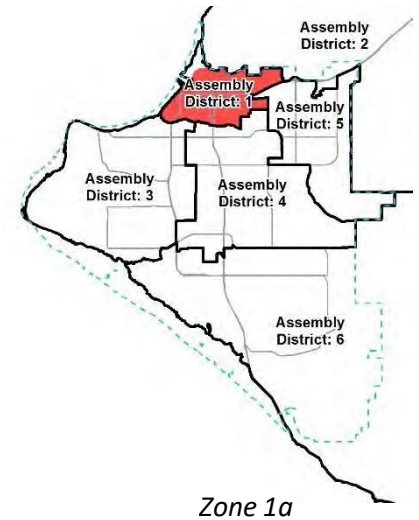


Zone 1a Land Use by Zoning

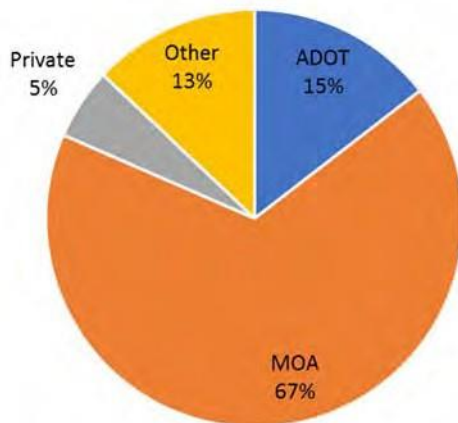
unknown.

While there are very little wetlands located in Zone 1a today, historic wetland mapping shows that 23% of this zone was wetland in the 1950s. There are approximately 7 miles of stream in this zone.

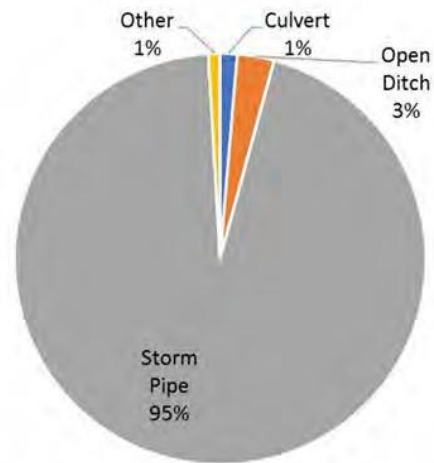
There are approximately 83 miles of drainageways (generally not including streams) in Zone 1a, 95% of which is piped storm drain. The MOA owns 67% of the drainageways in this zone. DOT&PF owns 15%. Six percent is privately owned the remaining 13% is either abandoned or ownership is



Zone 1a



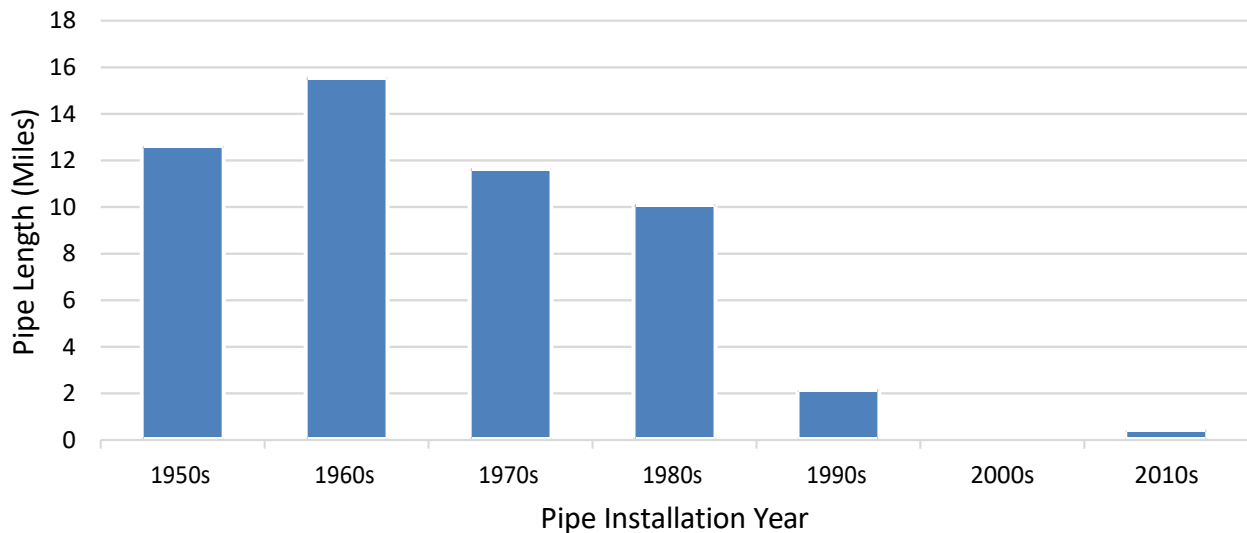
Zone 1a Drainageway Ownership



Zone 1a Drainageway Types

Based on the MOA Fixed Asset Database, 54% of the piped storm drain in this zone was constructed before 1970, 22% was constructed in the 1970s, and 19% was constructed in the 1980s. Only 5% of the piped storm drain in this zone is expected to have been constructed more recently than 1990. This means the over half of the pipe is expected to be 50 years old or older, and nearly all of the pipe is expected to be at least 30 years old. The graph below shows the relationship between the MOA-owned pipe length in miles and the decade it was developed.

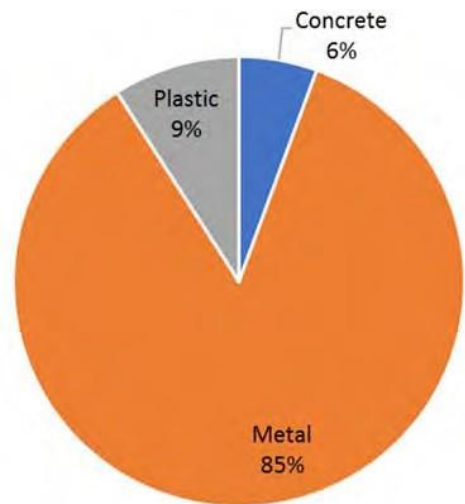
Zone 1a Approximate MOA Storm Pipe Age



Of the nearly 80 miles of piped storm drain, 85 percent (68 miles) are expected to be metal pipe. Nine percent is expected to be plastic and 6% is expected to be concrete.

Street Maintenance has reported 36 known drainage issues in Zone 1a. The issues range from pipe failure to areas of known flooding/icing. Pictures of a few of the known issues are provided in Image 1 below, and the locations of known issues are depicted on Figure 4 in Attachment 1.

Based on the available infrastructure information, it is estimated that at least 85% of the piped storm drain in this zone (68 miles) has failed or is near failing.



Zone 1a Storm Pipe Material

Image 1: Zone 1a Problem Area Examples



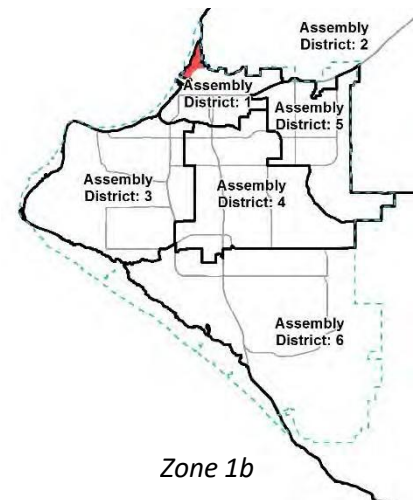
Above: Sinkhole due to failed pipe on North Park Drive. Right: Deteriorated structure with no bottom at 7th and C St. Below: Flooding from icing on Chester Creek at Arctic Blvd.

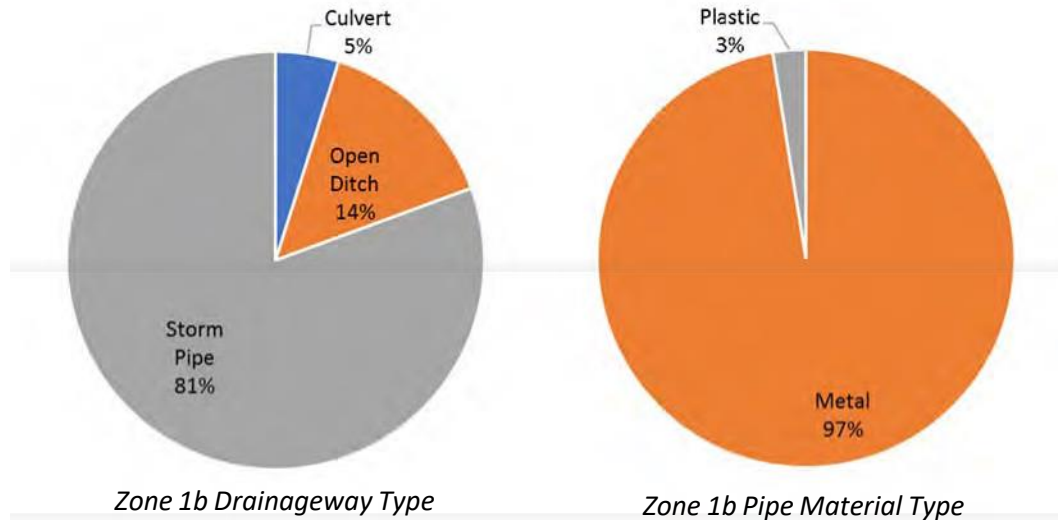


4.1.2. Zone 1b

Zone 1b is approximately 0.5 square miles, and generally encompasses the Port of Anchorage. There are approximately 8 miles of drainageways in Zone 1b, 81% of which is piped storm drain.

The MOA owns 98% of the drainageways in this zone, and DOT&PF owns the remaining 2%. Most of the piped storm drain was constructed before 1970 and it is expected to be nearly entirely metal pipe. Based on the available infrastructure information for this area, all of the Zone 1b piped infrastructure is expected to be failing or near failing.



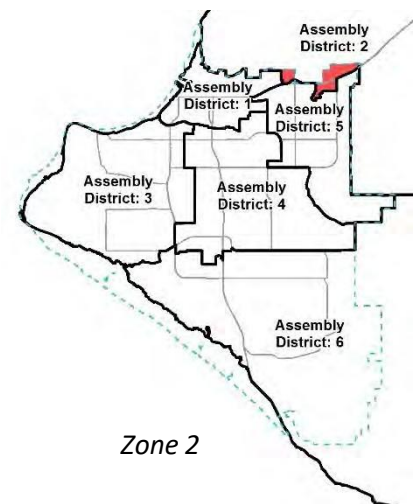


4.2. Assembly District 2

Assembly District 2 is located primarily north of the Anchorage bowl area, in the Chugiak, Birchwood, and Eagle River areas of the MOA. There is a small, 1.1 square mile portion of District 2 that lies within the proposed SWU boundary area, as shown in Figure 1. This area was classified as Zone 2, and is the only portion of District 2 that was included in this condition assessment.

Zone 2 is a mix of residential (27%), commercial and industrial (18%), and public (19%) land use, with nearly 36% of the area transition zoning. Approximately 21 percent of this area was historically covered in wetlands.

Zone 2 includes 4.8 miles of drainageway, 3.8 of which is expected to be piped storm drain and culverts. The MOA owns 74% of the drainageways, DOT&PF owns 22%, and 4% are privately owned. Ninety percent of the piped storm is expected to be metal pipe, and nearly all of the pipe is expected to have been constructed in the 1980s or earlier. It is expected that nearly all of the pipe in this zone is failing or near failing.

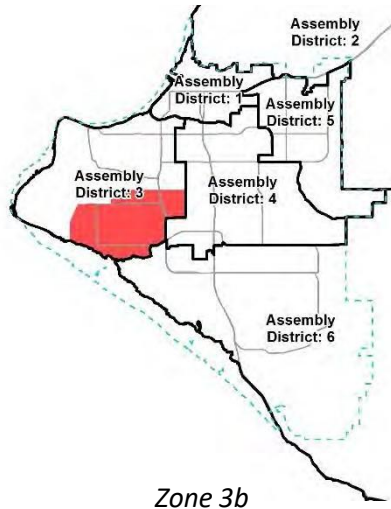
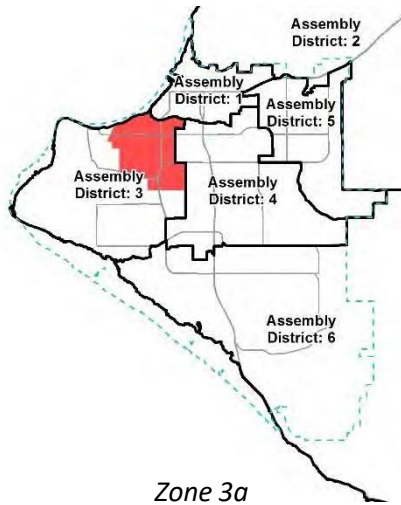


4.3. Assembly District 3

Assembly District 3 is located in west Anchorage and generally extends from Arctic Boulevard to Cook Inlet and from Chester Creek to Dimond Boulevard. All of District 3 lies within the proposed SWU area. District 3 was divided into four zones for this condition assessment. Zones 3a and 3b represent the majority of the district. Zone 3c is primarily park land and Zone 3d is primarily the Anchorage International Airport and Lake Hood Airport.

4.3.1. Zones 3a and 3b

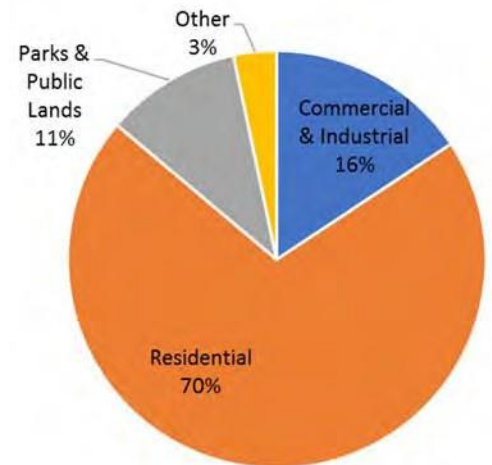
Upon completion of the analysis of each zone, the characteristics of Zones 3a and 3b were determined to be very similar, so they were combined and are discussed together in this section. These zones are shown below as well as on Figure 5 in Attachment 1.



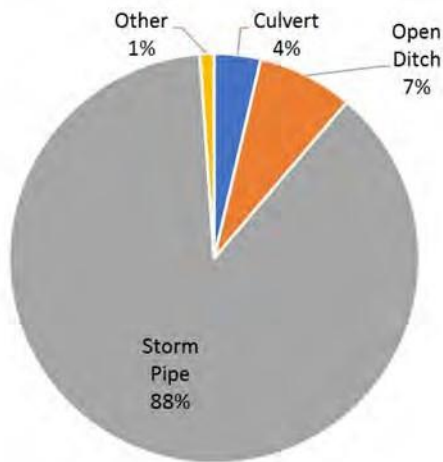
The Zone 3a/3b area is approximately 13.1 square miles and includes nearly half of Assembly District 3. The area is mostly residential use (70%) with approximately 16% commercial and industrial use and 14% that is a mix of public lands and transition zoning areas.

While only 10% of this area is currently mapped as wetlands, historic wetland mapping shows that 35% of this zone was wetland in the 1950s. There are approximately 10.1 miles of stream in this zone.

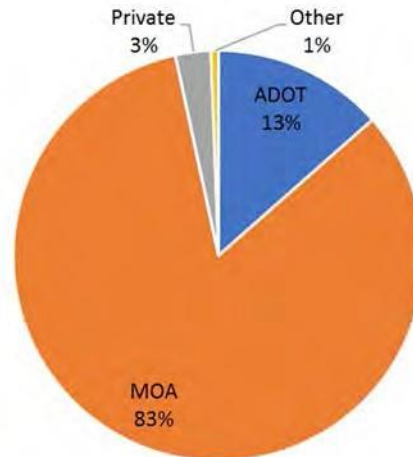
There are approximately 120 miles of drainageways (generally not including streams) in Zones 3a and 3b, 88% of which is piped storm drain. The MOA owns 83% of the drainageways in this zone. DOT&PF owns 13%. Three percent is privately owned the remaining 1% is either abandoned or ownership is unknown.



Zone 3a/3b Land Use by Zoning



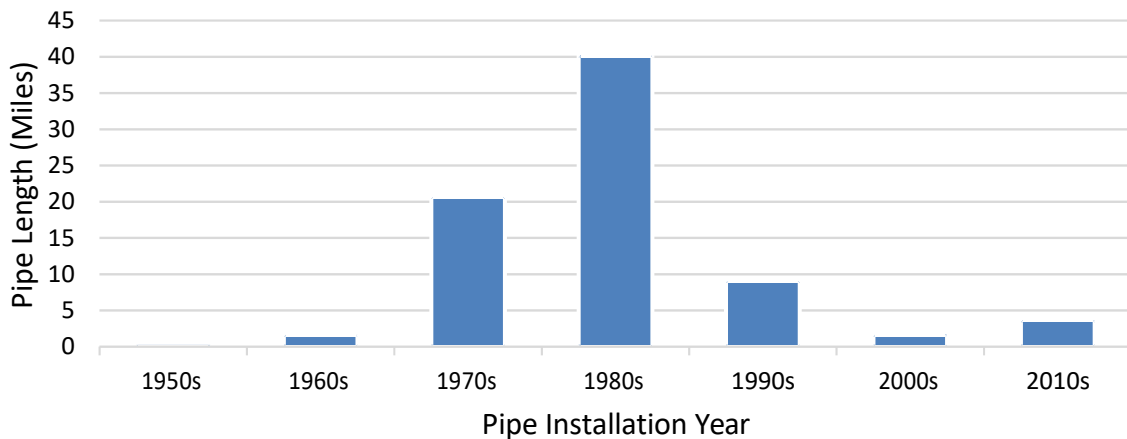
Zone 3a/3b Drainageway Types



Zone 3a/3b Drainageway Ownership

Based on the MOA Fixed Asset Database, 29% of the piped storm drain in this zone was constructed before 1970, 27% was constructed in the 1970s, and 52% was constructed in the 1980s. Approximately 19% of the piped storm drain in this zone is expected to have been constructed more recently than 1990. This means over a quarter of the pipe is expected to be 50 years old or older, and 80% of the pipe is expected to be at least 30 years old. The graph below shows the relationship between the MOA-owned pipe length in miles and the decade it was developed.

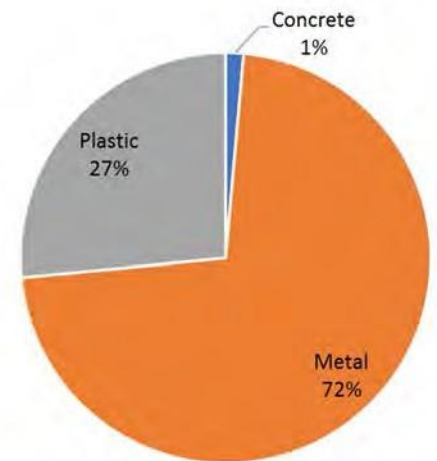
Zone 3a and 3b Approximate MOA Storm Pipe Age



Of the nearly 105 miles of piped storm drain in this zone, 72% (79 miles) are expected to be metal pipe. Of the remaining 28%, 27% is expected to be plastic and 1% is expected to be concrete.

Street Maintenance has reported 43 known drainage issues in Zones 3a and 3b. The issues range from pipe failure to areas of known flooding/icing. Pictures of a few of the known issues are provided in Image 2 below, and the locations of known issues are depicted on Figure 5 in Attachment 1.

Based on the available infrastructure information, it is estimated that at least 72% of the piped storm drain in this zone (79 miles) has failed or is near failing.



Zone 3a/3b Pipe Material Type

Image 2: Zone 3a/3b Problem Area Examples



Above left: Sinkhole due to failed pipe on 71st and Cheryl. Above right: Deteriorated pipe with no bottom on Bennett Street. Lower right: Deteriorated pipe with no bottom on 74th and Rovenna

4.3.2. Zones 3c and 3d

Condition assessment was not completed for the Zone 3c and 3d areas. Zone 3c is comprised almost entirely of park land and has less than 0.4 miles of drainageways. Zone 3d includes the AIA and Lake Hood areas. The majority of the infrastructure in this area is owned by DOT&PF, and DOT&PF operates a separate stormwater discharge permit for the airport.

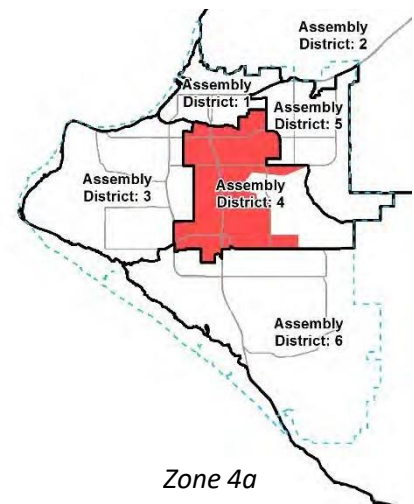
4.4. Assembly District 4

Assembly District 4 is located in central and eastern Anchorage. It includes most of Anchorage's midtown and extends east into Far North Bicentennial Park. All of District 4 is located in the proposed SWU area.

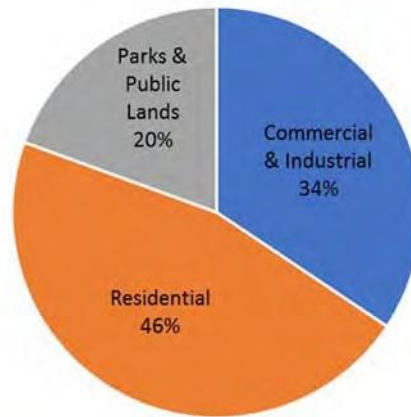
4.4.1. Zone 4a

Zone 4a is approximately 14.7 square miles and includes most of the populated areas of District 4, as shown in Figure 6 in Attachment 1. The area is 46% residential land use with approximately 34% commercial and industrial use and 20% public lands.

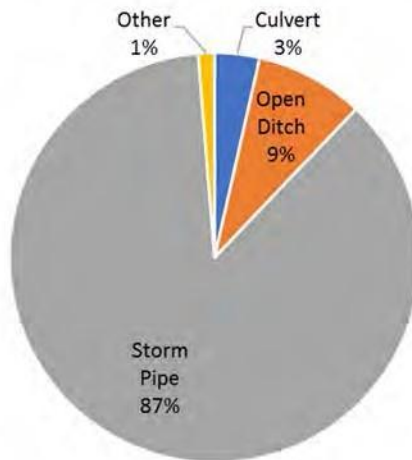
Though only 10% of this area is currently mapped as wetlands, historic wetland mapping shows that 48% of this zone was wetland in the 1950s. Today, there are approximately 22 miles of stream in this zone.



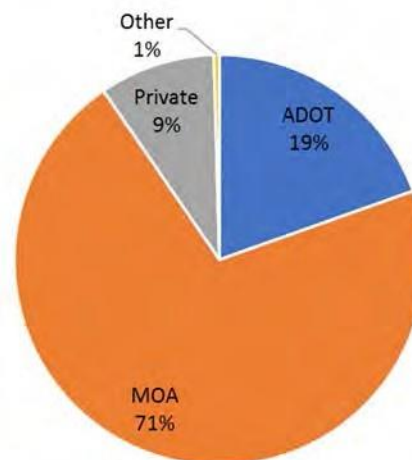
There are approximately 174 miles of drainageways (generally not including streams) in Zone 4a, 87% of which is piped storm drain. The MOA owns 71% of the drainageways in this zone, DOT&PF owns 19%, and 9% is privately owned.



Zone 4a Land Use by Zoning



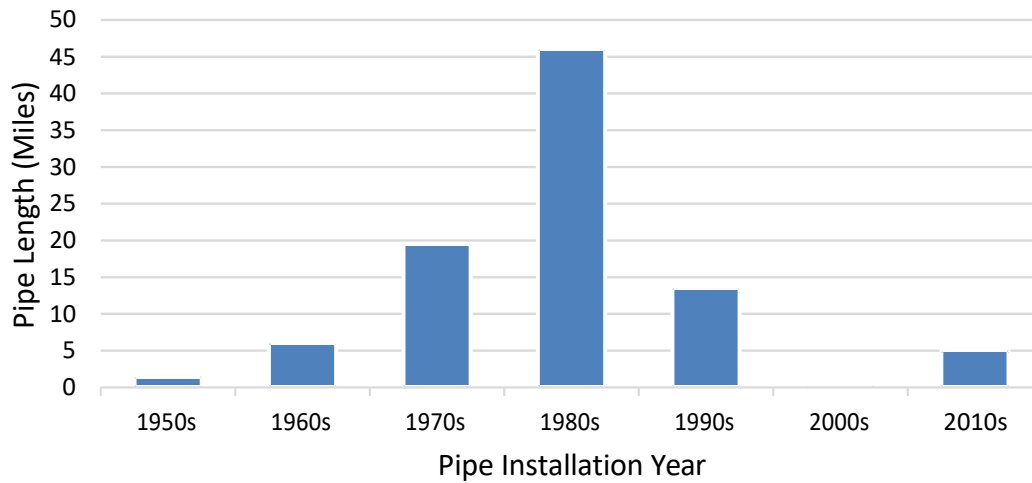
Zone 4a Drainageway Type



Zone 4a Drainageway Ownership

Based on the MOA Fixed Asset Database, 9% of the piped storm drain in this zone was constructed before 1970, 21% was constructed in the 1970s, and 50% was constructed in the 1980s. Approximately 20% of the piped storm drain in this zone is expected to have been constructed more recently than 1990. This means that roughly 80% of the pipe is expected to be at least 30 years old. The following graph shows the relationship between the MOA-owned pipe length in miles and the decade it was developed.

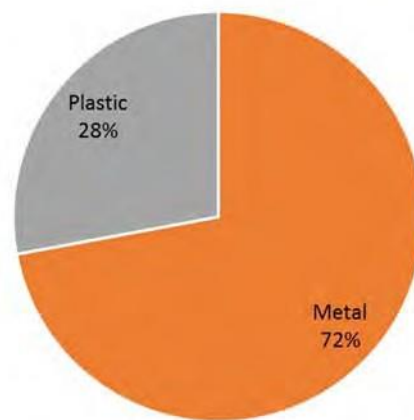
Zone 4a Approximate MOA Storm Pipe Age



Of the nearly 150 miles of piped storm drain in this zone, 72% (110 miles) are expected to be metal pipe. The remaining 28%, is expected to be plastic.

Street Maintenance has reported 67 known drainage issues in Zone 4a. The issues are primarily pipe failure and flooding issues. Pictures of a few of the known issues are provided in Image 3 below, and the locations of known issues are depicted on Figure 6 in Attachment 1.

Based on the available infrastructure information, it is estimated that at least 72% of the piped storm drain in this zone (110 miles) has failed or is near failing.



Zone 4a Pipe Material Type

Image 3: Zone 4a Problem Area Examples



*Above left:
Sinkhole from pipe
failure at
Communications
Avenue. Above
right: Sinkhole
from pipe failure
at Nichols Street.
Lower left: Pipe
failure on C Street*

4.4.2. Zone 4b

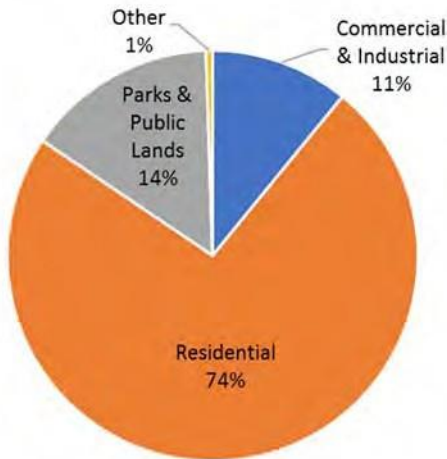
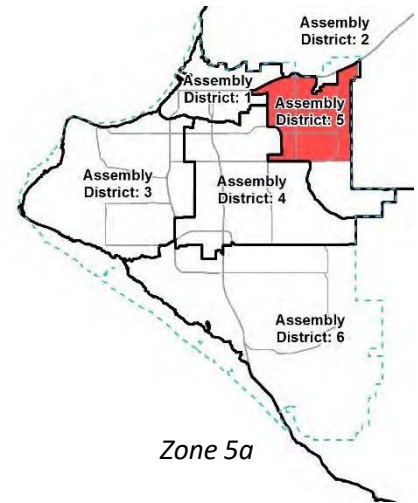
This zone is a roughly 6 square mile area comprised of portions of Far North Bicentennial Park and the Campbell Airstrip region. There is very little mapped stormwater infrastructure in this area, and a condition assessment for this zone was not completed.

4.5. Assembly District 5

Assembly District 5 is located in northeast Anchorage, and generally spans from the Muldoon Area to Bragraw Street and from the Seward Highway to Tudor Road. The district also encompasses much of Far North Bicentennial Park and the more rural Stuckagain Heights neighborhood. All of District 5 lies within the proposed SWU area. The district was separated into three zones for this condition assessment.

4.5.1. Zone 5a

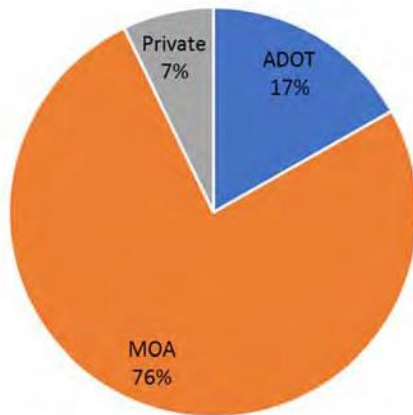
Zone 5a includes most of Assembly District 5 north of Tudor Road and is approximately 8.7 square miles. (See Figure 7 in Attachment 1.) The area is mostly residential use (74%) with approximately 11% commercial and industrial use and 15% that is a mix of public lands and transition zoning areas.



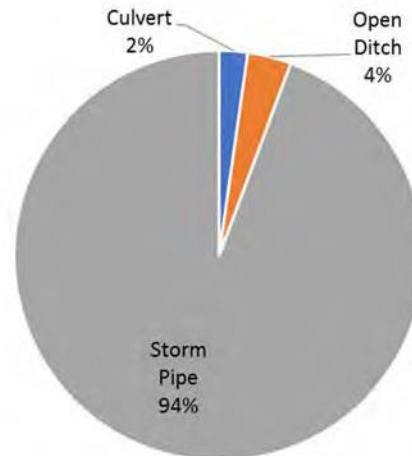
Zone 5a Land Use by Zoning

Approximately 4% of Zone 5 is wetlands today, and historic wetland mapping shows that 40% of this zone was wetlands in the 1950s. There are approximately 7.9 miles of stream in this zone.

There are approximately 87 miles of drainageways (generally not including streams) in Zone 5a, 94% of which is piped storm drain. The MOA owns 76% of the drainageways in this zone. DOT&PF owns 17%, and 7% is privately owned.



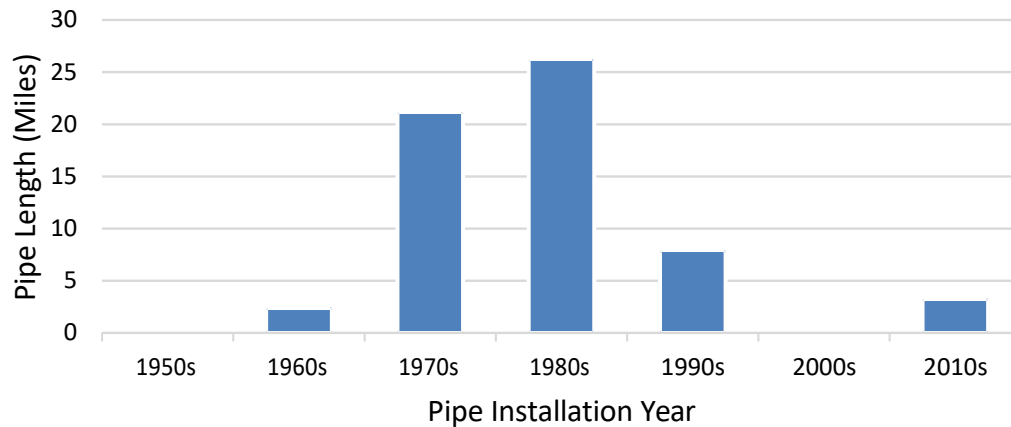
Zone 5a Drainageway Ownership



Zone 5a Drainageway Type

Based on the MOA Fixed Asset Database, 4% of the piped storm drain in this zone was constructed before 1970, 35% was constructed in the 1970s, and 43% was constructed in the 1980s. Approximately 18% of the piped storm drain in this zone is expected to have been constructed more recently than 1990. This means over 80% of the pipe is expected to be at least 30 years old. The following graph shows the relationship between the MOA-owned pipe length in miles and the decade it was developed.

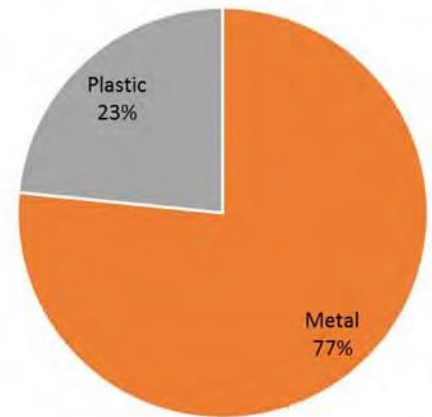
Zone 5a Approximate MOA Storm Pipe Age



Of the nearly 82 miles of piped storm drain, 77% (64 miles) are expected to be metal pipe. The remaining 23% is expected to be plastic.

Street Maintenance has reported 42 known drainage issues in Zone 5a. The issues range from pipe failure to areas of known flooding/icing. Pictures of a few of the known issues are provided in Image 4 below, and the locations of known issues are depicted on Figure 7 in Attachment 1.

Based on the available infrastructure information, it is estimated that at least 77% of the piped storm drain in this zone (64 miles) has failed or is near failing.



Zone 5a Pipe Material Type

Image 4: Zone 5a Problem Area Examples



Above: Sinkhole from pipe failure on Prosperity Drive. Right: Sinkhole from pipe failure at Sharon Street.



4.5.2. Zone 5b

Zone 5b is almost entirely park land and contains very little infrastructure, and a condition assessment for this region was not completed.

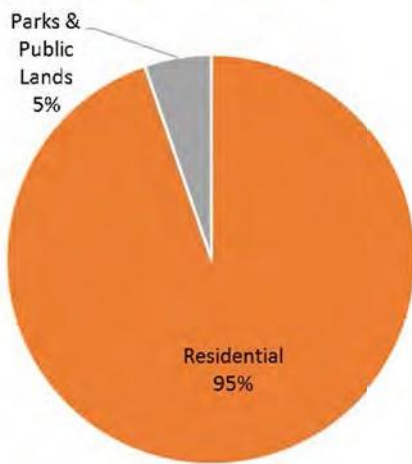
4.5.3. Zone 5c

Zone 5c includes a small portion of Assembly District 5 east of Far North Bicentennial Park, generally known as the Stuckagain Heights area. (See Figure 8 in Attachment 1.) Zone 5c is located entirely outside of ARDSA and is within the Section 6/Campbell Airstrip LRSA. Zone 5c is approximately 1.2 square miles. The area is mostly residential use (95%) with approximately 5% public lands.

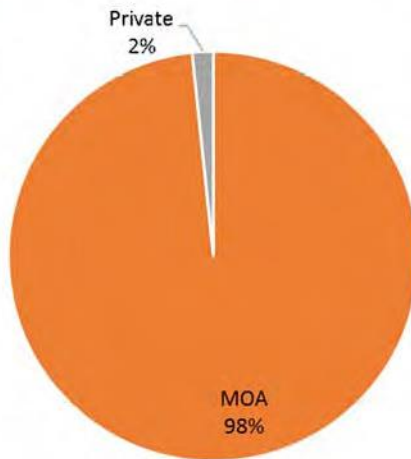


Two percent of this area is mapped as wetlands, and historic wetland mapping shows no wetlands in this zone in the 1950s. There are approximately 2.1 miles of stream in this zone.

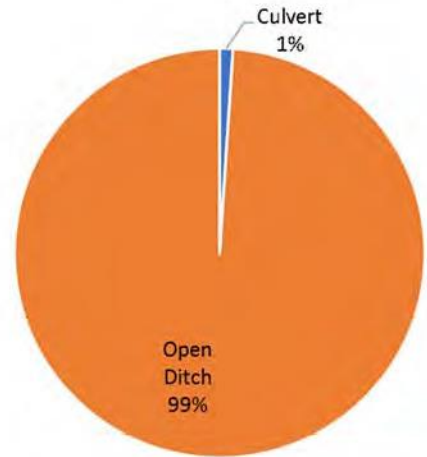
There are approximately 8.8 miles of drainageways (generally not including streams) in Zone 5c, 99% of which is open channels. The MOA owns 98% of the drainageways in this zone, and 2% is privately owned.



Zone 5c Land Use by Zoning



Zone 5c Drainageway Ownership



Zone 5c Drainageway Type

The MOA Fixed Asset Database does not have information for this zone. Approximately, 500 feet of pipe are located within this zone, half of which is estimated to metal and half of which may be plastic.

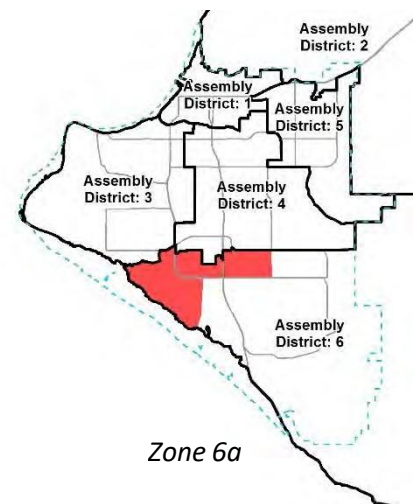
Drainage facilities in Zone 5c are generally maintained by the Section 6/Campbell Airstrip LRSA. There are no records of area-wide drainage issues. Identification of the locations of known issues in this zone requires a more comprehensive data collection process that what was included in this project scope.

4.6. Assembly District 6

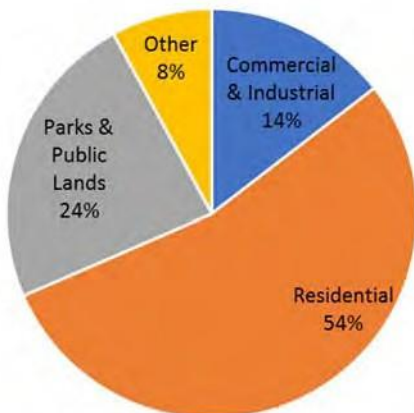
Assembly District 6 encompasses the southern portions of the MOA, including the Anchorage Hillside. Although the district extends south to Girdwood, only approximately 38 square miles of the district are included in the proposed SWU service area. The area inside the SWU boundary generally extends from Abbott Road to the Potter Valley area and was separated into 4 zones for the condition assessment.

4.6.1. Zone 6a

Zone 6a is the northeastern portion of District 6, and includes the Klatt, Southport, and Bayshore areas. (See Figure 9 in Attachment 1.) All of Zone 6a is located within the ARDSA. Zone 6a is approximately 7.2 square miles and is 54% residential, 14% commercial and industrial, and 24% public lands. The remaining 8% is transition zoning and planned communities.



Zone 6a

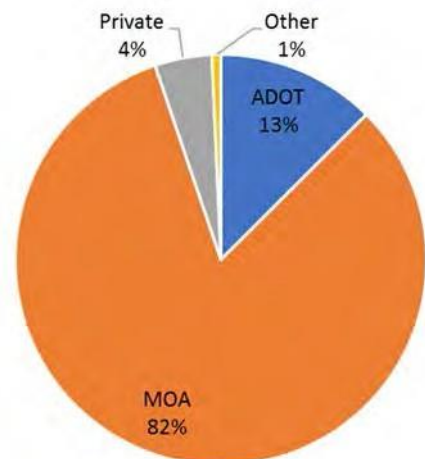


Zone 6a Land Use by Zoning

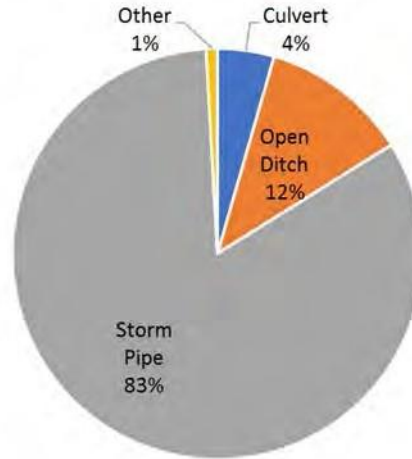
Zone 6a was primarily developed in the 1970s and 1980s, with newer developments continuing into recent years.

Current mapping shows that 42% of this zone is wetlands, and historic wetland mapping shows that 40 percent of this zone was wetland in the 1950s. There are 6 miles of mapped streams located in this zone.

There are approximately 60 miles of drainageways (generally not including streams) in Zone 6a, 87% of which is piped storm drain and culverts. The MOA owns 82% of the drainageways in this zone. DOT&PF owns 13%. Four percent is privately owned the remaining 1% is either cataloged as abandoned or ownership is unknown.



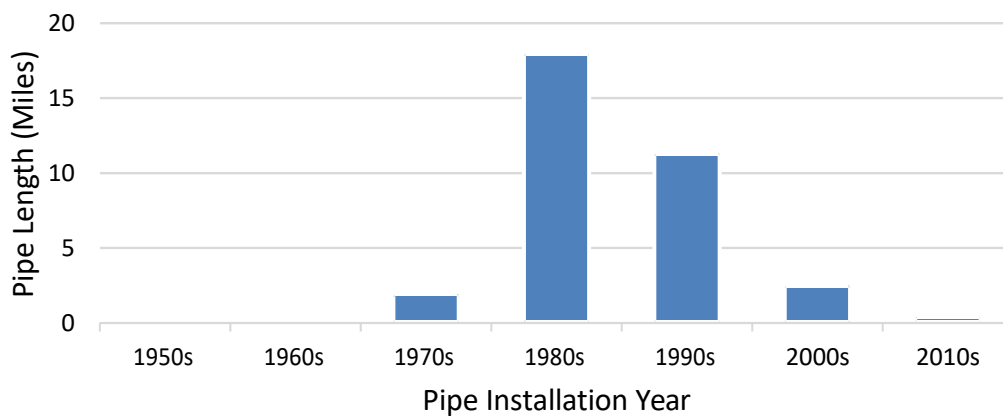
Zone 6a Drainageway Ownership



Zone 6a Drainageway Type

Based on the MOA Fixed Asset Database, 59% of the piped storm drain in this zone is estimated to have been constructed in the 1970s and 1980s. Thirty-three percent is estimated to have been constructed in the 1990s, and 8% more recently than 2000. The following graph shows the relationship between the MOA-owned pipe length in miles and the decade it was developed.

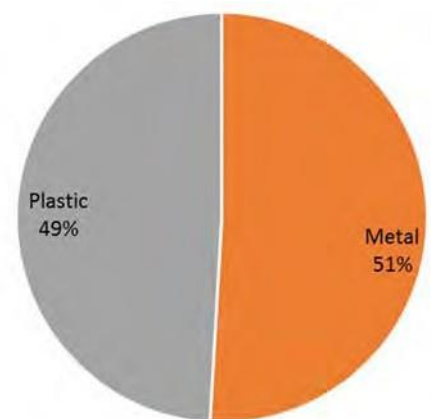
Zone 6a Approximate MOA Storm Pipe Age



Of the 52 miles of piped storm drain in this zone, 51 percent (26 miles) are expected to be metal pipe. The remaining 49 percent is expected to be plastic pipe.

Street Maintenance has reported 10 known drainage- issues in Zone 6a. The issues include pipe and structure failures as well as flooding and icing issues. Pictures of a known issue is provided in Image 5 below, and the locations of known issues are depicted on Figure 9 in Attachment 1.

Based on the available infrastructure information, it is estimated that at least 51% of the piped storm drain in this zone has failed or is near failing.



Zone 6a Pipe Material Type

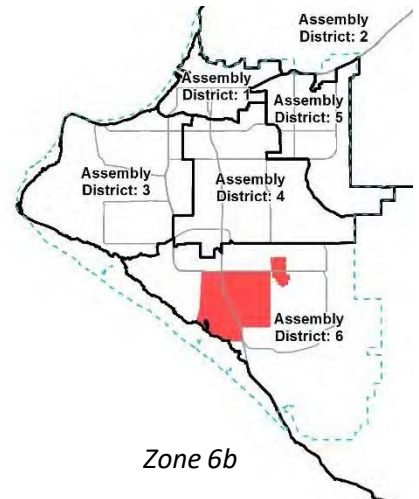
Image 5: Zone 6a Problem Area Example



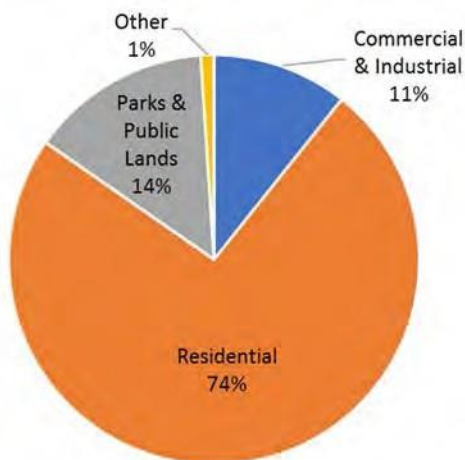
Sinkhole due to pipe failure in a residential back yard off of Canton Loop

4.6.2. Zone 6b

Zone 6b is the north-central portion of District 6, and generally extends from O’Malley Road to DeArmoun Road and from John’s Road to Elmore Road. (See Figure 10 in Attachment 1.) All of Zone 6b is located within the ARDSA. Zone 6b is approximately 6.1 square miles and is 74% residential, 11% commercial and industrial, and 14% public lands. The remaining 1% is transition zoning and planned communities. The eastern portion of Zone 6b is considered the Anchorage Hillside and is generally characterized by large-lot development with rural roadways that are frequently narrow, unpaved, and do not have street lights.



Zone 6b



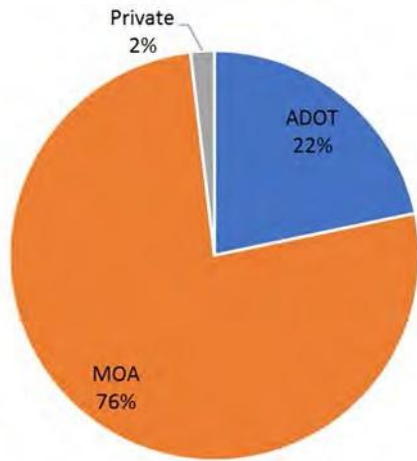
Zone 6b Land Use by Zoning

Zone 6b was originally developed primarily in the 1970s.

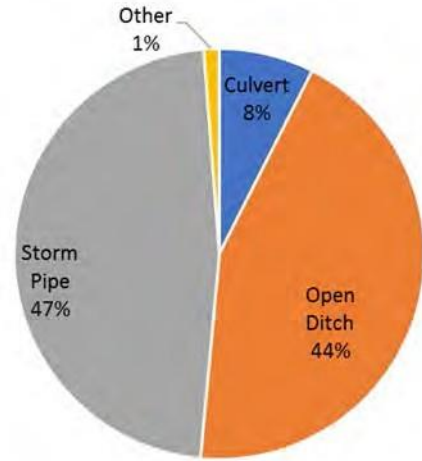
Twelve percent of this zone is currently mapped as wetlands, and historic wetland mapping shows that 6% of this zone was wetland in the 1950s. There are 3.9 miles of streams located in this zone.

There are approximately 76 miles of drainageways (generally not including streams) in Zone 6b. Unlike other areas of Anchorage, the drainageways in Zone 6b are only 55% piped storm drain. Open channels make up 44% of the drainageways.

The MOA owns 76% of the drainageways in this zone. DOT&PF owns 22%, and 2% is privately owned.



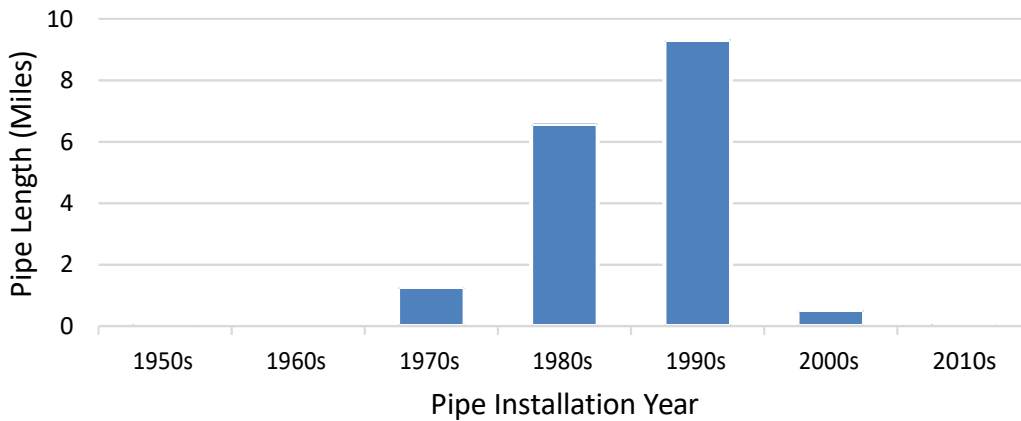
Zone 6b Drainageway Ownership



Zone 6b Drainageway Type

Based on the MOA Fixed Asset Database, 7% of the piped storm drain in this zone is estimated to have been constructed in the 1970s, and 38% is estimated to have been constructed in the 1980s. Fifty-two percent is estimated to have been constructed after 1990, and 3% more recently than 2000. The following graph shows the relationship between the MOA-owned pipe length in miles and the decade it was developed.

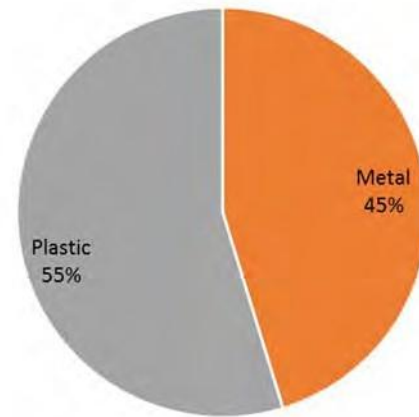
Zone 6b Approximate MOA Storm Pipe Age



Of the 42 miles of piped storm drain in this zone, 45 percent (19 miles) are expected to be metal pipe. The remaining 55 percent is expected to be plastic pipe.

Street Maintenance has reported 3 known drainage-related infrastructure issues in Zone 6a include one pipe/structure failure, one flooding issues, and one icing issue. A photo of one known issue is provided in Image 6 below, and the locations of known issues are depicted on Figure 10 in Attachment 1. *(Note: the number of known issues in this zone is expected to increase pending additional information that is currently being processed, as discussed in Section 2.)*

It is estimated that at least 45% of the piped storm drain in this zone has failed or is near failing. However, nearly half of the mapped drainageways in this zone are open channels, and not pipe. The condition of the open channels is difficult to estimate based on a desktop study, but additional condition information may be available pending more known locations of drainage issues that is currently being processed.



Zone 6b Pipe Material Type

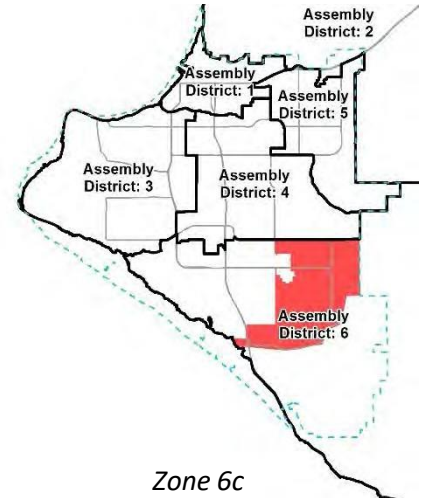
Image 6: Zone 6b Problem Area Example



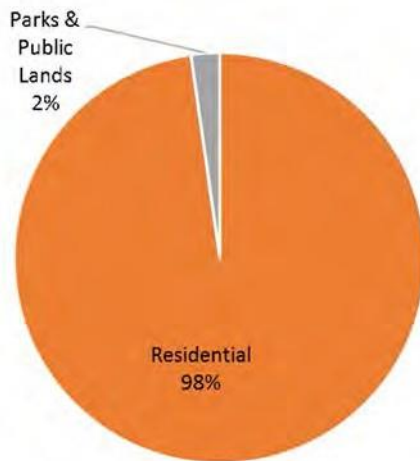
Sinkhole due to failure on
Devonshire Circle

4.6.3. Zone 6c

Zone 6c is the northeastern portion of Zone 6, and generally extends from Abbott Road to Rabbit Creek Road and from Elmore Road to Chugach State Park. (See Figure 11 in Attachment 1.) Zone 6c is located entirely outside of ARDSA, and encompasses 16 separate road service areas. (The Glen Alps Service Area is split with Zone 6d). Zone 6c is approximately 10 square miles, 98% of which is residential and 2% of which is public lands. This area is considered the Anchorage Hillside and is generally characterized by large-lot development with rural roadways that are frequently narrow, unpaved, and do not have street lights.



Zone 6c was originally developed primarily in the 1970s.

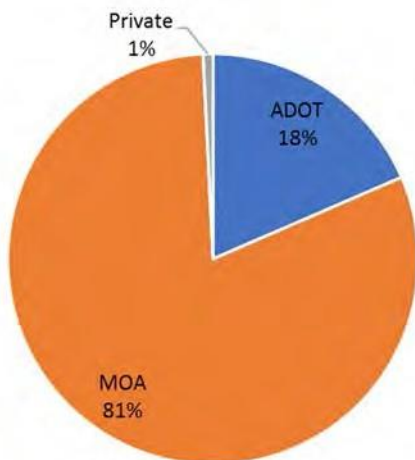


Zone 6c Land Use by Zoning

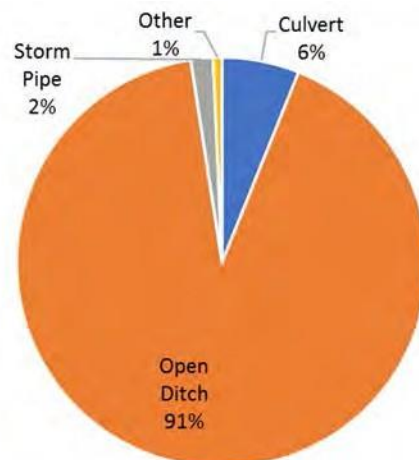
Four percent of this zone is currently mapped as wetlands, and historic wetland mapping shows that 2 percent of this zone was wetland in the 1950s. There are over 20 miles of streams located in this zone.

There are approximately 156 miles of mapped drainageways (not including streams) in Zone 6c. Ninety-one percent of the drainageways are open channels. MOA WMS estimates that the actual length of open channels in this zone may exceed what is mapped, though this is difficult to quantify without a detailed drainageway mapping effort.

The MOA owns 81% of the drainageways in this zone. DOT&PF owns 18%. One percent is privately owned, and the remaining 1% is either abandoned or drainageway ownership is not known.



Zone 6c Drainageway Ownership



Zone 6c Drainageway Type

the

Based
MOA

on
Fixed

Asset Database, the small amount of piped storm drain in this zone is estimated to be almost entirely metal pipe that was constructed in the 1980s.

Drainage facilities in Zone 6c are generally maintained by one of the 16 LRSA/RRSAs in this zone or by private entities, which is discussed further in Section 5.2.4. As a result of the many different management entities, there are no formal records of the frequency or location of drainage issues. Thorough condition assessment of the drainage facilities in this area requires visual inspection, which was outside of the scope of this project. Instead, condition information was based on limited site observations and completed interviews with stakeholders. One interview was with a representative of the Upper O'Malley LRSA to discuss existing drainage issues in that area. Generally, issues identified in this LRSA include poor ditching, lack of driveway culverts or poorly functioning driveways culvert, and freezing and icing issues with frequent steam thawing required. Perhaps the most significant issue reported by the Upper O'Malley LRSA are problems associated with poor management across the many jurisdictional boundaries that exist in this zone. Because drainage facility design and maintenance are not coordinated across the different LRSAs and the DOT&PF, problems frequently arise when stormwater and stream drainage is directed to a neighboring entity that is not equipped to handle it. This is discussed further in Section 5.1.

Across Zone 6c, condition and function of drainage facilities varies significantly by location, as the facilities are maintained by many different entities. In some locations, drainage facilities (such as culverts) are fairly new and ditches have been cleaned and graded to provide efficient drainage. In other areas, (generally outside of the Upper O'Malley LRSA) driveway culverts are blocked with sediment and debris, ditching is too shallow to contain stormwater flows or does not exist at all, and misdirected water can impact roadway stability and private property.

MOA Street Maintenance routinely responds to at least two drainage-related issues in this zone, despite the fact that the zone is outside of ARDSA. One location is near the intersection of 140th Avenue and Buffalo, where Rabbit Creek crosses 140th Avenue. Street Maintenance responds to flooding emergencies in this location due to culvert freezing or blockage. The local LRSA is not equipped to respond. Another location is at Porcupine Trail Road, where Rabbit Creek crosses the road. In this location, the creek has caused significant erosion and flooding issues. This area is located outside of a municipal road service area. Photos of these problem areas are shown in Image 7.

Image 7: Zone 6c Problem Area Examples

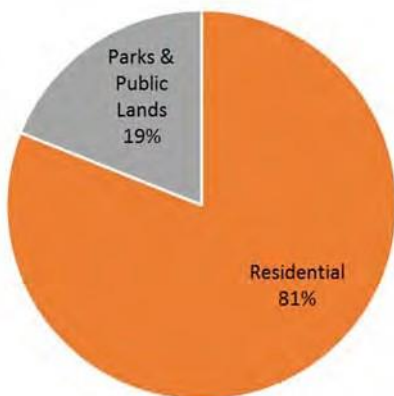
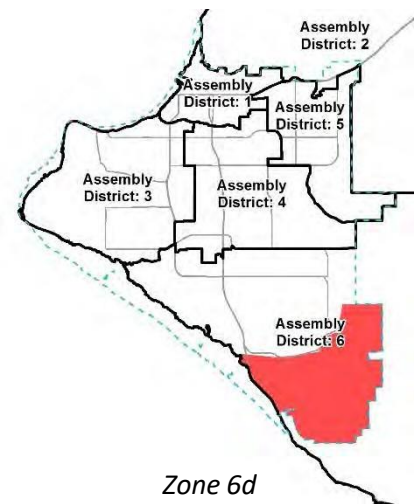


Above: Roadway erosion due to a culvert washout at Porcupine Trail Road.
 Below: Flooding and damage due to culvert blockage at 140th and Buffalo Street



4.6.4. Zone 6d

Zone 6d is the southern portion of Zone 6, and generally extends from Rabbit Creek Road to the Pottery Valley area. (See Figure 12 in Attachment 1.) Only a small section of Zone 6d is located inside of ARDSA. This area includes Golden View Drive and the Pottery Valley area, including all of Potter Valley Road. This zone also encompasses 7 LRSA/RRSAs. (The Glen Alps Service Area is split with Zone 6c.) Zone 6d is approximately 15 square miles, 81% of which is residential and 19% of which is public lands. Similar to Zone 6c, this area is considered the Anchorage Hillside and is generally characterized by large-lot development with rural roadways that are frequently narrow, unpaved, and do not have street lights.



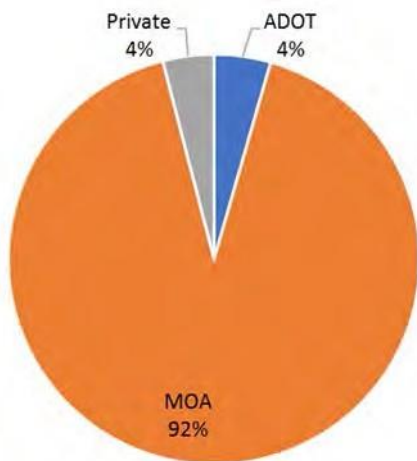
Zone 6d Land Use by Zoning

Most of the original development in Zone 6c occurred in the 1980s, 1990s, and 2000s. Fourteen percent of this zone is currently mapped as wetlands,

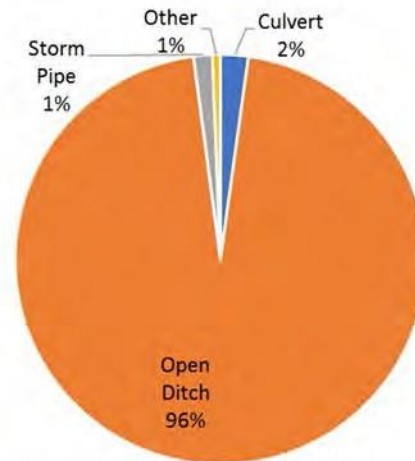
and historic wetland mapping shows that 4 percent of this zone was wetland in the 1950s. There are nearly 50 miles of streams located in this zone.

There are approximately 93 miles of mapped drainageways (not including streams) in Zone 6d. Ninety-six percent of the drainageways are open channels. MOA Watershed Management Services estimates that the actual length of open channels in this zone may exceed what is mapped, though this is difficult to quantify without a detailed drainageway mapping effort.

The MOA owns 92% of the drainageways in this zone. DOT&PF owns 4%, and 4% is privately owned.



Zone 6d Drainageway Ownership



Zone 6d Drainageway Type

Based on the MOA Fixed Asset Database, the small amount of piped storm drain in this zone is estimated to be plastic pipe that was constructed after the year 2000.

Drainage facilities in Zone 6d are generally maintained by Street Maintenance (inside the ARDSA areas), LRSA/RRSAs, or by private entities similar to Zone 6c. As a result of the many different management entities, there are no formal records of the frequency or location of drainage issues. Identification of the locations of issues in this zone requires a more comprehensive data collection process than what was included in this project scope. However, general issues and associated condition information were based on discussions with stakeholders and general knowledge of the area.

Street Maintenance has reported notable drainage issues along the small portion of this zone that is inside ARDSA. The ditches along Golden View drive are generally undersized and not adequate to contain current amounts of runoff from the road surface and from adjacent developments. Additionally, fast moving water along the relatively steep grades cause erosion problems if the velocities are not controlled. Street Maintenance has installed check dams along the ditches to help with this issue. The problems on Golden View worsens as new developments are added upstream. Street Maintenance has cleaned and deepened the existing ditches, but noted that this system needs to be reconstructed and capacity added. Similarly, on Potter Valley Road, Street Maintenance noted that they frequently address fast-moving, misdirected water that causes problems as it flows in unintended directions. They have installed several improvements to attempt to keep water contained in drainageways. Finally, Street Maintenance noted that icing is an ongoing issue in both locations.

A representative of the South Golden View RRSA also discussed existing drainage issues in the RRSA. Generally, issues identified are similar to what Street Maintenance noted and include icing, inadequate ditching, lack of driveway culverts or poorly functioning driveways culvert. These types of issues are generally expected to be common throughout Zone 6d, though the severity and magnitude of the impacts varies significantly based on location and management entity. For example, the Prominence Pointe subdivision in this zone has at least 8 known drainage issues that have resulted in substantial impacts to both roadway safety and private property. These issues are primarily flooding and icing problems due to lack of adequate drainage conveyance and groundwater seepage/flow. The Bridgeview subdivision has similar issues, though the number of problems in that area is not known. Both of these areas are primarily maintained by private HOAs. Conversely, the South Golden View LRSA reports that drainage facilities in many locations of the LRSA are functioning well.

The South Golden View RRSA reports that they are generally able to sufficiently construct and maintain drainage facilities within the service area, except when issues arise as a result of water being directed across jurisdictional boundaries unexpectedly. Although other LRSAs and management entities in Zone 6d were not specifically interviewed for this report, this trend is expected to be prevalent throughout the zone, and is discussed further in Section 5.1.

Image 8: Zone 6d Problem Area Examples



*Above left: Icing across Briarcliff Ridge Circle.
Above right: Icing across Woods Pointe Circle.
Lower left: Roadway erosion from stream flow at Woods Point Circle.
Lower right: Perennial stream flowing in a roadside ditch.*

5. Management and Levels of Service

Roadway and drainage maintenance within the proposed SWU boundary is complex. There are 24 different government-supported entities providing some type of roadway and/or drainage maintenance, along with a large section of the Hillside that is outside of road service areas altogether and rely on private management groups. The different management entities provide varying levels of service. This section provides an overview of the different management entities and a general description of the level of drainage-related service they are providing.

5.1. Current Management Structure

Within the proposed SWU boundary, there are 24 known government-supported entities that are responsible for roadway and drainage maintenance, which are described below.

- DOT&PF – The state maintains a wide variety of drainage facilities throughout the proposed SWU area, including both urban drainage and rural hillside drainage.
- ARDSA – Anchorage’s primary service area covers 45,600 acres within the proposed SWU boundary and encompasses most of the Anchorage bowl.
- Nineteen Municipal LRSAs – Scattered across the hillside, these service areas range in size from 28 to 1,100 acres.

Table 1: LRSAs within the Proposed SWU Boundary

Limited Road Service Area	Area (acres)
Bear Valley	474
Birch Tree/Elmore	724
Homestead	57
Lakehill	120
Mountain Park Estates	63
Paradise Valley South	28
Rabbit Creek View and Rabbit Creek Heights	640
Raven Woods/Bubbling Brook	63
Rockhill	79
Section 6/Campbell Airstrip	759
Sequoia Estates	30
Skyranch Estates	47
SRW Homeowners	80
Talus West	203
Totem	119
Upper Grover	46
Upper O’Malley	1,101
Valli Vue Estates	154
Villages Scenic Parkway	150

- Three Municipal Road Service Areas – Located in Zones 6c and 6d, these management entities differ from LRSAs in that they are authorized to perform capital construction and can manage funding accordingly.

Table 2: RSAs within the Proposed SWU Boundary

Road Service Area	Area (acres)
Glen Alps Road Service Area	1,291
Mountain Park/Robin Hill Rural Road Service Area	428
South Golden View Rural Road Service Area	1,355

In addition, there are approximately 8,200 acres of the Hillside that are within the proposed SWU boundary but are outside of a road service area. This makes up approximately 50% of the Anchorage Hillside within the SWU boundary, though that number is by area and not by population. Populations tend to be denser within the LRSA/RRSA areas. Drainage facilities in areas outside of LRSA/RRSA boundaries are either maintained by private entities such as homeowners’ associations or individuals, or are not maintained at all.

As a result of having so many different management entities, drainage facility planning and management is not holistic. Each entity generally deals with facilities inside its boundary with little to no regard for how decision may impact adjacent areas. This was reported as a problem by LRSA, RRSA, and Street Maintenance representatives that were interviewed for this project. The Upper O’Malley LRSA reported substantial problems caused by stormwater management decisions made by both DOT&PF and by adjacent LRSAs. The South Golden View RRSA noted that drainage issues caused by adjacent or upstream developments are often unexpected and are disruptive to their budget and planning efforts. Representatives from Street Maintenance noted that in several locations, stormwater is directed into the ARDSA area from upstream LRSAs/RRSAs and creates problems for which Street Maintenance is then responsible. Each group agreed that Anchorage needs holistic stormwater management across jurisdictional boundaries.

The current disconnected approach to drainage management is inefficient and costly. When drainage problems are directed downstream for another management entity to correct, it blurs the boundaries of fiscal responsibility for responding to drainage issues.

5.2. Existing Levels of Service

This assessment includes a basic overview of the levels of services provided by various management entities across the MOA.

5.2.1. DOT&PF

The Anchorage-based DOT&PF M&O group is responsible for maintenance of 140 miles of state-owned drainageways across the proposed SWU area. This includes drainage facilities on both major urban corridors like Minnesota Drive and the Seward Highway as well as hillside roads like Upper DeArmoun and Hillside Drive. The level of service that DOT&PF provides throughout the area is generally reactionary. The maintenance group responds to drainage-related emergencies such as pipe failures, blockages, or icing issues, as they arise. M&O representatives estimate that they respond to one to two pipe-failure related emergencies each summer, and multiple icing related emergencies each winter. Scheduled maintenance of drainage facilities includes sweeping curbs and gutters four

times each summer, annually inspecting storm drain structures, and cleaning storm drain structures and pipe, as needed. Maintenance related video inspection of storm pipes is not typically performed, unless it is needed as part of a specific repair effort. DOT&PF is currently completing a video inspection and condition assessment project for storm drains on select National Highway Safety routes in Anchorage. This project is not yet complete, and is the first one of its kind.

Maintenance of drainage facilities is primarily state funded, though the state does utilize federal funding for select activities, such as cleaning structures on National Highway Safety routes. The current funding for maintenance activities is not adequate. Preliminary findings of the above-referenced project indicate that much of the storm pipe on the inspected routes is failing and in need of replacement/repair. DOT&PF representatives expressed that more inspection of the existing system is needed to better understand the condition of the vast network of drainage infrastructure. Representatives also expressed the responding to drainage-related emergencies is detrimental to the limited M&O operating budgets.

Capital planning for storm infrastructure is not separated from capital planning for highway improvements. When highway projects are completed, drainage facilities are typically repaired or upgraded concurrently, as allowed by the scope of the project. Nearly all of the capital funding for highway projects is federal, and as such, federal dollars support nearly all of the capital costs for drainage facility construction or upgrades within DOT&PF rights of way. DOT&PF representatives indicated that this approach should continue, even in the event of an operational SWU. Representatives also suggested that both DOT&PF and the MOA would benefit from integrating drainage planning with other types of coordinated planning efforts, such as the Anchorage Metropolitan Area Transportation Solutions. If drainage infrastructure needs were more documented and coordinated, projects that seek to upgrade or repair drainage facilities could benefit from cooperation with highway projects that do not include drainage, such as a pavement replacement project.

Summaries of interviews with DOT&PF representatives are provided in Attachment 2.

5.2.2. Anchorage Road and Drainage Service Area (PM&E and Street Maintenance)

Street Maintenance provides maintenance of drainage facilities with ARDSA, which encompasses most of the Anchorage Bowl and a portion of the Anchorage hillside in Zone 6d. Inside the proposed SWU boundary, the ARDSA area includes over 70 square miles of land, 525 miles of drainageways, and 75 miles of streams.

Street Maintenance provides routine cleaning and inspection of stormwater infrastructure and sweeping of curbs and gutters. Street Maintenance does have pipe TV-inspection equipment, but it is not currently operational. As a result, visual TV-inspection of pipes is typically not performed, unless it is a requirement of a specific project. Street Maintenance would be completing TV-inspections of pipes to aid with condition assessment if their TV equipment were repaired.

Similar to the level of service provided by DOT&PF, the level of service provided by Street Maintenance is primarily reactionary. The group routinely responds to drainage-related emergencies across Anchorage including failed pipes causing holes in roadways, flooding caused by frozen conveyance systems or streams, failed structures, overflowing ditches, and erosion problems. Street Maintenance repairs the problems as much as possible and works with PM&E to plan capital projects for cases where a maintenance repair is insufficient. Unfortunately, the number of locations that need capital project repairs far exceeds the number of capital projects that are completed each year. As a

result, much of the storm drainage system in ARDSA is deteriorating faster than it is being repaired or replaced. Street Maintenance reports that many problems areas are temporarily repaired by Street Maintenance multiple times. In some locations, “temporary” repairs have been repeated for over 20 years because there has not been available funding for a capital project to fully repair the issue.

It is not currently known how the cost of repeatedly providing temporary repairs compares to the costs of providing a full capital project improvement. But it is noteworthy that temporary repairs are costly, and this cost is expected to be substantial when added up over time.

Capital drainage projects are funded through the annual ARDSA bond funding. The bond amount is generally around \$30 million annually, and it covers much more than drainage projects. The bond funding is used for roadway upgrades, pedestrian facilities, lighting, transit improvements, traffic signals, etc. Of the \$30 million annually, MOA PM&E estimates that \$8 million is used for drainage-related improvements. PM&E also roughly estimates that at least \$1 billion dollars are needed to repair the entire storm drainage system. At only \$8 million per year being applied to the problem and system deterioration worsening each year, the current program is not able to meet the city-wide needs.

PM&E does not maintain a stormwater-specific capital improvement plan. Projects included on the annual bond package are generally selected from a long list of needed/requested projects, and this list is coordinated with many stakeholders including Street Maintenance and community councils. Final project selection requires Assembly approval.

Road projects and drainage improvement projects are routinely coordinated within PM&E to maximize available funding, and this is a practice that PM&E indicated should continue in the event that a SWU is successfully implemented, as it results in significant cost savings.

5.2.3. Limited and Rural Road Service Areas

Within the 22 limited and rural road service areas in the SWU boundary, there are approximately 150 miles of mapped drainageways and 30 miles of mapped streams. The rural nature of the drainage systems on the Hillside present unique challenges. Most of the existing drainageways are open channels, and in many locations, the terrain is steep, causing fairly high velocity flow. When a drainageway become blocked or misdirected, the impacts to adjacent properties or to other infrastructure are often immediate, and repairs of the problem are required in very short time frames. In addition, groundwater commonly flows into drainageways which can cause notable winter icing problems.

The degree to which these challenges are managed and the resulting levels of service provided varies significantly across the road service areas. Several of the road service areas provide high levels of service and respond rapidly to drainage needs. Two examples are the Upper O’Malley LRSA and the South Golden View RRSA. Other road service areas are less active or may have less funding available to respond to drainage-related issues. In these cases, drainage issues are typically either unaddressed or are addressed by private groups or individuals.

Occasionally, Street Maintenance responds to large-scale drainage emergencies in LRSA or RRSA areas, outside of ARDSA. Although this is relatively infrequent, the practice is problematic due to the associated ARDSA resources that are dedicated to areas outside of ARDSA.

The LRSA and RRSA entities are expected to be the most impacted by the lack of holistic drainage management discussed in Section 5.1. The Hillside's steep terrain causes water-related issues to move rapidly from one location to the next, and each relatively small service area has no authority over adjacent area drainage practices, even if the practices are causing adverse impacts. In addition to other LRSA/RRSAs, the road service areas are also impacted by drainage management within DOT&PF rights-of-way and within private maintenance areas. When drainage efforts are not coordinated, the resulting impacts can force LRSA/RRSA management to become reactionary instead of proactive.

Similar to ARDSA, LRSA and RRSA maintenance funding is obtained through property taxes. The mill rates for each LRSA/RRSA varies and the levels of service provided are generally expected to vary accordingly. Each LRSA/RRSA elects a board of representatives who typically manage the entity's funding, determine which types of improvements are needed, and manage the entity's hired maintenance contractor. In the case of RRSAs, the board can also seek funding for capital projects and plan and direct those projects accordingly.

5.2.4. Private Maintenance Areas

There are approximately 13 square miles within the proposed SWU boundary that is outside of a municipal road service area. These areas contain over 100 miles of mapped drainageways and nearly 50 miles of streams. Drainage facilities in these areas are either maintained by private entities or they are not maintained. The number of private management entities within these areas is not known. Additionally, there are also a number of private management entities within LRSA/RRSA areas, such as homeowners' associations. The responsibilities and levels of service provided by private management entities varies significantly based on location, type of organization, and amount of funding that the organization collects. For example, the Prominence Pointe homeowner's association is located in the South Golden View RRSA, and provides regular drainage maintenance and coordinates necessary upgrades for stormwater conveyance facilities (primarily ditches and culverts) associated with private roadways owned by the homeowners' association. Many other communities on the Hillside do not have formal homeowners' associations. For example, the Prator subdivision is not located within a LRSA or RRSA and does not have a formal homeowners' association. Instead, residents of that subdivision contribute annually to a minimalistic maintenance effort that is generally limited to snow plowing and basic surface repair of the unpaved roadways. Residents take turns volunteering to manage the road fund and coordinating with a contractor to complete the necessary work. This approach can present problems in cases where residents elect to not contribute to the maintenance fund. Since contribution is essentially voluntary, lack of contribution results in higher costs for other area residents. Roadway and drainage maintenance outside the road fund work is typically completed by impacted individuals.

5.3. Municipal Separate Storm Sewer System Permit

The MOA and DOT&PF are co-permittees on a stormwater discharge permit issued by the Alaska Department of Environmental Conservation, and overseen by the US Environmental Protection Agency. This permit is called the Municipal Separate Storm Sewer System (MS4) permit, and it authorizes the permittees to discharge water into the creeks of Anchorage and ultimately into Cook Inlet. The permit outlines a host of activities that the permittees must complete to maintain authorization to discharge. The activities are centered around maintaining adequate water quality of stormwater and include things like street sweeping, stormwater treatment for new and re-development, water quality monitoring, Green Infrastructure demonstration projects, plan reviews, site inspections, and public education and outreach.

The MS4 permit is managed by MOA WMS. The permit coverage area includes the entire MOA, beyond the proposed SWU boundaries. Funding for compliance with MS4 activities comes from a combination of MOA funding and a contribution from DOT&PF, and compliance activities are primarily completed by WMS and Street Maintenance.

6. Summary

This limited condition assessment analyzed available data to approximate the condition of stormwater conveyance facilities within the proposed SWU boundary. Anchorage was discretized into Assembly District and then into smaller zones for completion of this assessment. A summary of the results is provided in Table 3 below.

Table 3: Zone Infrastructure Summary

Zone	Primary Installation Decade	Primary Conveyance Infrastructure Type	Estimated % of Pipe Failing or Near Failure	Estimated Miles of Pipe Failing or Near Failure
1a	Pre 1970	Metal Pipe	85	68
1b	Pre 1970	Metal Pipe	Nearly all	6.5
2	Post 1980	Metal Pipe	Nearly all	3.8
3a/b	1980s	Metal Pipe	72	79
3c/d*	-	-	-	-
4a	1980s	Metal Pipe	72	110
4b*	-	-	-	-
5a	1970s & 1980s	Metal Pipe	77	64
5b*	-	-	-	-
5c	1980s & 2000s	Open Channel	**	**
6a	1980s & 1990s	Metal/Plastic Pipe	51	26
6b	1980s & 1990s	Metal/Plastic Pipe & Open Channel	45	19
6c	1970s	Open Channel	**	**
6d	1980s to 2000s	Open Channel	**	**

* Zones not analyzed due to special land use and/or limited amounts of drainage infrastructure (e.g. park land).

** See specific sections for a general discussion of open channels.

Within the SWU boundary, there are 24 government-supported road and drainage management entities as well as an unknown number of private entities that are providing roadway and drainage maintenance in locations outside of other service areas. A summary of these entities and a brief description of the associated level of service is provided in Table 4.

Table 4: Levels of Service Summary

Management Entity	Description	Level of Service Overview
DOT&PF	Manages drainage facilities in state-owned rights of way throughout the proposed SWU boundary.	<ul style="list-style-type: none"> – Maintenance is generally reactionary. M&O responds to issues as they arise. – Visual inspection of conveyance systems is generally not completed. – Maintenance budgets are not adequate for needed work. – Capital planning and construction is limited to what corresponds to highway improvements. – See Section 5.2.1 for details
MOA PM&E and Street Maintenance	Manage drainage facilities in MOA-owned rights of way and easements throughout ARDSA	<ul style="list-style-type: none"> – Maintenance is generally reactionary. Street Maintenance responds to issues as they arise. – Visual inspection of conveyance systems is not generally completed. – Capital planning and construction is based on a long list of needs. – Approximately \$8 million per year for drainage projects. – System is deteriorating faster than it is being repaired. – See Section 5.2.2 for details
Limited and Rural Road Service Areas	Manage drainage facilities specific service areas that are outside of ARDSA but are within the proposed SWU boundary	<ul style="list-style-type: none"> – Highly impacted by lack of stormwater management across jurisdictional boundaries. – Level of Service is highly variable. – See Section 5.2.3 for more details.
Private Entities	Manage drainage facilities in select locations both inside and outside of LRSA and RRSA areas.	<ul style="list-style-type: none"> – Level of Service is highly variable and limited details are available. – See section 5.2.4 for details.

Attachment A
Figures

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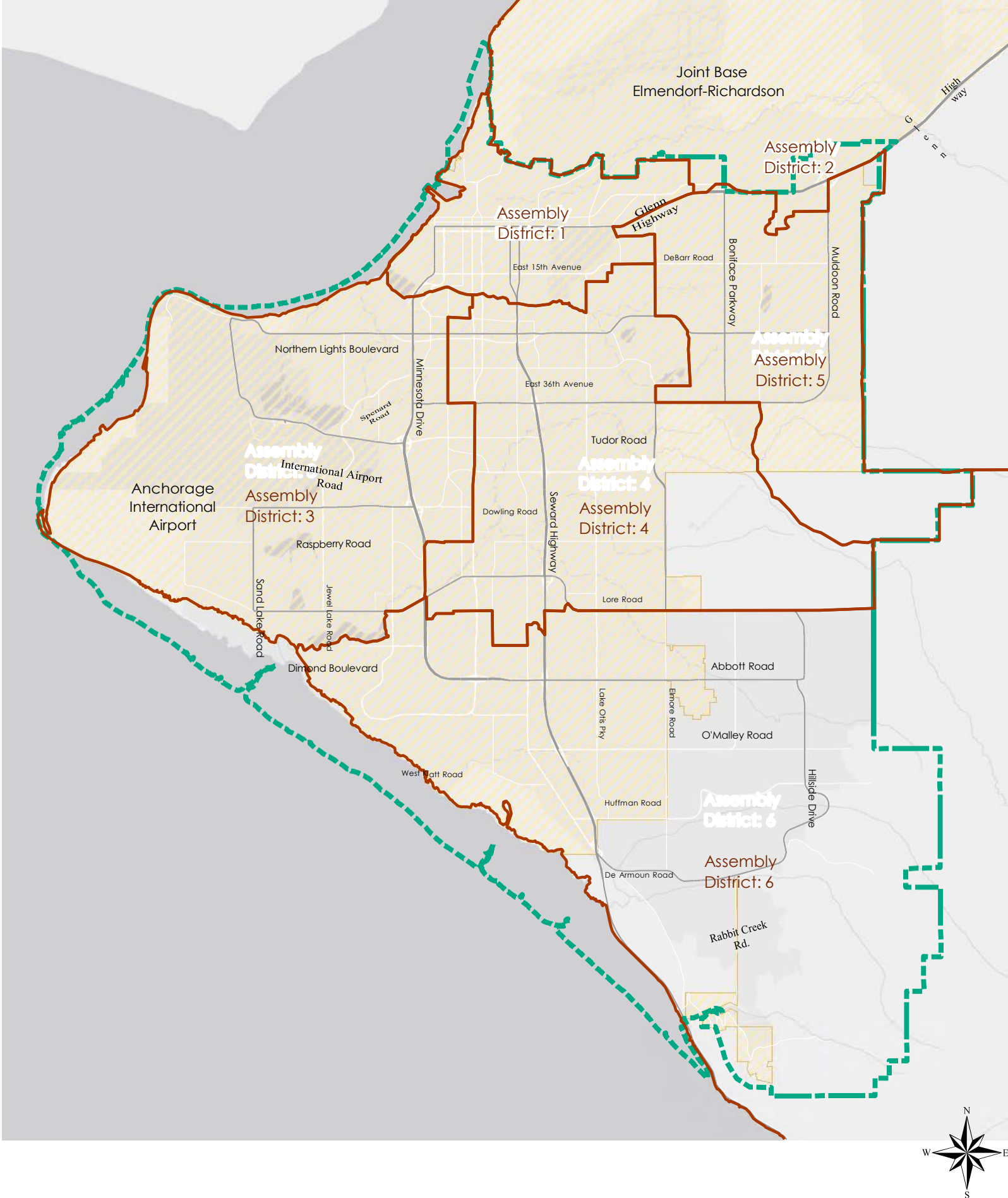


Figure 1: Proposed Stormwater Utility Boundary & Assembly Districts
 MOA Stormwater Implementation Plan

MOA Assembly Districts

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Proposed Stormwater Utility Boundary

ARDSA Boundary

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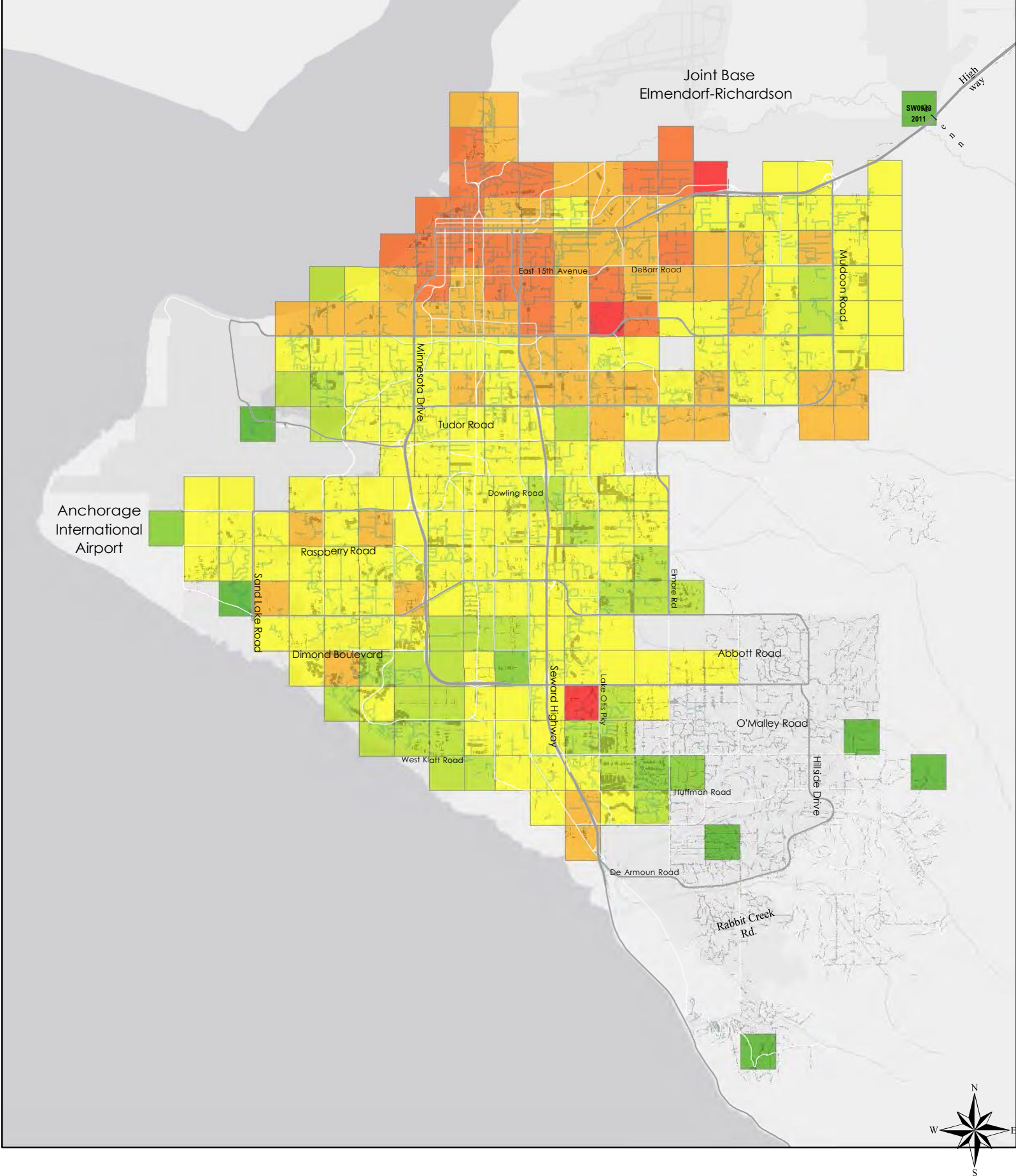


Figure 2: MOA Storm Pipe Age Overview
 MOA Stormwater Implementation Plan

Installation Date 19 55 - 1959

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0 1 2 3
 Miles

1960 - 1969



1970 - 1979



2000 - 2009



1980 - 1989



2010 - 2017



1990 - 1999

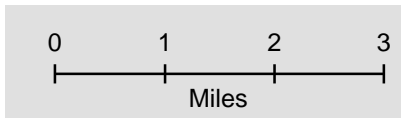
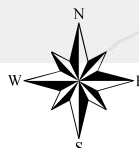
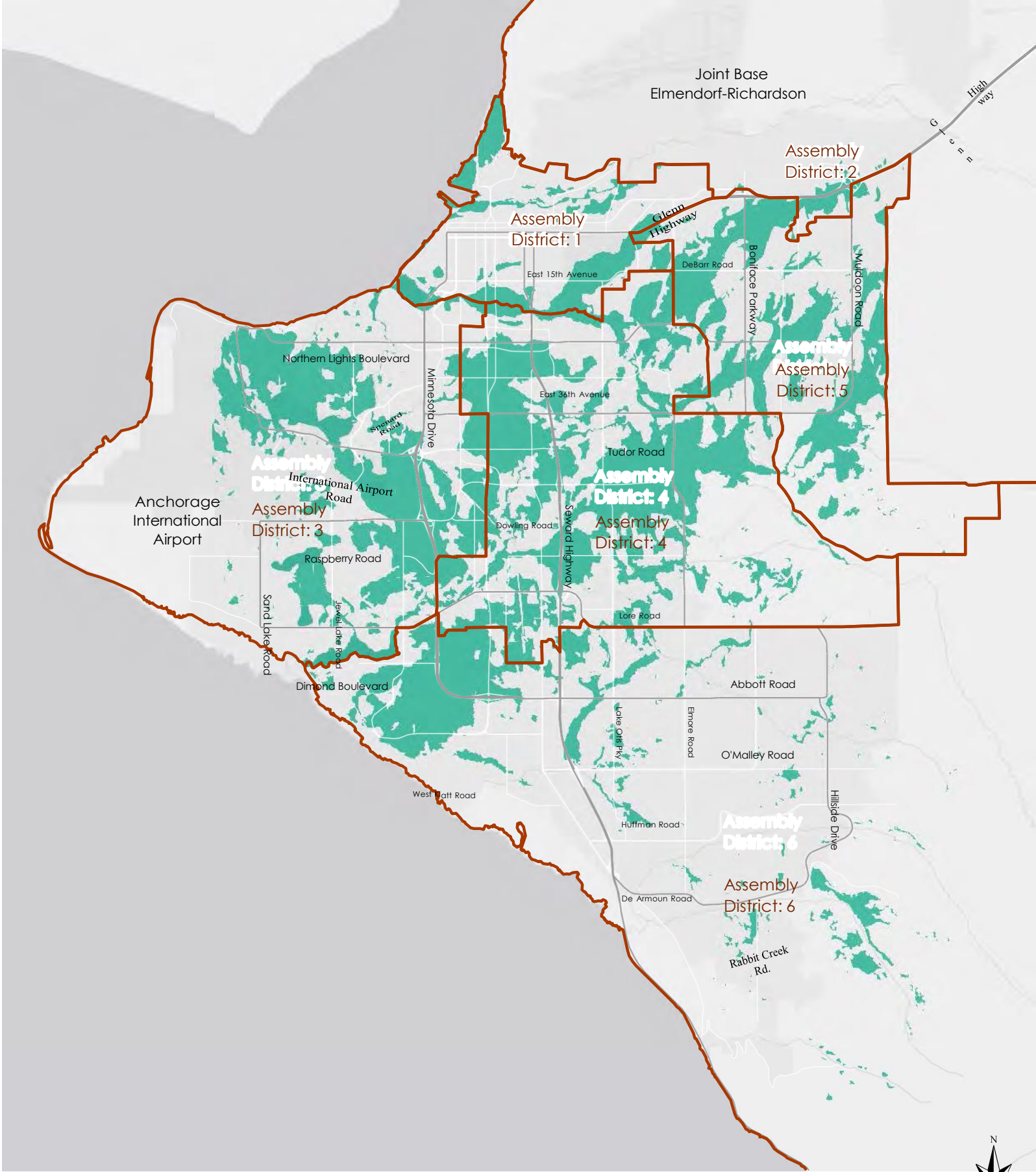


Figure 3: Historical Wetland Locations
MOA Stormwater Implementation Plan

MOA Assembly Districts



MOA Wetlands (1950s)

Red
Road

Tudor Road



Figure 5: Zones 1A & 1B

MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership

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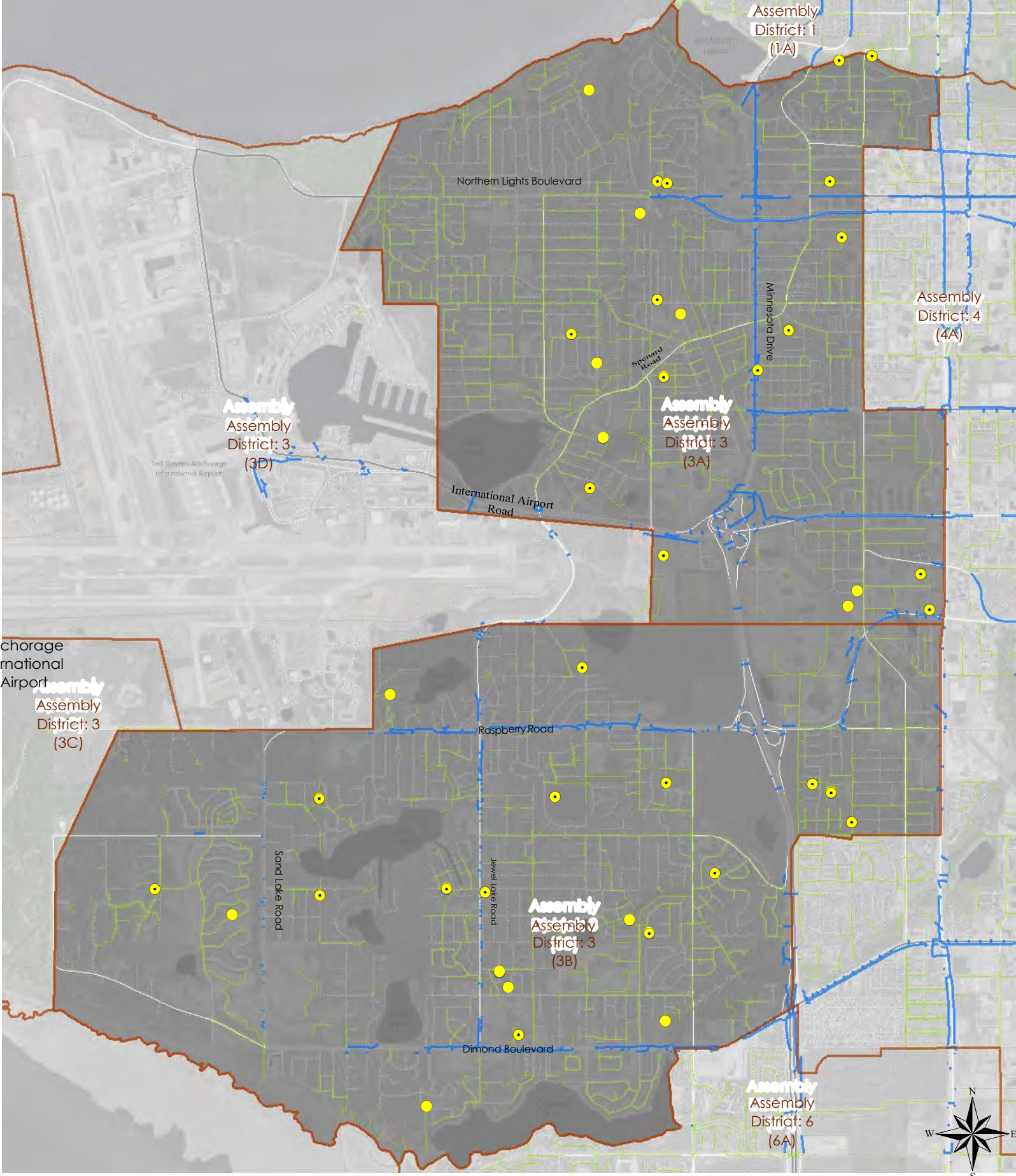
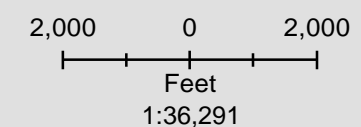


Figure 5: Zones 3A & 3B
 MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership



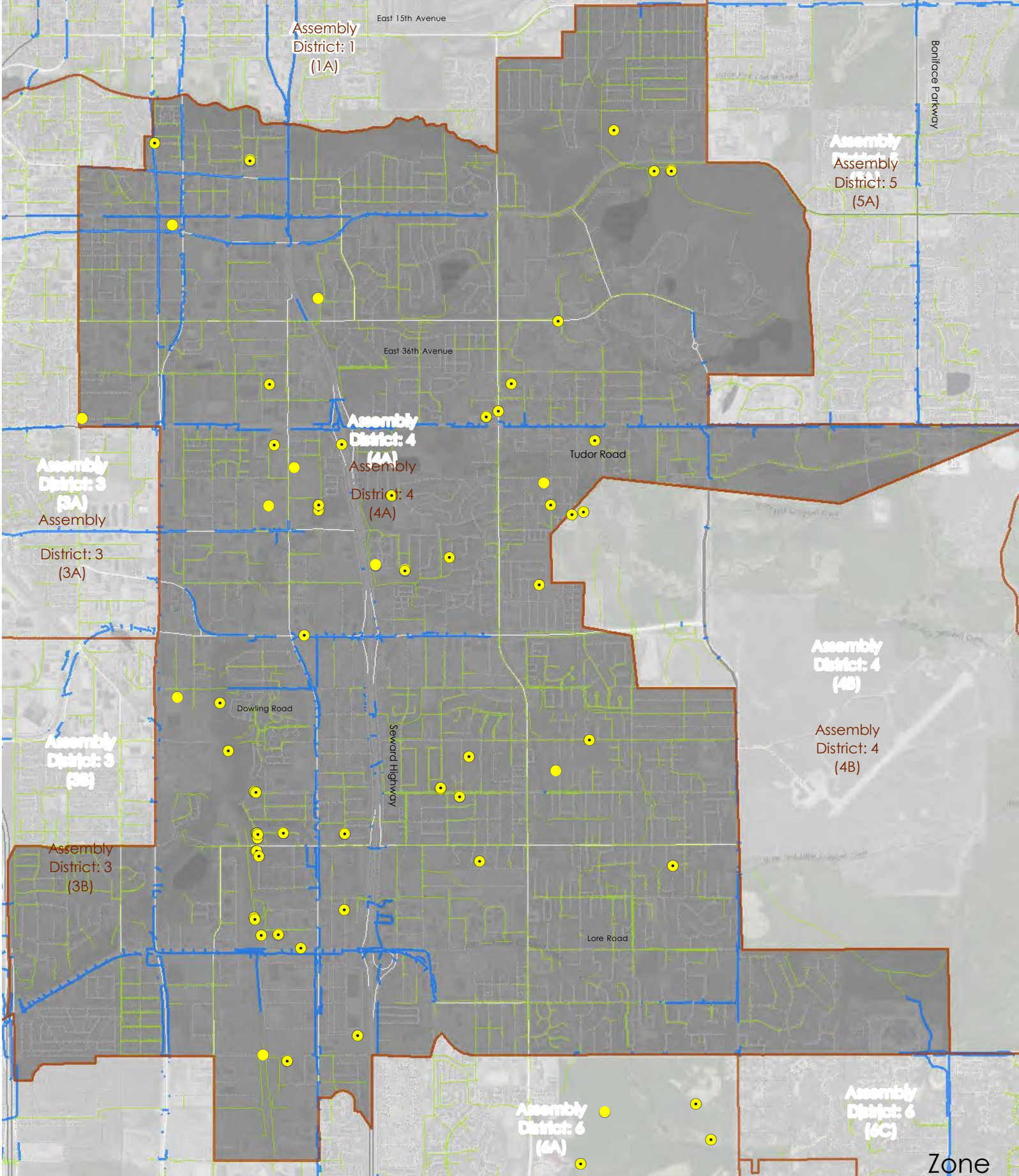
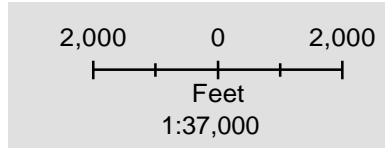


Figure 6: 4A

MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership



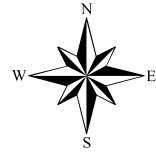
Assembly District: 6 (6A)



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Abbott Road



MOA Stormwater Implementation Plan

-  Known Problem Areas
-  State Drainageway Ownership
-  MOA Drainageway Ownership

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Assembly District: 1 (1A)

Assembly District: 2 (2)

Glenn Highway

DeBarr Road

Boniface Parkway

Assembly District: 5 (5A)

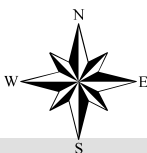
Muldoon Road

Assembly District: 4 (4A)

Tudor Road

Assembly District: 4 (4B)

Assembly District: 5 (5B)

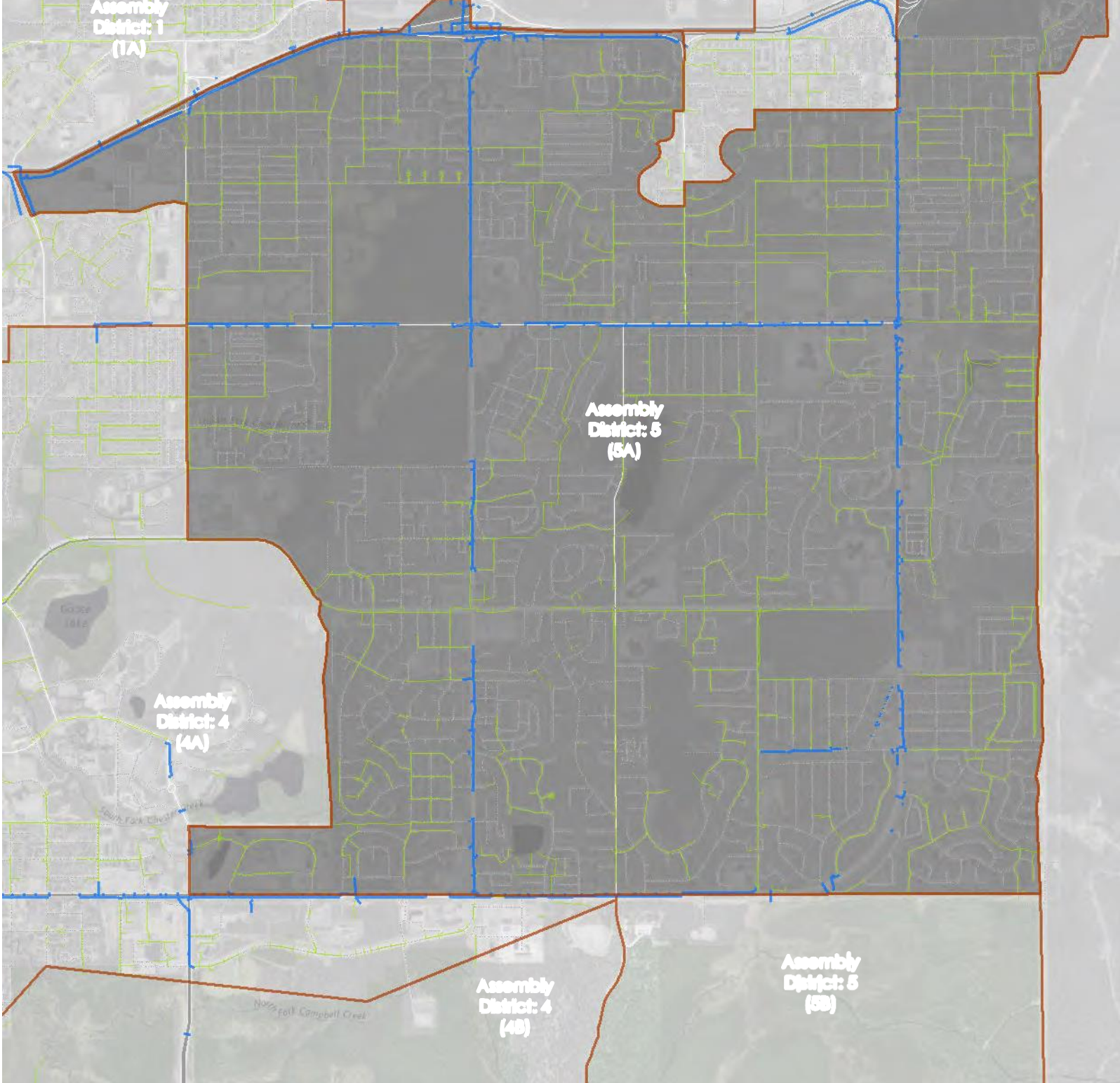


MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership

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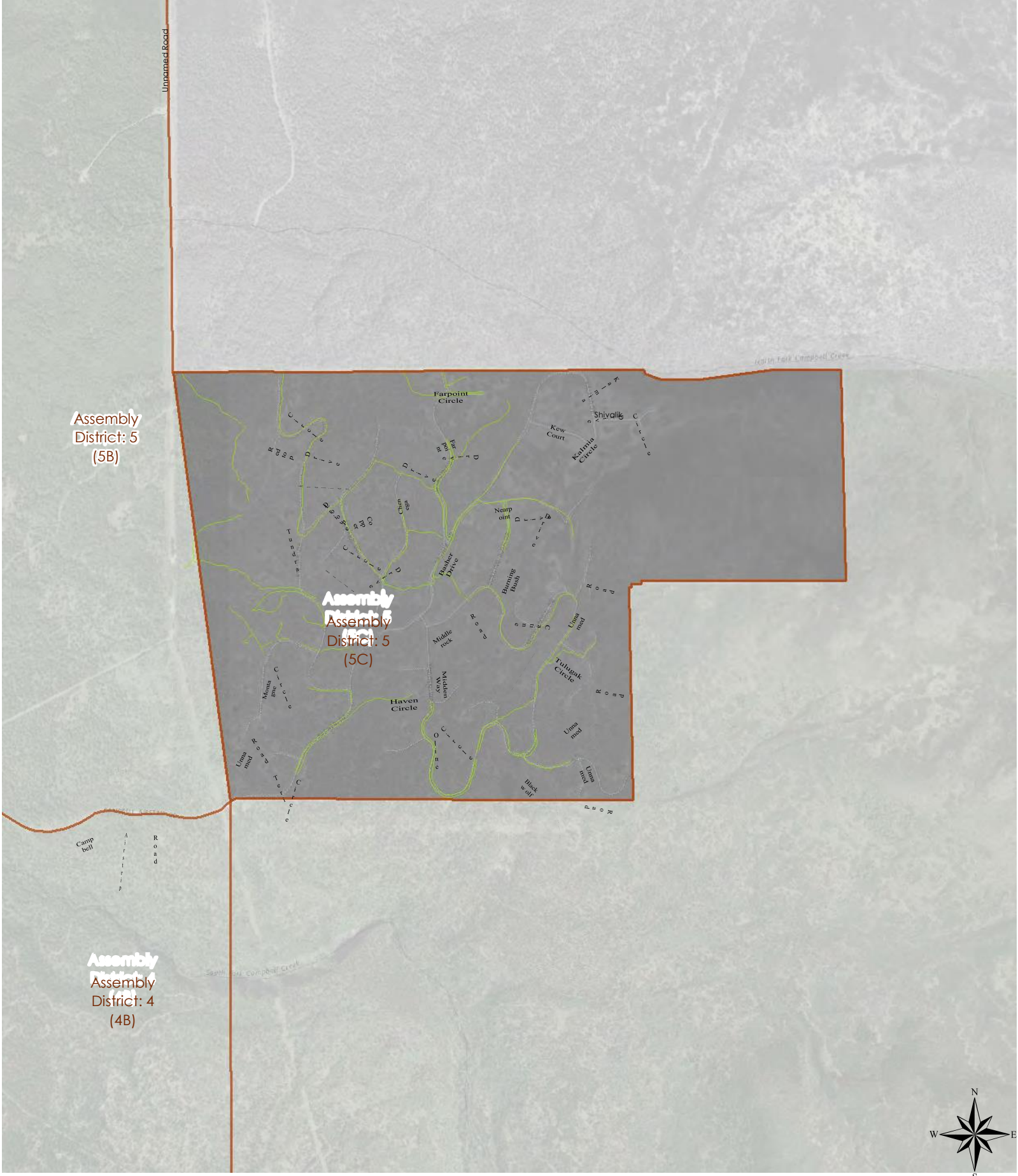
Figure 7: Zones 5A



MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership

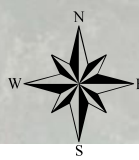
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Assembly District: 5 (5B)

Assembly District: 5 (5C)

Assembly District: 4 (4B)



MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership

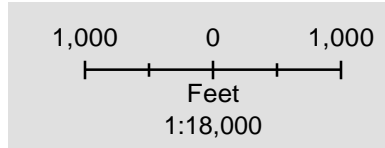
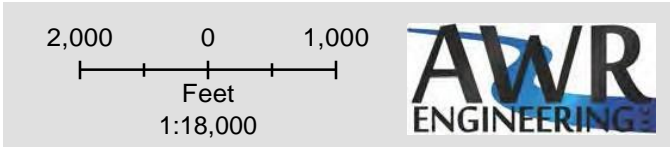


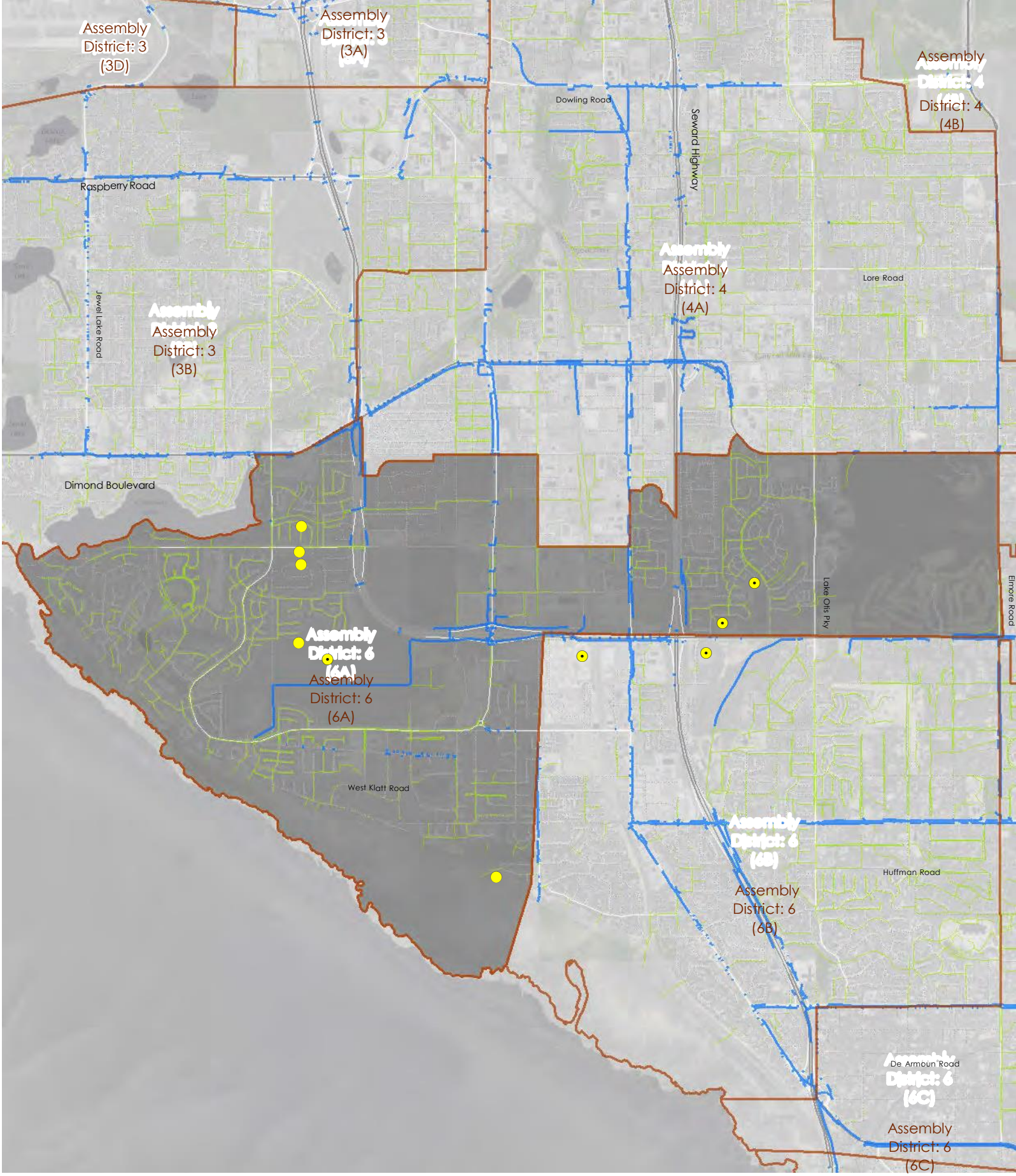
Figure 8: Zone 5C

MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership



A scale bar showing 2,000, 0, and 1,000 feet. Below the bar is the text "Feet" and "1:18,000". To the right is the logo for "AWR ENGINEERING" with a stylized blue and black design.



MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership

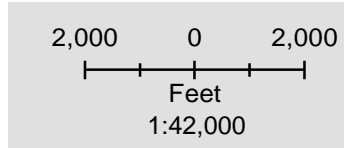
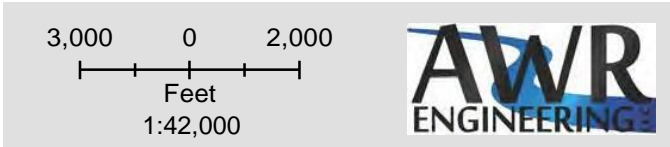


Figure 9: Zone 6A

MOA Stormwater Implementation Plan

- Known Problem Areas
- State Drainageway Ownership
- MOA Drainageway Ownership



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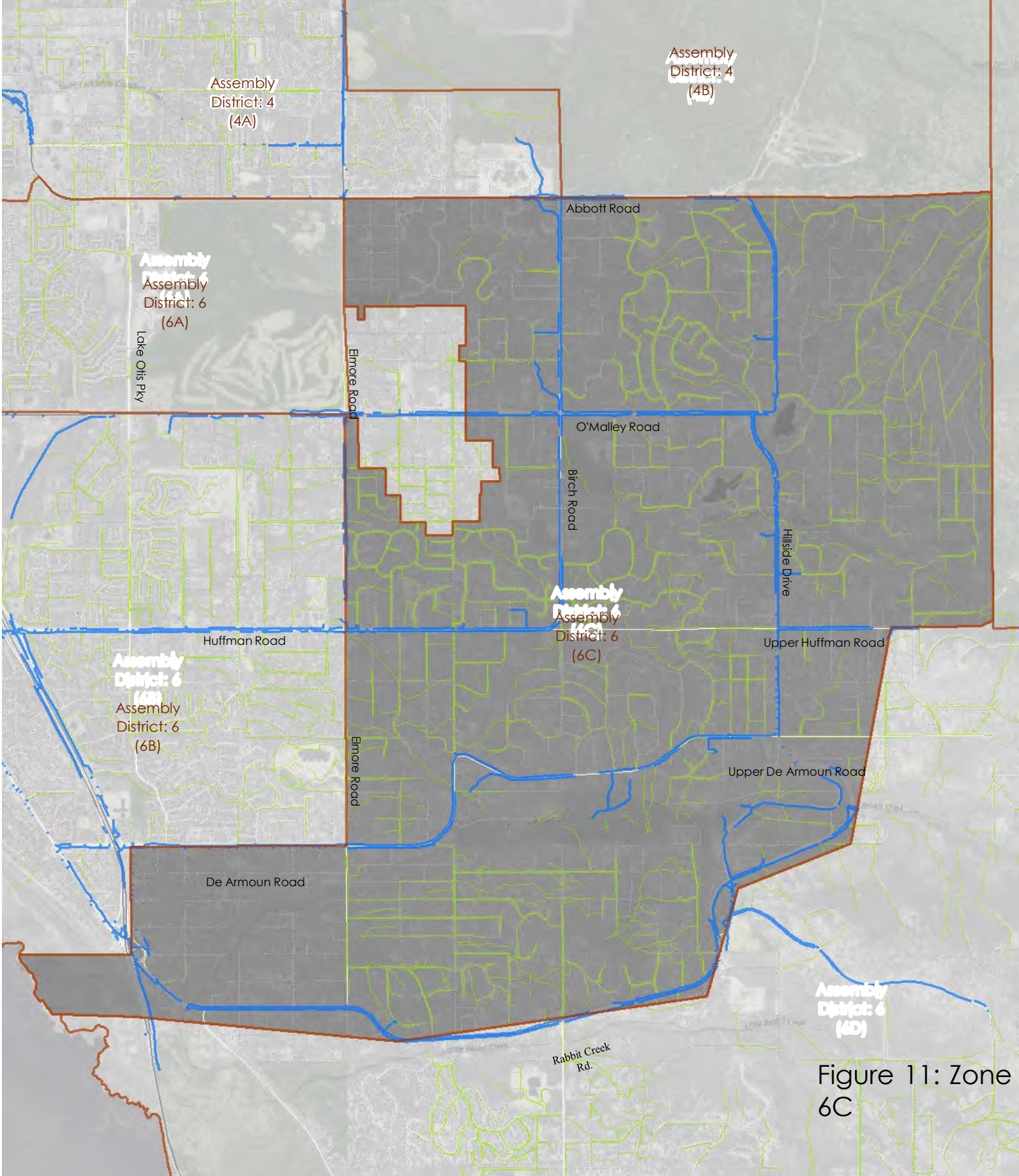


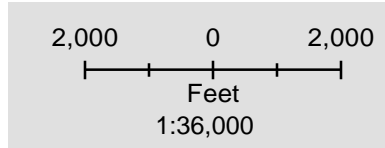


Figure 11: Zone 6C

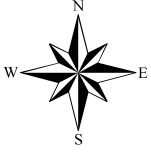
MOA Stormwater Implementation Plan

-  State Drainageway Ownership
-  MOA Drainageway Ownership

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Assembly
District: 6
(6D)

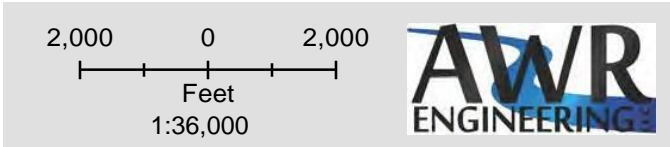


MOA Stormwater Implementation Plan


 State Drainageway Ownership

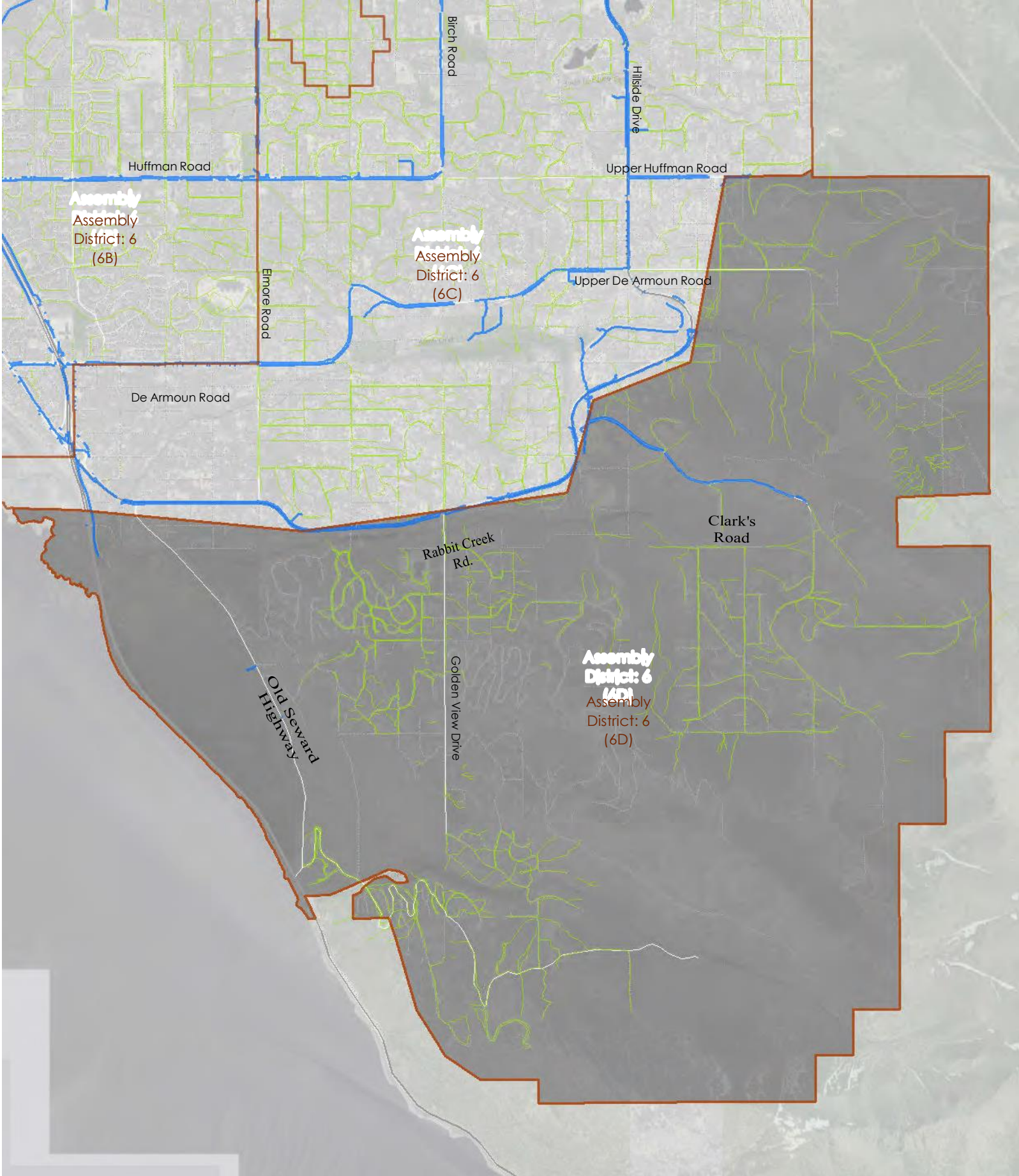
 MOA Drainageway Ownership

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MOA Stormwater Implementation Plan

-  State Drainageway Ownership
-  MOA Drainageway Ownership

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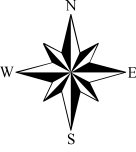





Figure 12: Zone 6D

MOA Stormwater Implementation Plan

-  State Drainageway Ownership
-  MOA Drainageway Ownership

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Attachment B
Interview and Meeting Summaries

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MOA Stormwater Utility Implementation Plan
Summary of Meeting with Jim Amundsen
Thursday, October 26, 2017 @ 10:30 am
Jim's office

General Questions/Discussion Items

Anchorage Drainage Planning and Management

- a. Question: How are drainage needs in Anchorage identified and integrated into DOT's CIP plan?

Response: Drainage needs are identified along with overall roadway project needs and incorporated into planned roadway improvement projects.

- b. Question: How is drainage related maintenance currently funding?

Response: Maintenance is mostly state funded. There is a limited Federal funding for things like OGS cleaning on NHS routes.

- c. Question: Are most drainage-related upgrades or new installations typically done in conjunction with highway projects?

Response: Yes. The recent storm drain inspection project for NHS routes is one of the first DOT drainage-specific projects that have been done in Anchorage.

- d. Question: How are drainage-related upgrades or new installation typically funded?

Response: Through federal funds associated with roadway improvements.

- e. Question: In your experience/opinion, is funding for maintaining, repairing, upgrading, and installing new drainage facilities currently adequate?

Response: No, current funding is not adequate. The results of the above-referenced TV inspection project have shown that the storm drain pipe in Anchorage are in very poor condition, and DOT commonly deals with "sinkholes" in roadways as the result of pipe failures.

- f. Question: In terms of drainage planning and management in Anchorage, what are some of the challenges that DOT faces? What changes would you make to the current set up, if any?

Response: The current drainage management system in Anchorage does not provide any incentives for private sites to manage stormwater responsibly and use best management practices. There is a lot of potential benefit to incorporating some type of incentives for parcel to utilize practices such as retention and detention when dealing with the stormwater on their sites.

The recently updated design storm events (NOAA 2012) has exacerbated the issue of undersized infrastructure across Anchorage. The DOT and the MOA recently enacted an MOU regarding how to handle the issue of undersized pipes where DOT and MOA systems come together. An integrated management approach needs to be taken to bring drainage systems up to current standards.

More televising of existing drainage pipes is needed to better understand the condition of Anchorage's vast storm drain network. TV inspection could identify pipes that are in poor condition and enable them to be slip-lined before their condition deteriorates to the point that slip-lining is no longer an option.

It makes sense to integrate drainage planning with other planning entities in Anchorage, such as AMATS. This would help ensure that drainage projects are coordinated across different management entities.

State and Local Cooperation

- g. Question: DOT has been an engaged partner in this project from the beginning. Do you have any specific thoughts/expectations on what DOT's involvement should look like moving forward? Or are you generally looking for examples of how other communities have integrated state and local governments?

Response: The DOT is supportive of the SWU concept and is open to suggestions of how the DOT should be integrated. DOT is expecting the Implementation Plan to outline alternatives based on experience in other states.

- h. Question: Our national team has found that SWUs that integrate multiple governments generally start with an intergovernmental agreement (or an amendment to an existing agreement) that outlines responsibilities and financial agreements between the Utility and the State. Does DOT and the MOA currently have other intergovernmental agreements that you know of? If so, what kinds?

Response: The only agreement in place is the one for MS4 compliance activities.

Question: If you don't currently have one, do you think DOT is open to working with the MOA to develop something like that?

Response: Yes.

- i. Question: What are your thoughts regarding ongoing ownership of the drainage assets in DOT's ROWs?

Response: It is important for the SWU team to keep in mind that as long as DOT owns the drainage facilities, we can also upgrade those facilities with our regular CIP program, which is federally funded.

- j. Question: In our team's experience, asset ownership does not commonly transfer to the Utility, but remains with the DOT. Do you think the AK DOT has a preference or opinion here?

Response: See above response.

- k. Question: In our team's experience in other communities, DOT often retains capital planning, design, and construction control of their own drainage assets and does not hand that over to the Utility. We expect this is based on federal funding constraints, highway safety assurance, and differing design criteria (DOT/FHWA vs local). Does the Alaska DOT have thoughts or preferences on this?

Response: DOT is open to options, but this approach makes sense because of the way DOT funding works. We are not allowed to upgrade assets that we do not own with federal transportation funding. It also helps us coordinate drainage needs with necessary roadway work.

Utility Organization

- l. Question: What are DOT's overall thoughts on Anchorage setting up a stormwater utility? Do you have any specific concerns or suggestions?

Response: A SWU is very needed in Anchorage and is long overdue.

- m. Question: There has been a lot of discussion of how a proposed utility should be housed (e.g. a standalone utility, part of AWWU, or part of public works (PM&E)). Do you have any thoughts or input on this?

Response: The SWU should prioritize minimizing government growth. It makes sense to utilize systems that are already in place, such as AWWU's billing and collection system. It would also be efficient if the utility could facilitate pooling resources (such as maintenance equipment) across different departments. Technology such as GPS in equipment makes it easy to track where equipment is being used so that time can be charged appropriately.

- n. Question: There has been discussion regarding whether it is practical to view/maintain drainage infrastructure separately from roadways. Do you have thoughts or input on that?

Response: It does not make sense to separate roadway and drainage improvements from many perspectives including optimizing financial resources, minimizing impacts to traffic congestion, utilizing available funding, and ensuring roadway safety.

MOA Stormwater Utility Implementation Plan
Information from DOT Maintenance
Responses obtained via email on November 3, 2017

Question and Items for Discussion

1. *Question:* Can you describe your position and general responsibilities?

Response: We perform maintenance on highways, roads and streets, approx. 1250 lane miles, including the associated infrastructure; lighting, fencing, guardrail, signage, pavements, vegetation control, crack sealing, striping, ditching and storm drains. A co-permittee on the MOA MS4 permit requirements.

2. *Question:* Do you maintain drainage facilities Anchorage-wide or in specific areas of Anchorage?

Response: Specific areas of Anchorage, State owned ROW, and maintained locations throughout Anchorage, Eagle River and Girdwood.

3. *Question:* What types of facilities do you maintain? (Pipe, ditches, OGS, etc.)

Response: Curb & Gutters, storm drain pipes, storm drain inlets, storm drain manholes, OGS, sedimentation detention/retention ponds and open ditches.

4. *Question:* Can you describe the overall types and schedules of maintenance for each type of drainage facility? For example, do you clean structures, pipes, or ditches on a regular schedule?

Response: Curbs and gutters are cleaned via a sweeping contractor four times during the summer season. Storm drain structures and pipes are inspected yearly and cleaned as needed. OGS are cleaned annually.

5. *Question:* Does your team generally video inspect the interior of pipes to assess condition? If so, is there a schedule for this?

Response: Video inspections are not typically done with respect to the MS4 project. At times on an as-needed basis by M&O or contractors will video inspect lines. More recently this effort has been done for planning and/or design purposes.

6. *Question:* Is your drainage facility maintenance generally proactive (e.g. finding and correcting problems before they cause issues) or reactive (responding to problems once issues have come up)?

Response: Can be both. Our storm drain cleaning program and federally fund preventative maintenance program for ditch clean enables us to be proactive to a degree but still have to react to issues that come up.

7. *Question:* Do you generally respond to drainage-related emergencies and if so, how often?

Response: Yes, typically once or twice per summer season we deal with a collapsed culvert causing sinkholes in a roadway. We excavate and replace the pipe and patch the pavement. There are multiple occasions during the winter that we respond to frozen culverts and storm drains that are in need of a thaw effort.

- a. *Question:* If yes, how do emergency drainage issues impact your schedule and budget?

b. *Response:* Emergencies are disruptive to our schedule. Unless declared an emergency where outside funding is made available they can be very detrimental to our operating budget.

8. *Question:* What is the general condition of the drainage facilities you maintain? (Pipes, ditches, structures, etc.)

Response: Our contractor and many O&M efforts suggest that much of the storm drain pipe in town is in poor to failing condition. Several structures are in need of repair and M&O performs at least one major repair each summer season. We do utilize a federal preventative maintenance program to work on open ditch areas, but it can encompass some culvert work.

MOA Stormwater Utility Implementation Plan
Information from DOT Maintenance
Responses obtained via email on November 3, 2017

9. Question: Do you notice more issues with any specific type of facility (pipe, manhole, inlet, etc.) or material (concrete, metal, plastic, etc.)?

Response: The pipes that are generally in the worst condition are metal corrugated pipes most notably the aluminum pipes.

10. Question: Are there specific areas of Anchorage where you generally notice or deal with more drainage-related problems?

Response: There are several streets with problems, but it is more of a general condition throughout Anchorage.

11. Question: What types of drainage-related issues are most prevalent in your service area? (Icing, surface flooding, undersized pipes or ditches, pipes or ditches clogged with debris, etc.)

Response: The biggest problems are typically undersized piped, clogged pipes and structures, and failing/collapse pipes but can relate to all the above mentioned in the question.

12. Question: Do drainage issues impact DOT roadway safety or private property? If so, generally where and how often does this occur?

Response: Yes, both roadways and private property. Sometimes during heavy rain events and can also occur during freeze/thaw cycles and breakup.

13. Question: Do you feel that you have adequate resources (budget and labor) to properly maintain the drainage facilities in Anchorage and address drainage problems as needed? If you could make changes to the current program, what would those changes look like?

Response: Anchorage M&O does the best they can with available resources and does have dedicated funding for a contract to clean the storm drain system via the MS4 permit.

14. Question: Could you describe how you typically coordinate your maintenance activities with the MOA? Please include both drainage activities and other types of roadway maintenance such as plowing.

Response: Through inter-agency communication maintenance activities are coordinated with MOA through the contract as far as when we conduct work.

- a. Question: Is there a different coordination process for MOA Street Maintenance versus LRSA/RRSAs?

Response: No.

15. Question: Do you have any other information that you think might help this project assess the current condition and/or management process of stormwater infrastructure in Anchorage?

Response: Just that the condition of the storm drain system of many main streets is in very poor condition.

**Municipality of Anchorage
Stormwater Utility Implementation Project
Thursday, August 31, 2017 @ 10am
Street Maintenance Conference Room**

Attendance

1. Paul VanLandingham, MOA Street Maintenance
2. Jim Belz, MOA Street Maintenance
3. Eric Hodgson, MOA Street Maintenance
4. Jason Bockenstedt, MOA Mayor's Office
5. Bruce Robson, Stantec
6. John Malueg, Stantec (via phone)
7. Janie Dusel, AWR Engineering

Meeting Discussion

- SWU Implementation Plan Project Overview: Janie briefly discussed the project's purpose and goals, current phase, and potential work for future phases.
- Stormwater Utilities: Janie asked the group if they were generally familiar with storm water utilities and how they work, and they said they did not have a lot of detail. John, Bruce, and Janie provided a brief overview of stormwater utilities and discussed that the organizational structures and levels of service are flexible based on entity preferences and stakeholder needs.
- Street Maintenance Input: Janie asked Paul, Eric, and Jim for their thoughts and input on the concept of a stormwater utility in Anchorage, which resulted in the following discussions:

Management and Operation

- Paul said he would like to see a clear picture of Street Maintenance's role under the new utility and how different groups would come together for a common goal. Jason explained that this will depend on how the MOA elects to organize the utility, but that he would generally envision Street Maintenance's roles responsibilities expanding. Paul explained that he and his team are open to that, provided there are also additional resources. He explained that his group is generally operating at full capacity. Street Maintenance will not be able to take on additional responsibilities without additional resources and still maintain the current level of service they are providing.
- Paul explained currently, Street Maintenance handles all aspects of roadway maintenance, from drainage to plowing snow to maintaining the pavement. He explained that having the same group of people doing all this work is advantageous because it enhances efficiency and ensures that when improvements or changes are made, impacts are looked at on a holistic basis.
- Paul explained that his group regularly responds to stormwater related emergencies and failures across town. Street Maintenance has the equipment and staff needed to do smaller-scale repairs and construction, but Paul noted that they are not set up for large-scale pipe installations or other large construction jobs. That type of work is better suited for a construction company.

- Paul emphasized the need for a system-wide assessment of the storm drain infrastructure in Anchorage, and Janie agreed. Paul explained that Street Maintenance would be happy to be part of the solution in moving forward with a system-wide inventory and assessment, but explained that they need guidelines for the types of information that should be collected and where to start the process. He also noted that their TV camera system is not currently operational, and it is estimated that \$130,000 is needed to bring it to operational condition. If Street Maintenance had this piece of equipment, they would be able to provide much more detailed assessment information, and it would save a lot of money in contracting TV inspections of problem areas.
- Paul also noted limitations in Street Maintenance’s asset management software, but said that they are expecting an upgrade in early 2018 that should resolve these issues.
- Paul discussed that Street Maintenance regularly deals with issues caused by poor lack of overall drainage planning. He explained that new developments routinely cause problems for downstream systems and that better planning, coordination, and responsible development is needed. Janie agreed. He also noted that he understands that developers are adversely impacted the lack of drainage master planning and that it is difficult to know how the overall responsibility should be shared between the MOA and developers.

Paul also noted that water from upstream management areas (LRSAs and RRSAs) flows into ARDSA and creates problems that his team deals with. Having multiple drainage entities creates a mentality to “send problems downstream” and Street Maintenance tends to be the downstream entity that deals with a lot of that.

- Paul noted that he has been previously directed to help LRSA/RRSA areas during time of flood-related emergencies. Examples include 140th and Buffalo and the creek adjacent to Porcupine Drive. But unless otherwise directed by upper management, Street Maintenance does not work outside of the ARDSA area.

System Condition

- Paul, Jim, and Eric discussed that they are dealing with pipe system failures across Anchorage. Jason asked if they could provide photos of failures, and they said yes. They generally explained that a majority of the metal storm pipe that they encounter is in very poor condition or is failing. They are seeing more and more “sinkholes” in roads throughout Anchorage caused by storm pipe failures. Paul suggested that condition assessments and prioritization for pipe replacements should focus on metal pipe first, as the plastic pipe is generally newer and expected to be in better condition in many cases.

Paul further explained that many of the failures they deal with are so severe that slip-lining the pipe is no longer an option and the entire system needs to be replaced. However, in some locations, replacement is very difficult. He provided an example of system near 71st Avenue and Cheryl Street that has deteriorated to the point that it has no bottom, so it can’t be slip lined. Part of the system lies in a 10-foot easement between two houses that are very close together and the pipe is about nine feet deep. The pipe cannot be excavated within the easement, and going outside the easement may result in impacts to the adjacent homes. He explained that they are facing these types of issues in many locations.

- Jason asked how many of the issues that Street Maintenance deals with are “repeat offenders”, and Paul, Jim, and Eric agreed that the majority of them probably are. Paul

explained that some of the issues he deals with were issues that he was also dealing with 20 years ago, but the MOA has not had the resources for a holistic fix to the issues.

Coordination with DOT

- Janie asked how Street Maintenance currently coordinates with the DOT maintenance group. Paul said that they have a good working relationship and that they regularly help each other out when they can. One example is that the MOA plows DOT sidewalks when they are hazardous to public safety. The groups also work together on traffic control, small paving needs, snow dumps, and salt and dust control. Paul described the relationship as very cooperative to the good of both organizations, which is largely attributed to the relationships he and his team have built with DOT over many years.

Coordination with AWWU

- Janie asked how Street Maintenance currently coordinates with AWWU. Paul said they cooperate well when they need to, but that their overlap is generally limited. Street Maintenance provides asphalt for AWWU's smaller scale paving needs.

Funding

- Janie asked about Street Maintenance's current funding and its adequacy for meeting the needs. Paul explained that it varies from year to year and that their total funding is made up of both capital funding and operational funding. He emphasized that both are needed to maintain the level of service that Street Maintenance is currently providing. Any decrease in funds or increase in responsibility without an increase in funds would result in an overall decrease in level of service.

MOA Stormwater Utility Implementation Plan
Meeting with PM&E – Meeting Summary
Monday, October 23, 2017 @ 10am
PM&E Conference Room B

Attendance:

1. Gary Jones, MOA PM&E
2. Kent Kohlhase, MOA PM&E
3. Russ Oswald, MOA PM&E
4. Paul Van Landingham, MOA Street Maintenance
5. Janie Dusel, AWR Engineering
6. Aaron Havel, AWR Engineering
7. Justin Shaw, AWR Engineering

Meeting Discussion

1. **Brief review of project purpose, status, and current goals** - *Janie gave a brief overview of the SWU project. The group was generally already familiar with the project.*

2. **General Questions/Discussion Items**

System Condition

- a. *Question: Based on talking with Street Maintenance and with DOT maintenance, we expect that most of the metal storm drain pipe in Anchorage is failing or near failing. Much of it was installed in the 1970s and 1980s and is 30+ years old. Is the consistent with PM&Es experience and understanding of the existing system?*

Discussion: Russ explained that it generally depends on the location and age of the pipe. He said that they have encountered pipes in the downtown area that are 30 years old and in great condition because they have been in well-drained gravel soils. He also noted that soils with a high peat content generally cause a lot of corrosion. Russ referred AWR to Mike Krueger (retired PM&E lab manager) for more information on which soils in Anchorage are expected to be corrosive.

- b. *Question: When do you think Anchorage started the switch to plastic pipe? (Glenda and Duane estimated early 1990s with plastic prevalent by the mid-90s.)*

Discussion: The group agreed this sounds right. Street Maintenance was using plastic in 1996 when Paul started working for the MOA. Russ said that generally half of new design projects were using plastic pipe and half were using metal pipe when he started with the MOA in 1993.

- c. *Question: In your experience, is the plastic pipe holding up better than CMP?*

Discussion: The group agreed plastic holds up well. However, Russ and Paul noted that plastic pipes generally do not perform well at diameters larger than 54-inches. This is because large pipes flex too much and will float (pop-up) or collapse during construction.

- d. *Question: Are there particular areas of town that PM&E expects would have more failing or poor condition storm drain infrastructure than others?*

Discussion: The group said failures generally occur all over town and listed the following known problem areas:

- West side has a lot of issues (west of Arctic and south of Tudor).

- Downtown has a lot of old infrastructure that is starting to need replacement. Contaminated soils are highly likely in this area.
 - East of Muldoon (from Tudor/Muldoon curve to Glenn Highway) experiences surface runoff issues from adjacent military land.
 - Homer Drive from Tudor to Diamond and west of King Street is likely an old swamp and has issues.
 - Independence/Jamestown intersection flooded due to undersized infrastructure and the intersection blew up.
 - The hillside has a lot of drainage issues. The group noted that runoff from LRSA/RRSA areas can overwhelm downstream ARDSA infrastructure.
 - West 71st Avenue and surrounding neighborhood has a failing storm drain system.
 - On 64th near Polaris School (by Dowling roundabouts), plastic pipe failed likely due to shallow fill.
- e. *Question: Are there particular areas of town that have more drainage-related problems than others, regardless of infrastructure condition?*

Please see response to Question “d” above.

Project Planning and Management

- a. *Question: How does PM&E currently identify and prioritize capital project needs related to drainage infrastructure?*

Discussion: Russ explained that Street Maintenance and PM&E work together to rank roadway and drainage issues each year, and the largest or highest priority issues get put in the bond package. Which projects are included in the bond package from year to year is also politically influenced based on current priorities. Gary discussed that the total bond package is approximately \$30M annually, and drainage is only a portion of that. He and Kent explained that the \$30M is also used for road projects, pedestrian facilities, lighting, etc.

Gary said PM&E has a roadway condition map created in 2014 that he would provide to AWR. He said a new map will be ready in a couple months, and the roadway issues usually line up with drainage issues.

- b. *Question: In your experience, do the annual bond packages keep up with the drainage infrastructure needs?*

Discussion: The group agreed that current funding is not adequate. Gary roughly estimated that it would take \$1Billion to fix/improve the entire system. He explained that with the drainage system only receiving a portion of \$30M annually, (approximately \$8M bonded in 2017 for drainage improvements), the MOA will only be able to fund emergency repairs and will not be able to get ahead of the ongoing drainage problems.

Kent and Russ discussed that there is not system-wide infrastructure condition assessment and this is very limiting. As a result, the MOA typically responds reactively to issues as they come up. The group also noted that they coordinate drainage and street upgrades as much as possible to minimize project costs. There is a significant cost savings when these types of improvements are done together.

- c. *Question: Generally, how well do you think the current program of using bonds for drainage improvements is working?*

Discussion: See response to Question “b” above.

- d. *Question: Does PM&E do any coordination for projects outside of ARDSA? E.g. on the hillside.*

Discussion: Paul described that Street Maintenance generally does not respond to issues outside of ARDSA, other than a few isolated cases such as the issue at 140th Avenue at Buffalo Street. Russ and Kent agreed and explained that PM&E used to facilitate projects outside of ARDSA when State grants for project funding was available. Given the State’s current fiscal climate, these types of grants are no longer available.

Kent discussed how projects/developments in LRSA/RRSA areas can adversely impact others downstream. The projects aren’t always designed, and because the drainage issues aren’t looked at holistically, they can cause problems for downstream receiving systems.

Examples of current and previous hillside drainage issues discussed include Prominence Point, the Sahalee subdivision and the associated wash out on Zodiac Manor, and the storm drain system added to Lipscomb and 113th Avenue to accommodate hillside runoff.

Proposed Stormwater Utility

- a. *Question: What are PM&E’s overall thoughts on Anchorage setting up a stormwater utility? Suggestions? Concerns?*

Discussion: Generally, the group agreed that the idea has potential, but they were not sure that the overall Anchorage community would be supportive. Paul and Gary discussed that it may be viewed as just another tax, which is often not popular. The group agreed that even if the Assembly approves the utility, the general public may try to overturn that decision.

Kent noted that the Utility would need to determine how to coordinate funding and maintenance responsibilities across various existing management entities, such as ARDSA vs non-ARDSA areas.

- b. *Question: There has been a lot of discussion of how a proposed utility should be housed (e.g. a standalone utility, part of AWWU, or part of PM&E). One argument for a standalone utility is to provide an entity that is dedicated solely to drainage and stormwater issues. Do you have any thoughts or inputs on that?*

Discussion: The group agreed that it would be most efficient to house the SWU within PM&E. They noted that drainage is already one of PM&E’s core responsibilities, and Kent said that 90% of the call and complaints that he gets are drainage related. The group also pointed out that housing the utility under PM&E would result in the least amount of government growth, as their staff is already equipped with the necessary work flows and standards to evaluate, design, and repair drainage systems. They also have a lot of historical knowledge of the drainage systems. Utilizing PM&E for housing the utility would also make ongoing coordination with roadway projects fairly seamless, which will continue to be necessary to maximize funding for both roads and drainage.

Russ explained that PM&E regularly does joint projects with AWWU and that sharing projects costs between the two entities is straightforward. SWU funding could be set up and managed the same way.

The group thought that AWWU would likely not be a good fit for the SWU. They noted that AWWU does not have the design or the maintenance/operation experience related to drainage facilities. Paul noted that AWWU also does not have the equipment needed to repair drainage systems on a municipality-wide scale. The group agreed that it would be most efficient for PM&E to house the utility, followed by a stand-alone utility, and lastly using AWWU to house the utility. The group expected that PM&E would be able to achieve results for the SWU much faster than other options.

Janie asked the group about billing systems and if PM&E could be set up to handle that. Russ said that they could be with the additional staff to manage it. He and Kent also suggested that the utility could utilize AWWU for billing and collection and then funnel that funding to PM&E for management of SWU activities.

- c. *Question: There has been discussion regarding whether it is practical to view/maintain drainage infrastructure separately from roadways. Do you have thoughts or input on that?*

Discussion: The group agreed that nearly all drainage projects are also roadway projects, and PM&E designs both. Paul said it's difficult to fix potholes and improve roads without also improving drainage. The two tend to go hand-in-hand in Anchorage.

Questions for RRSA/LRSA representatives

1. **Question:** What is the general condition of drainage facilities in your district (channels, pipes, culverts, etc.)? Generally, do you think the facilities are adequately maintained?

Response: There's a mixture of both good condition, well-maintained facilities, and facilities that need attention. Problems arise particularly related to drainage across jurisdictional boundaries (E.g. DOT, other LRSAs etc.).

2. **Question:** In your district, are drainage problems generally a notable or common concern/issue?

Response: Yes

3. **Question:** What types of drainage-related issues are most prevalent in your district?

Response: Issues include poor ditching, lack of driveway culverts or poorly functioning driveway culverts, freezing and icing (frequent steam thawing is required), and poor management of water across jurisdictional boundaries. Tim provided an example of water from a DOT ROW (**Upper Huffman or Upper Dearmoun?**) being directed onto a LRSA road when the road was not prepared to deal with it. It caused a lot of damage that DOT's contractor ended up repairing at the request of the LRSA. Another example is streams flowing into the area from upstream with highly varying water levels. During low flow, things are function well, but during high flow, downstream systems can become overwhelmed (e.g. in 2012) and cause flooding. The LRSA responds to these kinds of issues and installs system to prevent future problems. (E.g. they installed a high flow diversion on a stream to redirect flood flows away from properties.)

4. **Question:** Do your drainage issues impact roadway safety or private property?

Response: Yes. The LRSA generally responds to these types of issues quickly.

5. **Question:** Do you feel that your district has adequate resources to address drainage problems?

Response: Generally, yes. The LRSA collects about \$850,000 in annual revenue with approximately \$600,000 to \$700,000 used for projects and maintenance. This generally keeps with our needs and we've had a lot of success with maintaining the roads and drainage systems. The LRSA does have issues associated with drainage across jurisdictional boundaries creating problems for adjacent districts. (See response to question 3.)

6. **Question:** What management challenges do you deal with related to resolving drainage issues or coordinating drainage issues with the MOA as a whole?

Response: Coordination across jurisdictional boundaries. See response to previous questions.

Another issue that is fairly common is related to driveway culverts and who is responsible for replacing them or installing new ones. Technically, driveway culverts are supposed to be put in by the homeowners, but when LRSA improvements result in the need for driveway culvert work, the LRSA is left to decide who is/should be responsible for that.

7. **Question:** What are your thoughts on the proposed Anchorage-wide Stormwater Utility? How could this type of entity improve drainage management in your district?

Response: Tim has a lot of concerns related to the proposed utility. These are generally reflected in the questions that Mark Schimscheimer provided to the SWU project team, dated October 16, 2017. Additionally, Tim pointed out that the LRSA's contractor is currently able to respond to issues in the LRSA very quickly, and that this fast response time is much-needed. The ability to respond quickly often alleviates or prevents flooding damage. It is very important to the LRSA that they do not lose this

functionality. They LRSA also values being able to work directly with their contract to determine the best solution for issues that arise and to outline local priorities. Finally, Tim discussed the need to keep roadway and drainage improvements linked. LRSA projects are usually a combination of roadway and drainage improvements, which is both cost effective and usually provides the best overall solution. It makes sense for this practice to continue.

8. Question: Do you have any other information that you think might help us assess the condition of stormwater infrastructure and the current stormwater management challenges?

Response: See above-referenced list of questions.

Questions for RRSA/LRSA representatives

1. *Question: What is the general condition of drainage facilities in your district (channels, pipes, culverts, etc.)? Generally, do you think the facilities are adequately maintained?*

Response: Mark echoed Tim Alderson's feedback here. Generally, there's a mixture of both good condition, well-maintained facilities, and facilities that need attention. Problems arise particularly related to drainage across jurisdictional boundaries (E.g. DOT, other LRSAs etc.)

2. *Question: In your district, are drainage problems generally a notable or common concern/issue?*

Response: Yes

3. *Question: What types of drainage-related issues are most prevalent in your district?*

Response: Again, Mark echoed Tim's feedback. Lack of adequate ditching, poorly functioning ditches and culverts, icing, driveway culverts.

4. *Question: Do your drainage issues impact roadway safety or private property?*

Response: Not specifically answered, but generally feedback indicates yes.

5. *Question: Do you feel that your district has adequate resources to address drainage problems?*

Response: Mark said yes and no. In terms of money and resources for issues that arise within their district, yes. They have adequate funds and they feel that the LRSA responds to problems much more efficiently than a larger entity could. Where resources do not feel adequate is when adjacent areas create drainage problems that impact the RRSA area, and they cannot always respond the way they need to.

6. *Question: What management challenges do you deal with related to resolving drainage issues or coordinating drainage issues with the MOA as a whole?*

Response: See response to question 5.

7. *Question: What are your thoughts on the proposed Anchorage-wide Stormwater Utility? How could this type of entity improve drainage management in your district?*

Response: Mark sent a list of questions to Jason Bockenstedt and Shelly Wade recently expressing their questions and concerns. Please reference that document.

(Questions were sent via email dated 10-16-17 and the list of questions is attached.)

8. *Question: Do you have any other information that you think might help us assess the condition of stormwater infrastructure and the current stormwater management challenges?*

Response: See response to Question 7.

Other related questions:

9. *Question: The Hillside Road and Drainage Service Committee recommended formation of 4-5 RISAs and outlined some specific goals of this process. Do you think a Muni-wide utility could accomplish the same goals as what the HRDSC outlined in their recommendations?*

Response: No. The Hillside prioritizes local drainage control and they do not think a larger, MOA-wide entity could respond to issues as quickly or as cost effectively as a local, hillside group

could or as quickly and cost effectively as the functional RRSA/LRSAs are doing now. Over time, the MOA has demonstrated hillside improvements are not a high priority, and the Hillside expects to be a low priority with the proposed utility also.

10. *Question: How were the proposed boundaries for the RISAs selected?*

Response: The boundaries are based on general grouping of areas with similar issues, cultures, mill rates, and types of concerns.

**MOA Stormwater Utility Implementation Committee
Questions to Consider**

Authorization:

1. Is there a Pre-Feasibility Analysis (as detailed in a document presented by the AEDC Live.Work.Play. Housing Area of Focus Infrastructure Subcommittee) that defined and assessed the problem, compared alternative solutions, and produced the recommended alternative of a Stand Alone Storm Water Utility?
2. If a Pre-Feasibility Analysis was not performed, why was it not and what was the deliberative process that identified a Stand Alone Storm Water Utility as the preferred solution?

The National Association of Clean Water Administrators white paper *Legal Considerations for Enacting, Implementing, & Funding Stormwater Programs (2016)* concludes in their analysis that:

“Authority for a local or regional agency to enact and administer storm water programs and assess user fees is most commonly derived from an enabling statute enacted by the state legislature or via the state’s constitution or charter.”

“Utilities should carefully review the entire legal framework authorizing the program and fee as well as any binding case law and persuasive precedent. If the grant of authority is ambiguous or questionable, utilities should consider requesting a state Attorney General opinion and/or working with the state legislature to make the grant of authority more explicit.”

3. What is the enabling legislation that grants municipalities’ legal authority to form a Stand Alone Storm Water Utility in the State of Alaska?

Rates/money questions:

Understanding that some of these questions may not have answers at this point I none the less pose the following:

4. Will storm water expenses currently paid for by the state for state owned roads be rolled in to the Stand Alone Storm Water Utility and be paid for by ratepayers?
5. If so, is there a contemplated mechanism to recover such costs from the state?
6. The Muni currently estimates that it spends \$19 million annually on storm water issues. If this amount is shifted to the Stand Alone Storm Water Utility will the \$19 million be deducted from the future property tax?
7. Road Service Areas currently self-perform at the own cost drainage projects and maintenance. Is the Stand Alone Storm Water Utility contemplated to assume this work and cost and if so will this cost be deducted from future property tax?
8. What are the estimated administrative costs of the utility? How many employees will be required?
9. Is a Stand Alone Storm Water Utility the most efficient way to deliver this service?

October 16, 2017

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Appendix B

GIS Assessment Report for the Implementation of a Stormwater Utility for the MOA

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GIS Assessment Report for the Implementation of a Stormwater Utility for the Municipality of Anchorage

November 2017

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Table of Contents

1.	Introduction	5
2.	Summary & Evaluation of Available GIS Data	7
3.	Impervious Surface Data.....	19
	Description.....	19
	Acquisition	19
4.	Creation of New GIS Datasets.....	20
5.	Data Stewardship.....	23
6.	Expected GIS Tasks & Workloads.....	23
7.	Development of Standard Operating Procedures.....	26

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1. Introduction

Geographic Information Systems (GIS) is a powerful analytical tool that will be critical in the implementation of the Municipality of Anchorage's (MOA) Stormwater Utility (SWU). GIS tools facilitate the ability to:

- Catalog available infrastructure
- Model runoff to determine system capacity
- Link geographic data to scanned engineering documents
- Provide necessary paper & digital mapping
- Aid in determining rate structures based on parcel characteristics (e.g. impervious surface).

In general, the critical GIS layers required in implementing a stormwater utility are:

- Aerial imagery
- Building footprints
- Parcel boundaries
- Tax assessor data for parcels
- Impervious surface coverage

The purpose of this document is to provide a roadmap for integrating GIS into a new municipal Stormwater Utility. This is accomplished by first assessing (in Section 2) critical GIS data currently available (through MOA, the State of Alaska, or other agency) and describing how it can be used in its current condition, and detailing how it will need to be further developed to provide maximum benefit to the SWU. Following the data review, we discuss the process for acquiring impervious surface data (Section 3), then (in Section 4) we describe spatial data that would be beneficial to have, but is not necessarily critical for operations. Section 5 discusses data stewardship; that is, who would be responsible for maintaining specific layers of GIS data. Then (in Section 6) we present a description of expected GIS-related tasks and workloads as the utility evolves. Finally, we present an outline for developing standard operating procedures for data management (Section 7).

The implementation strategy presented here is organized by the applicability in each of the following 4 SWU phases of implementation (in order of increasing complexity):

1. Pre-Utility

This refers to GIS work that needs to be performed before initial implementation of the SWU. In this phase, there may be no full-time MOA staff person dedicated to providing GIS support, but rather MOA staff (perhaps 1 or more) provides GIS services on an as-needed basis.

2. Basic Use

During this phase, the GIS, with minor changes to existing data and minimal acquisition and development of new data, is used to support the initial implementation of the SWU. Uses of GIS at this phase include: Reporting of parcel types (residential, commercial, State vs Federal vs. Private, etc.) and cataloging of SWU infrastructure and ownership. It also includes making the infrastructure GIS data "model ready" on an as-needed basis per area. In this phase there may still be no full-time MOA staff person dedicated to providing GIS support

for the utility, but identified MOA staff (perhaps 1 or more) continues to provide GIS services on an as-needed basis.

3. Detailed Use

At this phase, the GIS is augmented with new spatial data (e.g. impervious surface) and SWU infrastructure data is enhanced with additional attributes (e.g. inverts). Existing data with missing features (e.g. building footprints) is completed. This would allow for more detailed mapping, modeling, and parcel summary calculations for analysis. At this phase of implementation, it is likely that 1 full-time MOA staff would need to be working on developing and maintaining the GIS for the Utility.

4. Enhanced Use

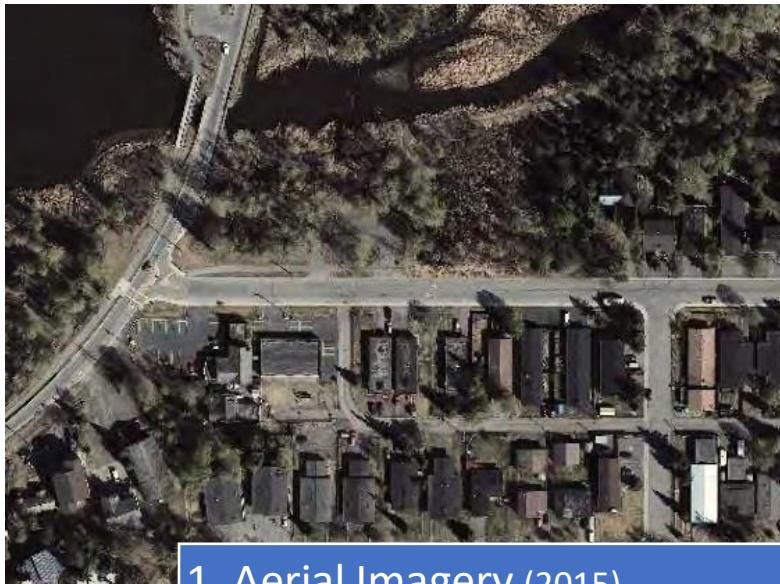
A full realization of the use of GIS in the SWU. The SWU has, or is developing, all spatial data required. GIS data is linked to scanned record documents where applicable. Through the development of customized tools and applications, SWU staff can analyze parcels for impervious surfaces and runoff easily, as well as manage data collected (or modified) in the field. In addition to 1 full-time GIS staff, there would likely need to be a records manager who assists with GIS tasks as well as scanned document management. Additional GIS staff support beyond these 2 staff members may also be needed.

It should be noted that a goal of the GIS implementation is to have as few SWU staff as possible reliant on using GIS software, and instead direct users to interactive maps and applications created by GIS staff.

It is also worth mentioning that MOA GIS & Mapping Services currently has a state-of-the-art GIS implementation with highly-experienced GIS staff. Implementation of GIS for the SWU will only be successful if the MOA GIS & Mapping Services staff are consulted and utilized regularly as the utility advances.

2. Summary & Evaluation of Available GIS Data

The first step in developing the Implementation Plan was to review existing GIS data necessary for day-to-day analytical and cartography operations in the SWU. Spatial data was reviewed primarily for applicability and completeness (relative to the potential SWU service area). It is important to note here that the MOA GIS library contains more spatial data than is listed here. These are the datasets most important to SWU operation from the onset of implementation.



1. Aerial Imagery (2015)

Source: MOA

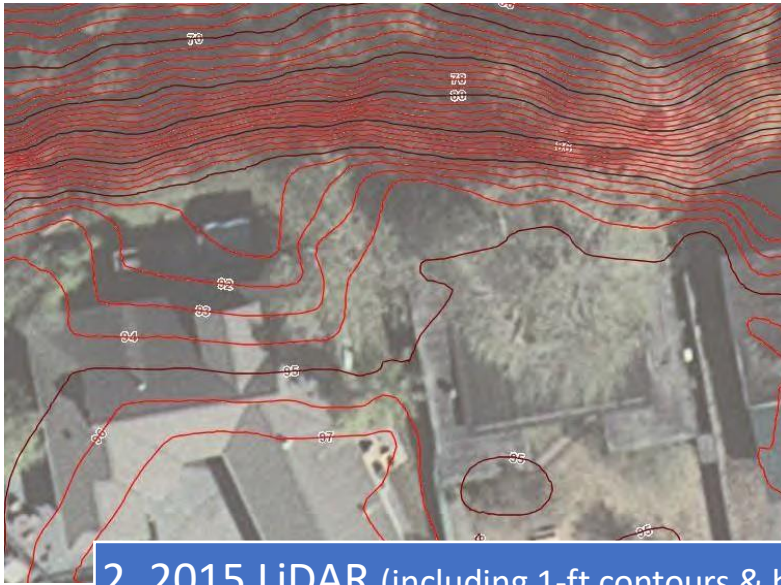
Maintained By: GIS & Mapping Services

Key Attributes: Not applicable. Image resolution is 0.21 feet.

SWU Use: Base mapping, analysis of impervious surfaces, building footprints, and other parcel characteristics.

Data Gaps: None

Editing Required by SWU: No



Source: MOA

Maintained By: GIS & Mapping Services

Key Attributes: Elevation

SWU Use: Base maps, drainage modeling, and other parcel characteristic derivations.

Data Gaps: None

Editing Required by SWU: No



Source: MOA

Maintained By: Project Management & Engineering, Land Records Section (parcel boundaries and zoning data)
Property Appraisal (assessment data)

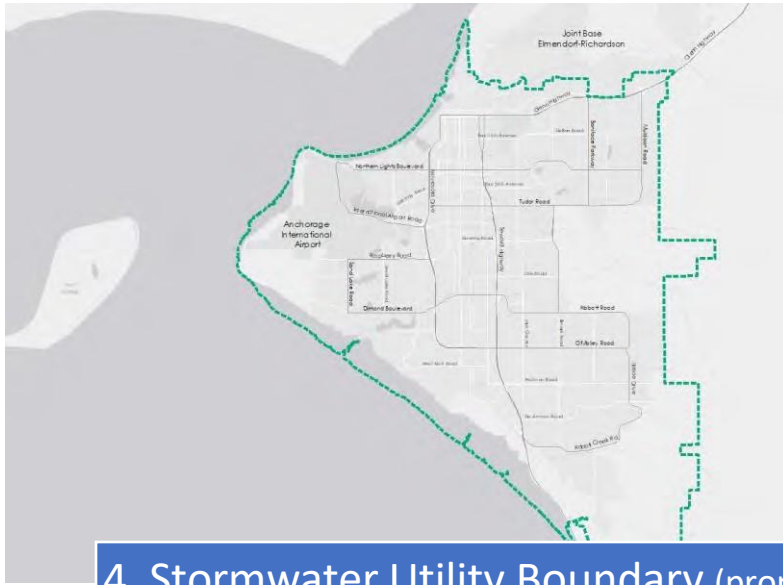
Key Attributes: Owner name, address, zoning, land use, legal description

SWU Use: Base maps, analysis of owner types, analysis of impervious surfaces, billing

Data Gaps: Parcel attributes do not contain information that explicitly states whether a parcel is public, private, non-profit or whether it is State, Federal, or Municipally owned.

Editing Required by SWU: Yes, an attribute field to contain the owner-type information described in the **Data Gaps** will need to be added.

Parcel data gaps would need to be addressed at the “pre-utility” or “basic use” level (see Introduction) of SWU implementation.



4. Stormwater Utility Boundary (proposed)

Source: MOA **Maintained By:** Watershed Management Section (WMS)

Key Attributes: Area

SWU Use: This would be used in all mapping to depict the certificated SWU boundary.

Data Gaps: This data is currently in draft form. The official boundary has not been determined.

Editing Required by SWU: Yes, completing this dataset will be one of the first GIS priorities. The final dataset will need to be edited so that boundary lines are coincident with parcels and other legal boundaries.

Stormwater Utility boundary data gaps would need to be addressed at the “pre-utility” level of SWU implementation.



5. Building Footprints

Source: MOA

Maintained By: GIS & Mapping Services

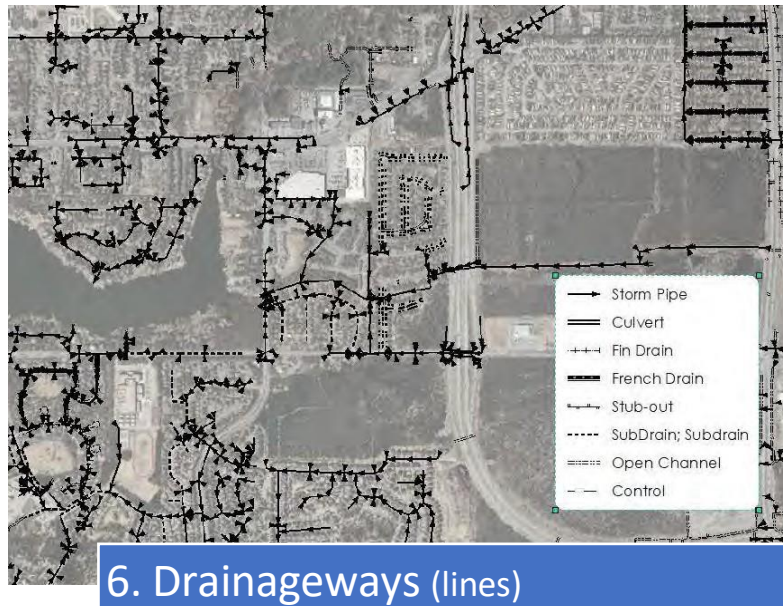
Key Attributes: Area, Elevation, Parcel Number, Land Use

SWU Use: Building footprints are used in the calculation of impervious surface area on a property.

Data Gaps: This data is based upon the 2015 aerial imagery and is updated regularly; however, not all buildings in the Municipality are represented in this dataset. It is estimated that this dataset is >95% complete.

Editing Required by SWU: Yes, missing building footprints will need to be added to this dataset.

Building footprint data gaps would need to be addressed at the “detailed use” level of SWU implementation.



6. Drainageways (lines)

Source: MOA

Maintained By: Watershed Management Section (WMS)

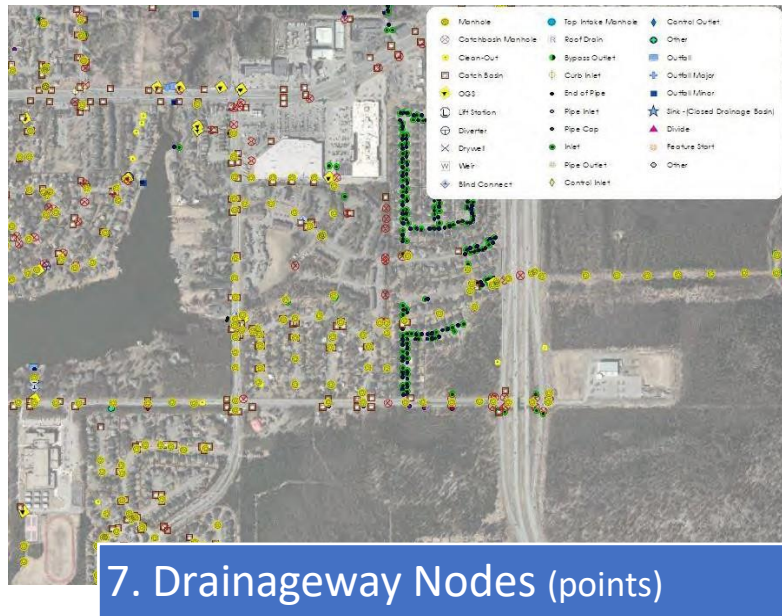
Key Attributes: Owner (ADOT, MOA, Private), Conveyance Type, Data Source

SWU Use: Base maps, cataloging of assets, link to document records, hydraulic modeling of runoff.

Data Gaps: Installation dates, invert elevation (depth to inside bottom of the pipe), condition assessment data, and missing features will need to be added (e.g. ditches along secondary roads in Hillside area). It is estimated that this dataset is >95% complete. Some spatial accuracy verification may be needed.

Editing Required by SWU: Yes, attribute fields for items mentioned in the **Data Gaps** will need to be added. In addition, the SWU might eventually need to add the drainage ditches mentioned in the **Data Gaps** as well. In the long term, this dataset could be enhanced to provide linkages to scanned engineering records and/or asset management IDs.

Drainageway (line) data gaps would need to be addressed in some areas of the SWU service area (on an as needed basis) at the “detailed use” level of implementation, but then comprehensively addressed for the entire service area at the “enhanced use” level of implementation.



Source: MOA Maintained By: Watershed Management Section (WMS)

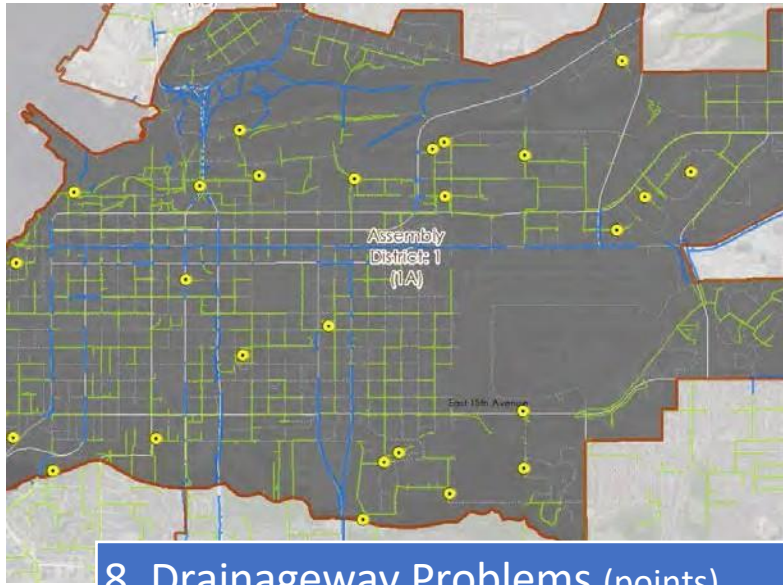
Key Attributes: Owner (ADOT, MOA, Private), Type, Data Source

SWU Use: Base maps, cataloging of assets, link to document records, hydraulic modeling of runoff.

Data Gaps: Installation dates, condition assessment information, and missing data added. It is estimated that this dataset is >95% complete. Some spatial accuracy verification may be needed.

Editing Required by SWU: Yes, attribute fields and missing features for items mentioned in the Data Gaps will need to be added. In the long term, this dataset could be enhanced to provide linkages to scanned engineering records and/or asset management IDs.

Drainageway Node data gaps would need to be addressed in some areas of the SWU service area (on an as needed basis) at the “detailed use” level of implementation, but then comprehensively addressed for the entire service area at the “enhanced use” level of implementation.



Source: MOA

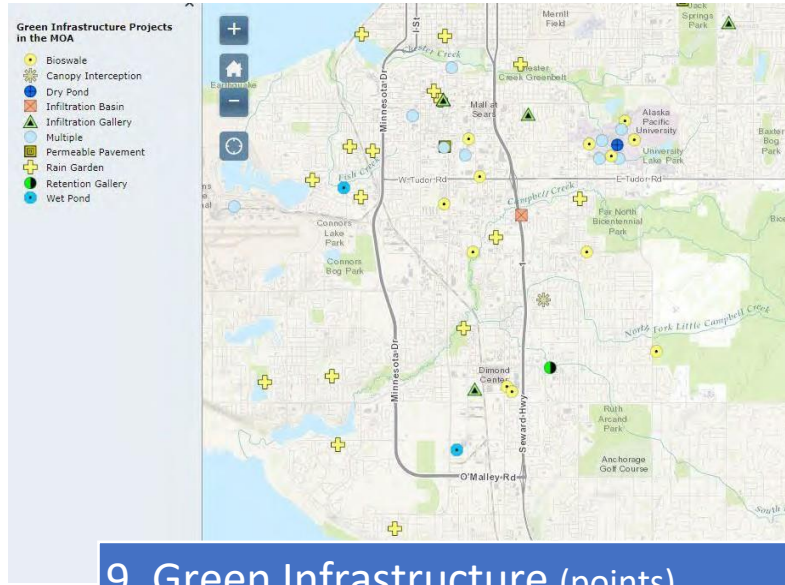
Maintained By: Watershed Management Section (WMS)

Key Attributes: Type (culvert, inlet, unknown), Issue (failure, flooding, icing, other, unknown)

SWU Use: To track known problem areas, and to set priorities for repairs/upgrades.

Data Gaps: This data is a combination of information provided by MOA Maintenance & Operation and WMS. It contains known problems, but is not considered a comprehensive database of all problem areas.

Editing Required by SWU: Yes, the SWU will need to add/remove problem areas as they are discovered or addressed.



9. Green Infrastructure (points)

Dataset: Green Infrastructure **Source:** MOA, Watershed Management Section (WMS)

Key Attributes: Project type (bioswale, canopy interception, rain garden, wet pond, etc), Owner name

SWU Use: To track projects actively reducing the volume of runoff from a parcel.

Data Gaps: This data is no longer maintained, and would need to be updated if it is to be used.

Editing Required by SWU: Only if the SWU determines that this is information that is beneficial to track.



10. Subbasin Areas & Discharge Nodes

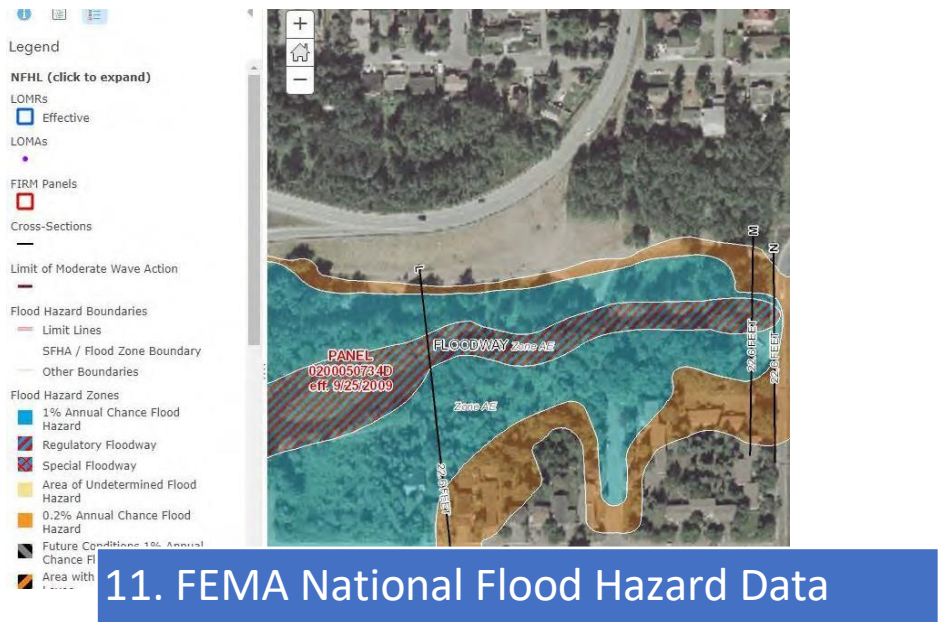
Source: MOA Maintained By: Watershed Management Section (WMS)

Key Attributes: BasinType (outfall, outlet, sink, other)

SWU Use: Delineate drainage modeling areas for planning purposes.

Data Gaps: None

Editing Required by SWU: No, this data is maintained by WMS for the MOA National Pollution Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) stormwater permit (<http://anchoragestormwater.com/APDES.html>)



Source: ArcGIS Online Web Service

<http://fema.maps.arcgis.com/home/item.html?id=cbe088e7c8704464aa0fc34eb99e7f30>

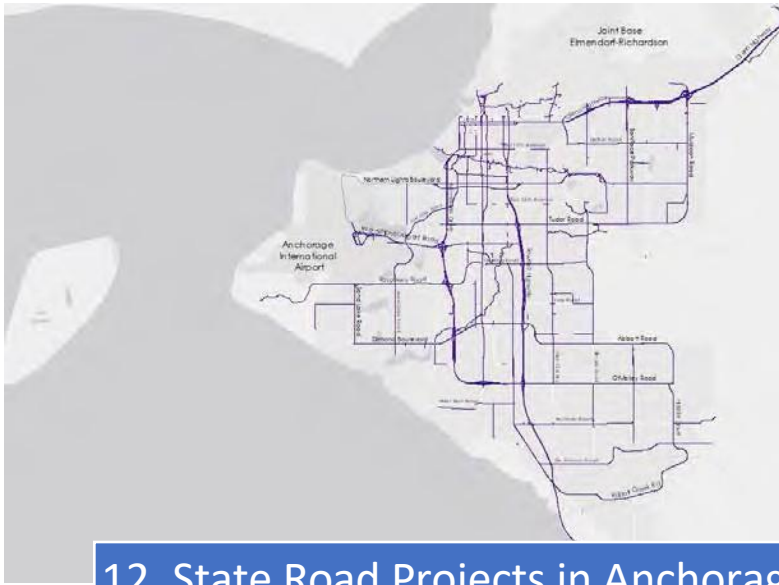
Maintained By: FEMA

Key Attributes: Effective date, Hazard Zone Type, Map panel download link

SWU Use: Identify potential problem areas, delineate potential flood boundaries

Data Gaps: None

Editing Required by SWU: No, this is an Internet accessible dataset (via Esri ArcGIS Online) maintained by FEMA, although it would be possible for the SWU to save a local copy of this data and perform editing if necessary.



Source: State of Alaska Department of Transportation & Public Facilities (DOT&PF)

Maintained By: Highway Design

Key Attributes: Project Name, Project ID, Project Year, Hyperlink to as-built

SWU Use: Track State of Alaska DOT&PF projects and obtain access to digital as-builts

Data Gaps: This dataset is not complete; however it is the dataset that DOT&PF uses to provide their own internal access to project information.

Editing Required by SWU: It would be beneficial to obtain a copy of this dataset at regular intervals (perhaps every 6 months) and create a modified hyperlink attribute field containing a hyperlink to the digital as-builts (because the native data contains a hyperlink that works only at DOT&PF offices).

An example of this type of hyperlinked map was created during the SWU Implementation Plan development:

<http://bss.maps.arcgis.com/apps/View/index.html?appid=199cc02f656148448800bb8e84905d7a>

The use of this dataset could occur anytime during the implementation when SWU staff needed regular access to DOT&PF transportation project records.

13. Other data

Other GIS layers that will likely be used as reference data for the SWU include:

- Addresses Source: Development Services, Addressing
- Minnesota Drive Condition Assessment Source: Steph Engineering (via DOT&PF)
- Existing Wetlands Source: WMS
- Historic Wetlands Source: WMS
- Lakes & Streams Source: WMS
- Road Service Areas Source: Project Management & Engineering
- Streets Source: Project Management & Engineering
- Surficial Geology Source: GIS & Mapping Services

3. Impervious Surface Data

Description

Impervious surfaces are areas where runoff water from precipitation (both rain & snow) cannot infiltrate because the ground surfaces are comprised of impenetrable materials. Impervious surfaces are usually artificial (e.g., roads, sidewalks, driveways, parking lots) and are generally made of materials such as concrete, asphalt, brick, stone, and rooftops. Heavily compacted soils may also behave as impervious surfaces.

In communities with a stormwater utility, an accurate calculation of impervious surface area (usually on the parcel level) is critical in determining the volumes of water entering a storm drain system (both ditched and piped), and in determining impacts to water quality. Specifically, a stormwater utility having access to impervious surface area data aids in:

- Calculating stormwater runoff volumes (and other hydraulic modeling)
- Assessing stormwater utility fees
- Measuring urban development of areas within a community
- Land use planning

Acquisition

Esri ArcGIS Desktop or ArcGIS Pro software with the Spatial Analyst Extension (or a remote sensing processing software such as ERDAS IMAGINE or Clark Labs' TerraSet software) can be used to generate a GIS layer of impervious surface data. For inputs, one (or more) of the following is required:

- Aerial color imagery
- Color infrared imagery
- LiDAR data (vegetation heights & building heights)

The process used to generate the impervious surface layer varies based upon the type of input data used (color imagery, infrared, or LiDAR). One process isn't considered better than the other, and

determining which process to use is typically determined by data availability or by the cost of acquisition for one of these layers. Of the input data required, MOA currently only has color aerial imagery from 2015. MOA does have LiDAR data, but MOA did not acquire the necessary vegetation height or building height data as part of the delivered datasets. Any color infrared imagery covering MOA would likely not meet resolution requirements that would allow for impervious surface derivation at the parcel level.

Although the steps for generating impervious surface data can be found online, or in software tutorial/help pages, it is recommended that this process only be performed by an individual or company with prior experience creating this type of data. One reason for this, apart from greatly reducing the likelihood of an erroneous classification, is that they will also be required to provide a statistical assessment of the accuracy of the impervious surface classification that can be used to determine where field checking may be required.

Having a contractor generate the impervious surface data from the existing 2015 aerial imagery would likely cost between \$7,500 - \$15,000, depending on the level of accuracy assessment needed.

It is also recommended to cost-compare generating the impervious surface data using existing aerial imagery with having it generated via LiDAR data. Even though MOA didn't receive the necessary LiDAR derived vegetation/building height data as a deliverable, this information could still be generated from the source LiDAR data and could be used by a contractor to generate an impervious surface layer.

The acquisition of an impervious surface GIS dataset would occur during the "detailed use" level of implementation.

4. Creation of New GIS Datasets

There are some GIS layers that would benefit the SWU, but do not currently exist in the MOA GIS library. These layers are not necessarily required for successful SWU implementation, but they would provide an additional layer of resolution in decision making. This section describes these datasets and discusses how they would be useful to the SWU.

When determining whether to develop these layers, consideration should be made for:

- The level of effort required to create the data
- The level of effort required to maintain the data
- Understanding how often the data changes

1. SWU Customers

What is it: This is a point dataset, where each point represents the location of an SWU customer. Attributes would include, at the very least, a customer ID that could be linked to a customer database. Linking to the customer database would allow for GIS access to customer name, physical address, billing address, and other information that could be mapped or summarized thematically.

Benefit to SWU: Being able to map and analyze customer locations would allow for the creation of spatial subsets for modeling, reporting, as well as generating targeted mailing notices.

Level of Effort to Complete: Once customer ID's are generated and associated with the physical address, the points could be generated by a relatively simple geocoding process that utilizes the MOA addressing database.

The development of a customer dataset would occur during the "pre-utility" or "basic use" level of implementation.

2. Right-of-Way

What is it: A right-of-way is the legal designation of an area of a property that allows other individuals to travel through the property using that area. These are typically used for transportation, utilities, drainage, or other similar purposes. Right-of-ways are dedicated to the public and no individual can claim exclusive ownership or use.

Benefit to SWU: Used to determine areas of a parcel possibly not subject to SWU fees.

Level of Effort to Complete: This would be an intensive, multi-year project requiring significant land records research and review of survey plat documents.

The development of an ROW GIS dataset would occur during the "enhanced use" level of implementation.

3. Driveway Access

What is it: This is typically a GIS layer of lines, where each line represents the driveway access within a property.

Benefit to SWU: Used to assist in calculating impervious surface area within a property (in situations where an impervious surface dataset is not available). Developing this data may not be necessary if the impervious surface GIS layer exists, since driveways are typically included in that data. However, some development of driveway access data might be beneficial during the time where impervious surface data is still in development. For example, estimates of impervious surface coverage for a parcel can be made using a combination of building footprints and driveway access data.

Level of Effort to Complete: Since a full SWU-wide derivation of impervious surface would take precedent over development of driveway access line data, this would only need to be performed in certain areas; such as where modeling is required, or where estimates of impervious surface need to be made prior to the development of the “full” impervious surface data.

The development of a driveway access GIS dataset would occur “as-needed” throughout the “basic use” and “detailed use” level of implementation and would not be needed once the impervious surface data is finalized.

4. National Flood Insurance Claims

What is it: Locations (usually points) showing properties where flood insurance claims have been made. In general, there are not many claims made in Alaska (e.g., from 10/2015 – 9/2016 there were only 8 claims made in the entire state of Alaska through the National Flood Insurance Program).

Benefit to SWU: Would show “problem areas” where property damage had occurred in the past.

Level of Effort to Complete: The difficult part of developing this data is finding out the exact properties where claims have been submitted.

The development of a Flood Insurance Claim GIS dataset would not likely need to occur until the “enhanced use” level of implementation (if at all).

5. Data Stewardship

It will need to be clear from the onset of implementation who “owns” a particular GIS dataset; that is, who is responsible for data editing and maintenance as well as coordinating with MOA GIS & Mapping Services for the data to be made available to other MOA staff or the public (if applicable). Not doing so will result in confusion and possible mismanagement of GIS data.

It is not typically the MOA GIS & Mapping Services team that maintains GIS data, but rather the department where the data is created. Therefore, if a new layer is generated by the SWU (e.g. customers, impervious surface, etc.), the SWU would own the data and be responsible for its’ maintenance.

This will be especially important for stormwater infrastructure (i.e., drainageway) data currently maintained by the MOA Watershed Management Section. Much of their data will have direct application to the SWU, who will almost certainly need to modify some WMS data layers (see Section 2 of this document). WMS has indicated that they will likely need to retain ownership of the surface drainage network (e.g. ditches), but as SWU implementation progresses, it might make sense to have the piped drainageway network (and associated point structures) be maintained by the SWU.

6. Expected GIS Tasks & Workloads

This section outlines the expected GIS staffing tasks & workloads as utility implementation progresses.

1. Pre-Utility Needs

Tasks:

- Work with the MOA Geographic Information Officer (GIO) to ensure appropriate access to software and existing GIS data. This would include access to the MOA ArcGIS Online (and/or Portal for ArcGIS).
- Set up network work space for new GIS data as well as for copies of existing GIS data (that might need to be modified for SWU use).
- Ensure access to a large-format plotter (at least 36-in width).
- Coordinate with the MOA Watershed Management Section (WMS) to ensure access to the appropriate drainageway and subbasin GIS data.
- Develop the SWU boundary GIS layer.
- Use existing MOA parcel data to generate parcel owner-type summaries (e.g., State, Federal, MOA, nonprofit).
- Generate large-format maps for SWU use.
- Work with MOA GIS staff to generate interactive GIS maps for both internal and public use (using Portal for ArcGIS / ArcGIS Online).
- Possibly generate samples of impervious surface calculations for selected sub-areas within the SWU boundary.
- Prepare GIS data for modeling runoff for engineering purposes if needed.
- Develop an “SWU customers” GIS layer.

Staff Workload:

It is possible that this initial work could be accomplished by an existing MOA staff person. During the initial flurry of activity that will accompany utility approval, this staff person might need to work full-time for a period of 1-2 months, then be available at $\frac{1}{4}$ - $\frac{1}{2}$ full time equivalent (FTE). However, if the possibility exists to hire a full time GIS staff from the onset of the SWU, that would be preferable since the GIS workload will greatly increase as SWU implementation is underway and progresses.

2. Basic Use**Tasks:**

- Continuation of tasks as outlined in the “Pre-utility Needs” section above.
- Begin development of impervious surface GIS dataset; either through internal MOA development or via a qualified contractor.
- Develop interactive map to provide access to State as-build records (see Section 2, item 12).
- Ensure access to MOA engineering records through their existing MS Access forms interface.
- Review standardized GIS data models for stormwater utility data. An example of this is the “WaterUtilities.gdb” geodatabase available via the Esri “Water Utility Network Editing & Analysis” solutions (<http://solutions.arcgis.com/utilities/water/help/network-editing/>), which contains a template geodatabase for stormwater utility data. Using standardized data models often makes it easier and cheaper to implement out of the box mapping solutions for data management.
- Expand Portal for ArcGIS / ArcGIS Online mapping applications as needed.

Staff Workload:

1 full-time SWU GIS staff member.

3. Detailed Use**Tasks:**

- Continuation of tasks as outlined in the “Basic Use” section above.
- Digitize new or missing building footprint data.
- If needed, assist in developing a GIS model for pipe condition assessment using existing MOA GIS datasets (e.g., surficial geology and wetland data).
- Add attributes to the WMS drainageway data as described in Section 2, items 6 & 7 of this document.
- Support engineering modeling efforts as needed.
- Develop framework for direct GIS linkage of infrastructure features (currently contained in the WMS drainageway GIS data) to scanned engineering records.

Staff Workload:

1 full time GIS/data person with possible additional GIS support needed at $\frac{1}{4}$ - $\frac{1}{2}$ full time equivalent (FTE).

4. Enhanced Use

Tasks:

- Continuation of tasks as outlined in the “Detailed Use” section above.
- Ensure a process is in place to update & maintain all necessary GIS data (e.g., impervious surface data, building footprints, drainageway information, parcel ownership type and customer locations).
- Implement a process to link scanned MOA and State of Alaska ADO&PF records to drainageway GIS data.
- Implement a process to link drainageway GIS data to the asset management database.
- Develop (or implement out of the box) tools for asset inventory & inspection.

Note: Esri has suite of stormwater utility tools and apps that can be utilized ([http://solutions.arcgis.com/gallery/#s=0&md=industries:water:Stormwater Conveyance](http://solutions.arcgis.com/gallery/#s=0&md=industries:water:StormwaterConveyance)). Implementation of these would require support from MOA GIS & Mapping Services.

These might include tools for:

- Capital improvement planning & tracking
- Stormwater asset inventory & inspection
- Tracking site violations / problem areas
- Viewing impervious surface breakdowns at the parcel level

Staff Workload:

1 full time GIS staff and 1 full time records management staff (who also assists with GIS when needed). There is a possibility that, beyond these 2 staff members) additional GIS support would be required at an estimated ¼ - ½ full time equivalent (FTE).

7. Development of Standard Operating Procedures

Developing formalized operating procedures for spatial data processes in a utility is critical. In reality, operating procedures are rarely documented. This typically isn't intentional, but rather staff are usually busy with day-to-day tasks and do not have time to create appropriate procedural documentation. Written operating procedures for GIS do not need to contain a high level of detail (this is often what prevents them from being completed in the first place), but rather may contain an overview level of policies that provide structure for how day-to-day GIS operations should occur.

While not entirely practical to develop standardized operating procedures prior to knowing how the SWU will be structured, it is possible to present a timeline for when procedures should be formalized based upon the stage of SWU implementation.

1. Pre-utility Needs

- a. Ensure that there is a "stewardship plan" for any data that will be edited (see Section 5 of this document).
- b. Ensure that users who need only to view data do not have the ability to delete or edit data.
- c. Ensure any "borrowed" data is at its most current version and that it is updated regularly.

2. Basic Use

- a. Implement "staging" and "production" versions of SWU GIS geodatabases. A "staging" geodatabase is the working database where editing is performed. The "production" database is the version of the data used in mapping and applications. Typically, staging data is copied to the production data on a regular basis (e.g. weekly).
- b. Ensure that data edits are logged by user and also by date. Using Esri geodatabase tools, this can be setup to occur automatically.
- c. As soon as there is more than 1 GIS staff assisting the utility, make sure there are designated editors for datasets.
- d. Review standardized stormwater GIS data models (see Section 6, item 2 of this document) that can be followed as data use expands. Assess if the data model contains a geometric network & determine if a geometric network is needed for SWU GIS needs.

3. Detailed Use

- a. Implement the data model (from item 2d above).
- b. Develop process for the intake, scanning, data extraction (of drainage infrastructure), and digital storage of engineering documents. Separate processes will need to be established for State of Alaska and MOA records.
- c. Develop the process for how scanned documents will be linked to GIS drainage features.

4. Enhanced Use

By this stage of implementation, all Standard Operating Procedure documents should be complete, and they should be updated as needed.

Appendix C
Analysis of Legal Authority
for a Municipal Stormwater Utility

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MEMORANDUM

To: Jason Bockenstedt, Ralph Duerre
Municipality of Anchorage

From: Michael S. McLaughlin
Guess & Rudd P.C.

Cc: Bruce Robson
Stantec Consulting Services, Inc.

Date: November 17, 2017

Re: Analysis of Legal Authority for a Municipal Stormwater Utility
Our File No. 6577.1

This memorandum analyzes the legal basis for creating a stormwater utility (“SWU”) under the Alaska Constitution, Alaska Statutes, the Municipality of Anchorage (“MOA”) Charter, and the Anchorage Municipal Code. Review of these items indicates there is adequate legal basis for creating a stormwater utility, although doing so would require modification of certain existing sections of the Anchorage Municipal Code (“AMC”) and the addition of new AMC sections addressing the new utility. We conclude that if the Assembly decides to create an SWU as opposed to a service area for stormwater handling, it could be done by ordinance. Because of the challenges to using service areas, creating a new utility would likely be simpler and offer more flexibility. In addition, we recommend that the ordinance creating such an SWU address the following topics:

1. Add new chapters to AMC Titles 19 and 26 for the SWU which are similar to existing chapters in both titles for water and wastewater;
2. Amend AMC 4.80.020 if it is decided that the SWU should be administered by Anchorage Water and Wastewater Utility (“AWWU”) or add a new section to AMC Chapter 4.80 if an advisory board will be organized for the SWU; and
3. Approve an SWU Tariff (or an AWWU Stormwater Tariff), *see* AMC 26.10.035, if the SWU is not granted an exemption from economic regulation under AS 42.05.711(b) or (d).¹

The basis for these conclusions and recommendations is analyzed below.

A. Alaska Constitution.

¹ See our memorandum of October 6, 2017 on the topic of regulation by the Regulatory Commission of Alaska.

Article X, Section 1 of the Alaska Constitution provides that the purpose of Article 10 “is to provide for maximum self-government with a minimum of local government units. . . A liberal construction shall be given to the powers of local government units.” Article X, Section 11 of the Alaska Constitution states that “[a] home rule borough or city may exercise all legislative powers not prohibited by law or by charter.”

These two sections of Article X clearly intend to allow local governments like the MOA to exercise broad powers limited only by what is specifically prohibited. There are no other provisions of the Alaska Constitution which can reasonably be construed to prohibit the creation of a stormwater utility. Indeed, public utilities of various types have historically, and are currently, owned and operated by local governments in Alaska, including the MOA.

The Constitution also allows the creation of service areas for the provision of “special services” as well. Article X, Section 5 provides as follows:

Service areas to provide special services within an organized borough may be established, altered, or abolished by the assembly, subject to the provisions of law or charter. A new service area shall not be established if, consistent with the purposes of this article, the new service can be provided by an existing service area, by incorporation as a city, or by annexation to a city. The assembly may authorize the levying of taxes, charges, or assessments within a service area to finance the special services.

Creating stormwater service areas is a potential alternative or supplement to creating an SWU. However, there are limitations on the creation of service areas, such as if the new service can be provided by an existing service area, or by inclusion of the area into a city by organization or annexation. Creation of such service areas would be subject to the MOA Charter.

B. Alaska Statutes.

Under AS 29.04.010, “[a] home rule municipality has all legislative powers not prohibited by law or charter.” It further defines a home rule municipality to be “a city or a borough that has adopted a home rule charter, or it is a unified municipality.” Again, state law provides very broad powers to home rule municipalities. In fact, AS 29.10.200 lists the provisions of state law that “apply to home rule municipalities as prohibitions on acting otherwise than as provided. These provisions supersede existing and prohibit future home rule enactments that provide otherwise. . .” Among the provisions listed are AS 29.20.050 requiring all legislative power of a home rule municipality to be vested in the assembly, and AS 29.20.220 requiring all executive power to be vested in a mayor. Also included in the list of items that cannot be varied by a home rule municipality is a provision on the establishment of public utilities, AS 29.35.070.

AS 29.35.070 allows the assembly of a municipality to fully regulate and set rates for utilities operating within its boundaries to the extent they are not regulated, either completely or economically, by the Regulatory Commission of Alaska (“RCA”) under AS 42.05. As discussed in our memorandum dated October 6, 2017, the proposed SWU appears to fall within the regulatory jurisdiction of the RCA, both for certification and rates, unless granted an exemption by the RCA under AS 42.05.711(d). Notwithstanding the regulation by the RCA, there is nothing that appears to prohibit municipal regulation of municipally-owned utilities, so long as that regulation is not inconsistent with RCA regulation.²

AS 29.35.450(a) addresses the authority for the creation of service areas to provide special services. It provides (in relevant part) as follows:

(a) A service area to provide special services in a borough or unified municipality may be established, operated, altered, or abolished by ordinance, subject to (c) of this section. Special services include services not provided by the unified municipality or a higher or different level of services. Special services include services not provided by a borough on an areawide or nonareawide basis in the borough or a higher or different level of services than that provided on an areawide or nonareawide basis. (Emphasis added.)

Under this subsection, the MOA is allowed to establish a new service area by ordinance. However, the reference “subject to (c) of this section” raises questions about how existing service areas would be treated, particularly if they provide road, fire protection, and parks and recreation services where voter approval could be required in certain circumstances. The circumstances under which voter approval would be required under subsection (c) include abolishment of a service area providing road, fire protection, and parks and recreation services, enlargement of such a service area, and combining two or more of such service areas. To the extent that the road, fire protection and parks and recreation services provide storm sewer services, there would have to be some relationship between them and any new SWU. One possibility might be to treat them like existing utility improvement districts, and have them donate their stormwater handling assets to the SWU and agree to pay for stormwater handling service in return for the SWU agreeing to maintain them in the future and taking responsibility for the proper handling of stormwater coming from the service area.

The broad grant of authority to home rule municipalities to create, and in some cases regulate, public utilities and service areas is expressed in the Alaska Statutes.

² See AS 42.05.641, which provides that the RCA’s “jurisdiction and authority extend to public utilities operating within a municipality, whether home rule or otherwise. In the event of a conflict between a certificate, order, decision, or regulation of the commission and a charter, permit, franchise, ordinance, rule, or regulation of such a local governmental entity, the certificate, order, decision, or regulation of the commission shall prevail.” This section obviously contemplates local regulation in addition to RCA regulation of public utilities.

C. Municipality of Anchorage Charter.

The MOA Charter at Section 3.01 states that the MOA may exercise all powers not prohibited by law or by the Charter itself. The MOA is a home rule municipality. *See Commission Commentary to Anchorage Municipal Charter at Section 3.01 (“[b]y virtue of this section the new government will be a home rule municipality.”)*

Section 16.01 of the Charter addresses municipal utilities. It requires in subsection (a) that each MOA utility “shall be operated in accordance with the general standards common to utilities providing the same utility service.” Subsection (b) provides that each MOA utility “shall have a separate budget within the annual municipal budget. The accounts shall be separately kept and classified in accordance with uniform accounting standards generally prescribed for public utilities providing the same utility service.” Most importantly, subsection (c) states that “[t]he assembly shall prescribe rules and procedures for the operation and management of municipal utilities.”

Article IX of the MOA Charter addresses the creation of service areas and assessment districts. Section 9.01(a) states in part that “[a] service area may be created, altered, or abolished only with the approval of a majority of those voting on the question within the area affected, or, if no qualified voter resides within the area, with the written consent of the owners of all real property within the area affected.” Similarly, Section 9.02(a) states in part that “The assembly by ordinance may establish districts to provide and finance capital improvements by means of an assessment, or services by means of a tax levy. The assessment or levy shall be proportionate to the benefit received from and the burden imposed upon the improvement or service. The assembly by ordinance shall prescribe uniform criteria for allocating the cost of the improvement or service within an assessment district.” Section 9.02(b) provides that “An assessment district may be created or extended only with the approval of the property owners who would bear more than 50 percent of the estimated cost of the improvement or service. An assessment district created to finance a capital improvement may be dissolved by assembly resolution at any time after the district's share of the cost of the improvement has been paid. An assessment district created to finance a service may not be dissolved without the approval of the property owners who bear more than 50 percent of the cost of providing the service.” In short, creation of service areas and assessment districts is allowed if more than 50% of the voters in the proposed service area vote for it, or property owners in a proposed assessment district who would bear more 50% of the cost approve it.

Clearly, the Charter accepts the broad grant of home rule authority deriving from the Alaska Constitution and State law, and specifically contemplates the creation and regulation of MOA-owned utilities, service areas and assessment districts. The power to create and regulate municipal utilities is vested in the MOA Assembly.

D. Anchorage Municipal Code.

The AMC contains many provisions related to utilities, service areas and assessment districts. AMC Title 26 is the principal location of many of the provisions related to the operation and regulation of MOA-owned utilities. AMC 26.10 contains provisions related to the general operation of all MOA-owned utilities, such as standards for operation, the requirement for a separate budget within the municipal budget, the application of the Municipal Utility Service Assessment, the requirement to operate certain utilities to make a profit, the conditions for distributions of excess revenue to the MOA, and the requirement for Assembly approval of rules, regulations, and rates of each MOA utility.

AMC 26.50 addresses sewer service. AMC 26.50.020 defines the term “sewer” broadly:

Sewer means any pipe, conduit, ditch, or other device used to collect and transport wastewater or stormwater from the generating source.

Currently, however, AMC 26.50 is focused primarily on the Municipal Sewerage System, which is defined in AMC 26.50.020 to mean “any sewage treatment works and the sewers and conveyance appurtenances discharging thereto, owned and operated by the municipality.” This would not include a new SWU because the term “sewage” is defined as “human excrement and gray water (from household showers, dishwashing operations, etc.)” and therefore the Municipal Sewerage System only includes those sewers which discharge to the sewage treatment system, which the SWU does not and will not do. This is different than stormwater, which is also defined in AMC 26.50.020 to mean “any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.”

Because the current structure of AS 26.50 is limited to regulation and operation of the Municipal Sewerage System, also known as the sanitary sewer system, it does not clearly address stormwater handling despite some of the definitions that include references to stormwater. This is not surprising since stormwater handling has historically been left to Municipal Public Works, the State of Alaska, and service areas like LRSAs (limited road service areas) created under AMC Title 19.

Assessment districts are governed by AMC Title 19. AMC 19.10.020.A.1.c specifically allows for the creation of an assessment district for public capital improvements like “[s]torm sewers and drains” among other types of public capital improvements. AMC 19.10.020.A.2.a specifically allows for the creation of assessment districts for “[m]aintenance, repair and upkeep of any public capital improvement created by an assessment district” among other types of services.³ There are limitations to what

³ Assessment districts for services are not the same as service areas. They are a creature of municipal law that can be created, abolished and changed. There are other types of districts that might be affected as well, such as an assessment district for services. Under the Alaska Supreme Court’s interpretation, these are purely creatures of municipal law that are not subject to the dual approval rules contained in AS

an assessment district for services can be used to do. For example, AMC 19.10.020.B contains the following limitation: “Assessment districts for services shall provide an enhanced or supplemental public service or new public service not provided by the municipality generally. The establishment of an assessment district for services shall not operate unilaterally or by implication as a substitute for or to reduce or eliminate the nature or extent of services provided by other means” (emphasis added). If an assessment district for services model is used instead of a utility model, this limitation could prevent the MOA from converting services currently provided by the MOA generally into an assessment district for services. My recommendation is to include provisions for new stormwater assessment districts within the tariff of the new SWU and have AMC provisions similar to those for the water and sewer assessments simply referring to the tariff (assuming there is one). I would expect the process for assessment to be very similar to existing water and sewer tariff provisions which are based on existing requirements in Title 19.

Service areas are addressed by AMC Title 27. They are created by a public vote within the area affected as that term is defined in AMC 27.10.010(A) as “that area determined by the assembly to be subject to significant change in the cost, quality, quantity or other factor affecting the delivery of service therein if the proposed action is approved.” Certain types of service areas, those focused on providing road, fire protection, or parks and recreation services, have a dual approval requirement for extension or dissolution and immediate re-creation of a new, larger service area. It requires the affirmative vote of both those in the existing service area and those residing in an area to be added to an existing service area.⁴ The process for altering an existing service area is set forth in AMC 27.10.020. While it is not entirely clear how the process would be applied for transferring only the drainage function to the SWU, it appears a petition would be required. Amendment of AMC 27.10 to provide a specific procedure for transferring a single function from an existing service area or LRSA may be the best way to clarify the process.

In order to create the SWU, changes to and supplementation of the AMC would be necessary. While changes to existing AMC chapter 26.50 could be made to accommodate an SWU, to the extent that a stand-alone utility is contemplated, the best strategy would likely be to create a new chapter of AMC Title 26 in which provisions related to the SWU would be located. A few minor changes to existing sections of AMC 26.50 to clarify what applies to the Municipal Sewerage System and what applies to the new SWU will be necessary under either case. Also, AMC Title 19 will need to be supplemented to include a new chapter addressing the new SWU’s ability to make assessments for capital improvements, which will likely mirror those relating to water

29.35.450(c) (see *L Street Investments v. Municipality of Anchorage*, 307 P.3d 965 (Alaska 2013)). Instead, under AMC chapter 19.20, creation, extension, or dissolution of an assessment district for services requires the approval of property owners bearing at least 50% of the cost. However, there is nothing in the AMC or the Charter which requires such approval for an alteration of an existing assessment district for services. There is no case law on this either so it is unclear whether a court would require approval of property owners bearing at least 50% in order to alter an assessment district for services by removing the stormwater handling functions.

⁴ See AS 29.35.450(c) and AMC 27.10.020.

and sewer assessments.⁵ Clarification of the service area alteration process through amendment of AMC Title 27 is also recommended.

E. Conclusion.

In conclusion, there is ample legal authority for the Assembly, through the power granted to it by the Alaska Constitution, State statutes, and the MOA Charter, to create the SWU as a new municipal utility.⁶ Such a utility should be created through a new chapter of AMC Title 26 and appropriate changes to some of the existing AMC sections as discussed above. It also may be possible to create a number of service areas or assessment districts instead of a utility, but limitations on the use of assessment districts for services already provided by the MOA generally, and the requirement for a vote of those to be included in the service area, could be a substantial impediment. Also, use of a large number of separate service areas for stormwater handling will likely continue the hodge-podge nature of the current system.

⁵ See AMC 19.55.010 and AMC 19.70.010. These provisions simply refer to the existing approved tariffs of the water and sewer utilities, respectively.

⁶ A new and separate SWU may also require the addition of a new section in AMC Title 4.80 addressing any advisory board that may be organized to provide oversight and/or input to the SWU. Or, if the SWU becomes part of AWWU, AMC 4.80.020 would need to be amended to include the SWU.

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Appendix D
Stakeholder Engagement Materials

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MOA Stormwater Utility Implementation Steering Committee

Meeting # 1

August 22, 2017

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MOA Stormwater Utility Implementation Steering Committee Kickoff Meeting
Tuesday, August 22nd, 2017 – 11:30 a.m. to 1:00 p.m. (*lunch provided*)
Mayor's Conference Room; 632 West 6th Avenue, 8th Floor

OBJECTIVES

- Clarify project purpose and role of Steering Committee.
- Gain initial input from Committee members on project purpose, role and next steps.

AGENDA

- 11:30a-11:35a Welcome, Brief Introductions + Meeting Guidelines
- 11:35a-11:40a Mayor Ethan Berkowitz – Vision for Potential New Stormwater Utility and Role of the Steering Committee
- 11:40a-11:45p Purpose – Why is this necessary?
- Issues and needs – existing infrastructure challenges and policies.
 - Comparable utilities/best practices – how other communities/states have addressed these issues and challenges.
- 11:45p-12:50p Discussion – Immediate Response from Steering Committee Members
- What do you need to know to better understand and fulfill your role as a Steering Committee Member? What is the best way to share information and get input from you throughout the planning process?
 - What is the potential impact (benefits and/or challenges) of a stormwater utility on your organization, community, stakeholders?
 - What do you/your constituents care most about?
- 12:50p-1:00p Process – Where do we go from here?
- Work-to-date.
 - Ultimate goals and key milestones moving forward.
 - Moving forward, as we know and can share more with a broader audience, what are the best ways to educate and engage your constituents, the community?

STEERING COMMITTEE MEMBERS

- Chris Schutte, Municipality of Anchorage
- Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Judith Schonbeck, Associated General Contractors of Alaska
- Kevin Campbell, Building Owners and Managers Association
- Mark Premo, Subject Matter Expert
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert
- Moira Gallagher, Anchorage Economic Development Corporation
- Stephanie Mormilo, Municipality of Anchorage
- Thede Tobish, Municipality of Anchorage
- Tim Potter, DOWL

PROJECT TEAM

- MOA Project Manager – Jason Bockenstedt
- Consultants to MOA attending:
 - Bruce Robson, Stantec, Project Manager
 - John Malueg, Stantec, National Subject Matter Expert
 - Shelly Wade, Agnew::Beck Consulting and Holly Spoth-Torres, Huddle AK, Project Stakeholder Engagement

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Creating a Stormwater Utility for the Anchorage Bowl

Steering Committee Kickoff Meeting

August 22nd, 2017

Welcome and Introductions

Please share:

- Your name
- Your affiliation



Meeting Guidelines

- Be positive.
- Be clear and concise.
- Avoid jargon and acronyms.
- Think creatively and strategically.
- Ask questions.
- Ideally, no laptops or cellphones on the table (unless emergency).

3

Our Vision and Your Role



4

Why is This Necessary? What is Stormwater?



5

How does Anchorage currently handle stormwater and drainage? Why do we need a stormwater utility?



Ownership

- MOA
- DOT&PF



Funding

- Capital improvements: municipal GO bonds and state grants
- Operations and maintenance: property taxes and state appropriations



Maintenance

- Aging system more costly to maintain
- Deferred maintenance
- Increased regulatory mandates (MS4)

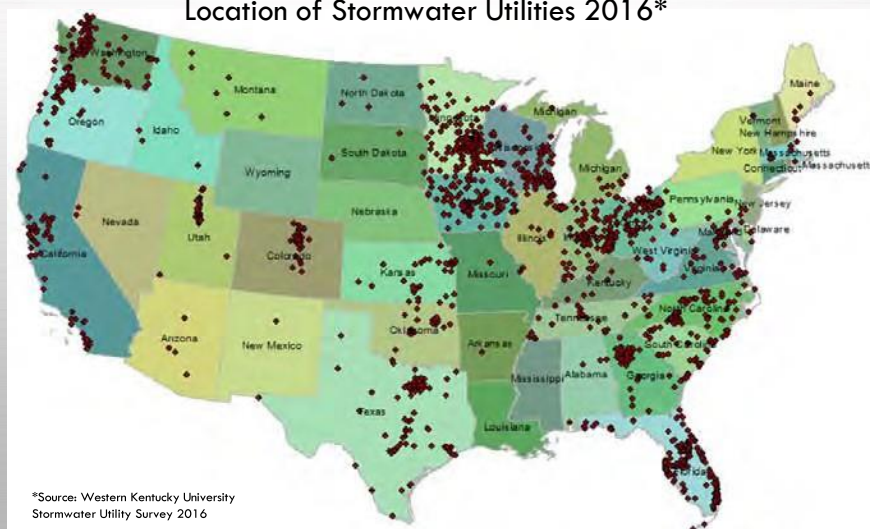
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Example Anchorage Bowl stormwater issues



Comparable SW Facilities – National Trends

Location of Stormwater Utilities 2016*



Impacts and Your Needs – Tell Us

- What do you and your constituents care most about regarding stormwater issues?
- What potential benefits and/or challenges will a stormwater utility have on your organization, community and stakeholders?

9

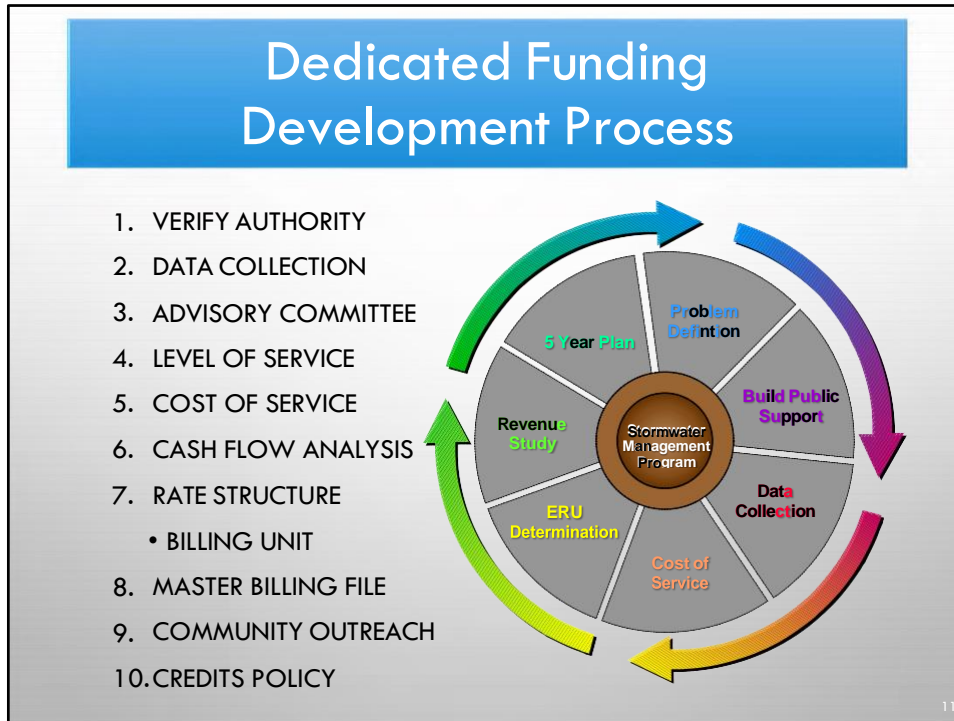
Proposed Schedule

PHASE I –
Assembly request

PHASE II –
SWU Implementation

PHASE III –
SW Operations + Restructure


- RFP and contract for Stormwater Utility (SWU) Implementation Plan
- Assembly approves funding request
- Complete Implementation Plan
- Approve SWU ordinance
- **Utility begins basic operations**
 - Develop Stormwater Master Plan
 - Identify Capital Improvement Plan
 - Define service levels
 - Develop rate structure
 - Finalize Stormwater Master Plan
- **SWU is fully operational**
 - Customers receive first utility bill



Funding Innovation

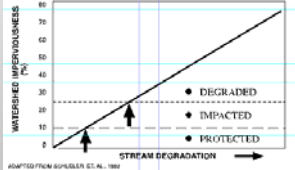
Stormwater Utilities By the Numbers:

- Flat Rate – 231 utilities
- ERU – 877 utilities
 - Including Residential Equivalent Factor (Q=CIA)
 - Challenged and upheld in Courts
- Others – 492 utilities
 - Parcel specific plus



ERU (median) = 2,900 sq. ft.

ERU (fee) = \$15.14 based on \$4.50 / ERU
Waterway Health and Imperviousness



ADAPTED FROM SPILLER ET AL., 1992

12

Your Role – Tell us:

1. What do you need to know in your role as a Steering Committee Member?
2. What is the best way to share information with you and get your input?

13

Recommendations: Education + Engagement

- What are the best ways to educate and engage your constituents?
- What are the best ways to educate and engage the community?



14

Thank you!

Questions, Comments, Concerns? Contact us:

Jason Bockenstedt

907-343-8290

BockenstedtJr@muni.org





MOA Stormwater Utility Implementation Steering Committee Kickoff Meeting NOTES
Tuesday, August 22nd, 2017 – 11:30 a.m. to 1:00 p.m.
Mayor's Conference Room; 632 West 6th Avenue, 8th Floor

OBJECTIVES

- Clarify project purpose and role of Steering Committee.
- Gain initial input from Committee members on project purpose, role and next steps.

PARTICIPANTS (*in alpha order by first name*)

- Bob Anderson, Alaska Department of Transportation and Public Facilities (DOT), Maintenance and Operations
- Chris Schutte, Municipality of Anchorage (MOA)
- Dave Laster, Associated General Contractors of Alaska
- Judith Schonbeck, Associated General Contractors of Alaska
- Kevin Campbell, Building Owners and Managers Association
- Kristi Bischofberger, Municipality of Anchorage, Watershed Management
- Mark Premo, Subject Matter Expert
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert, Homeowner
- Misti Dawn Crim, Associated General Contractors of Alaska
- Moira Gallagher, Anchorage Economic Development Corporation
- Sean Baski, DOT, FOR Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Stephanie Mormilo, Municipality of Anchorage, Traffic
- Thede Tobish, Municipality of Anchorage, Long Range Planning
- Tim Potter, DOWL

PROJECT TEAM ATTENDANCE

- MOA Project Manager – Jason Bockenstedt
- Mayor Ethan Berkowitz
- Consultants to MOA attending:
 - Bruce Robson, Stantec, Project Manager
 - John Malueg, Stantec, National Subject Matter Expert
 - Shelly Wade, Agnew::Beck Consulting, Project Stakeholder Engagement
 - Holly Spoth-Torres, Huddle AK, Project Stakeholder Engagement

SUMMARY OF DISCUSSION

A. Welcome, Brief Introductions + Meeting Guidelines

- Jason Bockenstedt, MOA project manager, welcomed everyone and thanked the Steering Committee for participating. Steering Committee and Project Team members went around the room and briefly introduced themselves and described their affiliation.
- Shelly Wade, the meeting facilitator, described the goals and purpose of the meeting and briefly outlined the agenda and guidelines for the meeting.
 1. Municipal Stormwater Utility: What is the purpose and why is this necessary?
 2. Process and Schedule for Implementing a Stormwater Utility in Anchorage
 3. Role of the Steering Committee

B. Remarks from Mayor Ethan Berkowitz – Vision for Potential Stormwater Utility and Role of the Steering Committee

- Mayor Berkowitz thanked the group for their expertise and participation and stated that stormwater utilities are a very rational mechanism to manage critical drainage infrastructure. Today in Anchorage there is a patchwork of financing and assets. Additionally, the current stormwater management system does not provide equity for beneficiaries and contributors. To complete large capital and economic development projects, there needs to be a rational way to manage the financing and operations of stormwater. Mayor Berkowitz closed by stating that he is committed to this project and will be monitoring progress.

C. Purpose – Why is this necessary? – The Project Team gave a brief presentation covering the following:

What is Stormwater?

Stormwater is runoff generated from rain and snowmelt events that flow over land or impervious surfaces (e.g., paved streets, parking lots, building rooftops). Stormwater runoff does not soak into the ground naturally and it picks up pollutants such as trash, chemicals, oils, and dirt/sediments that can negatively impact water quality.

Stormwater impacts everyone and does not follow political boundaries.

How does Anchorage currently handle stormwater and drainage?

- Ownership: Currently multiple agencies own stormwater infrastructure including both MOA and DOT.
- Funding:
 - Capital Improvements – Funded through general obligation (GO) bonds and State grants.
 - Maintenance and Operations – Funded through property taxes and State appropriations.
 - Anchorage Roads & Drainage Service Area (ARDSA), Limited Road Service Area (LRSAs) and Homeowner Association (HOAs) – ARDSA covers much of the Anchorage Bowl, LRSAs fund and operate drainage facilities on much of the hillside and in some cases the Homeowners Association is responsible for drainage.
- Maintenance: The current stormwater system is aging, very costly to maintain and there is a large backlog of deferred maintenance issues.

Why do we need a stormwater utility?

- A stormwater utility is needed because it would provide a dedicated funding source for capital improvements and maintenance for a defined level of service.
- The utility will establish a process for comprehensive stormwater planning so that managers can systematically address issues per a timeline.
- A stormwater utility will provide an equitable system for raising revenues based on actual runoff impact, so that the cost causer is the cost payer.
- There continues to be increased regulatory mandates vis the Alaska Pollutant Discharge Elimination System (APDES) MS4¹ permit and a stormwater utility will provide a mechanism for more streamlined compliance.

Comparable utilities/best practices – how other communities/states have addressed these issues and challenges?

- There are hundreds of stormwater utilities successfully operating in the United States. It will be important to draw on the successes of other cities similar in size and climate.

¹ <https://www.epa.gov/npdes/stormwater-discharges-municipal-sources>: An MS4 is a conveyance or system of conveyances that is: owned by a state, city, town, village, or other public entity that discharges to waters of the U.S., designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches), not a combined sewer, and not part of a sewage treatment plant, or publicly owned treatment works (POTW).

D. Discussion – Immediate Input from Steering Committee Members

- The Steering Committee was asked the following questions for discussion and response:
- What is the potential impact (benefits and/or challenges) of a stormwater utility on your organization, community, stakeholders?
- What do you/your constituents care most about?

Following is a summary of the discussion and comments categorized by (1) BENEFITS (of implementing SWU); (2) CHALLENGES (of implementing SWU); (3) OTHER CONSIDERATIONS (to SWU implementation); and, (4) PROCESS + COMMUNICATIONS:

BENEFITS of a stormwater utility in Anchorage:

- Utilizes natural systems and green infrastructure; working with mother nature instead of against it, therefore using natural systems to reduce maintenance costs.
- Provides a mechanism for comprehensive stormwater master planning.
- Provides a funding mechanism for land acquisition; acquire natural systems to be part of the complete drainage system for storage and/or to offset drainage or flooding issues over time (example: Cuddy Family Midtown Park). These acquired assets could function as greenbelts and open spaces for use by the public if appropriate. Specific potential mechanism: MOA/utility would have first right of refusal on private property, increasing opportunity for adequate stormwater and other infrastructure construction/improvements.
- Increases the quality of life for Anchorage residents by improving water quality.
- Economic Development – Connecting into community-supported infrastructure (utility infrastructure) will make development more efficient and less costly. Example: The cost to build stormwater infrastructure is one of the major obstacles for developers when considering redevelopment or new development in certain parts of town. Specific benefit: with decreased development costs is a potential increase in affordable housing stock.
- Improve stormwater infrastructure to be able to handle peak flow (currently, certain streets flood because the infrastructure is undersized).

CHALLENGES of a stormwater utility in Anchorage:

- In Anchorage, there is a rural-urban split. When considering a stormwater utility, Hillside resident perspective will be that money and services will be transferred from the Hillside to the urban areas (a perceived inequity). For a stormwater utility to be successful, the Hillside will need to see value in the system and benefit to then (most are concerned with snow removal and stormwater issues are not on their radar). Hillside residents/homeowners want to have a voice and play an active role in how money is spent and services are distributed.
- There is concern that commercial property owners will be faced with increased costs, timelines, permitting requirements, regulatory requirements and other impacts to their bottom line when they want to make improvements to infrastructure.
- Currently, stormwater is funded through the municipal and state general funds, GO bonds, State grants. It will be challenging to communicate potential impacts on the tax cap to the public.

OTHER CONSIDERATIONS – What do I or my constituents care most about:

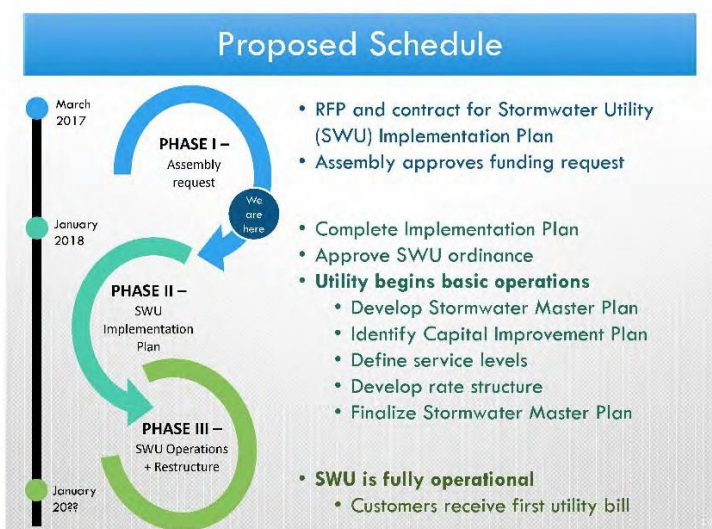
- What are the potential regulatory constraints of using green infrastructure?
- Timing/coordination of infrastructure projects is important when considering redevelopment. Costs, who and how.
- There needs to be fairness and consistency in applying the MS4 permit requirements.
- Transportation mobility, safety and cost need to be elements of the conversation.
- Complete a stormwater master plan before deciding funding policies (who pays for what).
- Midtown infrastructure is aging significantly to the point where there are liabilities.
- When completing the stormwater master plan be very realistic. There are decades-worth of backlog/reactionary work required before proactive work can happen.

- Please communicate very clearly to the construction community about new specifications, timelines and requirements. Additionally, construction bidding will not stop; please be clear about requirements in the interim.
- The MOA is releasing new drainage design criteria that includes green infrastructure. Green infrastructure could be used as an incentive in the stormwater utility model. Ratepayers who install green infrastructure could potentially be eligible for rebates, financing, tax credits or reimbursements.
- Federal Emergency Management Agency (FEMA) flood maps are out of date. Currently the MOA tries to regulate existing conditions, but it is hard to prove when it is different than the FEMA maps and it is not appropriate for a developer to have to fund an entire flood study; this adds costs and delays to development. Consider getting FEMA maps updated as part of this project; having updated maps will be beneficial to the public.
- It boils down to water quality and investment upstream.

PROCESS + COMMUNICATIONS – Messaging and plan development:

- It will be important during the beginning phases of the project to keep the report and discussion technical, not a policy document. Figure out the technical issues and the mechanics of implementing a stormwater utility before diving into policy discussions.
- It is important to document the system and all its issues before trying to sell a solution to the public. Communicate/sell the problem first.
- There needs to be a very well thought out and articulated problem definition statement. What is the purpose? What is the problem that a stormwater utility will address for the benefit of the Anchorage community? Why does everyone have to pay?
- Please make sure other major landowners are included as stakeholders in the planning process – example: State Parks, the Alaska Railroad, Joint Base Elmendorf Richardson (JBER), TSAIA, University of Alaska Anchorage (UAA), Alaska Mental Health Trust Authority (AMHTA), Bureau of Land Management (BLM).
- Please communicate why the project boundary was selected and potentially re-evaluate the scope of the boundary.
- There are three groups represented on this Steering Committee: (1) MOA, (2) DOT and (3) Hillside/Development Community. How do we ensure that there is broader, more robust outreach and communication to stakeholders about this project? There will be a broader Public Involvement Plan. Over the next couple of months project staff will be attending every community council meeting, attending Rotary lunches and other community events to communicate the project.

E. Process – Where do we go from here?



F. The Role of the Steering Committee

The steering committee was asked the following questions:

- What do you need to know in your role as a Steering Committee Member?
- What is the best way to share information with you and get your input?

Responses are captured as Questions, Answers and General Comments below:

- Q – Can we get a copy of the consultant contract so that we understand the scope, milestones and scheduling?
- A – YES. We will distribute a copy of the contract to the steering committee.

- Q – What level of time commitment is required and how will you share information with us?
- A – We will have a monthly meeting (between now and January 2018), approximately 90-minutes in duration spanning the lunch hour where we will share progress, information and listen to feedback. You can also expect regular email updates. Potential topics include:
 - Assets/Issue Assessment and Better Understanding of Existing Regulations
 - Potential Levels of Service
 - Potential Rate Structures

- Q – What is the expectation of the Steering Committee? Are we responsible for making statements to our constituents?
- A – At the next meeting, the project team will provide written statement of the role of the Steering Committee.

- Q – Is my role as a steering committee to represent my professional capacity or is my role that of a homeowner?
- A – Professional and personal input are both very important. You all have significant professional knowledge as it relates to developing a stormwater utility in Anchorage, but your opinions as homeowners are equally important.

General Comments:

- It would be helpful to understand the current costs of the drainage processes that happen across town. For example, Hillside vs. the urban area vs. developers. This information would help make educated decisions moving forward.
- Communicate with the steering committee via email that sends us to a website for more information.
- Please keep communications short and visual. Lengthy, technical reports are not read.

G. Action – To Do:

The project team will:

- Send out a Doodle Poll to schedule the next Steering Committee meetings.
- Send out the following documents prior to the next Steering Committee meeting:
 - Project scope/consultant contract.
 - A written statement on the role of the Steering Committee.

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MOA Stormwater Utility Implementation Steering Committee

Meeting # 2

October 2, 2017

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MOA Stormwater Utility Implementation Steering Committee Meeting #2
Monday, October 2, 2017 – 11:30 a.m. to 1:00 p.m. (lunch provided)
Permit Center Conference Room; 4700 Elmore Road, Room 170

OBJECTIVES

- Revisit project purpose and role of Steering Committee and schedule for key public involvement activities.
- Learn more from MOA Street Maintenance Manager and Consultant Team –
 - **Why is a Municipality of Anchorage Stormwater Utility needed?**
 - **What is the current level of service?**
 - **What levels of service might a SWU provide?**

AGENDA

- 11:30a-11:35a Welcome, Review Agenda, Meeting Guidelines, Recap Meeting #1
- 11:35a-11:50a Role of the Steering Committee and Proposed Schedule for Steering Committee/Other Key Public Involvement Activities
- 11:50a-12:55p Presentation & Discussion – MOA Street Maintenance Manager, Paul Van Landingham and Stantec Consultant Team
- What is the existing infrastructure? What are the current operations and maintenance guidelines, processes? What is the current level of service? What are the issues and needs?
 - What are the potential levels of service a SWU could provide?
- 12:55p – 1:00p Next Steps & Wrap-Up

STEERING COMMITTEE MEMBERS

- Chris Schutte, Municipality of Anchorage
- Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Judith Schonbeck, Associated General Contractors of Alaska
- Kevin Campbell, Building Owners and Managers Association
- Mark Premo, Subject Matter Expert
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert
- Moira Gallagher, Anchorage Economic Development Corporation
- Stephanie Mormilo, Municipality of Anchorage
- Thede Tobish, Municipality of Anchorage
- Tim Potter, DOWL

PROJECT TEAM

- MOA Project Manager – Jason Bockenstedt
- Consultants to MOA attending:
 - Bruce Robson, Stantec, Project Manager
 - Janie Dusel, AWR Engineering, Water Resources Engineer
 - Shelly Wade, Agnew::Beck Consulting and Holly Spoth-Torres, Huddle AK, Project Stakeholder Engagement

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Creating a Stormwater Utility for the Anchorage Bowl

Steering Committee Meeting #2

October 2, 2017

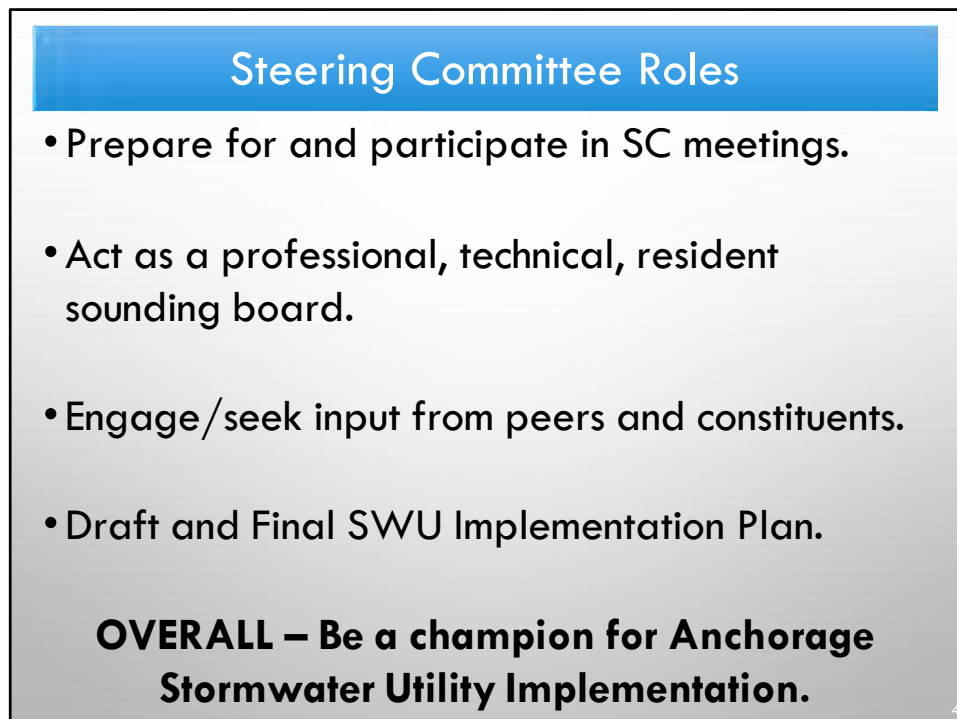
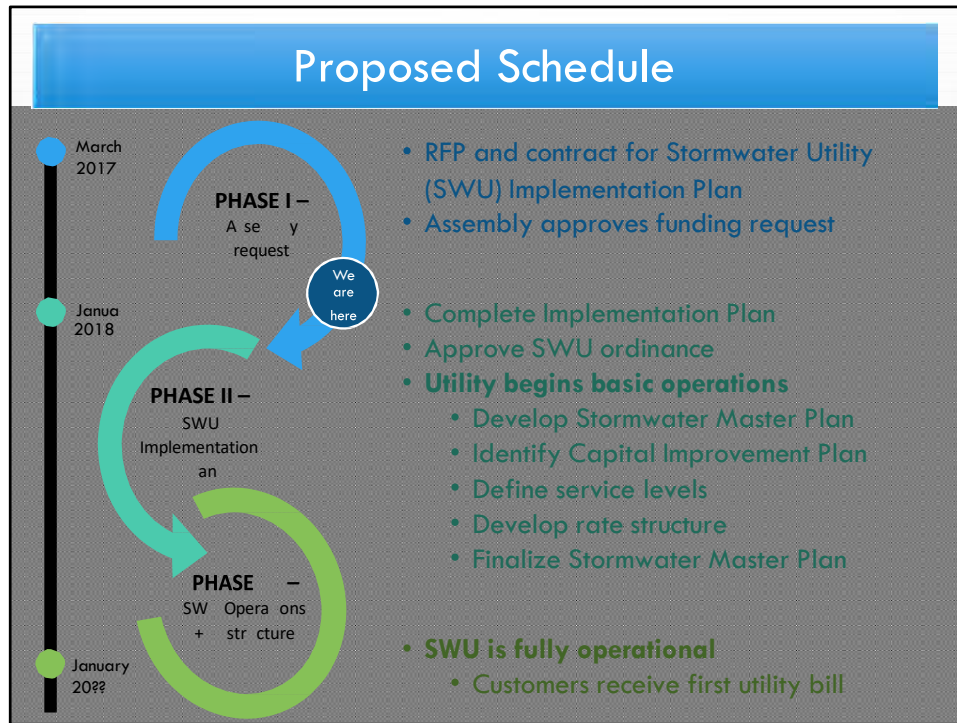
Meeting Objectives

Revisit:

- Project purpose.
- Steering Committee (SC) roles and schedule.
- Other planned public involvement activities.

Learn more about:

- Why is an Anchorage SWU needed?
- What is the current level of service?
- What levels of service might an SWU provide?



Steering Committee Schedule

Kickoff/Meeting #1 – August 22, 2017

Objectives: Purpose, initial input from SC members.

Meeting #2 – October 2, 2017

Objectives: SC roles, why an SWU, potential levels of service.

Meeting #3 – Early November 2017 (Nov 7 – 10)

Objectives: Potential rate structures.

Meeting #4 – Early December 2017 (Dec 5 – 8)

Objectives: Draft SWU Implementation Plan.

Final Meeting #5 – Early January 2018

Objectives: Final SWU Implementation Plan.

5

Other Engagement/Involvement

Anchorage Assembly

- ✓ October and November 2017 – Updates
- ✓ Early December 2017 – Worksession on Draft Plan
- ✓ January 2018 – Public Hearing

Website – October 2017

Community Council Meetings – November and December 2017

Other Stakeholder Presentations and Discussions

Other Outreach/Assessment

6

Existing ANC Stormwater System Issues ^{SW3}

- Stormwater: “out of sight, out of mind” mentality
- Deteriorating or failing infrastructure city-wide
- Lots of metal pipe in corrosive soils (30-60 years old)
- Existing Level of Service
- Roadway and private property impacts
- Flooding
- MOA Street Maintenance regularly responds to stormwater failure emergencies

Review: Current Level of Service ^{SW8}

MS4 Regulatory

- Construction site runoff control program
- Management of developments
- SW design criteria manual
- System inventory/mapping
- Outfall & stream monitoring
- Public education

Maintenance

- Street sweeping 3x/year
- Snow dump sites
- Emergency repairs
- Structure cleaning



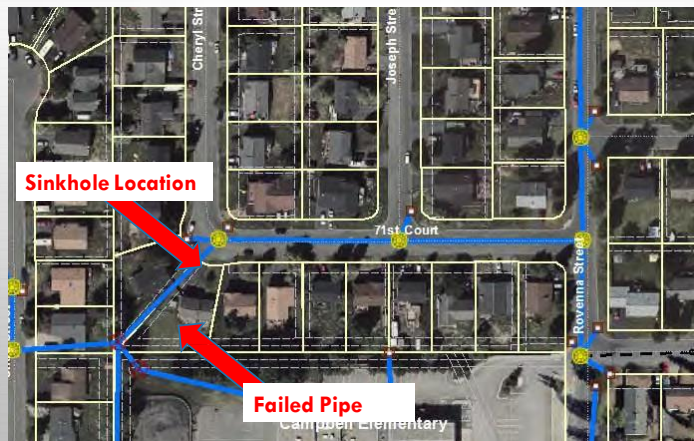
Examples of Current Problems

- 71st Avenue and Cheryl
- Storm drain constructed in 1976
- Pipe bottom fully corroded away ^{SW4} causing a “sinkhole”



Examples of Current Problems

71st Avenue and Cheryl



Examples of Current Problems



Backyard off of
Canton Loop

Examples of Current Problems



C Street
pipe
failure





Examples of Current Problems



7th Avenue and
C Street



4th Avenue



Chad Street

Examples of Current Problems



Nichols Street outfall to Chester Creek

Examples of Current Problems

140th and Buffalo

(photos from alaskapublic.org)



Examples of Current Problems

Porcupine Drive



Examples of Current Problems



Chester Creek

Left: Icing and flooding

Below: Debris in channels



Existing Stormwater System Issues

Other issues:

- Stormwater not managed from a holistic, city-wide perspective
- Water from higher elevations causes problems downstream
- Uncontrolled impacts of new and re-development
- System not flood resilient
- System is piecemealed

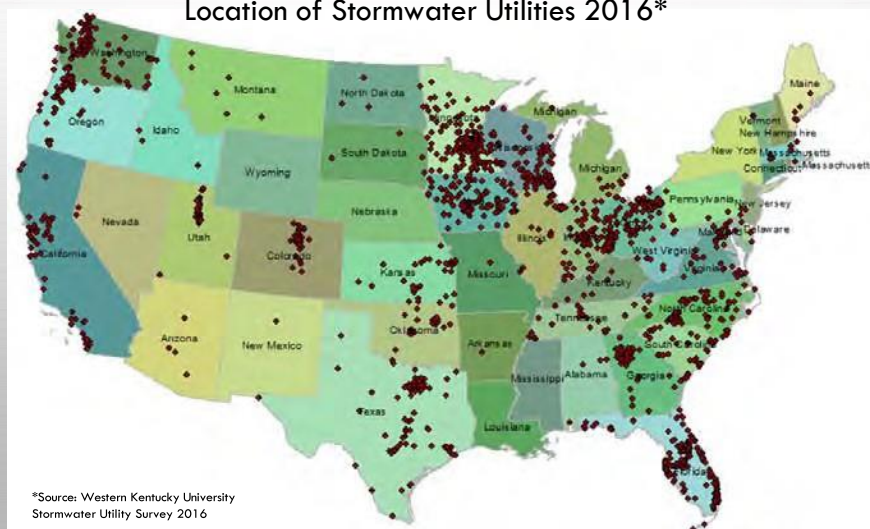
Existing Stormwater System Issues

Other issues:

- Lack of basic information:
 - On existing stormwater infrastructure – pipe type, condition, capacity, depth
 - Limits planning for proactive development and capital improvements

National Trends

Location of Stormwater Utilities 2016*



National Trends

Growth in Dedicated SW With Funding Sources

- 1986: 2
- 1996: ~ 100 (NAFSMA)
- Today: ~ 1,600 (WKU)

States: 39

SW Utility Adoption Trends

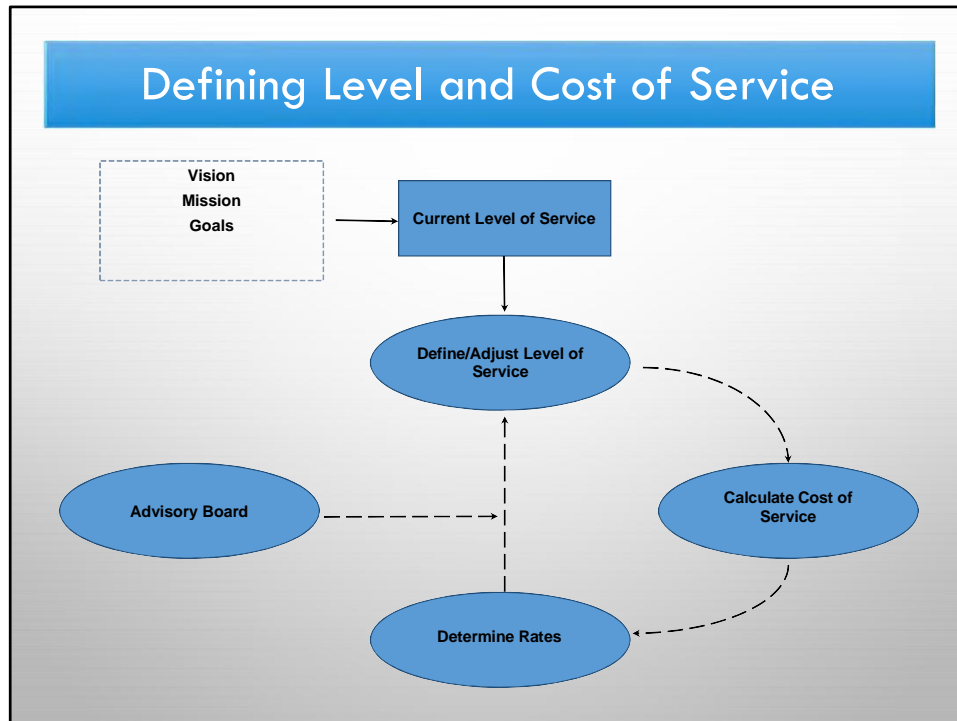
- 30% Before 2005
- 27% 2005 – 2010
- 43% 2010 – Present

National Trends

SWU Types by the Numbers

- Equivalent Residential Units⁽¹⁾: 877 utilities
 - Including Residential Equivalent Factor (Q=CIA)
 - Challenged and upheld in Courts
- Flat Rate: 231 utilities
- Other: 492 utilities
 - Parcel specific plus

⁽¹⁾ ERU – average impervious area on a single residential lot (WKU)



Review: Current Level of Service

MS4 Regulatory

- Construction site runoff control program
- Management of developments
- SW design criteria manual
- System inventory/mapping
- Outfall & stream monitoring
- Public education

Maintenance

- Street sweeping 3x/year
- Snow dump sites
- Emergency repairs
- Structure cleaning



Cost for Current MOA Level of Service

Expenses	2016 Actuals	2017 Budget
Operating		
Labor	\$ 1,765,000	\$ 1,615,000
Non-labor	\$ 8,960,000	\$ 8,780,000
Existing Debt Service	\$ 8,710,800	\$ 8,710,800
	SW7	
Total Operational:	\$19,435,800	\$19,105,800

Level of Service Maturation	
Service Level	Approach
Current	Reactive
New Baseline	Planning/Scheduling
Future	Programmatic/Proactive

LOS Analysis Organizational Categories
<ul style="list-style-type: none"> • Utility administration and finance • Engineering and planning • Regulatory and enforcement • MS4 Driver – operation and maintenance • Capital Improvements Program <ul style="list-style-type: none"> ▪ System upgrades, rehab, replacement and expansion ▪ Stream restoration and enhancements

Comparable Communities – SWU Case Studies

Greensboro, NC

Toledo, OH

Tulsa, OK



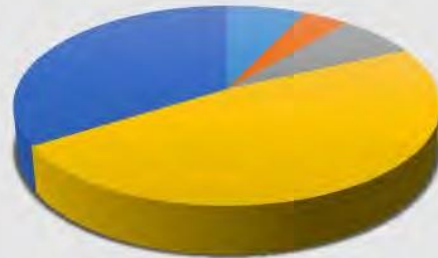
Case Study - City of Greensboro, NC



Stormwater Utility

- Population: 285,000 +
- Area: 130 sq. mi.
- Date Created: 1994
- Rate Structure: Impervious Area^(ERU)
- Rate: \$2.70/ERU (3 tiers - \$1.50; 2.70; 3.90)
- Cost of Service (Revenue): \$12 million

Case Study - City of Greensboro, NC



- Administrative & Finance (6%)
- Engineering & Planning (5%)
- Regulation & Enforcement (8%)
- Operation & Maintenance (58%)
- Capital Improvements (21%)

Case Study - City of Toledo, OH



Stormwater Utility

- Population: 278,000 +
- Area: 84 sq. mi.
- Date Created: 2001
- Rate Structure: Impervious Area (ERU)
- Rate: \$3.16/ERU
- Cost of Service (Revenue): \$14 million

Case Study - City of Toledo, OH



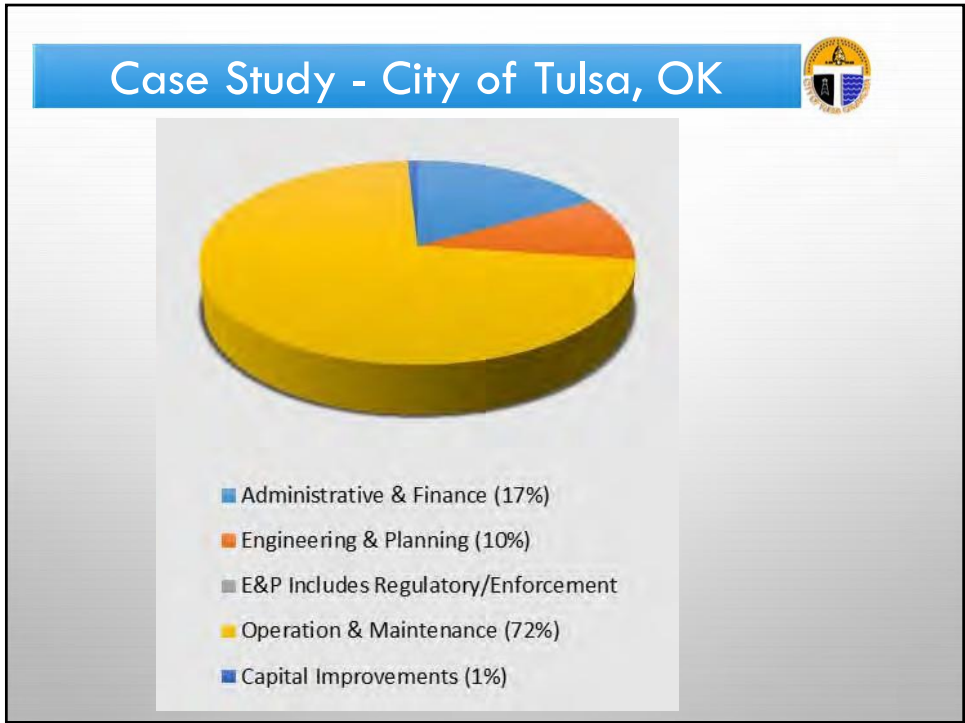
- Administrative & Finance (6%)
- Engineering & Planning (5%)
- Regulation & Enforcement (8%)
- Operation & Maintenance (58%)
- Capital Improvements (21%)
- Debt Service (1%)

Case Study - City of Tulsa, OK



Stormwater Utility

- Population: 403,000 +
- Area: 200 sq. mi.
- Date Created: 1994
- Rate Structure: Impervious Area^(ERU)
- Rate: \$3.38\ERU
- Cost of Service (Revenue): \$12 million



Thank you!

Questions, Comments, Concerns? Contact us:

Jason Bockenstedt
907-343-8290
BockenstedtJr@muni.org



38

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MOA Stormwater Utility Implementation Steering Committee Meeting #2 NOTES
Monday, October 2, 2017 – 11:30 a.m. to 1:00 p.m.
Permit Center Conference Room; 4700 Elmore Road, Room 170

OBJECTIVES

- Revisit project purpose and role of Steering Committee and schedule for key public involvement activities.
- Learn more from MOA Street Maintenance Manager and Consultant Team –
 - **Why is a Municipality of Anchorage Stormwater Utility needed?**
 - **What is the current level of service?**
 - **What levels of service might a SWU provide?**

ATTENDANCE

- Chris Schutte, Municipality of Anchorage
- Eric Hodgson, Street Maintenance Superintendent
- Jim Belz, Street Maintenance Superintendent
- John Crapps, Municipality of Anchorage, Traffic
- Judith Schonbeck, Associated General Contractors of Alaska
- Kevin Campbell, Building Owners and Managers Association
- Kristi Bischofberger, Municipality of Anchorage, Watershed Management
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert, Homeowner
- Paul VanLandingham, Street Maintenance Manager
- Sean Baski, DOT, FOR Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Thede Tobish, Municipality of Anchorage, Long Range Planning
- Tim Potter, DOWL
- Tim Alderson, Upper O'Malley LRSA

PROJECT TEAM ATTENDANCE

- MOA Project Manager – Jason Bockenstedt
- Consultants to MOA attending:
 - Bruce Robson, Stantec, Project Manager
 - Janie Dusel, AWR Engineering, Water Resource Engineer
 - Shelly Wade, Agnew::Beck Consulting, Project Stakeholder Engagement
 - Holly Spoth-Torres, Huddle AK, Project Stakeholder Engagement

MEETING SUMMARY

Welcome, Review Agenda, Meeting Guidelines, Recap Meeting #1

Jason Bockenstedt, MOA project manager, welcomed everyone, thanked the Steering Committee for attending and shared a brief overview of meeting objectives.

Meeting facilitator, Shelly Wade, then introduced meeting Steering Committee Members that did not attend meeting #1 (Tim Alderson, Upper O'Malley LRSA and John Crapps, standing in for the Municipal Traffic Engineer) as well as the MOA Maintenance and Operations staff who attended to present information to the Steering Committee (Paul VanLandingham, Eric Hodgson and Jim Belz). Shelly then briefly recapped Meeting #1 and went on to describe today's agenda including (1) the role and Municipality's expectation of the Steering Committee, (2) as requested during



meeting #1, a better explanation of WHY Anchorage needs a Stormwater Utility. To help do that, Paul VanLandingham from MOA Street Maintenance is in attendance to present the issues his team encounters daily. Finally, Jason distributed a preliminary map that summarizes existing MOA stormwater infrastructure broken down by Assembly District.

Bruce Robson, the Consultant Project Manager reviewed the project schedule.

Phase 1: We are HERE. The project team is compiling data collected from the MOA, the State of Alaska and LRSAs. Next, the team will package the data, analyze it and compare it to other successful utilities so that the team can make recommendations for Anchorage via a Stormwater Utility Implementation Plan in January.

Phase 2: After the Assembly decides on the creation of a Stormwater Utility in January 2018, the next project steps are the basic beginning operations of a Utility to include:

- Develop Stormwater Master Plan
- Identify Capital Improvement Plan
- Define service levels
- Develop rate structure
- Finalize Stormwater Master Plan

Role of the Steering Committee and Proposed Schedule for Steering Committee/Other Key Public Involvement Activities

Role of the Steering Committee and Meeting Schedule

Shelly communicated the following Steering Committee Responsibilities:

- Prepare for and participate in SC meetings.
- Act as a professional, technical, resident sounding board.
- Engage/seek input from peers and constituents.
- Draft and Final SWU Implementation Plan.
- OVERALL – Be a champion for Anchorage Stormwater Utility Implementation.

Steering Committee Meeting Schedule:

Shelly listed the past and future Steering Committee Meetings.

Kickoff/Meeting #1 – August 22, 2017 – COMPLETE

Objectives: Purpose, initial input from SC members.

Meeting #2 – October 2, 2017

Objectives: SC roles, why an SWU, potential levels of service.

Meeting #3 – Early November 2017 (Nov 7 – 10)

Objectives: Potential rate structures.

Meeting #4 – Early December 2017 (Dec 5 – 8)

Objectives: Draft SWU Implementation Plan.

Final Meeting #5 – Early January 2018

Objectives: Final SWU Implementation Plan.



Other Key Public Involvement Activities

Shelly described the framework of the public involvement plan. The milestones and purpose/goal of each steering committee meeting is aligned closely with other engagement activities including:

- Anchorage Assembly
 - October and November 2017 – Updates from the MOA Project Manager
 - Early December 2017 – Full Assembly Worksession on Draft Implementation Plan
 - January 2018 – Public Hearing – Steering Committee Members should plan to attend and testify.
- Website – October 2017 – A basic website will direct people to the most basic project information, FAQs, photos, maps and Steering Committee info. It will be transparent tool to describe the process.
- Community Council Meetings – November and December 2017 will include a brief presentation and question and answer session to all councils.
- Other Stakeholder Presentations and Discussions
- Other Outreach/Assessment including BOMA, Chamber, Rotary, Live.Work.Play., potentially a public survey, postcards, project flyers.

Questions and discussion regarding public involvement activities:

Q: Will the project team send out notices to the Steering Committee about other public involvement activities, Community Council Meetings and Anchorage Assembly events?

A: All of these activities will be shared with the Steering Committee so that you can attend, participate and share with your constituents.

Q: This outreach strategy and listed responsibilities of the Steering Committee assumes that we are all going to be on the same page to support the creation of a Utility. Please be prepared for resistance to the idea, especially from the Hillside. What will you do if you encounter a lot of resistance?

A: The intention of the project team is to present a Draft Stormwater Utility Implementation Plan to the Anchorage Assembly that incorporates everything we've heard throughout the process. We will listen to everyone and present a plan that works for all of Anchorage including the Hillside.

Q: Is Chugiak-Eagle River included?

A: No, Chugiak-Eagle River is not included. We will be clear about the project area in presentations and on the website and that the Utility will not include

RECOMMENDATION: It would be very effective to call a special meeting for all LRSAs and RRSAs to discuss the creation of a Stormwater Utility. Get all of them in a room at the same time to educate and talk it through.

RECOMMENDATION: It would be worth the time to present to the Watershed and Natural Resources Advisory Commission. They meet the last Wednesday of every month. Thede Tobish is the Commission staff and can facilitate getting the project on the agenda.

Presentation & Discussion – MOA Street Maintenance Manager, Paul Van Ledingham and Janie Dusel: Why a Stormwater Utility is Needed – Existing Conditions and Current Level of Service

Introduction

Janie Dusel provided an introduction to the presentation and discussion. She made the following introductory statements:

- For most of the general public, stormwater is an “out of sight, out of mind” issue. Generally, residents have no idea where rainwater goes and this is a major challenge when trying to communicate why a Stormwater Utility is needed.
- There is deteriorating or failing infrastructure city-wide.
- Stormwater pipes in Anchorage are anywhere from 30 – 60 years old, mostly metal in corrosive soils. A great percentage of the infrastructure is failing.
- Because of infrastructure failures, there are multiple roadway and private property impacts visible to the public as flooding, and large, ongoing holes in roads and yards.
- MOA Street Maintenance regularly responds to stormwater failure emergencies reactively.
- In summary, with the current funding scenario, existing level of service for stormwater include:

MS4 Regulatory

- Construction site runoff control program
- Management of developments
- SW design criteria manual
- System inventory/mapping
- Outfall & stream monitoring
- Public education

Street Maintenance

- Street sweeping 3x/year
- Snow dump sites
- Emergency repairs only (reactive)
- Structure cleaning

Existing Municipal Stormwater Maintenance and Operations

MOA Street Maintenance Manager, Paul VanLandingham presented the details of the Street Maintenance Stormwater program. Paul has worked for Street Maintenance for more than 20 years; he began his career in the private sector construction industry and after starting with Street Maintenance was promoted throughout the organization from a laborer, to the General Foreman all the way to the Street Maintenance Manager.

Current Stormwater Program Status:

- There isn't a complete assessment of the existing conditions of stormwater infrastructure.
- Two years ago Street Maintenance (SM) began a program to inspect and clean all stormwater structures (*manholes and catch basins, not pipes*) on a 3-year cycle. Every year SM can inspect and clean one third of the system. They are currently in the second year of the first 3-year cycle.
- In January of 2018 SM is launching a new asset management system into which they will feed all of the infrastructure data collected during this first 3-year inventory cycle. This will allow SM to pull reports and share information with others.
- Over the last few years, SM has collaborated with Watershed Management (responsible for MS4 regulatory) more closely to analyze problem areas in town from the 35K foot level. Together, the two groups began mapping the system to begin to understand the problem areas holistically.
- Infrastructure in the ARDSA service area will not sustain all the uphill infrastructure without more responsible uphill development and rehabilitation of downstream infrastructure.
- Every year in July – August SM responds to 6 – 10 stormwater infrastructure failures. They do their best to fix the problem, however most times the ‘fix’ is only a ‘band aid’ solution.
- SM doesn't have the correct equipment to implement a proactive stormwater maintenance program.

- Approximately 80% of the annual SM stormwater repair work includes repeat problem spots.
- Many of the problem areas need to be fixed through a capital project/complete redesign/replacement. SM works with Project Management & Engineering to identify and complete reconstruction, however the timeline for capital projects is long and the “band-aid” maintenance regime must continue in the interim.
- SW/drainage infrastructure generally doesn’t get fixed unless there is a corresponding road/transportation capital project.
- In summary, SM agrees that there needs to be an overall, comprehensive stormwater plan (both upstream and downstream) for the community otherwise impacts will keep surfacing downstream.

Potential Levels of Service that a Stormwater Utility Could Provide

Bruce Robson presented the numerous stormwater utilities throughout the United States and the different rate structures and levels of service typically provided. The first utility was created in Bellevue, Washington in the 1980s.

There are three basic ways to set rates:

- FLAT RATE: Many utilities start this way (similar to AWWU).
- ERU: Equivalent Residential Unit: Rates are based on what an average residential property looks like.
- OTHER: parcel specific.

COMMENTS, QUESTION & ANSWER SESSION and SUGGESTIONS FOR PUBLIC OUTREACH

Comments

- When we communicate with the public about why a Stormwater Utility is needed, we need to remember that the public wants to know “how does this impact ME?”
- It would be more effective to develop a graphic that translates the potential benefit to the public.
- Do not use technical terminology when communicating with the general public; example: “sliplining”.
- The general public doesn’t understand that there is a difference between transportation infrastructure, water and sewer infrastructure and stormwater infrastructure. We need to figure out how to simply communicate these details.
- The patchwork of funding and management of stormwater infrastructure and maintenance in Anchorage is very confusing to the public (ARDSA vs LRSA vs RRSA vs HOA vs STATE). This is an opportunity to both educate the public and also explain how a stormwater utility can work to simplify and improve funding, maintenance and operations complexities.
- We’ve talked a lot about MOA funding and infrastructure. Knowing that a stormwater utility would also encompass all of DOT’s infrastructure, be prepared to address the detail that utility rate payers will also be responsible for MOA and DOT infrastructure.
- The general public will interpret this as a tax.
- Comments on the provided map:

It would help to add natural drainage features and receiving waters to this map. It will help people understand how the entire system functions (natural/built).

Consider organizing the map into watersheds, not into political boundaries. Don’t do a political map if the issue is it isn’t political. The watershed perspective is very intuitive. It might help explain to the general public how the stormwater system works (natural/built) and where/why there are problem areas.

Questions and Answers:

Q: Why is a stormwater utility needed? How do we know that a utility is the best option for Anchorage? Is there a formal process that led to this point? Have we seen a comparative analysis that includes data with all of the

options? Much of our discussion has been anecdotal, where is the hard data? How do we know that a utility is the best logic for the specific problems we see in Anchorage? Can you share your thinking on this?

A: A complete data analysis, infrastructure assessment and stormwater utility plan is part of Phase 2 of this project and will be funded after a utility with basic operations and funding is in place. There is a study (10-15 years ago), the Hillside District Plan recommended a stormwater utility, and a more recent Live.Work.Play White Paper outlines details and history of why a stormwater utility is needed. The Live.Work.Play Whitepaper and the 10-15 year-old study will be distributed to the Steering Committee. The Hillside District Plan can be viewed here: <https://www.muni.org/Departments/OCPD/Planning/Publications/Pages/HillsideDistrictPlan2010.aspx>

What we know is that stormwater utilities create a more equitable system. The entities that impact the system the most will pay into the utility. Currently, large landowners that don't pay property taxes are contributing stormwater to the system (government, non-profit, airports). Overall, stormwater utilities are preferred because they "erase" political boundaries and create one overlay boundary or service area that better reflects the natural drainage/watershed boundaries. It allows one entity to look at the complete system (both natural and built infrastructure) to do system-wide planning and maintenance.

Q: Why can't we fund repair of stormwater infrastructure through a GO Bond?

A: GO Bonds do not fund the maintenance of assets. Also, we currently fund new stormwater infrastructure with GO Bonds and we know that the level of service we see is reactive and not able to keep pace with needs. This methodology doesn't provide a comprehensive stormwater plan (operations, maintenance and capital) to ever allow the MOA to get ahead of the issue. Stormwater requires the same priority as other utilities and needs its own dedicated funding source.

Q: What if we do nothing? Will we continue to clean, inspect and make lists? What does this mean for the general public?

A: A very small fraction of infrastructure is being inspected and maintained annually. Infrastructure will continue to fail, work will be piecemeal. Existing limited funding will continue to be spent reactively and will not address the root issues.

Q: What would the cost of a complete system cost?

A: This is still unknown. Phase I will develop preliminary system costs and Phase II will provide more detail through a complete Stormwater Utility Plan.

Ideas from the committee on how to better communicate the complex issues to the general public:

- Describe simply "how will this impact me?"/ "what will this cost me?"
- Equate the maintenance and operations of stormwater infrastructure to car or home maintenance because the general public won't respond to the term "asset management".
- Quantify and communicate miles of pipe. 650 miles of stormwater pipe in Anchorage; similar to the distance between Anchorage and Fairbanks.
- Be open and transparent on how a stormwater utility will impact the individual property owner's tax bill.
- Successful stormwater management and maintenance impacts economic development. Show how a utility can help economic development in Anchorage. "Industry came to our town because they were able to predict development costs."
- Use a benchmark/comparison city that is as close as possible to Anchorage (Bellingham and Bellevue both mentioned as examples, something Pacific Northwest). Greensboro, Toledo and Tulsa will not resonate with Anchorage residents – they are too far away.

MOA Stormwater Utility Implementation Steering Committee

Meeting # 3

November 13, 2017

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MOA Stormwater Utility (SWU) Implementation Steering Committee Meeting #2
Monday, November 13, 2017 – 11:30 a.m. to 1:00 p.m. (lunch provided)
Mayor's Conference Room; 632 West 6th Avenue, 8th Floor

OBJECTIVES

- Confirm project phases and related outcomes.
- Learn about and discuss preliminary conditions assessment, current stormwater expenditures, benefits of SWU and comparable communities, recommended initial SWU organizational structure.
- Identify and confirm next steps.

AGENDA

11:30a-11:35a Welcome, Review Agenda, Meeting Guidelines, Recap Meeting #2/Related Progress-to-Date

11:35a-12:50a Presentation & Discussion

- Confirm project phases and related outcomes.
- Preliminary infrastructure conditions assessment;
- Current MOA stormwater expenditures and potential impact with SWU implementation;
- How other communities are addressing similar stormwater issues and benefits of SWU implementation;
- Recommended initial SWU organizational structure.

12:50p – 1:00p Next Steps & Wrap-Up

- December 2017 – Community Council meetings; Steering Committee Meeting #4 to provide input on DRAFT Implementation Plan.
- January 2018 – Public hearing and Assembly vote on SWU ordinance.

STEERING COMMITTEE MEMBERS

- Chris Schutte, Municipality of Anchorage
- Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Judith Schonbeck, Associated General Contractors of Alaska
- Kevin Campbell, Building Owners and Managers Association
- Mark Premo, Subject Matter Expert
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert
- Moira Gallagher, Anchorage Economic Development Corporation
- Stephanie Mormilo, Municipality of Anchorage
- Thede Tobish, Municipality of Anchorage
- Tim Potter, DOWL

PROJECT TEAM

- MOA Project Manager – Jason Bockenstedt
- Consultants to MOA:
 - Bruce Robson, Stantec, Project Manager
 - Janie Dusel, AWR Engineering, Water Resources Engineer
 - Shelly Wade, Agnew::Beck Consulting and Holly Spoth-Torres, Huddle AK, Project Stakeholder Engagement

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Anchorage Stormwater Utility Implementation Plan

Steering Committee Meeting #3
November 13, 2017

Introduction

How We Got Here	Work to Date	What's Next
-----------------	--------------	-------------

- Stormwater Utility (SWU) concept: across 20+ years and 4 mayors
- Proposal based on best practice research: SWU are a solution to stormwater issues
- Establishing a SWU was unanimously supported by Live.Work.Play. Infrastructure Subcommittee and AEDC leadership



Introduction

How We Got Here	Work to Date	What's Next
------------------------	--------------	-------------

▼

Phase 1: Assembly Request

- Mayor recommended and Assembly approved funding for SWU Implementation Plan
- Development of RFP and Award of Contract to Stantec

Phase 1: Complete 

3

Introduction

How We Got Here	Work to Date	What's Next
-----------------	---------------------	-------------

▼

We are now in **Phase 2: Development of the Implementation Plan**. Work includes:

- Preliminary conditions assessment of ARDSA stormwater infrastructure
- Financial summary of current level of service
- Comparable communities research
- Legal analysis to develop ordinance creating utility
- Community and partner input

4

Introduction

How We Got Here

Work to Date

What's Next

Phase 3: SWU Operations + Restructure would begin after Assembly approval establishing SWU.

- Work will include development of:
 - Stormwater Master Plan;
 - Capital Improvement Plan (CIP);
 - Establish service level;
 - Rate structure based on comprehensive rate study.
- This phase will take 18-24 months.

5

Criteria used for Infrastructure Conditions Assessment

- **Pipe Age** – Approximated from MOA financial asset database
- **Pipe Material (Metal vs. Plastic)** – From sampling record drawings and from limited MOA database info
- **Historic Location of Wetlands** – From MOA mapping of 1950s wetland locations
- **Stakeholder Interviews**
 - MOA Maintenance
 - DOT Maintenance
 - LRSA/RRSA Representatives
 - MOA PM&E

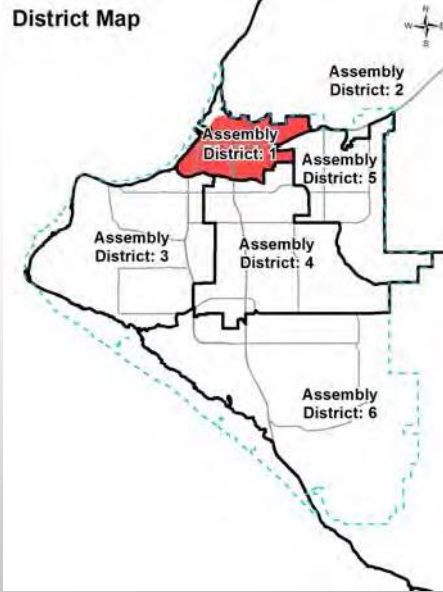
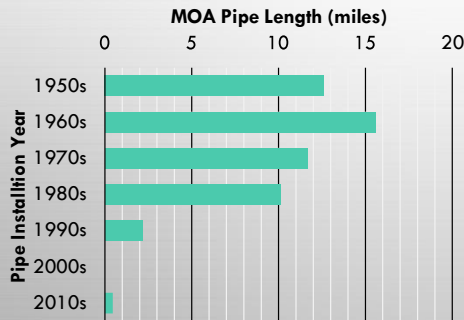


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Preliminary Infrastructure Condition Assessment

Zone 1A

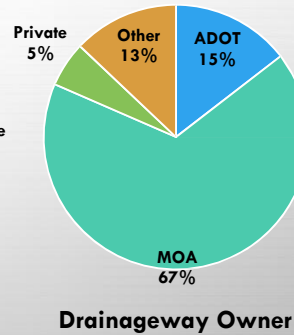
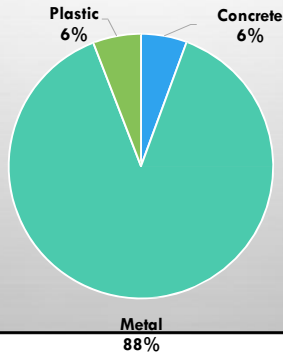
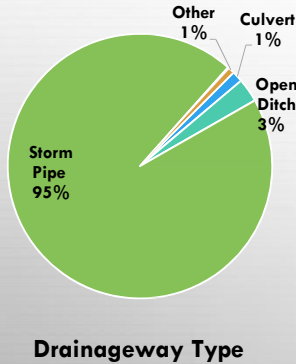
- 6.2 Square miles
- 83 Miles of Drainageway
- 115 Miles of Roadway



Preliminary Infrastructure Condition Assessment

Zone 1A Preliminary Condition Summary

- 30 to 60 year old Drainage Infrastructure
- 88% of Pipe Expected to be Failing or Near Failing

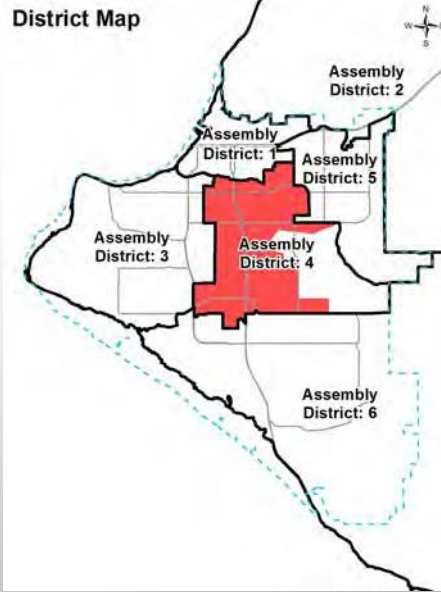
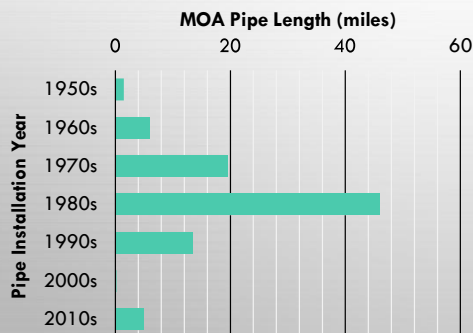


Estimated Pipe Material

Preliminary Infrastructure Condition Assessment

Zone 4A

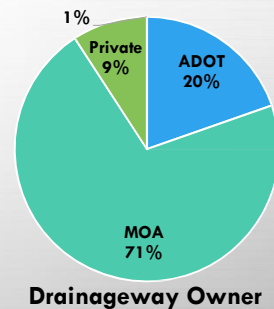
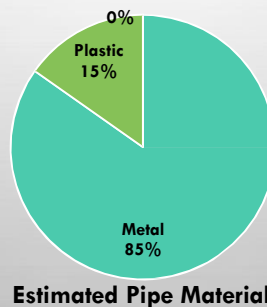
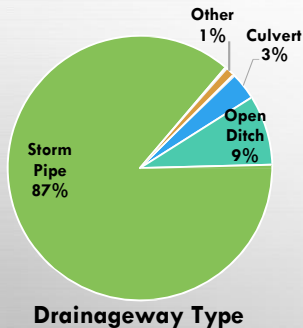
- 14.7 Square miles
- 174 Miles of Drainageway
- 257 Miles of Roadway



Preliminary Infrastructure Condition Assessment

Zone 4A Preliminary Condition Summary

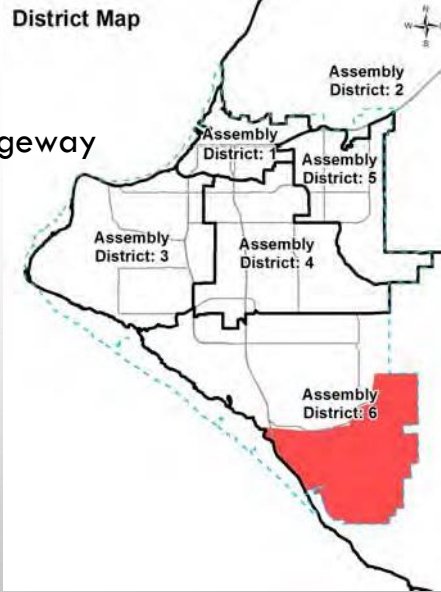
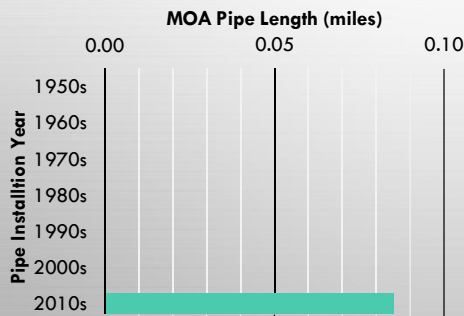
- 30 to 40 year old Drainage Infrastructure
- 85% of Pipe Expected to be Failing or Near Failing



Preliminary Infrastructure Condition Assessment

Zones 6D

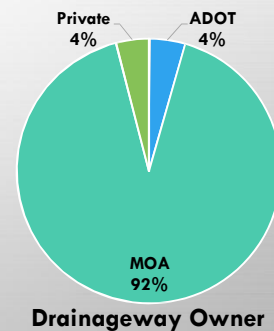
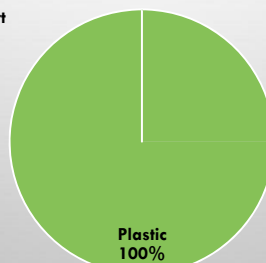
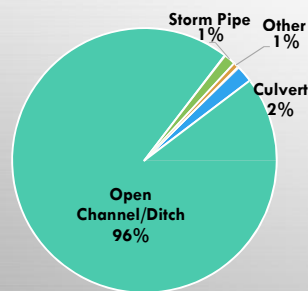
- 15.0 Square miles
- 93 Miles of Mapped Drainageway
- 85 Miles of Roadway



Preliminary Infrastructure Condition Assessment

Zone 6D Preliminary Condition Summary

- Drainage is primarily open channels/ditches
- Issues:
 - Undersized or poorly maintained channels/ditches
 - Undersized or poorly maintained culverts
 - Erosion from steep slopes
 - Groundwater and icing
 - Isolated pockets of drainage managements--drainage across jurisdictional boundaries causes major issues



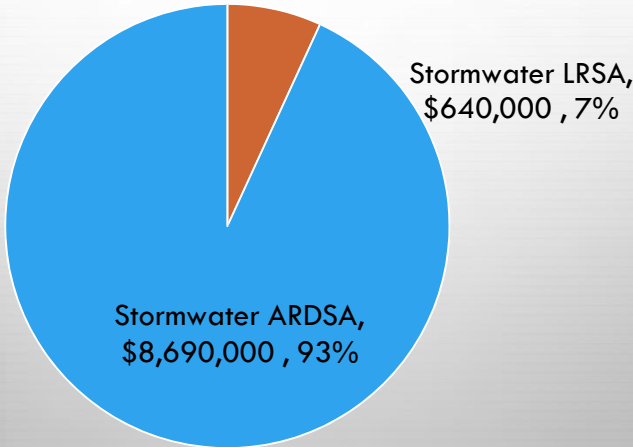
Why a SWU?



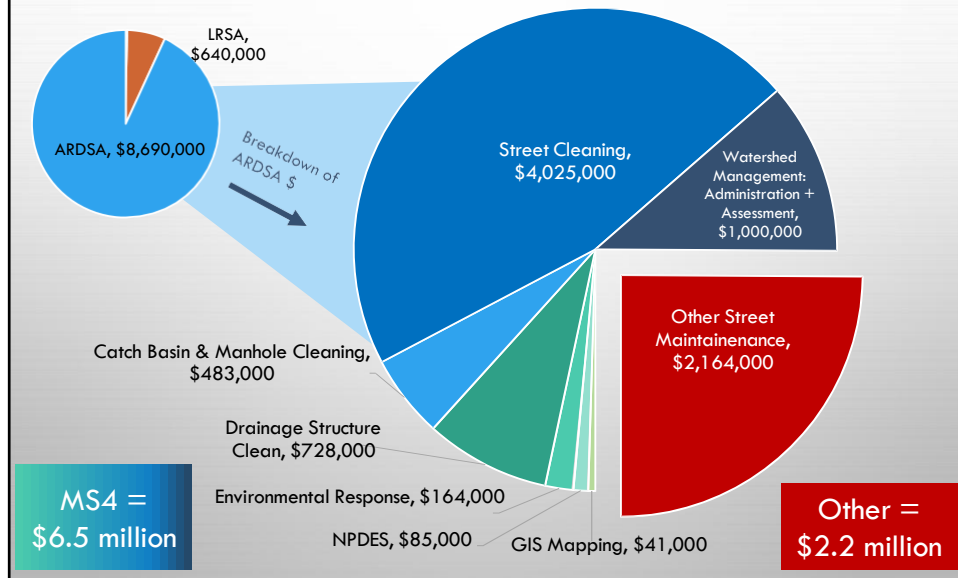
13

Current Operations: How Costs are Distributed

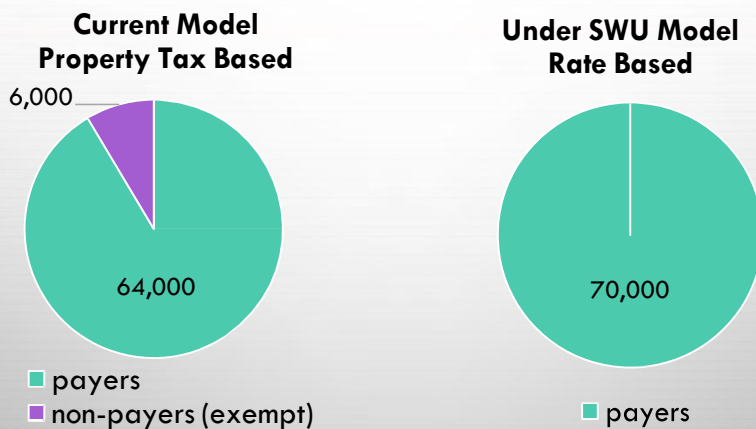
2016 ARDSA & LRSA Actual Costs



MS4 – What are we Required to Do?



Who Pays Now? How Could a SWU Change That?



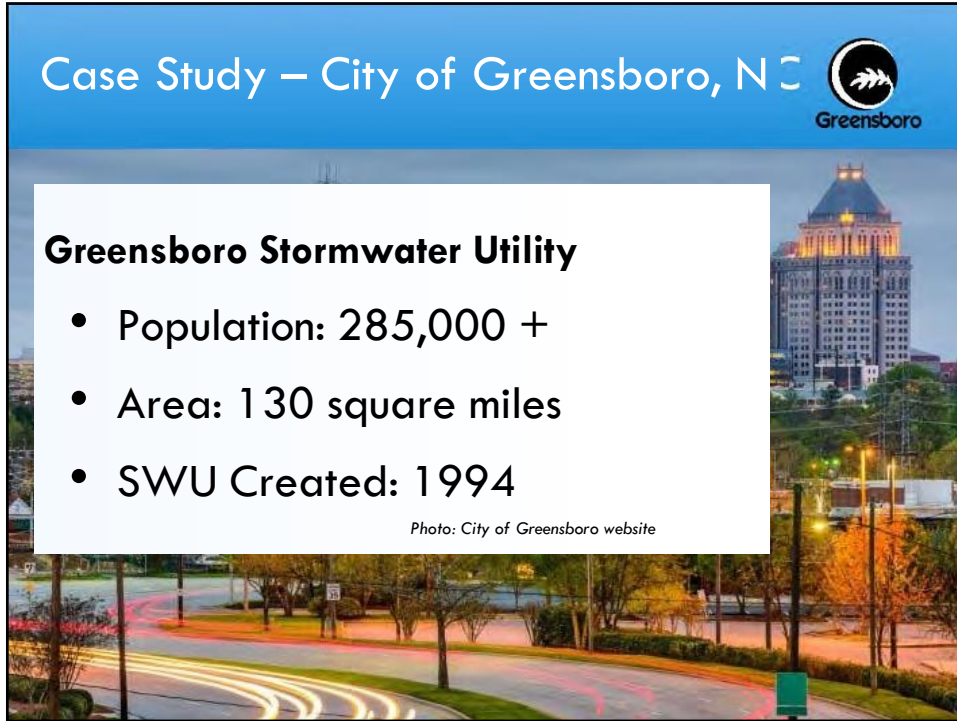
Case Study – City of Greensboro, NC



Greensboro Stormwater Utility

- Population: 285,000 +
- Area: 130 square miles
- SWU Created: 1994

Photo: City of Greensboro website



Greensboro Stormwater Utility: How have rates changed?

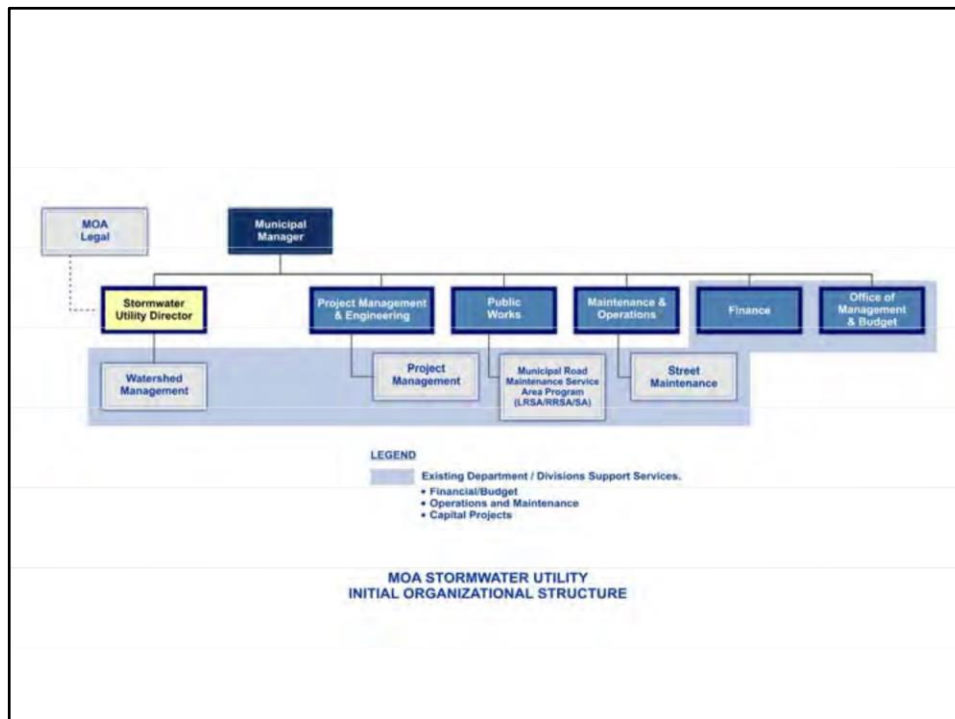


	1994	Today
Rate Structure	Single rate	Three tier system (A, B, C)
Equivalent Residential Unit (ERU) Rate	\$2.35 <i>based on 2,543 sq ft average residential lot impervious area</i>	A = \$1.50/mo (600-1,999 sq ft) B = \$2.70/mo (2,000-2,899 sq ft) C = \$3.90/mo (2,900 + sq ft)
Annual revenue (approximate)	\$8 million	\$11 million

Greensboro Stormwater Utility: Secondary Benefits



- Sponsored creation of new GIS system including many base data sets.
- Fully integrated SW drainage review into overall City new/re-development plan review process.
- Developed backyard drainage program partnering with residence to solve backyard drainage/flooding problems.
- Partnered with Parks and Recreation to maintain stream corridors more naturally.
- Shift to more open/natural drainage systems.



Next Steps

- ❖ **November – December 2017:** Continued Condition Assessment Data Gathering, Identification of Stormwater Management Issues (ARDSA, LRSA, DOT), and Recommended Approach for Phase 3
- ❖ **December 2017:** Steering Committee Meeting #4 to review Draft Implementation Plan; Community Council presentations (one-pager as tool)
- ❖ **January 2018:** Assembly Public Hearing on SWU Ordinance
- ❖ **January 2018:** Finalize Implementation Plan



Thank you!

Questions, Comments, Concerns? Contact us:

Jason Bockenstedt

907-343-8290

BockenstedtJr@muni.org



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MOA Stormwater Utility (SWU) Implementation Steering Committee Meeting #3 NOTES
Monday, November 13, 2017 – 11:30 a.m. to 1:00 p.m.
5th Floor Conference Room; 632 West 6th Avenue

OBJECTIVES

- Confirm project phases and related outcomes.
- Learn about and discuss preliminary conditions assessment, current stormwater expenditures, benefits of SWU and comparable communities, recommended initial SWU organizational structure.
- Identify and confirm next steps.

IMMEDIATE ACTION ITEMS

1. Feedback and comments on DRAFT FAQ one-pager due to Jason on Friday, November 17.
2. Project team connecting with HALO.
3. Project team scheduling LRSA meeting.
4. Steering Committee Members can volunteer to attend Community Councils in December with Jason to show support for the implementation plan, answer questions and educate about the future process. More details re: when and where forthcoming.

MEETING SUMMARY

Relevant Materials:

- Steering Committee Questions & Responses: The Steering Committee submitted a list of questions for the project team to consider in early November. The written answers were distributed in advance of this meeting for Steering Committee review and are attached to these notes.
- November 13th Presentation: The attached PowerPoint provides a summary of the information presented to the Steering Committee.

Steering Committee Questions, Comments, MOA SWU Team Responses + Summary of Specific Discussion Topics

- Q: The current financial data shows ARDSA spending almost \$8.7 million on stormwater related activities and the LRSAs at \$640,000. How did you get these numbers?
- A: The project team worked with Maury Robinson and went through all LRSA expenditures and categorized them based on existing financial coding. Understand this methodology might not be 100% perfect, however it gives us a place to begin understanding how much LRSAs currently spend on stormwater-related activities. The project team is working on scheduling a meeting with all LRSAs in the next two weeks. This will be an opportunity for the group to validate how the project team is interpreting LRSA financial coding and make adjustments as necessary.
- Q: At the last meeting (October) Paul Van Landingham from Street Maintenance stated his budget included \$19 million for Stormwater? Now the financial numbers indicate that ARDSA spends \$8.7 million. Why is there a huge discrepancy?
- A: The \$10 million difference represents debt service that will not be rolled over into the utility.

- Q: Do these numbers include both capital and maintenance?
- A: These numbers for existing financials include maintenance only, however when a utility is established it will have both a capital and an operations component. Phase 3 of this project, the stormwater master plan, will define a future capital program in more detail.
- Q: Will street cleaning be part of this utility? To date, street cleaning guidance from the MOA to LRSAs has been about air quality, not stormwater quality.
- A: All components of the MS4 permit will be part of the utility.
- Q: One of the benefits of a stormwater utility listed on the slide describing the case study city, Greensboro, NC is a “fully integrated review process”. What does that mean?
- A: The Utility will develop a master plan. The stormwater master plan will serve as the strategic planning guide for compliance of regulatory requirements, maintaining the existing system, and identifying future upgrades, improvements, and expansions of the stormwater system. Like other MOA plans, proposed development projects will need to consider this plan when moving through project approvals.
- Q: Once a utility is created, LRSAs get to decide what happens with their levy. They can keep it the same and invest more money into services. What happens with the ARDSA surplus?
- A: The Assembly will get to decide what happens with this money, whether it be redirected to tax relief, street maintenance, public safety, etc. However, we should be careful about viewing it as a ‘surplus’ with 80-85% of the system in failure. There really won’t be too much of a surplus until we fix the system.
- Q: I understand the intent is to have a public hearing on creating a stormwater utility at the Assembly in January 2018. What happens if the Assembly approves this ordinance and we get through the stormwater utility master plan and we realize it’s not implementable due to costs and other unforeseen factors?
- A: What the Assembly does, the Assembly can reverse. As shown in the organizational chart, the current staffing proposal for the master-planning phase of utility operations is just one staff person (Director) using existing MOA resources to supplement. If initial utility funding comes from an intergovernmental loan, as currently proposed, the loan would have to be paid back.
- Q: Will this utility be Regulatory Commission of Alaska (RCA) regulated?
- A: Yes, actions with the RCA would begin during Phase 3. It takes six months to receive authorization from the RCA after applying. The utility will be officially regulated by RCA when it bills people.
- Q: Do we know yet the role of DOT? Will they continue to contribute to State-owed stormwater infrastructure?
- A: DOT will continue to pay their share. We do need to figure out that mechanism. The MOA doesn’t want to ‘own’ DOT infrastructure due to federal funding opportunities.
- Q: Has HALO been involved yet? A group of 3-4 Steering Committee members worked for a long time to develop stormwater-related recommendations. These recommendations have been picked up by HALO to discuss and HALO is preparing to make a recommendation to this current process.
- A: We have been in touch with HALO members. We will engage on their current process immediately.



Discussion Topic: 40% of the HILLSIDE IS INDEPENDENT

- The set of questions answered by the project team to the steering committee clarifies how the utility will fund LRSA/RRSA operations. It will be challenging to decide the level of service to support for LRSAs fairly and even more challenging to decide and implement for the independent areas.
- For LRSAs, there could be an agreed list of all the things that are currently performed that are stormwater related and identify those services as reimbursable. It is unclear how the independents would work especially in interim before full utility operations.
- **The steering committee should make a recommendation about the independents. If this stormwater utility is going to be successful we need to nail down this monetary component.**

Discussion Topic: HOW MUCH WILL THIS COST?

- It will be important in the current project phase (Phase 2) to develop some sort of financial information to communicate what this utility will cost to all stakeholders (be definitive about monetary issues in Phase 2). What will it cost a homeowner? What will it cost a commercial property owner? What will it cost large organizational land owners? Considering that most of the data necessary to accurately understand costs will be collected and analyzed in a future project phase (phase 3) after the Assembly considers the ordinance, the project team should present a relevant financial context. The MOA should be able to place brackets on the cost, so we can communicate the potential cost to the future rate payer.
- The cost to the rate-payer will not be as simple as dividing the current cost of stormwater operations by the number of parcels within the service area. There could be a difference for residential and commercial property owners. There is a capital budget component. We need to agree on the appropriate level of service. The independent areas of the Hillside that are not captured within ARDSA, LRSAs or RRSAs and need to be incorporated.

Discussion Topics: INFORMING THE PUBLIC AND OTHER STAKEHOLDERS

- In addition to attending Community Councils in December, Phase 2 outreach includes presentations to the Chamber, AEDC, Rotary, BOMA.
- Phase 3 will include a robust stakeholder and public outreach plan that ensures that the public is informed about FAQs and asks communities to provide feedback on proposed levels of service. The public involvement plan should be prepared to answer important policy questions that we can predict will come up.
- The public needs to understand the huge economic impact to Anchorage if not in regulatory compliance with the MS4 permit. Also, there is value to the MS4 permit more than just compliance resulting in the quality of life that Alaskans value. Consider showing “the positives” in outreach materials.
- Consider showing how natural and political mapping intersects. Show an overall draining basin map so stakeholders understand how everything works together.

NEXT STEPS

- December 2017 – Community Council meetings; Steering Committee Meeting #4 to provide input on DRAFT Implementation Plan.
- January 2018 – Public hearing and Assembly vote on SWU ordinance.



STEERING COMMITTEE MEMBERS IN ATTENDANCE

- Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Sean Baski, Alaska Department of Transportation and Public Facilities
- Bob Anderson, Alaska Department of Transportation and Public Facilities, Maintenance and Operations
- Judith Schonbeck, Associated General Contractors of Alaska
- Mark Premo, Subject Matter Expert
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert
- Moira Gallagher, Anchorage Economic Development Corporation
- Stephanie Mormilo, Municipality of Anchorage
- Thede Tobish, Municipality of Anchorage
- Tim Potter, DOWL
- Tim Alderson, Upper O'Malley LRSA

PROJECT TEAM

- MOA Project Manager – Jason Bockenstedt
- Consultants to MOA:
 - Bruce Robson, Stantec, Project Manager
 - Shelly Wade, Agnew::Beck Consulting and Holly Spoth-Torres, Huddle AK, Project Stakeholder Engagement

MOA Stormwater Utility Implementation Steering Committee

Questions to Consider dated October 16, 2017

Responses Issued November 13, 2017

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**MOA Stormwater Utility Implementation Committee
Questions to Consider**

Authorization:

1. Is there a Pre-Feasibility Analysis (as detailed in a document presented by the AEDC Live.Work.Play. Housing Area of Focus Infrastructure Subcommittee) that defined and assessed the problem, compared alternative solutions, and produced the recommended alternative of a Stand Alone Storm Water Utility?

RESPONSE: *The creation of a Stormwater Utility to pro-actively manage and address the many stormwater related issues within Anchorage has been discussed and reviewed among many groups, organizations, government agencies, and residents for nearly 30 years. Most recently, the Live.Work.Play Infrastructure Subcommittee, AEDC, and others endorsed the idea of creating a Stormwater Utility within Anchorage.*

There have been a few modifications to the phases developed by the Live.Work.Play Subcommittee. We are currently in Phase 2 of the modified phases. This phase aims to identify the scope of the problem, a financial summary of the money spent today on stormwater activities, an overview of how other communities have addressed the same issues, and the legal analysis to develop the ordinance that will create the utility.

It is important to note that the MOA is currently operating with the needs and responsibilities of a stormwater utility but without the resources of one. Regardless of the specific organizational structure (see response to Question 9), the need for a stormwater utility is well-documented in Anchorage and did not warrant a full feasibility analysis. Stakeholders from many different interest groups have repeatedly expressed the need for a utility to provide holistic stormwater management, equitable cost sharing for stormwater infrastructure, stormwater master planning, and a dedicated funding stream for stormwater infrastructure

2. If a Pre-Feasibility Analysis was not performed, why was it not and what was the deliberative process that identified a Stand Alone Storm Water Utility as the preferred solution?

RESPONSE: *With much of the Anchorage Bowl already developed, management of stormwater runoff and snowmelt has become an increasingly significant task. Aging or incomplete infrastructure and deferred capital improvement projects, combined with existing stormwater regulations have driven the MOA's need to develop a better solution to address drainage system maintenance issues and high priority capital improvement projects.*

Other factors considered include growing infrastructure needs, multi-jurisdictional entities providing stormwater planning/operational & maintenance and capital improvements activities, replacement of aged infrastructure, and MS4 permit requirements. In addition, today's fractured nature of drainage management and responsibilities can lead to inefficient use of resources, and/or at worst, an insufficient drainage system. Without the benefit of a Stormwater Master Plan, it is difficult to identify and know the true extent of the backlog of capital projects and significant maintenance needs related to stormwater or snowmelt.

October 16, 2017

MOA Stormwater Utility Implementation Committee Questions to Consider

As a result of the issues discussed above, the creation of a Stormwater Utility was selected by the MOA as the preferred tool to fund and develop the master plan and capital improvement plan to more effectively manage stormwater related issues.

3. The National Association of Clean Water Administrators white paper *Legal Considerations for Enacting, Implementing, & Funding Stormwater Programs (2016)* concludes in their analysis that:

“Authority for a local or regional agency to enact and administer storm water programs and assess user fees is most commonly derived from an enabling statute enacted by the state legislature or via the state’s constitution or charter.”

“Utilities should carefully review the entire legal framework authorizing the program and fee as well as any binding case law and persuasive precedent. If the grant of authority is ambiguous or questionable, utilities should consider requesting a state Attorney General opinion and/or working with the state legislature to make the grant of authority more explicit.”

What is the enabling legislation that grants municipalities’ legal authority to form a Stand Alone Storm Water Utility in the State of Alaska?

RESPONSE: *Discussed in more detail below, there is ample legal authority for the Assembly, through the power granted to it by the Alaska Constitution, State statutes, and the MOA Charter, to create a Stormwater Utility as a new municipal utility. The analysis of this question was done by Mike McLaughlin who is part of the consultant team.*

Alaska Constitution.

Article X, Section 1 of the Alaska Constitution provides that the purpose of Article 10 “is to provide for maximum self-government with a minimum of local government units. . . A liberal construction shall be given to the powers of local government units.” Article X, Section 11 of the Alaska Constitution states that “[a] home rule borough or city may exercise all legislative powers not prohibited by law or by charter.”

These two sections of Article X clearly intend to allow local governments like the MOA to exercise broad powers limited only by what is specifically prohibited. There are no other provisions of the Alaska Constitution which can reasonably be construed to prohibit the creation of a stormwater utility. Indeed, public utilities of various types have historically, and are currently, owned and operated by local governments in Alaska, including the MOA.

Alaska Statutes.

Under AS 29.04.010, “[a] home rule municipality has all legislative powers not prohibited by law or charter.” It further defines a home rule municipality to be “a city or a borough that has adopted a home rule charter, or it is a unified municipality.” Again, state law provides very broad powers to home rule municipalities. In fact, AS 29.10.200 lists the provisions of state law that “apply to home rule municipalities as prohibitions on acting otherwise than as provided. These provisions supersede existing and prohibit future home rule enactments that provide otherwise. . .” Among the provisions listed are AS 29.20.050 requiring all legislative power of a home rule municipality to be vested in the assembly, and AS 29.20.220 requiring all executive power to be vested in a mayor. Also

**MOA Stormwater Utility Implementation Committee
Questions to Consider**

included in the list of items that cannot be varied by a home rule municipality is a provision on the regulation of public utilities, AS 29.35.070 (governing deposits for meters and service, and rate regulation by a municipality of a utility that is not rate regulated by the Regulatory Commission of Alaska).

The broad grant of authority to home rule municipalities to create, and in some cases regulate, public utilities and service areas is expressed in the Alaska Statutes.

Municipality of Anchorage Charter.

The MOA Charter at Section 3.01 states that the MOA may exercise all powers not prohibited by law or by the Charter itself. The MOA is a home rule municipality.

Section 16.01 of the Charter addresses municipal utilities. It requires in subsection (a) that each MOA utility “shall be operated in accordance with the general standards common to utilities providing the same utility service.” Subsection (b) provides that each MOA utility “shall have a separate budget within the annual municipal budget. The accounts shall be separately kept and classified in accordance with uniform accounting standards generally prescribed for public utilities providing the same utility service.” Most importantly, subsection (c) states that “[t]he assembly shall prescribe rules and procedures for the operation and management of municipal utilities.”

The Charter accepts the broad grant of home rule authority deriving from the Alaska Constitution and State law, and specifically contemplates the creation and regulation of MOA-owned utilities. The power to create and regulate municipal utilities is vested in the MOA Assembly.

Rates/money questions:

Understanding that some of these questions may not have answers at this point I none the less pose the following:

4. Will storm water expenses currently paid for by the state for state owned roads be rolled in to the Stand Alone Storm Water Utility and be paid for by ratepayers?

RESPONSE: *In short, no. This has been discussed as an option, but it is not currently expected to be in the best interest of either the proposed Utility or the DOT. There are several different models for how to incorporate the DOT and their drainage facilities in the proposed Utility, and these options will be examined in more detail in future phases of this project. Below is a brief overview of the some of the options that have been discussed or considered:*

- a) **No change from existing conditions:** *This option would continue ownership, operation, and maintenance of drainage facilities by the MOA and DOT separately. This option does not require any MOA-DOT agreements, but it would also not resolve issues related to disconnected management of a connected system.*
- b) **Stormwater Utility Owns all the Drainage Assets:** *One option is for the Utility to assume ownership and operation of drainage assets in the DOT rights of way. One benefit of this option would be to simplify ownership,*

**MOA Stormwater Utility Implementation Committee
Questions to Consider**

operation, and maintenance responsibilities within MOA corporate boundaries. One significant disadvantage of this option (that would likely offset the benefits) is that the DOT utilizes federal funding for the majority of the of the capital projects they complete, and these projects include highway drainage systems within the MOA. If ownership and capital planning of the drainage assets transfers to the Utility, it may jeopardize the ability to secure federal transportation funding. Research regarding this option is underway, but preliminary results indicate that this is not a common model.

- c) **DOT retains ownership of drainage assets but O&M is shared:** *In this option, the DOT and the MOA retain separate ownership of their assets and would set up an intergovernmental agreement to determine the responsibilities of both parties in maintaining and operating the drainage systems under the proposed Utility. The parties could agree that they will both continue to do some maintenance, or they might decide that it is more efficient for the Utility to take over all the maintenance. The agreement would also outline how things would be paid for. For example, if both parties decide that the Utility should take over maintenance of the DOT systems, DOT may in turn contribute a portion of their current drainage maintenance funding to the Utility. The details of the intergovernmental agreement will be based on the needs and preferences of both parties. This is a common approach and has been done in many other states.*

5. If so, is there a contemplated mechanism to recover such costs from the state?

RESPONSE: *If either full or partial transfer of ownership, operation and maintenance of drainage assets is selected for further consideration, the next step will be to draft an **intergovernmental agreement** and negotiate both party's responsibilities.*

6. The Muni currently estimates that it spends \$19 million annually on storm water issues. If this amount is shifted to the Stand Alone Storm Water Utility will the \$19 million be deducted from the future property tax?

RESPONSE: *Maybe – this is a policy decision the Assembly will ultimately make.*

7. Road Service Areas currently self-perform at the own cost drainage projects and maintenance. Is the Stand Alone Storm Water Utility contemplated to assume this work and cost and if so will this cost be deducted from future property tax?

RESPONSE: *We anticipate supporting the LRSAs at their current level of stormwater expenditures. It will be at the discretion of individual LRSAs to decide if they will decrease their mill rate to reflect decreased stormwater costs. The concept is to reimburse entities for current level of service drainage work.*

8. What are the estimated administrative costs of the utility? How many employees will be required?

**MOA Stormwater Utility Implementation Committee
Questions to Consider**

RESPONSE: *To the extent possible, we will take advantage of existing operational structures and workflows as much as possible to minimize the overall cost and keep growth of government to a minimum.*

One of the goals of this effort is to deliver stormwater services in the most efficient and cost effective way possible. Establishment of the SWU allows for a mechanism for doing the work of:

- Conducting a robust, comprehensive picture of conditions.
- Establishing the right level of service.
- Identifying a rate structure based on right level of service via a comprehensive rate study.
- Developing a Capital Improvement Plan (CIP).

The activities of the stormwater utility will provide for the efficient delivery of services and promote economic development.

9. Is a Stand Alone Storm Water Utility the most efficient way to deliver this service?

RESPONSE: *This project has not necessarily determined that a stand-alone utility will be the recommended configuration for the proposed SWU. There are several different organizational structures that the SWU could take, including as a division of PM&E, as a division of AWWU, or as a standalone entity. The most ideal and cost-effective scenario will be determined in the next phase of this project. In any of the possible configurations, we will take advantage of existing operational structures and workflows as much as possible to minimize the overall cost and keep growth of government to a minimum. Unfortunately, the MOA is not able to secure funding for much of the detailed assessment work that is needed until the Utility is in existence and can borrow funds. That is why the detailed assessment work is proposed for the next phase of this project.*

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MOA Stormwater Utility Implementation Draft Fact Sheet
Distributed for Review November 13, 2017

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Anchorage Stormwater Utility

How can we more efficiently manage and protect Anchorage waterways?

What does our stormwater system look like today?

Stormwater is managed by the Municipality of Anchorage (MOA), the Alaska Dept. of Transportation and Public Facilities, and 21 tax-based Limited Road Service Areas (LRSAs). MOA has 27 watersheds, each with separate plans and management for stormwater.

Our current system is challenged. Why isn't it working?

Operations

- Levels of service are variable throughout town
- MOA faces increasing regulatory requirements
- MOA street maintenance regularly responds to pipe failure emergencies for the same pipes – a “band-aid” approach to a systemic problem

Infrastructure

- Deteriorating infrastructure causing damage to roadways and property; the system has extensive amounts of metal pipe in corrosive soils
- The system is not flood resilient, resulting in flooding problems
- Water from higher elevations causes problems downstream

Planning

- Planning is fragmented; there is no city-wide management
- There is a lack of basic information about the system, including pipe type, condition, and depth; this makes it hard to plan

What is stormwater?

- Stormwater is rain or melted snow that does not soak into the ground.
- This water flows over parking lots, rooftops and streets into storm drains, ditches and other channels that eventually flow into creeks, rivers and lakes.
- Stormwater runoff picks up pollutants such as trash, chemicals, and dirt/sediment that can harm Anchorage waterways.

What is our proposed solution?

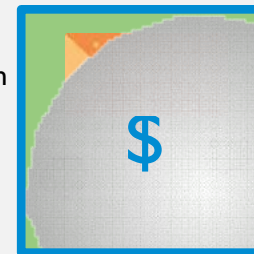
Create a Stormwater Utility. A stormwater utility (SWU) would be a new, citywide utility with dedicated funding to manage Anchorage’s stormwater system. The SWU will be able to systematically address priority maintenance needs across Anchorage’s 600 miles of pipe at a city level instead of the patchwork approach today. The SWU will also fund permit compliance, stream corridor maintenance and restoration, flood mitigation and environmental education.

Where will the money come from?

A SWU will collect fees based on actual runoff impact rather than property value. Under the new structure, stormwater fees will go directly to stormwater management and maintenance.

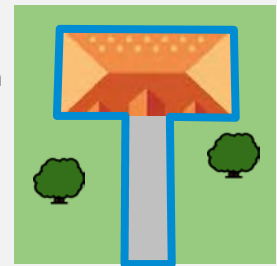
CURRENT

rate based on
property
value



PROPOSED

rate based on
impervious
area*



*Impervious area: any hard surface that does not let water soak into the ground, such as a roof or pavement



140th + Buffalo Flooding





71st + Cheryl pipe failure



7th Ave + C Street
manhole with no
bottom

Why is a Stormwater Utility the best solution?

Stormwater management is not just a challenge in Anchorage; this is a major and growing challenge nationwide, with stormwater pollution and flooding imposing impacts on water quality, public health and local economies. Over 1,500 communities in 39 different states around the country are using the SWU model as a solution to storm water issues, and to address needs in an effective, fair and efficient way.

		 Equity	 Efficiency
What we have today	<p>Our stormwater infrastructure has been failing for decades.</p> <p>Issues such as failing pipes, holes, and flooding, are addressed by a “band-aid approach” that uses property tax dollars to make temporary fixes instead of upgrading the underlying system.</p>	<p>Stormwater management is paid for through property taxes and is based on property value instead of runoff contributions from each property.</p> <p>Exempt property owners do not currently pay into the system for repairs.</p>	<p>Anchorage is doing everything a SWU does, managing stormwater and assets, in a fragmented way without a dedicated fund.</p> <p>Individual landowners and businesses struggle to redirect runoff through or around properties, without a consistent approach; this leads to inefficiencies, high maintenance costs and environmental damage.</p>
	<p>Stormwater infrastructure will be better managed and upgraded to meet current health and safety standards, reduce flooding incidents and better protect the health of Anchorage waterways.</p>	<p>A SWU is a more equitable way to raise revenues for stormwater management, since the cost causer is the cost payer.</p> <p>By changing the rate structure, it will also encourage new developers to consider stormwater impacts during construction.</p>	<p>A SWU would bring a more proactive, efficient approach to manage stormwater.</p> <p>With reliable funding, the SWU will be able to systematically address priority infrastructure needs across Anchorage’s 600 miles of pipe, instead of deferring them until there is a crisis.</p>

How is the Muni and its partners taking action?

- MOA is currently developing a SWU Implementation Plan. The Plan will:
 - Define Anchorage stormwater issues.
 - Identify how other communities have addressed the same problems – what are some best practices?
 - Outline steps to establish a SWU, including timeline and resources.
- In early 2018, the MOA Assembly will consider an ordinance and related public input to establish a SWU.
- With Assembly support, SWU implementation will move forward.



Questions? Comments? Learn more:



Contact Jason Bockenstedt
 907-343-8290 | Bockenstedtjr@muni.org

Assembly Enterprise and Utility Oversight Committee Meeting

October 19, 2017

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AGENDA
MUNICIPALITY OF ANCHORAGE
Assembly Enterprise and Utility Oversight Committee Meeting
Thursday, October 19, 2017
11:00 a.m. – 12:00 p.m.

City Hall, 632 West 6th Avenue
Mayor's Conference Room - #830
Anchorage, AK 99501

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **APPROVAL OF AGENDA**
4. **UPDATE ON STORM WATER UTILITY**
5. **UNFINISHED BUSINESS**
6. **AUDIENCE PARTICIPATION**
7. **ADJOURNMENT**

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Anchorage Stormwater Utility Implementation Plan

Enterprise and Utility Oversight Committee
Work Session

October 19, 2017

Introduction

- How We Got Here
- Work to Date
- What's Next

- Stormwater Utility (SWU) concept: across 20+ years and 4 mayors
- Proposal based on best practice research: SWU are a solution to stormwater issues
- Establishing a SWU was unanimously supported by Live.Work.Play. Infrastructure Subcommittee and AEDC leadership



Introduction

How We Got Here

Work to Date

What's Next

Phase 1: Assembly Request

- Mayor recommended and Assembly approved funding for SWU Implementation Plan
- Development of RFP and Award of Contract to Stantec

Phase 1: Complete

3

Introduction

How We Got Here

Work to Date

What's Next

We are now in **Phase 2: Development of the Implementation Plan**. Work includes:

- Preliminary conditions assessment of ARDSA stormwater infrastructure
- Financial summary of current level of service
- Comparable communities research
- Stakeholder engagement
- Legal analysis to develop ordinance creating utility

4

Introduction

How We Got Here

Work to Date

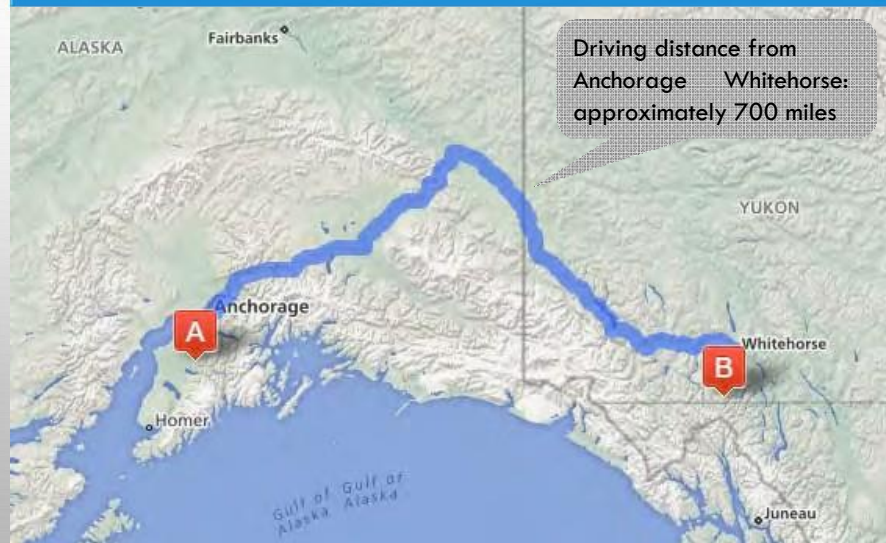
What's Next

Phase 3: SWU Operations + Restructure would begin after Assembly approval establishing SWU.

- Work will include development of:
 - Stormwater Master Plan;
 - Capital Improvement Plan (CIP);
 - Establish service level;
 - Rate structure based on comprehensive rate study.
- This phase will take 18-24 months.

5

Why a SWU?



6

Why a Stormwater Utility?

-  Health/Water Quality + Safety
-  Equity
-  Best Management Practices

7

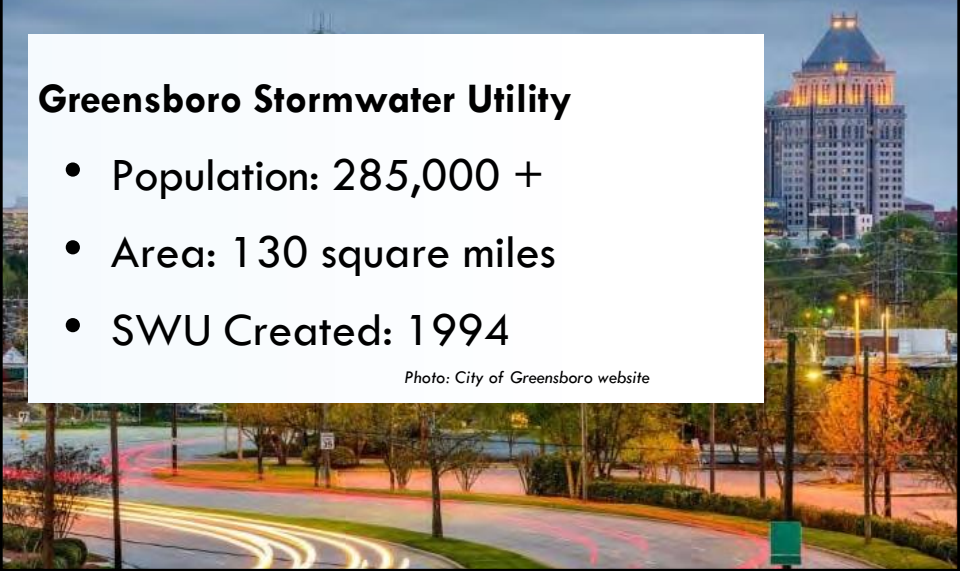
Case Study – City of Greensboro, NC

Greensboro

Greensboro Stormwater Utility

- Population: 285,000 +
- Area: 130 square miles
- SWU Created: 1994

Photo: City of Greensboro website



Greensboro Stormwater Utility: What drove the city to start a SWU?



- New/increased costs to:
 - Maintain aging SW infrastructure
 - Comply w/MS4 requirements
 - Meet increased requirements to maintain open drainage system
- Lack of:
 - No stormwater drainage master plan or CIP
 - Dedicated resources/mechanism to fund services outside street R.O.W.
 - No dedicated revenue stream


What were the outcomes?

Greensboro Stormwater Utility: Created in 1994



- City created SWU in 1994, following industry best management practices.
- Created a dedicated revenue stream through creation of enterprise fund.
- Created comprehensive stormwater master plan.
- As a result, city now proactively managing the stormwater drainage system.


Greensboro Stormwater Utility: Secondary Benefits



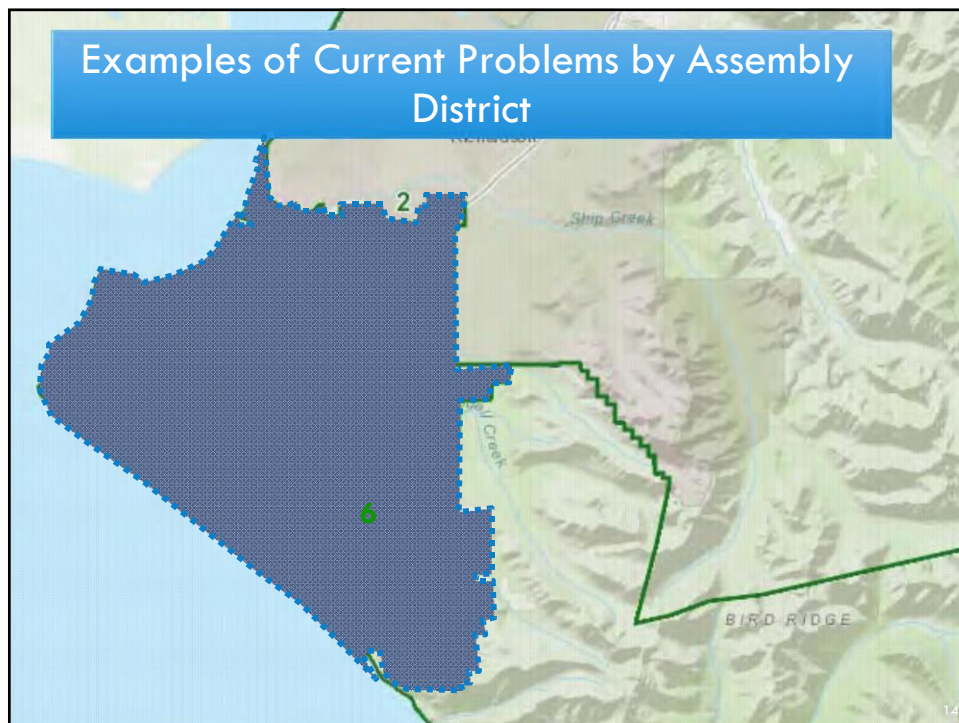
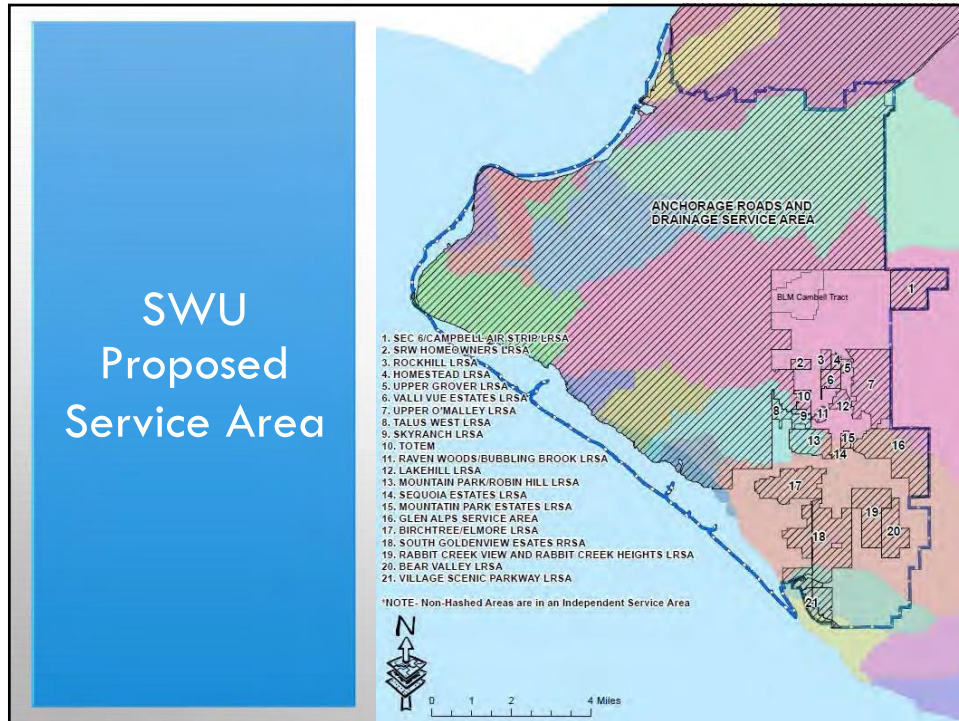
- Sponsored creation of new GIS system including many base data sets.
- Fully integrated SW drainage review into overall City new/re-development plan review process.
- Developed backyard drainage program partnering with residence to solve backyard drainage/flooding problems.
- Partnered with Parks and Recreation to maintain stream corridors more naturally.
- Shift to more open/natural drainage systems.

11

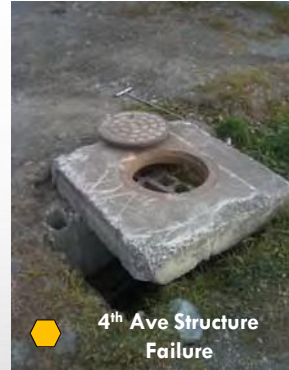
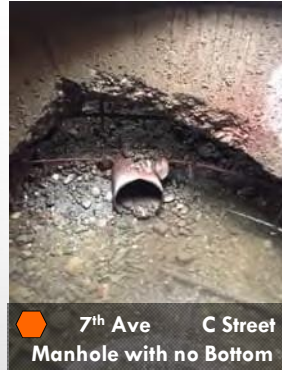
Greensboro Stormwater Utility: How have rates changed?



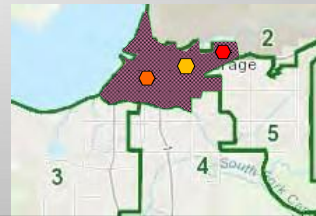
	1994	Today
Rate Structure	Single rate	Three tier system (A, B, C)
Equivalent Residential Unit (ERU) Rate	\$2.35 <i>based on 2,543 sq ft average residential lot impervious area</i>	A = \$1.50/mo (600-1,999 sq ft) B = \$2.70/mo (2,000-2,899 sq ft) C = \$3.90/mo (2,900 + sq ft)
Annual revenue (approximate)	\$8 million	\$11 million



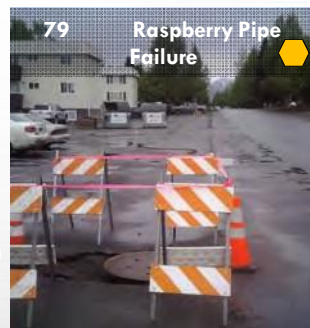
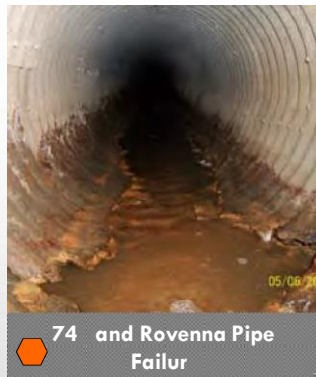
Examples of Current Problems - District 1



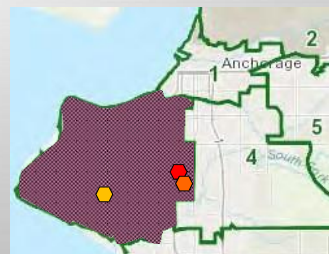
District 1: at least 41 known drainage issues that MOA Street Maintenance deals with regularly.




Examples of Current Problems - District 3







District 3: At least 38 known drainage issues that MOA Street Maintenance deals with regularly.



Examples of Current Problems - District 4

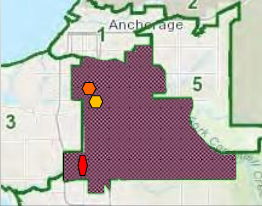


4th Ave and Old
Pipe Failure




4th Ave Pipe Failure


District 4: At least 49 known drainage issues that MOA Street Maintenance deals with regularly.



Examples of Current Problems - District 5

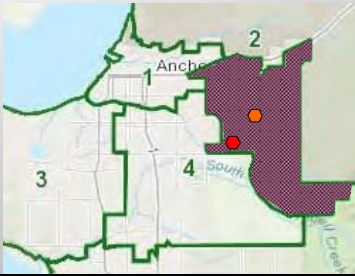


Sharon Street
Pipe Failure







Prosperity Drive Pipe Failure

District 5: At least 42 known drainage issues that MOA Street Maintenance deals with regularly.

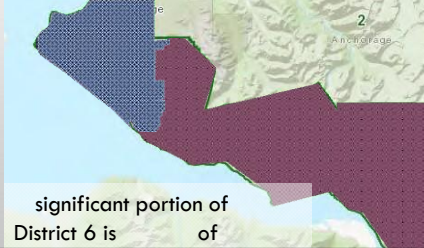


Examples of Current Problems - District 6



District 6: Street Maintenance regularly responds to **14 known issues**, but other maintenance groups are dealing with **MANY** more.

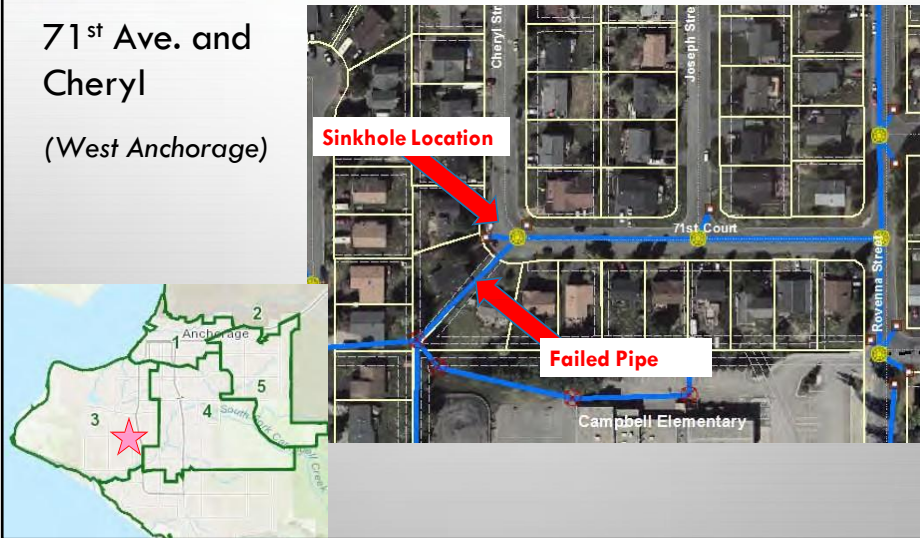


Examples of Current Problems - LRSAs

- Poor ditching causing roadway and/or private property impacts.
- Missing or poorly functioning driveway culverts.
- Ongoing issues with freezing infrastructure and the need for steam-thawing.
- Ongoing issues created by poor coordination across jurisdictional boundaries (e.g. MOA, DOT, other LRSAs, etc.)

Why is a Stormwater Master Plan needed?

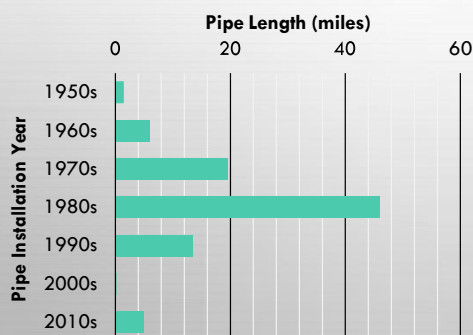
71st Ave. and Cheryl
(West Anchorage)



Preliminary Infrastructure Condition Assessment

Zone 4A

- 14.7 Square miles
- 174 Miles of Drainageway
- 257 Miles of Roadway



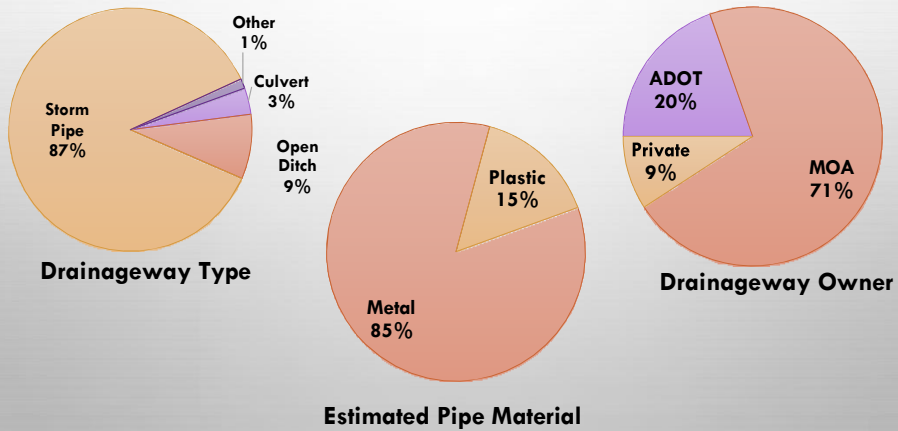
District Map



Preliminary Infrastructure Condition Assessment

Zone 4A Preliminary Condition Summary

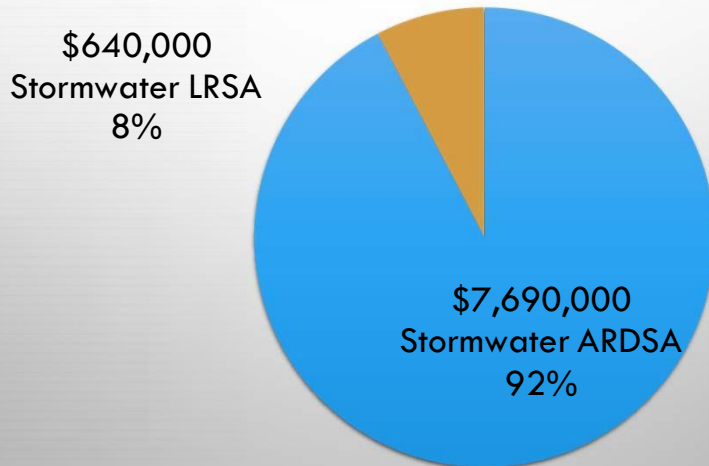
- 30 to 40 year old Drainage Infrastructure
- 85% of Pipe Expected to be Failing or Near Failing

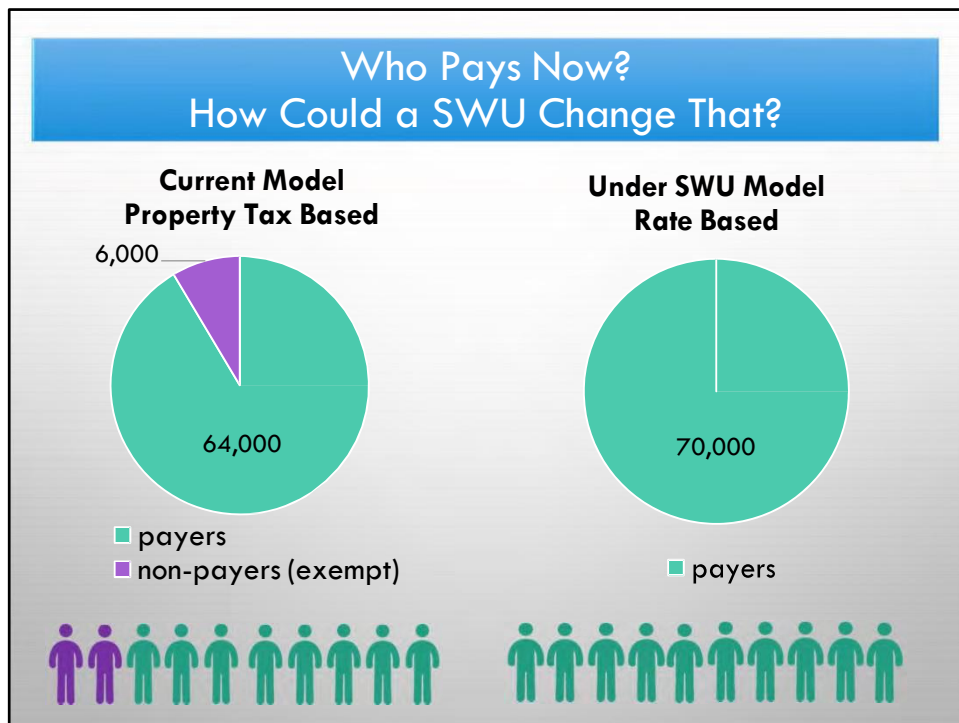
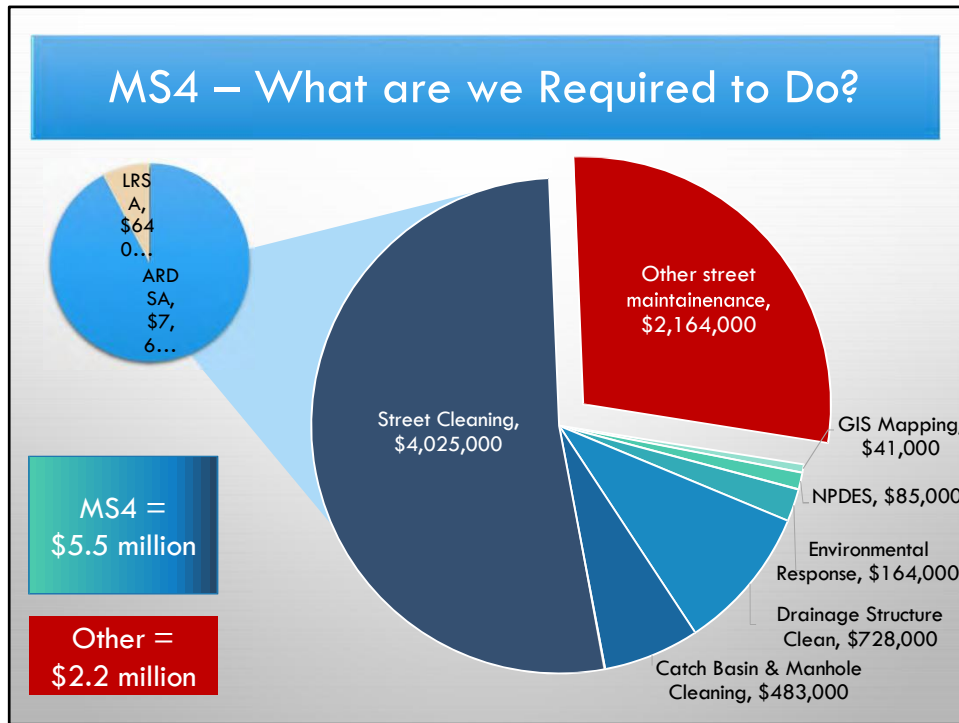


23

Current Operations: How Costs are Distributed

2016 ARDSA & LRSA ACTUAL COSTS





Next Steps

- ❖ **October – December 2017:** Continued Condition Assessment Data Gathering, Identification of Stormwater Management Issues (ARDSA, LRSA, DOT), and Recommended Approach for Phase 3
- ❖ **November – December 2017:** Implement Outreach
- ❖ **January 2018:** Assembly Public Hearing on SWU Ordinance
- ❖ **January 2018:** Finalize Implementation Plan



Thank you!

Questions, Comments, Concerns? Contact us:

Jason Bockenstedt

907-343-8290

BockenstedtJr@muni.org



MOA Stormwater Utility Implementation
DRAFT Public Involvement Plan Framework
September 7, 2017

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Municipality of Anchorage: Stormwater Utility Implementation
DRAFT Public Involvement Plan Framework – September 7, 2017

Developed by Agnew::Beck Consulting and Huddle AK

The following Public Involvement Plan (PIP) reflects an approach to inform, consult, involve, and collaborate with interested stakeholders at every stage of the process to implement a stormwater utility in Anchorage. Successful public involvement should be meaningful to the community and accurately reflect and incorporate the public's values.

A new stormwater utility will likely cause some concern for residents, businesses and other agencies about the cost impact to household budgets, capital budgets and other operations and maintenance functions. Is this another tax? How much will it cost? In addition to potential reactions regarding costs, stormwater management is highly technical and abstract to most people.

To be most effective in addressing these issues, the optimal PIP:

- Is proactive in its attempt to discuss difficult issues at the beginning of the process, such as potential cost and benefits to households and businesses.
- Gives the Municipality the resources to be the face of the project with skilled facilitators and a range of public involvement tools from which they can draw.
- Targets three focus areas for public involvement including:
 - (1) General Public
 - (2) Agency Decision-Makers and Policy Leaders
 - (3) Development Community/Business Leaders

The PIP provides the MOA with an outline of the methods to obtain public input as the plan develops. The plan contains a listing of the tools and methods as well as a schedule of when to use each tool.

Roles & Responsibilities

Anchorage residents, agency landowners, politicians, developers, and businesses will be keenly interested in this project as it relates to community and economic development, capital projects and the maintenance and operations of both State and Municipal drainage infrastructure. An open and transparent PIP at every step of the process will ensure that information is communicated accurately and timely. It will be to establish a single point of contact by which all residents and stakeholders can access information.

Jason Bockenstedt, the Municipality of Anchorage Deputy Chief of Staff, will be the project's main point of contact and the primary point of contact for the public and all project stakeholders. Shelly Wade of Agnew::Beck and Holly Spoth-Torres of Huddle AK will provide support as requested.

Public Involvement Plan Objectives

The PIP will achieve its goal of involving stakeholders in the development of the MOA SWU through the following objectives:

- Assist the MOA in developing a positive presence and targeted message for the SWU;
- Assess stakeholder perception, increase understanding and advance community support for and acceptance of the SWU;
- Involve a broad group of stakeholders to gather information that will inform creation of the SWU;

- Assist stakeholders/politicians/steering committee members to communicate information about the SWU to others;
- Clearly state how, when and where people can be involved in the development of the MOA SWU; and
- Respond to stakeholder input and concerns and provide timely and meaningful feedback.

Public Involvement Activities and Tools

Identify Stakeholders

A preliminary list of stakeholders is identified below that includes stakeholders that may have an interest in an MOA SWU and will be included in project communications. This list will be expanded as research and input identify others.

- DOT&PF
- Watershed Management
- MOA Street Maintenance
- MOA Parks & Recreation
- Anchorage Homeowners
- BOMA
- Associated General Contractors
- Anchorage Live.Work.Play Housing Committee

Project Contact List

The MOA SWU email list, still under development, will be used to provide notice to stakeholders of activities such as public meetings, project milestones and website updates. The list will be continually updated throughout the project.

Steering Committee

A Steering Committee will be formed to serve as a vital sounding board for the project. The Steering Committee will guide the effort and provide leadership and perspective to the planning process. They will act as liaison between the stormwater utility planning process and the community.

Steering Committee Members

- Chris Schutte, Municipality of Anchorage
- Jim Amundsen, Alaska Department of Transportation and Public Facilities
- Judith Schonbeck, Associated General Contractors of Alaska
- Kevin Campbell, Building Owners and Managers Association
- Mark Premo, Subject Matter Expert
- Mark Schimscheimer, South Goldenview RRSA
- Mike Jens, Subject Matter Expert
- Moira Gallagher, Anchorage Economic Development Corporation
- Stephanie Mormilo, Municipality of Anchorage

- Thede Tobish, Municipality of Anchorage
- Tim Potter, DOWL

Steering Committee Meetings

The Steering Committee will meet a total of five (5) times between August 2017 and January 2018. The meeting schedule and the purpose of each meeting is described below:

Kickoff Meeting #1 – August 22, 2017

Meeting Objectives:

- Clarify project purpose and role of Steering Committee.
- Gain initial input from Committee members on project purpose, impact/benefit to their constituents, role and next steps.

Meeting #2 – Early October 2017 (Oct 2 – 4)

Meeting Objectives:

- MOA Street Maintenance presentation.
- Refine roles and responsibilities of the Steering Committee.
- Present technical information gathered by consultant team to date.
- Present potential levels of service.

Meeting #3 – Early November 2017 (Nov 7 – 10)

Meeting Objectives:

- Present and discuss potential rate structure.

Meeting #4 – Early December 2017 (Dec 5 – 8)

Meeting Objectives:

- Present the Draft SWU Implementation Plan based on October/November Input.
- Give deadline for comments.

Final Meeting #5 – Early January 2018

Meeting Objectives:

- Present the Final SWU Implementation Plan that includes levels of service, rates associated with those levels of service and a map broken down by assembly district.

Anchorage Assembly

The Anchorage Assembly will be final decision-making authority on the development of a stormwater utility in Anchorage. The following meeting strategy will prepare the Assembly to act in January 2018. Note: The Assembly updates and worksession schedule below corresponds with the Steering Committee Meeting Schedule above.

- *Anchorage Assembly Update #1* – Week of October 2 (corresponds with Steering Committee Meeting #2). This can be an update to the appropriate Assembly Committee.
- *Anchorage Assembly Update #2* – Week of November 6 (corresponds with Steering Committee Meeting #3). This can be an update to the appropriate Assembly Committee.

- *Full Assembly Worksession* – Week of December 4 (corresponds with Steering Committee Meeting #4). This will be a presentation of the Draft Implementation Plan to the full Assembly.
- *Anchorage Assembly Public Hearing* – January 2018 (corresponds with the Final Steering Committee Meeting #5).

Website

A very simple project website will be created using the MOA or Watershed website to host. The website will conform to MOA requirements and contain project FAQs that describe scope, schedule, public involvement process, contacts, documents and how to get involved. The MOA Project Manager will approve all content and the site layout before information is posted.

Community Council Meetings

During the months of September, October and November the MOA project manager or other project representative will present at every community council within the proposed service area.

Other Stakeholder, Community & Business Meetings

During the months of October and November the MOA project manager or another project representative will present to other interested stakeholders, community and business organizations to both educate about the new utility and listen to comments and feedback. Example meetings include: Rotary meetings, Anchorage Chamber of Commerce, Anchorage Economic Development Corporation Live.Work.Play., Building Owners and Managers Association of Anchorage (BOMA)

Outreach Materials

A suite of materials will be developed to communicate about the project to different stakeholder groups including flyers, newsletters, postcards, social media and radio announcements.

Assessing Stakeholder Perceptions

Potentially develop and launch a simple online survey to gauge broad community interest/knowledge.