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## CAPITAL IMPROVEMENT PLAN

This chapter presents the recommended capital improvement plan (CIP) for the City of Grants Pass (City) collection system and a summary of the capital costs. This chapter is organized to assist the City in making financial decisions, and is based on the evaluation of the City's sewer system. This chapter combines the City of Grants Pass pipeline, pump station, and other general projects that were recommended in the previous chapters, i.e., Chapter 4 - Existing System and Condition Assessment and Chapter 5 - System Analysis. The CIP consists of the cost estimates and schedule for the recommended improvements.

### 6.1 INTRODUCTION

The cost estimates presented in this study are opinions developed from bid tabulations, cost curves, information obtained from previous studies, and Carollo Engineers, Inc. (Carollo) experience on other projects. The costs are based on an Engineering News Record Construction Cost Index (ENR CCI) 20-City Average of 10,037 (July 2015).

The following sections provide estimated planning-level capital project costs for the proposed improvements presented in Chapter 4 - Existing System and Condition Assessment and Chapter 5 – System Analysis. The capacity and condition upgrades and new service projects set the foundation for the City's sewer system CIP.

The City is also considering expanding its current collection system into five urban reserve areas and results are presented in Appendix A.

For the purpose of this plan, the following terms will be used to represent projects associated with condition problems, capacity requirements, and potential new service areas:

- “Repair/Replacement (R&R)” = Repair or rehabilitation of infrastructure. These projects are recommended to renew infrastructure in poor condition, as recommended and prioritized in Chapter 4 – Existing System and Condition Assessment.
- “Capacity” = Increase in capacity of infrastructure to meet capacity requirements of the existing service area. These projects are recommended to meet the capacity evaluation criteria, as recommended and prioritized in Chapter 5 – Capacity Analysis.
- “Expansion” = Construct new infrastructure to meet capacity requirements of areas of service area expansion. These projects are recommended to meet the wastewater conveyance requirements of potential future service areas, as recommended in Chapter 5 – Capacity Analysis.
- "General" = Other general projects for the wastewater collection system.

Recommended projects have been assigned a project name associated with the type of project. The following abbreviations were used:

- “P” = Pipeline (includes gravity, force main, or casing).
- “PS” = Pump Station.
- “G” = General.

## **6.2 COST ESTIMATING ACCURACY**

The cost estimates presented in the CIP have been prepared for general infrastructure planning purposes and for guidance in project evaluation and implementation. Final costs of a project will depend on actual labor and material costs, competitive market conditions, final project scope, implementation schedule, and other variable factors such as preliminary alignment generation, investigation of alternative routings, and detailed utility and topography surveys.

Acquisition of property, easements, and right-of-way (ROW) may be required for some of the recommended projects. However, for the purpose of this Plan, pipeline corridors, or easements are assumed to be in public ROW, and therefore do not require land acquisition. For this reason, land acquisition is not included in the cost estimated. Chapter 5 acknowledged that some pipes recommended to be replaced are difficult to access, even sometimes impossible, to perform routine maintenance actions, and that there is a need to improve it to facilitate repair and maintenance from the City crew. These will need to be addressed as much as possible with the project, but no cost specific to easement was included in the CIP.

The Association for the Advancement of Cost Engineering (AACE) defines an Order of Magnitude Estimate, deemed appropriate for master plan studies, as an approximate estimate made without detailed engineering data. It is normally expected that an estimate of this type would be accurate within plus 50 percent (%) to minus 30%. This section presents the assumptions used in developing order of magnitude cost estimates for recommended facilities.

## **6.3 COST ESTIMATING ASSUMPTIONS**

Project cost estimates are calculated based on elements, such as the project location, size, length, land acquisition needs, and other factors. Allowances for project contingencies consistent with an “Order of Magnitude” estimate are also included in the project costs prepared as part of this study, as outlined in this section.

### **6.3.1 Baseline Unit Cost**

The Baseline Construction Cost is the total estimated construction cost, in dollars, of the proposed improvements. The construction cost estimates below are representative of collection system facilities under normal construction conditions and schedules.

### 6.3.1.1 Gravity Pipeline Unit Costs

For pipes, Baseline Construction Costs are calculated by multiplying the estimated new pipe length by a proposed unit cost. Sanitary sewer collection system improvements range in size from 8- to 24-inches in diameter, and associated pipeline unit costs are shown in Table 6.1. Existing 6-inch and less in diameter pipes recommended to be replaced based on the condition analysis in Chapter 4 are replaced with 8-inch pipes. The unit costs are for “typical” field conditions with construction in stable soil at a depth ranging between 10 to 15 feet. Where there are existing pipes proposed for replacement, the unit costs assume in-place replacement, either in roadways or in right-of-way (ROW) areas.

<b>Table 6.1 Gravity Pipeline Construction Unit Costs Wastewater Collection System Master Plan City of Grants Pass</b>		
<b>Pipe Size (inches)</b>	<b>Unit Cost (\$/LF)</b>	<b>Cost Per Linear Foot (\$/foot)<sup>(1)</sup></b>
8	134	16.8
10	147	14.7
12	162	13.5
15	183	12.2
18	203	11.3
21	223	10.6
24	244	10.2

Note:  
(1). This corresponds to the unit cost standardized for the pipe size and is calculated by dividing the unit cost with the pipe size.

### 6.3.1.2 Force Main Unit Costs

Force main pipeline costs are independent from pump station costs presented in Section 6.3.1.4. Force main unit costs using used for the CIP are presented in Table 6.2.

<b>Table 6.2 Force Main Construction Unit Costs Wastewater Collection System Master Plan City of Grants Pass</b>		
<b>Pipe Size (inches)</b>	<b>Unit Cost (\$/LF)</b>	<b>Cost Per Linear Foot (\$/foot)</b>
4	144	36.0
6	147	24.5
8	151	18.9
10	156	15.6
12	160	13.3
24	336	14.0

### 6.3.1.3 Casing Unit Costs

Pipe casings up to 21-inches in diameter are included for major crossings (e.g., creeks, highways, and railroad) of the trunk sewers. Table 6.3 shows the unit costs for pipeline casings. The sizes in this table represent both pipeline diameter and associated casing size.

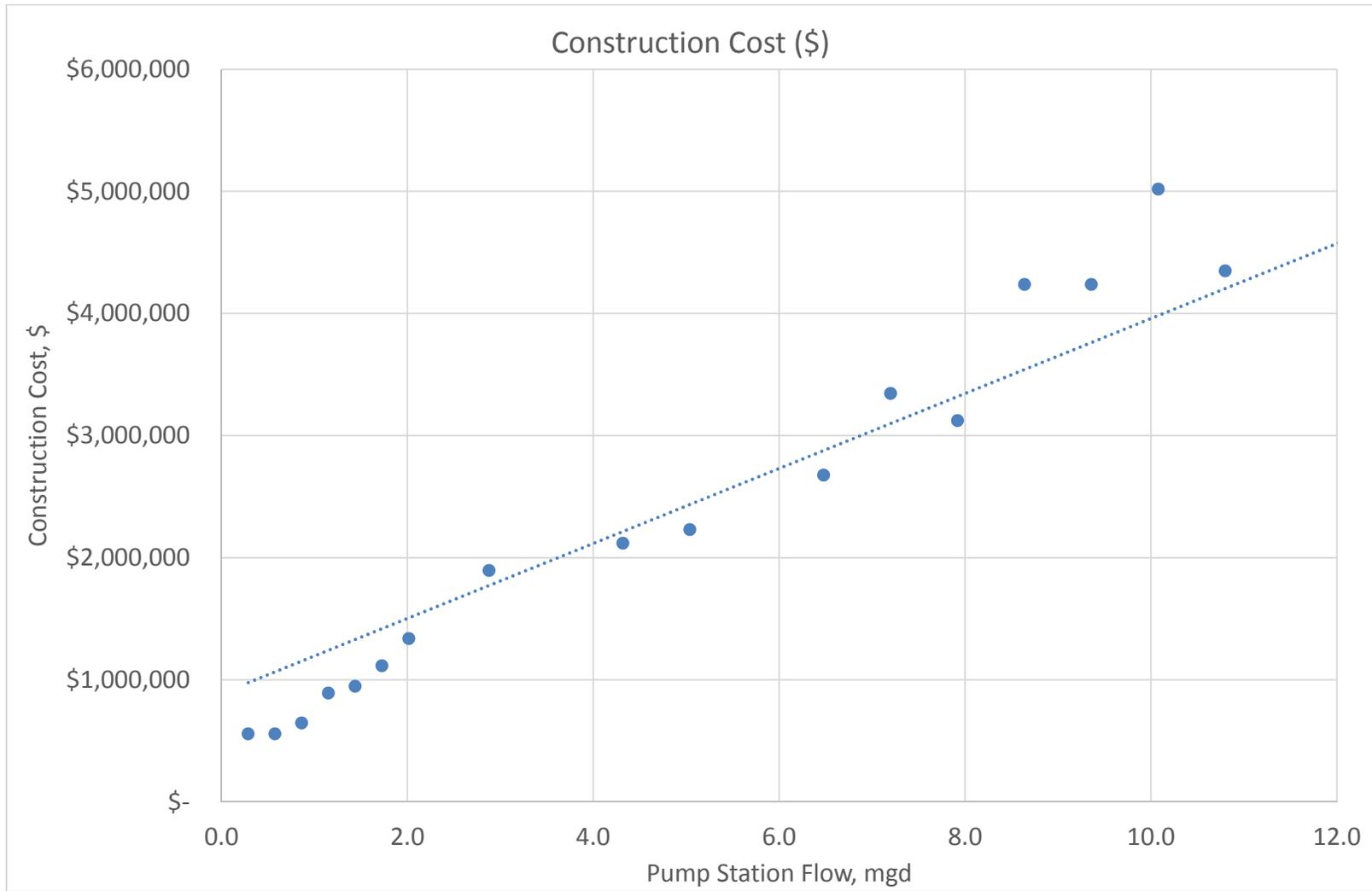
<b>Table 6.3 Pipeline Casing for Major Crossings Construction Unit Costs Wastewater Collection System Master Plan City of Grants Pass</b>	
<b>Pipe Size (inches)<sup>(1)</sup></b>	<b>Cost Per Linear Foot (\$/foot)</b>
12/24	988
15/30	1,235
21/42	1,729

Note:  
(1) Size represents pipeline diameter and associated casing size.

### 6.3.1.4 Pump Station Unit Costs

Recent pump station rehabilitation projects completed by the City, as well as Carollo Engineers, were used to create the pump station cost curve shown in Figure 6.1. All points on the curve are total construction costs dollars. This cost curve was used to estimate the construction cost of pump station repair and upgrade projects in the City's CIP. As shown in Figure 6.1, the pump station construction cost is highly variable depending on the actual project conditions and other ancillary improvements tacked to the project. However, the average trend line correlates well when pump station flows are above 2 mgd. Therefore this trend line was used for estimating Darneille Pump Station project.

Preliminary cost estimates were prepared for Bridge Street Pump Station as part of the Capacity and Reliability Study. Webster Lift Station No. 1 cost was obtained from the actual bid, and a similar cost was assigned to Webster Lift Station No. 2.



**PUMP STATION COST CURVE**

FIGURE 6.1

CITY OF GRANTS PASS  
WASTEWATER COLLECTION SYSTEM MASTER PLAN



### **6.3.2 Baseline Construction Cost**

This is the total estimated construction cost, in dollars, of the proposed improvement for pipelines and lift stations. Baseline construction costs were calculated by multiplying the estimated length by the unit cost.

### **6.3.3 Estimated Construction Cost**

Contingency costs must be reviewed on a case-by-case basis because they will vary considerably with each project. Consequently, it is appropriate to allow for uncertainties associated with the preliminary layout of a project. Such factors as unexpected construction conditions, the need for unforeseen mechanical items, and variations in final quantities are a few of the items that can increase project costs for which it is wise to make allowances in preliminary estimates. To assist the City in making financial decisions for these future construction projects, a contingency cost will be added to the Baseline Construction Cost as a percentages of the Baseline Construction Cost.

Since knowledge about site-specific conditions of each proposed project is limited at the current planning stage, a 20% contingency was applied to the Baseline Construction Cost to account for unforeseen events and unknown conditions. The Estimated Construction Cost for the proposed collection system improvement consists of the Baseline Construction Cost plus the 20% construction contingency.

### **6.3.4 Total Allied Project Cost**

Project allied costs include costs associated with project engineering, construction phase professional services, and project administration. Engineering services associated with new facilities include preliminary investigations and reports, Right of Way (ROW) acquisition, foundation explorations, preparation of drawings and specifications during construction, surveying and staking, sampling of testing material, and start-up services. Construction phase professional services cover such items as construction management, engineering services, materials testing, and inspection during construction. Finally, there are project administration costs, which cover such items as legal fees, financing expenses, administrative costs, and interest during construction.

The cost of these items can vary, but for the purpose of this study, it is assumed that the Total Allied Project Costs will equal approximately 30% of the Estimated Construction Cost.

### **6.3.5 Total Capital Improvement Cost**

The costs presented in this Plan are high-level planning costs to help the City in making financial decisions. A planning contingency cost will be added to the Total Allied Project Cost to account for unforeseen events and unexpected conditions through the design process of these projects.

As shown in the following sample calculation of the capital improvement cost, the total cost of all project contingencies (construction, and planning), and allied costs (engineering services, construction management, and project administration) is 95.9% of the baseline construction cost.

*Example:*

<b>Baseline Construction Cost</b>	<b>\$1,000,000</b>
<u>Construction Contingency (20%)</u>	<u>\$200,000</u>
<b>Estimated Construction Cost</b>	<b>\$1,200,000</b>
Engineering Cost +	
Construction Management +	
<u>Project Administration (30%)</u>	<u>\$360,000</u>
<b>Total Allied Project Cost</b>	<b>\$1,560,000</b>
<u>Planning Contingency (25%)</u>	<u>\$390,000</u>
<b>Total Capital Improvement Cost</b>	<b>\$1,959,000</b>

## 6.4 CAPITAL IMPROVEMENT IMPLEMENTATION

As discussed in Chapter 4 - Existing System and Condition Assessment and Chapter 5 - System Analysis, the capital improvement implementation (CIPs) are prioritized based on their urgency to mitigate existing deficiencies and issues and, for servicing anticipated growth.

It is recommended that improvements to mitigate existing deficiencies be constructed as soon as possible. The deficiencies in the future system have a significant total capital cost that is best distributed based on the order in which the City is expected to develop. The timing for implementing these improvement projects is based on the growth assumptions made for this Plan and is subject to growth. It is recommended that the City monitor growth and adjust project implementation accordingly.

The capital improvement implementation phases are separated into 3 phases:

- Phase 1 (2015-2020). Proposed facilities located in areas flagged as deficient under existing modeling conditions for the design storm that needs to be addressed first, and as high priority during the condition assessment. Timing for these projects is planned between 2015 and 2020.
- Phase 2 (2021- 2025). Proposed facilities located in areas flagged as deficient under Short-Term (2025) modeling conditions for the design storm, proposed facilities to service major growth areas to be developed in the short-term, and medium priority during the condition assessment.
- Phase 3 (2026-2035). Proposed facilities located in areas flagged as deficient under Long-Term (2035) modeling conditions for the design storm, proposed facilities to service major growth areas to be developed in the long-term, and low priority during the condition assessment.

When capital projects are overlapping between repair and replacement (chapter 4) and capacity (chapter 5) projects, it is assumed that the highest phase between the two will be picked. For instance, if a pipe upsized is recommended in Phase 1 to mitigate capacity deficiencies and the same pipe is recommended to be replaced or repaired only in phase 2, the pipe in question will be prioritized under Phase 1.

## 6.5 CAPITAL IMPROVEMENT PROGRAM

### 6.5.1 Capital Improvement Program Overview

This section presents a summary of the proposed collection sewer system CIP. More details on cost can be found in Appendix H.

As detailed in section 6.1, the proposed capital projects are divided into four main types of projects: repair and replacement, capacity, expansion, and general. Table 6.4 summarizes total costs by project type and by phasing.

<b>Table 6.4 CIP Summary by Implementation Phase Wastewater Collection System Master Plan City of Grants Pass</b>				
<b>Project Type</b>	<b>Phase 1 (2015-2020)</b>	<b>Phase 2 (2021-2025)</b>	<b>Phase 3 (2026-2035)</b>	<b>Total Capital Cost (\$M.)</b>
Capacity	\$ 1,924,000	\$ 914,000	\$ 2,257,000	\$ 5,095,000
Repair & Replacement	\$ 16,977,000	\$ 16,130,000	\$ 32,179,000	\$ 65,286,000
Capacity and R&R	\$ 11,211,000	\$ 4,032,000	\$ 1,989,000	\$ 17,232,000
Expansion	\$ –	\$ 3,153,000	\$ 17,220,000	\$ 20,373,000
General	\$ 150,000	\$ 300,000	\$ 300,000	\$ 750,000
<b>Total (\$M.)</b>	<b>\$ 30,262,000</b>	<b>\$ 24,529,000</b>	<b>\$ 53,945,000</b>	<b>\$ 108,736,000</b>
<b>Annual Total (\$M)</b>	<b>\$ 5,044,000</b>	<b>\$ 4,906,000</b>	<b>\$ 5,395,000</b>	<b>\$ 5,178,000</b>

The implementation timeframe was based on the priority of each project to correct existing deficiencies or accommodate future users.

As seen in Table 6.4, the CIP recommends investing \$30.3M into the wastewater system for Phase 1 (2015-2020). This high cost includes several critical programs, including \$13.9M for capacity improvements (also benefiting system condition) to reduce surcharging manholes, and \$17M in repair projects to address aging infrastructure. The annual Phase 1 cost for all recommended programs is approximately \$5.0M per year from 2015 to 2020. For the Phase 2

(2021-2025), the CIP recommended an additional \$24.5M be invested to continue these programs. The annual Phase 3 cost is approximately \$5.4M per year from 2026 to 2035.

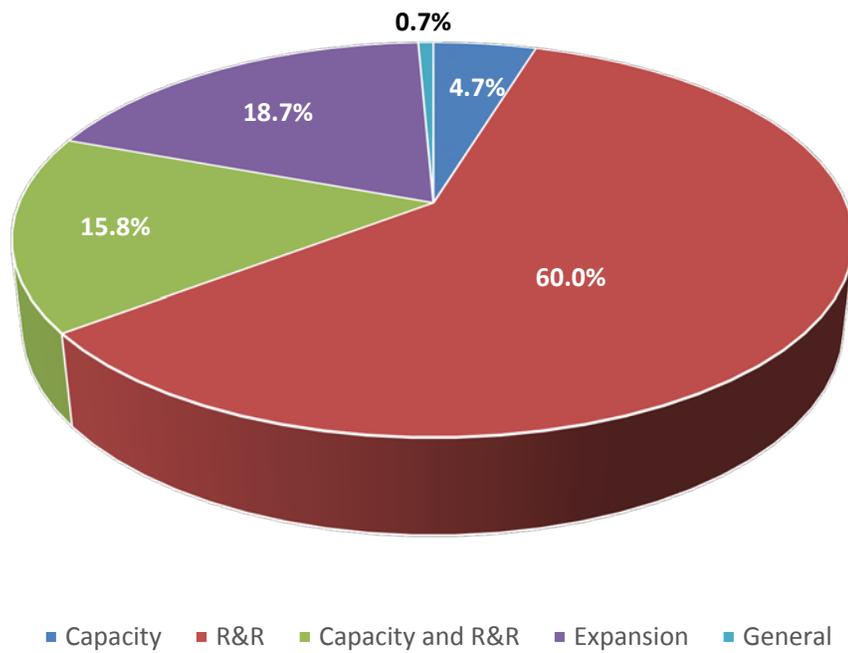
The total CIP cost, including contingencies and allied costs, is approximately \$108.7M.

Detailed sheets for each CIP project presented in this chapter can be found in the following chapter, Chapter 7 - CIP Detailed Sheets.

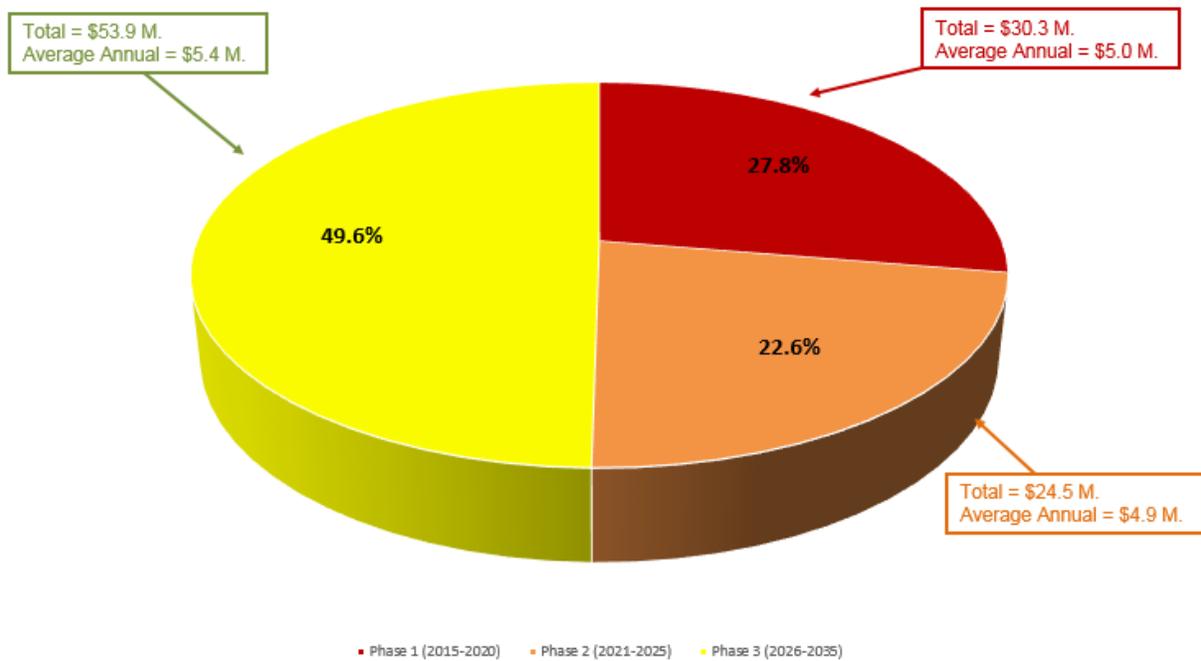
Table 6.5 summarizes the total estimated capital costs by facility type. Gravity pipelines account for \$95.7M of the \$108.7M. (i.e. 88.0 %) of the total CIP. Pump Stations and force mains account for \$10.5M (9.7 %), and highway crossings for \$1.8M (1.7 %). The remaining \$750,000 is associated with general projects.

<b>Table 6.5 CIP Summary by Facility Type Wastewater Collection System Master Plan City of Grants Pass</b>		
<b>Facility Type</b>	<b>Unit Cost (\$M.)</b>	<b>Percent (%)</b>
Gravity Pipeline	\$ 95,645,000	88.0%
Pump Station	\$ 8,549,000	7.9%
Casing / Highway Crossing	\$ 1,830,000	1.7%
Force Main	\$ 1,962,000	1.8%
General	\$ 750,000	0.7%
<b>Total (\$M.)</b>	<b>\$ 108,736,000</b>	<b>100.0%</b>

Figures 6.2 and Figure 6.3 are graphs showing the cost repartition of cost of all repair and replacement, capacity, expansion, and general projects based on project purpose and implementation phase, respectively.



**Figure 6.2 Total CIP Cost Repartition by Project Purpose**



**Figure 6.3 Total CIP Cost Repartition by Implementation Phase**

## **6.5.2 Repair and Replacement Projects**

This section describes the Repair and Replacement (R&R) recommendations for the City's pipelines and pump stations.

These projects were identified as part of the evaluation performed in Chapter 4 - Existing System and Condition Assessment. These projects are based on the remaining useful life (RUL) analysis, maintenance, and structural records that City is gathering over time in a GIS database. Several R&R projects are recommended to address the condition-related deficiencies. Implementing an Asset Management Program to prioritize these and other repair projects is recommended.

Figure 6.4 shows the locations of the repair and replacement projects.

### **6.5.2.1 Pipeline R&R Projects**

Many of the City's pipelines have less than 20 years of remaining useful life. The cost of maintaining these aging pipes will likely increase in the next 25 years as pipe deterioration continues.

Chapter 4 evaluated all of the City's sewer pipelines. The RUL analysis itself shows that 54.5% of the collection system would need to be replaced in the next 20 years, which would consist of replacing around 25,000 LF of pipes per year. However, some of these pipes do not present any maintenance or structural issues as identified by the City, and replacement could be pushed out to a later date after the end of the planning period (2035). In order to spread out repair and replacement and avoid having year where no pipes or too many need to be replaced, the life cycle of the entire system was taken into consideration. Using this assumption, approximately 12,000 LF of pipes would need to be replaced each year, which corresponds to approximately 250,000 LF (47 miles) of pipes to replace in the next 20 years. The City recommended including a few pipes not identified under Chapter 4 that they have issues. These pipes are included in the CIP under the R&R projects.

It is recommended that an Annual Pipeline Repair Program be implemented. The Annual Pipeline Repair is estimated to require a total cost of \$17.0M under Phase 1, \$16.1M under Phase 2, and \$32.2M under Phase 3. This corresponds to an average annual cost of \$3.1M over the course of the entire planning period (2015-2035), as shown in Table 6.6.

<b>Table 6.6 Repair and Replacement Pipelines Cost Summary Wastewater Collection System Master Plan City of Grants Pass</b>	
<b>Improvement Project ID</b>	<b>Total Capital Improvement Cost (\$)</b>
Project R&R-1 - Condition Only Projects - Phase 1 North of Rogue River	\$15,644,000
Project R&R-2 - Condition Only Projects - Phase 1 South of Rogue River	\$714,000
Project R&R-3 - Condition Only Projects - Phase 2 North of Rogue River	\$15,275,000
Project R&R-4 - Condition Only Projects - Phase 2 South of Rogue River	\$855,000
Project R&R-5 - Condition Only Projects - Phase 3 North of Rogue River	\$19,095,000
Project R&R-6 - Condition Only Projects - Phase 3 South of Rogue River	\$13,084,000
<b>Total Repair and Replacement Pipeline Projects</b>	<b>\$64,667,000</b>

Some projects needed for capacity improvements are also beneficial to the condition of the system and these pipes are not included in the Annual Pipeline Repair Program. The Annual Pipeline Repair Program is divided into four projects based on their location and implementation phase:

- Project R&R-1 – Condition Only Projects – Phase 1 North of the River
- Project R&R-2- Condition Only Projects – Phase 1 South of the River
- Project R&R-3 – Condition Only Projects – Phase 2 North of the River
- Project R&R-4- Condition Only Projects – Phase 2 South of the River
- Project R&R-5 – Condition Only Projects – Phase 3 North of the River
- Project R&R-6- Condition Only Projects – Phase 3 South of the River

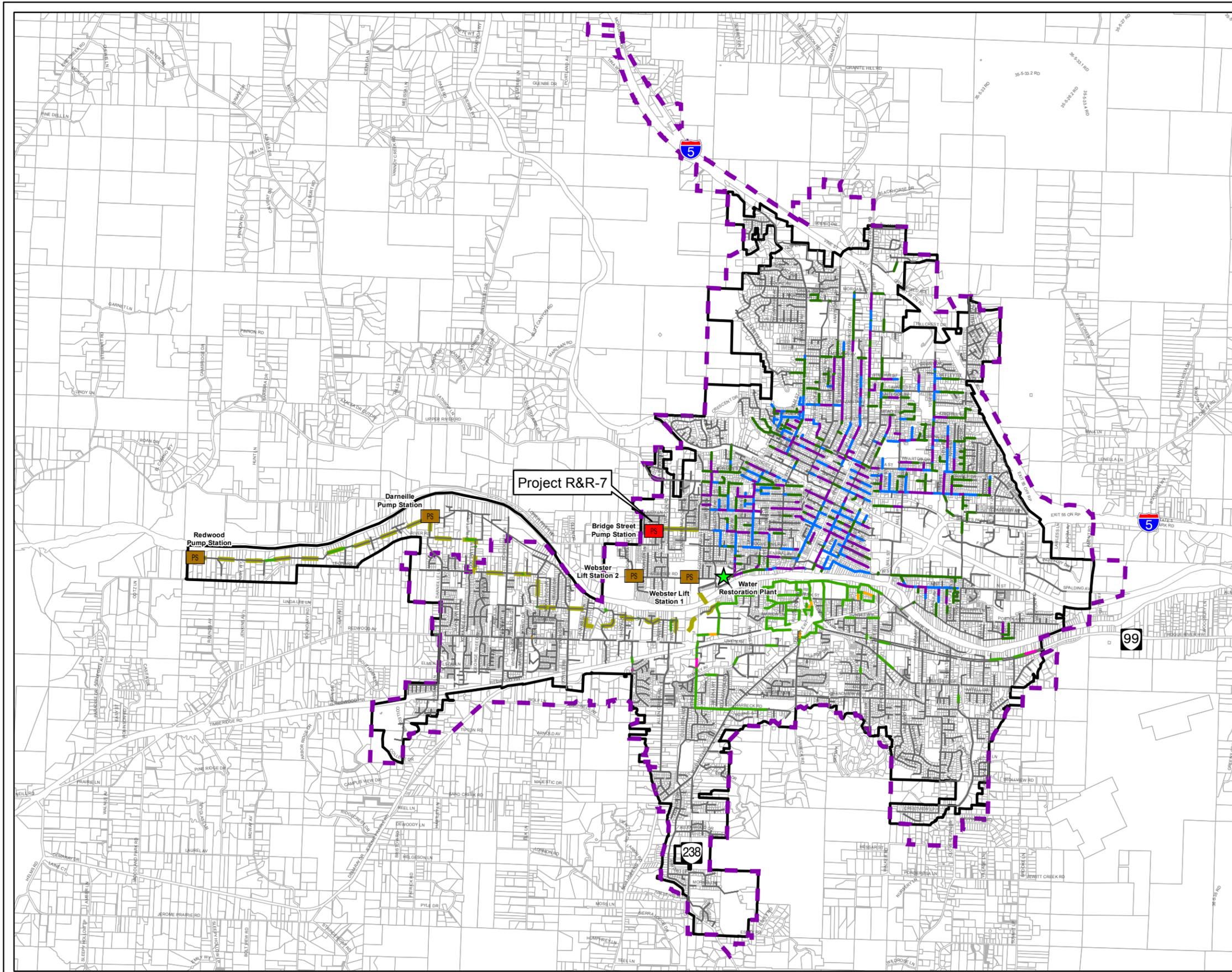
Projects 26 through 31 in Table 6.4 are R&R projects only and are illustrated in Figure 6.4.

**6.5.2.2 Pump Stations R&R Projects**

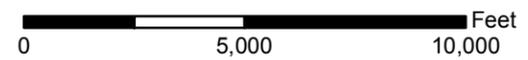
The City's existing pump stations were reviewed for general conditions and overall compliance with regulatory standards, as discussed in Chapter 4 - Existing System and Condition Assessment. Pump Stations recommendations are based on a general condition review, visual inspection of the facilities, input from the City, and existing pump station records.

Four pump stations are recommended for improvements based on the condition review presented in Chapter 4 – Existing System and Condition Assessment:

- Bridge Street Pump Station,
- Webster No. 1 Lift Station,
- Webster No. 2 Lift Station,
- Darneille Pump Station.



- Legend**
- ★ WRP
  - PS Lift/Pump Station
  - Force Main
  - Project R&R-7 - Bridge Street Pump Station
- Pipes Recommended to be Replaced or Repaired**
- North of the River**
- Project R&R-1 – Condition Only Projects – Phase 1 North of the River
  - Project R&R-3 – Condition Only Projects – Phase 2 North of the River
  - Project R&R-5 – Condition Only Projects – Phase 3 North of the River
- South of the River**
- Project R&R-2 – Condition Only Projects – Phase 1 South of the River
  - Project R&R-4 – Condition Only Projects – Phase 2 South of the River
  - Project R&R-6 – Condition Only Projects – Phase 3 South of the River
- Other Gravity Main
  - Existing Sewer Service Area
  - UGB
  - Tax Lots



**Figure 6.4**  
**Repair and Replacement Recommended**  
**Project Locations and Phasing**  
 Wastewater Collection System Master Plan  
 City of Grants Pass



All pump stations, except Bridge Street Pump Station, identified as needed repair improvements are also identified as needed capacity upgrade in the future. These pump stations will be discussed in the capacity section of this chapter. A detailed pre-design is recommended when the City is prepared to replace these pump stations to more accurately estimate costs and define the layout.

#### **6.5.2.2.1 Project R&R-7 - Bridge Street Pump Station**

Bridge Street Pump Station is recommended for repair and replacement under Phase 1 due to reliability issues related to the pump, guide rail, and level control issues at the pump station. Preliminary cost estimates were prepared for Bridge Street Pump Station as part of the Capacity and Reliability Study and total capital improvement cost was estimated at \$25,000.

### **6.5.3 Capacity Projects**

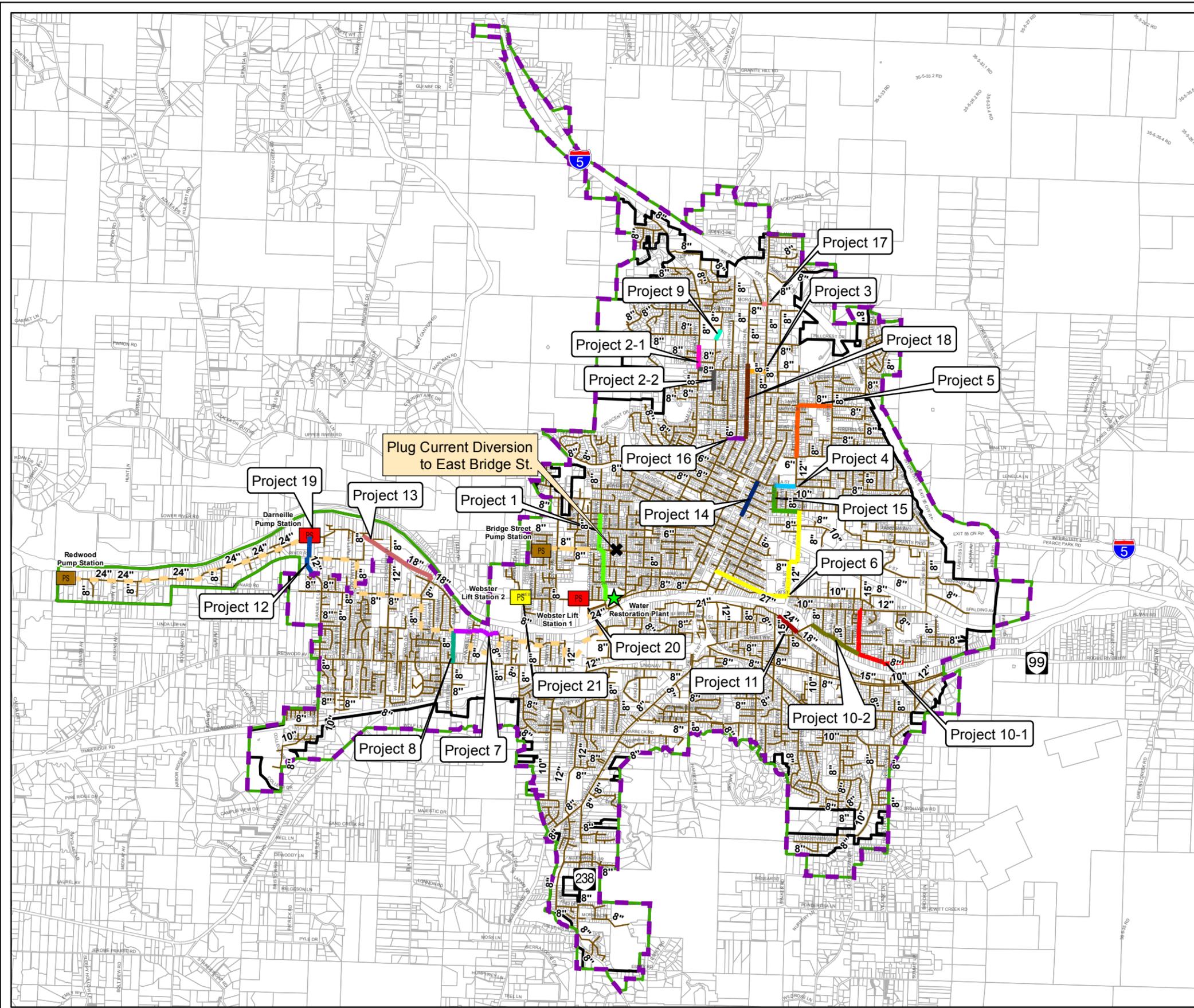
This section summarizes the recommended improvement program, which includes all recommended improvement projects needed to meet capacity requirements and the City's performance criteria under existing and future flow conditions. These capacity-related projects were identified using hydraulic modeling and were identified through the system analysis performed in Chapter 5. A majority of the recommended capacity projects are also beneficial to condition of the collection system.

Figure 6.5 shows the locations of the capacity projects and Figure 6.6 shows their recommended implementation phase.

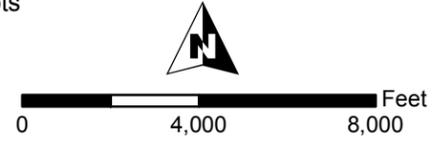
#### **6.5.3.1 Pipeline Capacity Projects**

Modeled City's pipelines in the wastewater system were evaluated against the criterion of keeping the water surface two feet or less above pipe crown during a custom 5-year storm event. The hydraulic model was used to show that several trunks could not meet this criterion and developed optimized pipe projects under existing and future conditions. All projects are sized for system build-out flow conditions.

Total CIP for all capacity-related pipeline projects is estimated at \$16.2M. 68% of these projects are also required as part of the repair and replacement analysis performed in Chapter 4 - Existing System and Condition Assessment. Table 6.7 summarizes all capacity-related recommended pipe projects.

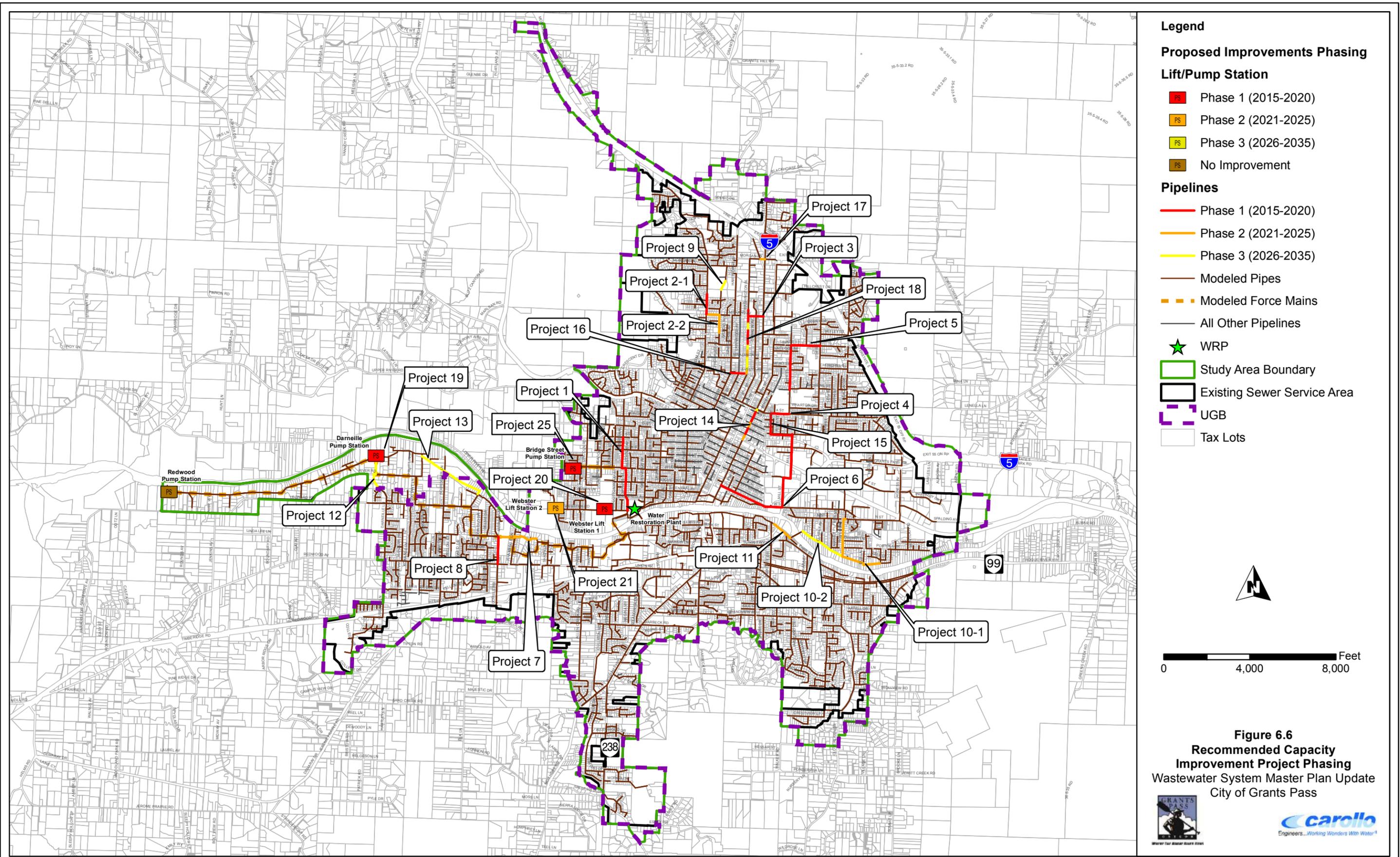


- Legend**
- Proposed Pipe Capacity-Related Improvement Projects**
- Project 1 - SW Western Street / SW Spruce Street
  - Project 2-1 - NW Highland Street
  - Project 2-2 - NW Prospect Street
  - Project 3 - NW Midland Ave
  - Project 4 - NE A Street
  - Project 5 - NE Savage Street / NE 9th Street
  - Project 6 - SE Mill Street / SE Rogue View Lane
  - Project 7 - Anabelle Ln
  - Project 8 - Leonard Road
  - Project 9 - Gilbert Creek Park
  - Project 10-1 - Rogue Drive / SE Blue Bird Drive
  - Project 10-2 - West SE Blue Bird Drive
  - Project 11 - Park Street
  - Project 12 - Darnelle Lane
  - Project 13 - Mesman Drive to Coutant Lane
  - Project 14 - NE 7th Street
  - Project 15 - NE Dean Dr / NE D St
  - Project 16 - NW Evelyn Ave
  - Project 17 - NW Morgan Ln
  - Project 18 - NW Washington Blvd
  - Other Gravity Mains
  - Existing Lift/Pump Station Deficiency
  - 2035 Lift/Pump Station Deficiency
  - Lift/Pump Station
  - WRP
  - Force Mains
  - Study Area Boundary
  - Existing Sewer Service Area
  - UGB
  - Tax Lots

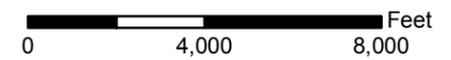


**Figure 6.5**  
**Recommended Capacity**  
**Improvement Project Locations**  
 Wastewater Collection System Master Plan  
 City of Grants Pass





- Legend**
- Proposed Improvements Phasing**
- Lift/Pump Station**
- Phase 1 (2015-2020)
  - Phase 2 (2021-2025)
  - Phase 3 (2026-2035)
  - No Improvement
- Pipelines**
- Phase 1 (2015-2020)
  - Phase 2 (2021-2025)
  - Phase 3 (2026-2035)
  - Modeled Pipes
  - Modeled Force Mains
  - All Other Pipelines
  - WRP
  - Study Area Boundary
  - Existing Sewer Service Area
  - UGB
  - Tax Lots



**Figure 6.6**  
**Recommended Capacity Improvement Project Phasing**  
 Wastewater System Master Plan Update  
 City of Grants Pass



<b>Table 6.7 Capacity-Related Pipeline Projects Cost Summary Wastewater Collection System Master Plan City of Grants Pass</b>				
<b>Project ID</b>	<b>Total Capital Improvement Cost (\$)</b>	<b>Phase 1 (2015-2020)</b>	<b>Phase 2 (2021-2025)</b>	<b>Phase 3 (2026-2035)</b>
Project 1 - SW Western / SW Spruce Street	\$1,833,000	\$1,833,000	–	–
Project 2-1 - NW Highland Street	\$296,000	\$296,000	–	–
Project 2-2 - NW Prospect Street	\$494,000	–	\$494,000	–
Project 3 - NW Midland Avenue	\$224,000	\$224,000	–	–
Project 4 - NE A Street	\$334,000	\$334,000	–	–
Project 5 - NE Savage Street / NE 9th St.	\$1,084,000	\$1,084,000	–	–
Project 6 - SE Mill Street / SE Rogue View Ln.	\$2,827,000	\$2,827,000	–	–
Project 7 - Annabelle Lane	\$848,000	–	\$848,000	–
Project 8 - Leonard Road	\$419,000	\$419,000	–	–
Project 9 - Gilbert Creek Park	\$143,000	–	–	\$143,000
Project 10-1 - Rogue River / SE Blue Bird Dr.	\$1,400,000	–	\$1,400,000	–
Project 10-2 - Rogue River / SE Blue Bird Dr.	\$1,051,000	–	–	\$1,051,000
Project 11 - Park Street	\$534,000	–	\$534,000	–
Project 12 - Darneille Lane	\$614,000	–	–	\$614,000
Project 13 - Mesman Drive to Coutant Lane	\$1,500,000	–	–	\$1,500,000
Project 14 - NE 7th Street	\$606,000	–	\$606,000	–
Project 15 - NE Dean Drive / NE D Street	\$795,000	\$795,000	–	–
Project 16 - NE Evelyn Avenue	\$190,000	\$190,000	–	–
Project 17 - NW Morgan Lane	\$66,000	–	\$66,000	–
Project 18 - NW Washington Boulevard	\$938,000	–	–	\$938,000
<b>Total Capacity-Related Pipeline Projects</b>	<b>\$16,196,000</b>	<b>\$8,002,000</b>	<b>\$3,948,000</b>	<b>\$4,246,000</b>
<b>Total Capacity-Related Projects Phasing Percent</b>		<b>49.4%</b>	<b>24.4%</b>	<b>26.2%</b>

Projects 1 through 18 presented in the sections below consist of the recommended capacity-related projects.

#### **6.5.3.1.1 Project 1 - SW Western Street / SW Spruce Street**

The sewer pipes located in wastewater basin B, along Western Avenue and SW Spruce Street severely lacks capacity to convey design flows and shows significant surcharging starting under existing conditions. Project 1 consists of replacing approximately 3,298 feet of existing 8- and

10-inch pipes with 12-, 15-, and 18-inch pipes on SW Western Street and SW Spruce Street between I Street and SW Westholm Ave.

Once the upsizing of the recommended pipes is completed, the pipe flowing east on Bridge St, east of SW Spruce St (between B108 and B21) can be plugged and the Bridge St Pump Station 8-inch force main (from B108) to SW Spruce St sewer will need to be rerouted to the SW Spruce trunk flowing south.

Project 1 also includes replacing the condition related pipes located along SW Western Ave north of the condition project is included under Project 1 to consolidate project. It consists of 2,271 feet of existing 8-inch pipelines. This was done to consolidate projects as much as possible. The City should take the advantage of replacing the sewer in SW Western Ave for increase in capacity to replace the pipes identified under the condition assessment located adjacent to the capacity project.

This project is planned under Phase 1 and total cost is estimated at \$1.8M.

#### **6.5.3.1.2 Project 2-1 – NW Highland Avenue**

The existing trunk traveling south on NW Highland Ave lacks the hydraulic capacity to convey modeled peak flows. Project 2-1, located in wastewater basin F consists of upsizing about 939 feet of existing 8-inch diameter sewers with new 12-inch diameter pipes along NW Highland Ave between 300 feet north of NW Parker Dr and NW Midland Ave.

Project 2-1 is planned under Phase 1 and is estimated at \$296,000.

#### **6.5.3.1.3 Project 2-2 – NW Prospect Street**

The existing trunk traveling east on NW Midland Ave, and south on NW Prospect Ave lacks the hydraulic capacity to convey modeled peak flows. Project 2-2, located in wastewater basin F consists of upsizing about 1,457 feet of existing 8-, and 10-inch diameter sewers with new 12- and 15-inch diameter pipes along NW Midland Ave between NW Highland Ave and NW Prospect Ave and along NW Prospect Ave between NW Midland Ave and 150 feet south of NW Sandy Dr.

Project 2-2 is planned under Phase 2 and is estimated at \$494,000.

#### **6.5.3.1.4 Project 3 – NW Midland Avenue**

One of the main areas of deficiencies observed is located along the NE 6th and 7th Streets trunk. These trunks are located along two of the busiest streets in the whole City. The City expressed its desire to prevent as much as possible projects along these streets. Flows were diverted away to different wastewater basins by proposing diversion pipes between NE 6th Street and adjacent trunks that had sufficient capacity to free up these surcharging trunks. Table 6.4 describes all capacity-related pipeline projects.

The existing interceptors that run along NE 7th Street and NE 6th Street shows surcharging above the performance criteria and lacks the hydraulic capacity to convey modeled peak flows.

Project 3 consists of constructing 710 feet of new 12- inch sewers along NW Midland Ave between NE 6th St and NW Washington Blvd. The implementation of this diversion and the ones from Projects 15, 16, and 17 in the short-term allows to divert enough flow away from NE 6th St to prevent replacing the NE 6th St Trunk where deficiencies are observed.

Total cost for Project 3 is estimated at \$224,000.

#### **6.5.3.1.5 Project 4 – NE A Street**

The existing trunk sewer that runs along NE A Street, between NE 9th Street and NE 7th Street, is flagged as capacity deficient in the hydraulic model starting under existing conditions, which results in surcharging above the planning criteria during PWWF.

Project 4 consists of replacing approximately 844 feet of existing 12-inch pipe with a new 18-inch pipeline. It will be strategic to coordinate construction of the NE A Street improvements with the NE 7th Street interceptor improvements (see Project 14 - NE 7th Street) to ensure sufficient downstream capacity in the system to convey design peak flows.

Project 4 is estimated to be implemented under Phase 1 and cost \$334,000.

#### **6.5.3.1.6 Project 5 – NE Savage Street / NE 9th Street**

The existing 8-inch trunk along NW Savage Street and NE 9th Street has insufficient capacity to convey design flows and creates bottlenecks.

Project 5 consists of upsizing 3,431 feet of the existing 8-inch pipe with a 12-inch trunk. Some of the current pipes in this project have low slopes, which increases the HGL in some pipes to above the design d/D value of 0.5.

Project 5 is planned under Phase 1 and total cost for this project is estimated at \$1.1M.

#### **6.5.3.1.7 Project 6 – SE Mill Street / SE Rogue View Ln**

The existing 12-inch trunk travelling along SE Mill Street (beginning south of the train tracks), SE M Street, and along the river easement to SE 8th Street lacks capacity to convey the modeled design flow. Surcharging above the performance criteria in the manholes along this section is observed starting under existing conditions.

A new pipeline will be installed along M Street west from the intersection of Mill Street and SE 12th St to the intersection of SE M St with SE 7th Street to connect to the 21-inch along SE 7th St.

Project 6 also recommends that 907 feet of existing 12-inch pipes located just south of the train tracks, along SE M St between SE Mill St and SE 12th St be replaced with 21-inch diameter pipes. It also recommends that 3,755 feet of existing 12-inch pipes be replaced with a new 18-inch sewer along SE Mill Street from NE D Street to SE M Street to facilitate manhole access

for maintenance and repair. The 21-inch along SE 7th St. connects to the existing 30-inch trunk line going to the WRP.

This project will need to be coordinated with the implementation of Project 15, which diverts flows from wastewater basin H towards the Mill Street trunk instead of the NE 7th Street trunk.

Project 6 is planned under Phase 1 and is estimated at \$2.8M.

#### **6.5.3.1.8 Project 7 - Annabelle Lane**

The primary interceptor in the Redwood area runs westerly along the Rogue River. The segment of 15-inch pipeline located between Wineteer Ln and Dowell Rd is capacity deficient and 1,948 feet of pipes are recommended to be replaced with a 21-inch diameter.

Project 7 consists of replacing the existing 1,948 feet of 15-inch pipe with a 21-inch pipe, which is greater than the upstream (15-inch) and downstream (18-inch) pipe diameters. The recommendation for the larger 21-inch pipe diameter is necessary based on existing pipe slopes of this segment and a design d/D value of 0.75.

Project 7 is planned under Phase 2 and is estimated at \$848,000.

#### **6.5.3.1.9 Project 8 - Dowell Road**

The existing 8-inch sewer along Dowell Road, located between Redwood Avenue and the intersection of Leonard Road with Mesman Drive, lack sufficient capacity to convey the model design flow. Surcharging above the performance criteria is observed starting under existing conditions.

Project 8 consists of replacing the existing 8-inch main with 888 feet of 12-inch and 384 feet of 15-inch pipes.

Project 8 is planned under Phase 1 and total project cost is estimated at \$419,000.

#### **6.5.3.1.10 Project 9 - Gilbert Creek Park**

The existing trunk traveling south through the football field and track of the North Middle School lacks the hydraulic capacity to convey build-out design flows. Project 9 consists of replacing 451 feet of existing 8-inch diameter pipe with a new 12-inch diameter trunk sewer. The pipe to replace is flat relative to the surrounding pipe, which creates a bottleneck along this line.

This project is planned under Phase 3 and is estimated at \$143,000.

#### **6.5.3.1.11 Project 10-1 - Rogue Drive / SE Blue Bird Drive**

The existing interceptor that runs along the north bank of the Rogue River, just south of SE Rogue Drive, SE Blue Bird Drive, and SE Oriole Street, experiences surcharging above the stated surcharging criteria and lacks the hydraulic capacity to convey the design flows starting in

the short-term planning period. Project 10-1 will need to be implemented concurrently with the construction of the Spalding pump station.

Project 10-1 runs from south of Waterman Lane and Lela Lane to just upstream of the split pipeline flowing under the Rogue River, and along Rogue Drive. To alleviate the identified deficiencies, approximately 3,720 feet of 15-, and 18-inch pipelines are recommended to replace the existing 12- and 15- inch sewers.

Project 10-1 is planned under Phase 2 and is estimated at \$1.4M.

#### **6.5.3.1.12 Project 10-2 – West SE Blue Bird Drive**

Additional flows from the Spalding expansion area trigger deficiencies along SE Blue Bird Drive. Project 10-2 runs along SE Blue Bird Drive, west of Rogue Drive, and helps alleviate deficiencies identified on the interceptor running along the north bank of the Rogue River.

Project 10-2 is recommended under Phase 3 and will need to be implemented concurrently with the development of the Spalding industrial expansion area. This project consists of upsizing 2,208 feet of 18-inch with 24-inch and its total capital improvement cost is estimated at \$1.1M.

#### **6.5.3.1.13 Project 11 – Park Street**

The existing interceptor located downstream of the siphon south of the Rogue River along Park Street experiences surcharging above the stated surcharging criteria and lacks capacity immediately downstream the siphon causing backwater and high HGL in the siphon. Project 11 consists of upsizing 202 feet of 18-inch and 795 feet of existing 24-inch with 24-inch and 27-inch diameter sewers, respectively.

Project 11 is phased in Phase 2 and is estimated at \$534,000.

#### **6.5.3.1.14 Project 12 - Darneille Lane**

Portions of the existing trunk sewer that runs along Darneille Lane, between SW Harvest Drive and the Darneille Pump Station are capacity deficient and result in surcharging above the planning criteria during build-out PWWF.

This project consists of replacing a total of 1,551 feet of existing 12-inch sewers with 18-inch pipelines.

Project 12 is prioritized under Phase 3 and its total capital cost is estimated at \$614,000M.

#### **6.5.3.1.15 Project 13 – Mesman Drive to Coutant Lane**

This improvement is located along the primary interceptor in the Redwood area that runs westerly along the Rogue River. The additional flow from build-out conditions causes surcharging above the planning criteria for the portion of the interceptor between Mesman Drive and Coutant Lane.

Project 13 consists of replacing the existing 18-inch main with 2,047 feet of 21-inch pipeline and 1,282 feet of 24-inch.

Project 13 is planned under Phase 3 and is estimated at \$1.5M.

#### **6.5.3.1.16 Project 14 - NE 7th Street**

Portions of the existing trunk sewer that runs along NE 7th Street, south of A Street, are capacity deficient which results in surcharging above the planning criteria during build-out PWWF.

Project 14 consists of replacing the existing 1,531 feet of 12-inch with an 18-inch pipeline along NE 7th Street between NE F Street and NE A Street.

Project 14 is planned under Phase 2 after combining phasing from the capacity analysis and the repair and replacement analysis. Capacity-wise only, this project is only required under phase 3 (2026-2035). However, as shown on Figure 6.6, the repair and replacement analysis performed in Chapter 4 identified these pipes as needing sooner attention and repair due to structural and maintenance issues. Chapter 4 showed that these pipes were needed either under Phase 1 or under Phase 2 based on the data the City collected, however, most of this trunk was identified as required under Phase 2, therefore, this project was recommended under Phase 2.

Additionally, project 14 is allocated under Phase 2 to see the beneficial impacts of the implementation of all diversions to divert flow away from NE 7th St under Phase 1. The City should closely monitor this area and replace/upsized pipes as soon as the opportunity arises.

This project was kept as one project, as it is located on one of the busiest streets in the City, to reduce costs and avoid disturbance, but is not as high of a priority as some other Phase 2 projects. The total capital improvement cost for this project is estimated at \$606,000.

#### **6.5.3.1.17 Project 15 – NE Dean Dr / NE D Street**

Flows from wastewater basin H currently flows west on NE A Street towards NE 7th Street, overloading the NE 7th Street trunk.

A new pipeline along NE Dean Drive and NE D Street from NE A Street to SE Mill Street is proposed. The purpose of this new collector is to redirect flows away from NE 7th Street towards wastewater basin I. Project 15 consists of constructing 2,009 feet of new 18-inch pipeline. Project 6 will need to be implemented as soon as this diversion becomes on-line.

Project 15 is planned under Phase 1 and its total capital improvement cost is estimated at \$795,000.

#### **6.5.3.1.18 Project 16 – NW Evelyn Street**

Projects 3 and 17 consist of routing flows from NW 6th Street to Washington Boulevard to help alleviate the 6th Street trunk located on one of the busiest streets of the City. Project 16 also routes these diverted flows from NW 6th Street towards NW 2nd Street.

Project 16 consists of constructing 1,446 feet of new 12-inch sewer along NW Evelyn Street between Washington Boulevard and NW 2nd Street. The existing sewer on NW 2nd Street has capacity availability.

Project 16 is planned under Phase 1 and its total capital improvement cost is estimated at \$190,000.

#### **6.5.3.1.19 Project 17 – NW Morgan Lane**

Flows from part of the North I-5 area (wastewater basin GG on Figure 4.2) is planned to be connected to the NE 6th Street trunk, significantly increasing future flows in this collector. Project 17 consists of constructing 208-feet of new 8-inch sewer between manholes G113 and G58. This is a new diversion from NE 6th Street to NW Washington Boulevard to relieve both NE 6th Street and NE 7th Street.

Project 17 is planned under Phase 2 and is estimated at \$66,000.

#### **6.5.3.1.20 Project 18 - NW Washington Boulevard**

As shown with Projects 3 and 17, flows from the NE 6th St trunk are diverted to NW Washington Blvd to alleviate the 6th St Trunk located on one of the busiest streets of the City. NW Washington Blvd now gets significant flows from 6<sup>th</sup> St in the future and capacity in this trunk becomes insufficient (above 2ft above pipe crown) in the long-term (2035).

Project 18 consists of upsizing 2,966 of existing 8-inch and 10-inch sewer with a 12-inch sewer along NW Washington Blvd between NW Midland Ave and NW Evelyn Ave.

This project is not recommended before Phase 3 (2026-2035) from a capacity standpoint. However, as shown on Figure 6.6, the repair and replacement analysis showed that a few sections of this project might be required before that (Phase 1 and Phase 2).

To reduce costs and traffic disturbance, it is recommended that this project be implemented under a single phase instead of splitting it under three implementation phases. It is therefore recommended that this project be implemented under Phase 3, however, the City should monitor the pipes identified as Phase 1 repair and replacement and move this project ahead as necessary.

Total capital improvement cost for Project 18 is estimated at \$938,000.

#### **6.5.3.2 Pump Station Capacity Projects**

The City's existing pump stations were evaluated against the redundancy criterion of having adequate firm capacity to pump peak flows during the custom 5-year design storm event. Chapter 5 recommended several pump station improvement projects for meeting this criterion.

It is projected that Webster No. 1, Darneille and Redwood pump stations are deficient under the existing conditions and that Webster No. 2 becomes deficient under the Long-term (2035) conditions. It is recommended that the existing Redwood Pump Station remain as it is currently,

and that the pipes upstream of Redwood be allowed to surcharge up to 3 feet below the manhole rim. If surcharging occurred upstream of the Redwood Pump Station above the 3-foot criteria, a pump station improvement would be recommended.

Table 6.8 summarizes the recommended capacity-related pump station project costs.

<b>Table 6.8 Capacity-Related Pump Station Projects Cost Summary Wastewater Collection System Master Plan City of Grants Pass</b>			
<b>Pump Station Project ID</b>	<b>Project Description</b>	<b>Total Capital Improvement Cost (\$)</b>	<b>Recommended Phase</b>
Project 19	Darneille Pump Station	\$ 5,113,000	Phase 1
Project 20	Webster No. 1 Lift Station	\$ 614,000	Phase 1
Project 21	Webster No. 2 Lift Station	\$ 998,000	Phase 2

#### **6.5.3.2.1 Project 19 - Darneille Pump Station**

Five high level options were developed as part of this Plan to improve Darneille Pump Station's capacity. It is highly recommended that the City perform an Alternative Analysis to optimize potential improvements at Darneille Pump Station. A recommendation for Darneille Pump Station should be made following an Alternative Analysis evaluating costs and other parameters in further detail to develop a recommended solution to the capacity limitations at the Darneille Pump Station.

Darneille Pump Station cost was estimated using the cost curve presented in Figure 6.1. Total Capital Cost for the pump station was estimated at \$5.1M. This cost is likely to change after the Alternatives Analysis is completed and once an optimal option to upgrade this station is recommended.

#### **6.5.3.2.2 Project 20 - Webster No. 1 Lift Station**

Project 20 consists of increasing its firm capacity of 0.66 mgd. Project to increase capacity at Webster No. 1 Lift Station is already underway and is planned to begin construction in 2016 (Phase 1).

Webster Lift Station No. 1 cost was obtained from the actual bid received as part of the design process, which is a total capital cost of \$614,000.

#### **6.5.3.2.3 Project 21 - Webster No. 2 Lift Station**

Project 21 consists of increasing its firm capacity to 0.23 mgd. The same cost as Webster No. 1 Lift Station was assigned to Webster Lift Station No. 2, but an additional 25% planning contingency was added for unforeseen conditions as this pump station has not been through design process yet.

#### 6.5.4 Expansion Projects

This section presents a summary of the expansion projects required specifically for new service areas. The recommended expansion projects to serve future growth areas were evaluated in Chapter 5, and consisted of evaluating options to expand the existing sewer system into five main expansion areas: North I-5, Spalding, and South Highway:

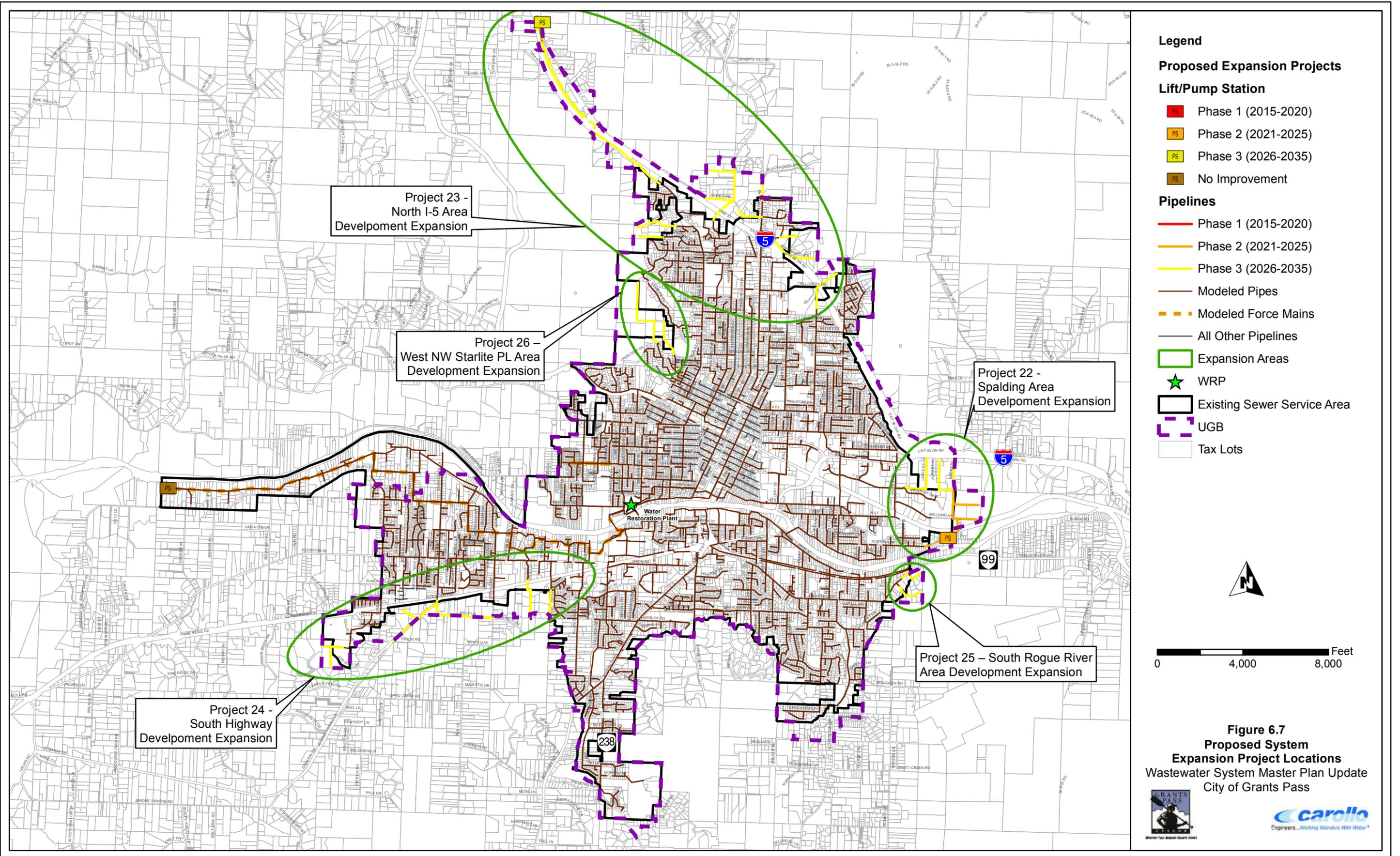
- Spalding Area Development Expansion.
- North I-5 Area Development Expansion.
- South Highway Development Expansion.
- South Rogue River Area Development Expansion.
- West NW Starlite Ln Area Development Expansion.

The ability of existing infrastructure to serve future areas of service was evaluated in Chapter 5. In general, the existing infrastructure was shown to have adequate capacity to serve most new service areas, with the exception of the Spalding area, and part of the area located north of I-5. Addition of these flows in the system saturates or helps saturate the already deficient areas. Connection of these areas will need to be coordinated with the necessary capacity improvements within the existing system, presented above in Section 6.5.3.

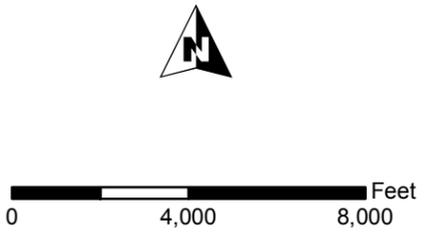
Figure 6.7 shows the location and phasing of all proposed expansion projects into the three growth areas identified as part of the system analysis.

A combination of new pipes, highway crossings, pump stations, and force mains is recommended to connect these areas located in the outskirts of the currently served areas.

Table 6.9 presents a summary of the recommended expansion projects total capital improvement costs by implementation phase.



- Legend**
- Proposed Expansion Projects**
- Lift/Pump Station**
- Phase 1 (2015-2020)
  - Phase 2 (2021-2025)
  - Phase 3 (2026-2035)
  - No Improvement
- Pipelines**
- Phase 1 (2015-2020)
  - Phase 2 (2021-2025)
  - Phase 3 (2026-2035)
  - Modeled Pipes
  - Modeled Force Mains
  - All Other Pipelines
  - Expansion Areas
  - WRP
  - Existing Sewer Service Area
  - UGB
  - Tax Lots



**Figure 6.7**  
**Proposed System**  
**Expansion Project Locations**  
 Wastewater System Master Plan Update  
 City of Grants Pass



<b>Table 6.9 Proposed Expansion Projects Cost Summary            Wastewater Collection System Master Plan            City of Grants Pass</b>						
Project ID	Improvement Type	Address Description	Total Capital Improvement Cost (\$)	Phase 1 (2015-2020)	Phase 2 (2021-2025)	Phase 3 (2026-2035)
<b>Project 22 - Spalding Area Development Expansion</b>						
PS-22A	Pump Station	SE Portola Dr.	\$986,000		\$986,000	
P-22B	Force Main	From Spalding PS to NE Portola Dr.	\$351,000		\$351,000	
P-22C	Gravity	In Spalding Area (Phase 2)	\$1,431,000		\$1,431,000	
P-22D	Gravity	In Spalding Area (Phase 3)	\$1,569,000			\$1,569,000
P-22E	Casing	Railroad crossing	\$385,000		\$385,000	
<b>Total Project 22 - Spalding Area Development Expansion</b>			<b>\$4,722,000</b>	<b>-</b>	<b>\$3,153,000</b>	<b>\$1,569,000</b>
<b>Project 23 - North I-5 Area Development Expansion</b>						
PS-23A	Pump Station	Monument Dr. and I-5	\$813,000			\$813,000
P-23B	Force Main	From I-5 PS to pipe on Pony Ln and NW Highland Ave	\$1,611,000			\$1,611,000
P-23C	Gravity	In I-5 North Area	\$6,755,000			\$6,755,000
P-23D	Casing	I-5 Crossings (3)	\$1,445,000			\$1,445,000
<b>Total Project 23 - North I-5 Area Development Expansion</b>			<b>\$10,624,000</b>	<b>-</b>	<b>-</b>	<b>\$10,624,000</b>
<b>Project 24 - South Highway Development Expansion</b>						
P-24A	Gravity	In South Highway Area	\$2,973,000			\$2,973,000
<b>Total Project 24 - South Highway Development Expansion</b>			<b>\$2,973,000</b>	<b>-</b>	<b>-</b>	<b>\$2,973,000</b>
<b>Project 25 - South Rogue River Area Development Expansion</b>						
P-25A	Gravity	In South Rogue River Area	\$643,000			\$643,000
<b>Total Project 25 - South Rogue River Development Expansion</b>			<b>\$643,000</b>	<b>-</b>	<b>-</b>	<b>\$643,000</b>
<b>Project 26 - West NW Starlite Ln Area Development Expansion</b>						
P-26A	Gravity	In West NW Starlite Area	\$1,411,000			\$1,411,000
<b>Total Project 26 - West NW Starlite Ln Development Expansion</b>			<b>\$1,411,000</b>			<b>\$1,411,000</b>
<b>Total Expansion Project Costs</b>			<b>\$20,373,000</b>	<b>-</b>	<b>\$3,153,000</b>	<b>\$17,220,000</b>

#### **6.5.4.1.1 Project 22 - Spalding Area Development Expansion**

A new pump station with 1,227 feet of force main, and approximately 11,483 feet of gravity pipes are proposed to connect the Spalding industrial area located east of the system and north of the Rogue River. Part of the area is planned to develop under Phase 2 and the rest under Phase 3. Total cost for gravity pipelines is estimated at \$3.0M.

Carollo completed a memorandum in 2015 entitled "Spalding Pump Station Analysis" (Appendix F) where costs were presented for this new pump station. These costs were used for the Plan and updated to the latest ENR (10,037 - July 2015). The pump station capital cost only is estimated at \$986,000. The single force main capital cost is estimated at \$351,000.

It is to be noted that incorporation of this expansion area will need to be properly timed with the incorporation of proposed piping projects 10 on Rogue Drive/SE Blue Bird Drive and 11 on Park Street.

#### **6.5.4.1.2 Project 23 - North I-5 Area Development Expansion**

A new pump station with 5,622 miles of force main, three I-5 crossings, and 25,849 feet of gravity pipes are proposed to connect the area north of I-5. Expansion of this area is planned to occur in the long-term under Phase 3.

The three crossings are located:

- At the intersection of Highland Avenue with I-5,
- Across I-5 at the latitude of Cherokee Ln dead-end, and
- From existing manhole F349 northeast crossing NE Vine Street and I-5.

The proposed I-5 North pump station cost was estimated based on the cost curve presented in Figure 6.1 and total capital cost is estimated at \$650,000. Total estimated cost for expanding in this area is approximately \$10.6M.

#### **6.5.4.1.3 Project 24 - South Highway Development Expansion**

This project consists of expanding the existing collection system into a new area located south of the highway. This area is planned to develop in the long-term under Phase 3 and consist of approximately 11,377 feet of gravity pipes.

#### **6.5.4.1.4 Project 25 - South Rogue River Development Expansion**

This project consists of expanding the existing collection system into a new area located south of the Rogue River and the Spalding development area. This area consists of approximately 2,457 feet of gravity pipes and is planned to develop in the long-term under Phase 3. Total estimate cost for this project is approximately \$643,000.

#### 6.5.4.1.5 Project 26 - West NW Starlite Ln Development Expansion

This project consists of expanding the existing collection system into a new area located west of the existing system in the vicinity of NW Starlite Lane. This area consists of approximately 5,402 feet of gravity pipes and is planned to develop in the long-term under Phase 3. Total cost for this project is estimated at \$1.4M.

### 6.5.5 Pipelines and Pump Stations Projects Summary

This section summarizes all projects presented in Sections 6.5.1 through 6.5.3. Table 6.10 summarizes all gravity pipeline projects by total linear feet and by total capital improvement cost. Table 6.11 shows similar statistics, but for pump stations and associated force mains.

<b>Table 6.10 Capital Improvement Plan Summary -- Gravity Pipelines Wastewater Collection System Master Plan City of Grants Pass</b>					
<b>Project Type</b>	<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 3</b>	<b>Total Pipelines</b>	<b>Percent (%)</b>
<b>Pipeline Linear Feet (ft)</b>					
Capacity	5,657	2,156	5,331	13,144	4.0%
R&R	61,366	57,766	109,496	228,627	70.2%
Capacity & R&R	14,412	7,705	5,174	27,291	8.4%
Expansion	-	5,479	51,089	56,568	17.4%
<b>Total (ft)</b>	<b>81,435</b>	<b>73,106</b>	<b>171,090</b>	<b>325,630</b>	<b>100%</b>
<b>Pipeline Capital Improvement Costs (\$)</b>					
Capacity	\$1,924,000	\$914,000	\$2,257,000	\$5,095,000	5.3%
R&R	\$16,952,000	\$16,130,000	\$32,179,000	\$65,261,000	68.2%
Capacity & R&R	\$5,484,000	\$3,034,000	\$1,989,000	\$10,507,000	11.0%
Expansion		\$1,431,000	\$13,351,000	\$14,782,000	15.5%
<b>Total (ft)</b>	<b>\$24,360,000</b>	<b>\$21,509,000</b>	<b>\$49,776,000</b>	<b>\$95,645,000</b>	<b>100%</b>

<b>Table 6.11 Capital Improvement Plan Summary -- Pump Stations and Force Mains Wastewater Collection System Master Plan City of Grants Pass</b>					
<b>Project Type</b>	<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 3</b>	<b>Total Capital Improvement Cost</b>	<b>Percent (%)</b>
<b>Pump Station Capital Improvement Costs (\$)</b>					
Capacity	–	–	–	\$0	–
R&R	\$25,000	–	–	\$25,000	<b>0.3%</b>
Capacity and R&R	\$5,727,000	\$998,000	–	\$6,725,000	<b>62.7%</b>
Expansion	–	\$1,337,000	\$2,424,000	\$3,761,000	<b>37.0%</b>
<b>Total (ft)</b>	<b>\$5,752,000</b>	<b>\$2,335,000</b>	<b>\$2,424,000</b>	<b>\$10,511,000</b>	<b>100%</b>

**6.5.6 General Projects**

Two general projects are included in the Improvement Program: an Asset Management Program, and additional Master Plan Updates. These projects are summarized in Table 6.4 and are described in detail in the following sections.

**6.5.6.1 G.1 - Asset Management Program**

Chapter 4 includes a recommendation to implement an Asset Management Program (AMP) to further assist the City in prioritizing repair and replacement of its entire aging wastewater infrastructure. Asset management plans help utility providers find the optimal timing for repair or replacement (R&R) of assets by weighing the costs of continued maintenance against the costs of R&R. These plans also prioritize projects to reduce operation and maintenance risks resulting in overall lower costs burdened by ratepayers.

The recommendation for implementing an AMP includes the following initial steps to be taken by the City:

- Continue to update data, such as pipe material, year installed, and invert elevations, in the City’s Geographic Information Systems (GIS) and Computerized Maintenance Management Software.
- Standardize condition assessments and closed-circuit television (CCTV) reports using the Pipeline Assessment and Certification Program (PACP). This may entail working with non-City contractors performing CCTV inspections. Possibly obtain training for City staff on PACP scoring.
- Take the Strategic Asset Management Gap (SAM-GAP), a free, online utility self-assessment tool.

These steps will help the City prepare to implement an AMP. Costs for these recommendations were not developed as they are assumed to be performed by current City staff. In addition to the

above steps, the following strategy is recommended for the City to develop and implement an AMP:

1. Assess the City's Current Asset Management Practices.
2. Review Appropriate Asset Management Tools.
3. Identify and Prioritize Gaps in Current Asset Management Practices.
4. Prepare an Asset Management Plan.
5. Implement Asset Management Plan.

Costs for steps 1 through 4 assume the City will have assistance from a consultant to develop the plan. Depending on the level of detail requested by the City, costs may range from \$75,000 to \$150,000. Table 6.4 assumes the higher cost for budgeting purposes. It is anticipated that during development of the AMP, the equivalent of one full time employee (FTE) will be required by the City for program administration. Development of the AMP is estimated to take approximately six months. Following development of the AMP, one FTE is anticipated to be required for another six months to complete inventory and data entry of the system. Thus, one FTE is required for one year to develop the AMP.

Implementing the AMP (Step 5) is anticipated to require 0.25 FTEs to continue to monitor data integration, update prioritization of repair projects, and update the AMP as necessary. Costs for implementing the projects prioritized in the AMP are assumed to come from other annual repair program budgets.

The City may opt to implement asset management for other utilities including water and stormwater, and due to economies of scale, the City would achieve a costs savings by integrating these asset groups into one overall AMP.

#### **6.5.6.2 G.2 - Master Plan Updates**

This project assumes that the City will update its Wastewater Collection System Master Plan every ten years, beginning in 2025. These updates are estimated to cost \$300,000 each. These updates to the Wastewater Collection Master Plan include several items:

- Policy and Criteria Review;
- Condition of Existing Assets;
- Flow Monitoring and Flow Projections;
- Hydraulic Model Update and Calibration to recent data;
- Collection System Analysis;
- Capital Project Development; and
- Master Plan Preparation.

## **6.6 CAPITAL IMPROVEMENTS PLAN DETAILS**

This section gives more details concerning all recommended projects presented in the above sections. Table 6.12 shows the detailed recommended CIP. This table identifies the projects, provides a brief description of the projects, identifies facility size (e.g. pipe diameter and length), and the total capital improvement cost. Table 6.12 also shows the proposed phase in which the project is recommended to be implemented.

Figures 6.8 through 6.10 illustrate the Phase 1, Phase 2, and Phase 3 improvement projects, respectively, for all repair and replacement, capacity, and expansion projects. The figures are located at the end of this chapter, after Table 6.12.

Detailed sheets for each CIP project presented in this chapter can be found in the following chapter, Chapter 7 - CIP Detailed Sheets.

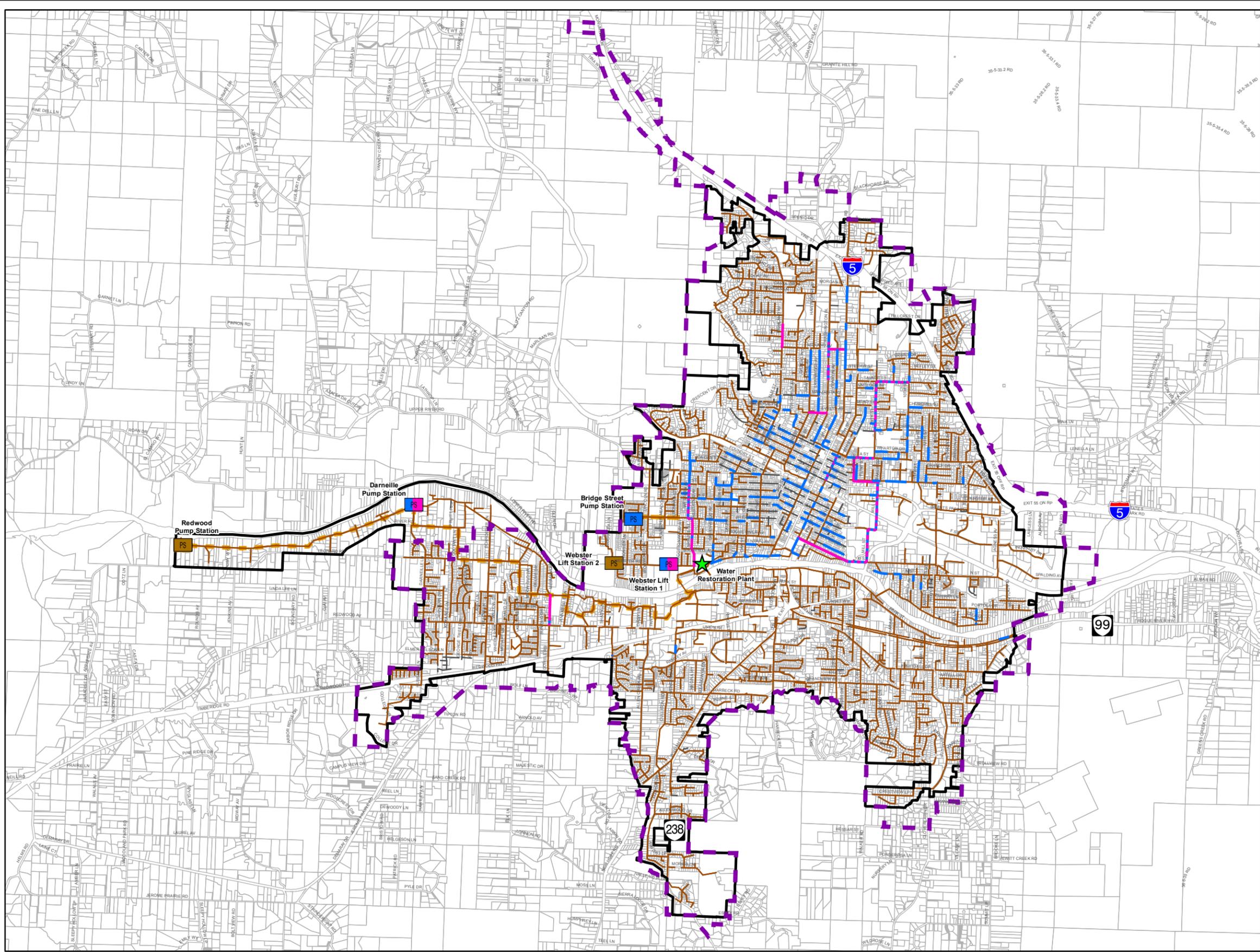
<b>Table 6.12 Detailed Capital Improvement Plan Wastewater Collection System Master Plan City of Grants Pass</b>											
Project Description				Project Size and Cost				Total CIP	Total CIP Cost (\$) - Project Phasing		
Improv. ID	Improv. Type	Project Purpose	Address Description	Existing Size	Proposed Size	Replace/ New	Length (ft)	Total Capital Improvement Cost(\$)	Phase 1 (2015-2020)	Phase 2 (2021-2025)	Phase 3 (2026-2035)
<b>Project 1 - SW Western Street / SW Spruce Street</b>											
P-1A	Gravity	Capacity and R&R	Along SW Western Ave between I St and K St	8	12	Upsize	581	\$184,000	\$184,000		
P-1B	Gravity	Capacity and R&R	Along SW Western Ave between K St and SW Bridge St	10	15	Upsize	546	\$195,000	\$195,000		
P-1C	Gravity	Capacity and R&R	Along SW Spruce St between SW Bridge St and Webster Rd	8	18	Upsize	1,998	\$791,000	\$791,000		
P-1D	Gravity	Capacity and R&R	Along SW Bridge St between SW Western Ave and SW Westhom Ave between Manholes B31 and B30	10	18	Upsize	174	\$69,000	\$69,000		
P-1E	Plug	Capacity	Plug pipe to east Bridge St (between B108 and B21) and reroute Bridge St Pump Station 8-inch force main (from B108) to SW Spruce St sewer	10	-	Plug	-	-	-		
P-1F	Gravity	R&R	Along SW Western Ave between SW Jordan St and SW I St	8	8	Upsize	2,271	\$594,000	\$594,000		
<b>Total Project 1 - SW Western / SW Spruce Street</b>								<b>\$1,833,000</b>	<b>\$1,833,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 2-1 - NW Highland Street</b>											
P-2A	Gravity	Capacity	Along NW Highland Ave between 300 ft north of NW Parker Dr and NW Midland Ave	8	12	Upsize	939	\$296,000	\$296,000		
<b>Total Project 2-1 - NW Highland Street</b>								<b>\$296,000</b>	<b>\$296,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 2-2 - NW Prospect Street</b>											
P-2B	Gravity	Capacity and R&R	Along NW Midland Ave between NW Highlands Ave and NW Prospect Ave	8	12	Upsize	623	\$196,000		\$196,000	
P-2C	Gravity	Capacity and R&R	Along NW Prospect Ave between NW Midland Ave and 150 feet south of NW Sandy Dr	10	15	Upsize	834	\$298,000		\$298,000	
<b>Total Project 2-2 - NW Prospect Street</b>								<b>\$494,000</b>	<b>\$0</b>	<b>\$494,000</b>	<b>\$0</b>
<b>Project 3 - NW Midland Avenue</b>											
P-3A	Gravity	Capacity	Along Midland Ave between NW 6th St and NW Washington Blvd	-	12	New	710	\$224,000	\$224,000		
<b>Total Project 3 - NW Midland Avenue</b>								<b>\$224,000</b>	<b>\$224,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 4 - NE A Street</b>											
P-4A	Gravity	Capacity and R&R	Along NE A St between NE 9th St and NE 7th St	12	18	Upsize	844	\$334,000	\$334,000		
<b>Total Project 4 - NE A Street</b>								<b>\$334,000</b>	<b>\$334,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 5 - NE Savage Street / NE 9th Street</b>											
P-5A	Gravity	Capacity and R&R	Along NE Savage St between NE 10th St and NE 9th St and along NE 9th St between NE Savage St and NE Josephine St	8	12	Upsize	3,431	\$1,084,000	\$1,084,000		
<b>Total Project 5 - NE Savage Street / NE 9th Street</b>								<b>\$1,084,000</b>	<b>\$1,084,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 6 - SE Mill Street / SE Rogue View Lane</b>											
P-6A	Gravity	Capacity and R&R	Along SE Mill St between NE D St and SE M St	12	18	Upsize	3,755	\$1,486,000	\$1,486,000		
P-6B	Gravity	Capacity and R&R	Along SE M St between SE Mill St and SE 12th St	12	21	Upsize	907	\$395,000	\$395,000		
P-6C	Gravity	Capacity and R&R	Along SE M St between SE 12th St and SE 7th St	-	21	New	2,177	\$946,000	\$946,000		
<b>Total Project 6 - SE Mill Street / SE Rogue View Lane</b>								<b>\$2,827,000</b>	<b>\$2,827,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 7 - Annabelle Lane</b>											
P-7A	Gravity	Capacity	RSSD Interceptor between Wineteer Ln To Leonard Rd	15	21	Upsize	1,948	\$848,000		\$848,000	
<b>Total Project 7 - Annabelle Lane</b>								<b>\$848,000</b>	<b>\$0</b>	<b>\$848,000</b>	<b>\$0</b>
<b>Project 8 - Dowell Road</b>											
P-8A	Gravity	Capacity	Along Dowell Rd between Redwood Ave to south of Mesman Dr	8	12	Upsize	888	\$281,000	\$281,000		
P-8B	Gravity	Capacity	Along Dowell Rd between south of Mesman Dr and intersection of Leonard Rd with Mesman Dr	8	15	Upsize	384	\$138,000	\$138,000		
<b>Total Project 8 - Dowell Road</b>								<b>\$419,000</b>	<b>\$419,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 9 - Gilbert Creek Park</b>											
P-9A	Gravity	Capacity	Along Gilbert Creek Park 500 ft north of NW Parker Dr and west of NW Hawthorne Ave	8	12	Upsize	451	\$143,000			\$143,000
<b>Total Project 9 - Gilbert Creek Park</b>								<b>\$143,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$143,000</b>
<b>Project 10-1 - Rogue Drive / SE Blue Bird Drive</b>											
P-10A	Gravity	Capacity and R&R	Along Rogue Dr between SE N St and SE Blue Bird Dr	15	18	Upsize	1,831	\$725,000		\$725,000	
P-10B	Gravity	Capacity and R&R	Through properties on north bank of river, south of Waterman Ln and Lela Ln to Blue Bird Dr	12	15	Upsize	1,890	\$675,000		\$675,000	
<b>Total Project 10-1 - Rogue River / SE Blue Bird Drive</b>								<b>\$1,400,000</b>	<b>\$0</b>	<b>\$1,400,000</b>	<b>\$0</b>

<b>Table 6.12 Detailed Capital Improvement Plan Wastewater Collection System Master Plan City of Grants Pass</b>											
Project Description				Project Size and Cost				Total CIP	Total CIP Cost (\$) - Project Phasing		
Improv. ID	Improv. Type	Project Purpose	Address Description	Existing Size	Proposed Size	Replace/ New	Length (ft)	Total Capital Improvement Cost(\$)	Phase 1 (2015-2020)	Phase 2 (2021-2025)	Phase 3 (2026-2035)
<b>Project 10-2 - West SE Blue Bird Drive</b>											
P-10C	Gravity	Capacity and R&R	Through properties on north bank of river, from Blue Bird Dr to just upstream of pipe split under Rogue River	18	24	Upsize	2,208	\$1,051,000			\$1,051,000
<b>Total Project 10-2 - Rogue River / SE Blue Bird Drive</b>								<b>\$1,051,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,051,000</b>
<b>Project 11 - Park Street</b>											
P-11A	Gravity	Capacity and R&R	Through properties on south bank of the river between Mystic Dr and Gold River Ln	18	27	Upsize	202	\$108,000		\$108,000	
P-11B	Gravity	Capacity and R&R	Through properties on south bank of the river between Gold River Dr and SE Acacia Ln	24	27	Upsize	795	\$426,000		\$426,000	
<b>Total Project 11 - Park Street</b>								<b>\$534,000</b>	<b>\$0</b>	<b>\$534,000</b>	<b>\$0</b>
<b>Project 12 - Darneille Lane</b>											
P-12A	Gravity	Capacity	Along Darneille Ln between the intersection of Darneille Ln with SW Harvest Dr and Darneille PS	12	18	Upsize	1,551	\$614,000			\$614,000
<b>Total Project 12 - Darneille Lane</b>								<b>\$614,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$614,000</b>
<b>Project 13 - Mesman Drive to Coutant Lane</b>											
P-13A	Gravity	Capacity	RSSD Interceptor between Mesman Dr and Schroeder Ln	18	21	Upsize	2,047	\$890,000			\$890,000
P-13B	Gravity	Capacity	RSSD Interceptor between Schroeder Ln and Coutant Ln	18	24	Upsize	1,282	\$610,000			\$610,000
<b>Total Project 13 - Mesman Drive to Coutant Lane</b>								<b>\$1,500,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,500,000</b>
<b>Project 14 - NE 7th Street</b>											
P-14A	Gravity	Capacity and R&R	Along NE 7th Street between NE A St and NW F St	12	18	Upsize	1,531	\$606,000		\$606,000	
<b>Total Project 14 - NE 7th Street</b>								<b>\$606,000</b>	<b>\$0</b>	<b>\$606,000</b>	<b>\$0</b>
<b>Project 15 - NE Dean Drive / NE D Street</b>											
P-15A	Gravity	Capacity	Along NE Dean Dr and NE D St from NE A St to SE Mill St	-	18	New	2,009	\$795,000	\$795,000		
<b>Total Project 15 - NE Dean Drive / NE D Street</b>								<b>\$795,000</b>	<b>\$795,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 16 - NW Evelyn Avenue</b>											
P-16A	Gravity	Capacity	Along Evelyn Ave between Washington Boulevard and NW 2nd St	-	8	New	727	\$190,000	\$190,000		
<b>Total Project 16 - NE Evelyn Avenue</b>								<b>\$190,000</b>	<b>\$190,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 17 - NW Morgan Lane</b>											
P-17A	Gravity	Capacity	Along Morgan Ln between NW 6th St and NW Washington Blvd	-	12	New	208	\$66,000		\$66,000	
<b>Total Project 17 - NW Morgan Lane</b>								<b>\$66,000</b>	<b>\$0</b>	<b>\$66,000</b>	<b>\$0</b>
<b>Project 18 - NW Washington Boulevard</b>											
P-18A	Gravity	Capacity and R&R	Along NW Washington Blvd between NW Midland Ave and NW Manzanita Ave	8	12	Upsize	2,239	\$708,000			\$708,000
P-18B	Gravity	Capacity and R&R	Along NW Washington Blvd between NW Manzanita Ave and NW Evelyn Ave	10	12	Upsize	727	\$230,000			\$230,000
<b>Total Project 18 - NW Washington Boulevard</b>								<b>\$938,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$938,000</b>
<b>Project 19 - Darneille Pump Station</b>											
PS-19A	Pump Station	Capacity and R&R	Alternatives Analysis Study	-	-	Study	1	\$75,000	\$75,000		
PS-19B	Pump Station	Capacity and R&R	Darneille PS	4.2	7.8	Upsize	1	\$5,038,000	\$5,038,000		
<b>Total Project 19 - Darneille Pump Station</b>								<b>\$5,113,000</b>	<b>\$5,113,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 20 - Webster No. 1 Lift Station</b>											
PS-20A	Pump Station	Capacity and R&R	Webster No. 1 PS	0	0.66	Upsize	1	\$614,000	\$614,000		
<b>Total Project 20 - Webster No. 1 Pump Station</b>								<b>\$614,000</b>	<b>\$614,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project 21 - Webster No. 2 Lift Station</b>											
PS-21A	Pump Station	Capacity and R&R	Webster No .2 PS	0	0.23	Upsize	1	\$998,000		\$998,000	
<b>Total Project 21 - Webster No. 2 Pump Station</b>								<b>\$998,000</b>	<b>\$0</b>	<b>\$998,000</b>	<b>\$0</b>
<b>Project 22 - Spalding Area Development Expansion</b>											
PS-22A	Pump Station	Expansion	SE Portola Dr.	-	0.16	New	1	\$986,000		\$986,000	
P-22B	Force Main	Expansion	From Spalding PS to NE Portola Dr.	-	6	New	1,227	\$351,000		\$351,000	
P-22C	Gravity	Expansion	In Spalding Area	-	8	New	5,479	\$1,431,000		\$1,431,000	
P-22D	Gravity	Expansion	In Spalding Area	-	8	New	6,004	\$1,569,000			\$1,569,000
P-22E	Casing	Expansion	Railroad crossing	-	12/24	New	200	\$385,000		\$385,000	
<b>Total Project 22 - Spalding Area Development Expansion</b>								<b>\$4,722,000</b>	<b>\$0</b>	<b>\$3,153,000</b>	<b>\$1,569,000</b>
<b>Project 23 - North I-5 Area Development Expansion</b>											
PS-23A	Pump Station	Expansion	Monument Dr. and I-5	-	0.14	Upsize	1	\$813,000			\$813,000
P-23B	Force Main	Expansion	From I-5 PS to pipe on Pony Ln and NW Highland Ave	-	6	New	5,622	\$1,611,000			\$1,611,000
P-23C	Gravity	Expansion	In I-5 North Area	-	8	New	25,849	\$6,755,000			\$6,755,000
P-23D	Casing	Expansion	I-5 Crossings (3)	-	12/24	New	750	\$1,445,000			\$1,445,000
<b>Total Project 23 - North I-5 Area Development Expansion</b>								<b>\$10,624,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$10,624,000</b>

**Table 6.12 Detailed Capital Improvement Plan  
 Wastewater Collection System Master Plan  
 City of Grants Pass**

Project Description				Project Size and Cost				Total CIP	Total CIP Cost (\$) - Project Phasing		
Improv. ID	Improv. Type	Project Purpose	Address Description	Existing Size	Proposed Size	Replace/ New	Length (ft)	Total Capital Improvement Cost(\$)	Phase 1 (2015-2020)	Phase 2 (2021-2025)	Phase 3 (2026-2035)
<b>Project 24 - South Highway Development Expansion</b>											
P-24A	Gravity	Expansion	In South Highway Area	-	8	New	11,377	\$2,973,000			\$2,973,000
<b>Total Project 24 - South Highway Development Expansion</b>								<b>\$2,973,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,973,000</b>
<b>Project 25 - South Rogue River Area Development Expansion</b>											
P-25A	Gravity	Expansion	In South Rogue River Area	-	8	New	2,457	\$643,000			\$643,000
<b>Total Project 25 - South Rogue River Area Development Expansion</b>								<b>\$643,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$643,000</b>
<b>Project 26 - West NW Starlite PI Area Development Expansion</b>											
P-26A	Gravity	Expansion	In West NW Starlite PI Area	-	8	New	5,402	\$1,411,000			\$1,411,000
<b>Total Project 26 - West NW Starlite PI Area Development Expansion</b>								<b>\$1,411,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,411,000</b>
<b>Project R&amp;R-7 - Bridge Street Pump Station</b>											
PS-R&R-7A	Pump Station	R&R	Bridge Street	0.94	0.94	Upgrade	1	\$25,000	\$25,000		
<b>Total Project R&amp;R-7 - Bridge Street Pump Station</b>								<b>\$25,000</b>	<b>\$25,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project R&amp;R-1 - Condition Only Projects - Phase 1 North of Rogue River</b>											
P-R&R-1A	Gravity	R&R	North of Rogue River	8 and less	8	Replace	45,960	\$12,009,000	\$12,009,000		
P-R&R-1B	Gravity	R&R	North of Rogue River	10	10	Replace	5,262	\$1,509,000	\$1,509,000		
P-R&R-1C	Gravity	R&R	North of Rogue River	12	12	Replace	2,060	\$651,000	\$651,000		
P-R&R-1D	Gravity	R&R	North of Rogue River	15	15	Replace	104	\$38,000	\$38,000		
P-R&R-1E	Gravity	R&R	North of Rogue River	18	18	Replace	923	\$365,000	\$365,000		
P-R&R-1F	Gravity	R&R	North of Rogue River	21	21	Replace	1,926	\$838,000	\$838,000		
P-R&R-1G	Gravity	R&R	North of Rogue River	24	24	Replace	492	\$234,000	\$234,000		
<b>Total Project R&amp;R-1 - Condition Only Projects - Phase 1 North of Rogue River</b>								<b>\$15,644,000</b>	<b>\$15,644,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project R&amp;R-2 - Condition Only Projects - Phase 1 South of Rogue River</b>											
P-R&R-2A	Gravity	R&R	South of Rogue River	8 and less	8	Replace	443	\$116,000	\$116,000		
P-R&R-2B	Gravity	R&R	South of Rogue River	10	10	Replace	919	\$264,000	\$264,000		
P-R&R-2C	Gravity	R&R	South of Rogue River	12	12	Replace	629	\$199,000	\$199,000		
P-R&R-2D	Gravity	R&R	South of Rogue River	15	15	Replace	378	\$135,000	\$135,000		
<b>Total Project R&amp;R-2 - Condition Only Projects - Phase 1 South of Rogue River</b>								<b>\$714,000</b>	<b>\$714,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Project R&amp;R-3 - Condition Only Projects - Phase 2 North of Rogue River</b>											
P-R&R-3A	Gravity	R&R	North of Rogue River	8 and less	8	Replace	38,468	\$10,051,000		\$10,051,000	
P-R&R-3B	Gravity	R&R	North of Rogue River	10	10	Replace	8,581	\$2,460,000		\$2,460,000	
P-R&R-3C	Gravity	R&R	North of Rogue River	12	12	Replace	6,618	\$2,090,000		\$2,090,000	
P-R&R-3D	Gravity	R&R	North of Rogue River	18	18	Replace	1,278	\$506,000		\$506,000	
P-R&R-3E	Gravity	R&R	North of Rogue River	21	21	Replace	385	\$168,000		\$168,000	
<b>Total Project R&amp;R-3 - Condition Only Projects - Phase 2 North of Rogue River</b>								<b>\$15,275,000</b>	<b>\$0</b>	<b>\$15,275,000</b>	<b>\$0</b>
<b>Project R&amp;R-4 - Condition Only Projects - Phase 2 South of Rogue River</b>											
P-R&R-4A	Gravity	R&R	South of Rogue River	8 and less	8	Replace	1,402	\$366,000		\$366,000	
P-R&R-4B	Gravity	R&R	South of Rogue River	10	10	Replace	76	\$21,000		\$21,000	
P-R&R-4C	Gravity	R&R	South of Rogue River	15	15	Replace	417	\$149,000		\$149,000	
P-R&R-4D	Gravity	R&R	South of Rogue River	30	30	Replace	542	\$319,000		\$319,000	
<b>Total Project R&amp;R-4 - Condition Only Projects - Phase 2 South of Rogue River</b>								<b>\$855,000</b>	<b>\$0</b>	<b>\$855,000</b>	<b>\$0</b>
<b>Project R&amp;R-5 - Condition Only Projects - Phase 3 North of Rogue River</b>											
P-R&R-5A	Gravity	R&R	North of Rogue River	8 and less	8	Replace	59,905	\$15,653,000			\$15,653,000
P-R&R-5B	Gravity	R&R	North of Rogue River	10	10	Replace	6,181	\$1,773,000			\$1,773,000
P-R&R-5C	Gravity	R&R	North of Rogue River	12	12	Replace	2,760	\$871,000			\$871,000
P-R&R-5D	Gravity	R&R	North of Rogue River	15	15	Replace	433	\$155,000			\$155,000
P-R&R-5E	Gravity	R&R	North of Rogue River	18	18	Replace	217	\$86,000			\$86,000
P-R&R-5F	Gravity	R&R	North of Rogue River	21	21	Replace	243	\$106,000			\$106,000
P-R&R-5G	Gravity	R&R	North of Rogue River	24	24	Replace	914	\$435,000			\$435,000
P-R&R-5H	Gravity	R&R	North of Rogue River	48	48	Replace	22	\$16,000			\$16,000
<b>Total Project R&amp;R-5 - Condition Only Projects - Phase 3 North of Rogue River</b>								<b>\$19,095,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$19,095,000</b>
<b>Project R&amp;R-6 - Condition Only Projects - Phase 3 South of Rogue River</b>											
P-R&R-6A	Gravity	R&R	South of Rogue River	8 and less	8	Replace	19,049	\$4,978,000			\$4,978,000
P-R&R-6B	Gravity	R&R	South of Rogue River	10	10	Replace	3,525	\$1,010,000			\$1,010,000
P-R&R-6C	Gravity	R&R	South of Rogue River	12	12	Replace	4,499	\$1,421,000			\$1,421,000
P-R&R-6D	Gravity	R&R	South of Rogue River	15	15	Replace	2,556	\$913,000			\$913,000
P-R&R-6E	Gravity	R&R	South of Rogue River	18	18	Replace	1,228	\$486,000			\$486,000
P-R&R-6F	Gravity	R&R	South of Rogue River	24	24	Replace	1,164	\$554,000			\$554,000
P-R&R-6G	Gravity	R&R	South of Rogue River	27	27	Replace	5,276	\$2,824,000			\$2,824,000
P-R&R-6G	Gravity	R&R	South of Rogue River	30	30	Replace	1,524	\$898,000			\$898,000
<b>Total Project R&amp;R-6 - Condition Only Projects - Phase 3 South of Rogue River</b>								<b>\$13,084,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$13,084,000</b>

<b>Table 6.12 Detailed Capital Improvement Plan Wastewater Collection System Master Plan City of Grants Pass</b>											
Project Description				Project Size and Cost				Total CIP	Total CIP Cost (\$) - Project Phasing		
Improv. ID	Improv. Type	Project Purpose	Address Description	Existing Size	Proposed Size	Replace/ New	Length (ft)	Total Capital Improvement Cost(\$)	Phase 1 (2015-2020)	Phase 2 (2021-2025)	Phase 3 (2026-2035)
<b>Project 27 - General Projects</b>											
G-1	General	General	Asset Management Program	-	-	-	1	\$150,000	\$150,000		
G-2A	General	General	Master Plan Updates (2021)	-	-	-	1	\$300,000		\$300,000	
G-2B	General	General	Master Plan Updates (2031)	-	-	-	1	\$300,000			\$300,000
<b>Total Project 27 - General Projects</b>								<b>\$750,000</b>	<b>\$150,000</b>	<b>\$300,000</b>	<b>\$300,000</b>
<b>Total CIP (\$)</b>								<b>\$108,736,000</b>	<b>\$30,262,000</b>	<b>\$24,529,000</b>	<b>\$53,945,000</b>
<b>Total CIP (%)</b>									<b>27.8%</b>	<b>22.6%</b>	<b>49.6%</b>
<b>Notes:</b>											
(1) ENR CCI = 10,037 (20-City Average, July 2015).											
(2) Capital Improvement Cost includes a 20% construction contingency applied to the Baseline Construction Cost to account for unforeseen events and unknown conditions, a 30% allied cost applied to the Estimated Construction Cost to account for engineering services, construction management, and project administration, and a 25% planning contingency applied to the Total Allied Project Costs.											



**Legend**

**Proposed Improvements - Phase 1 (2015-2020)**

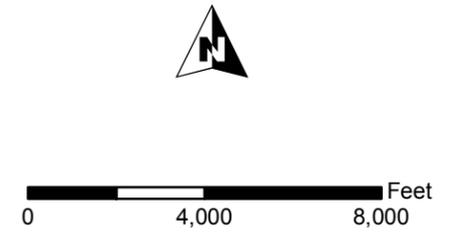
**Lift/Pump Station**

- PS Repair and Replacement
- PS R&R and Capacity
- PS Other Pump Stations

**Pipelines**

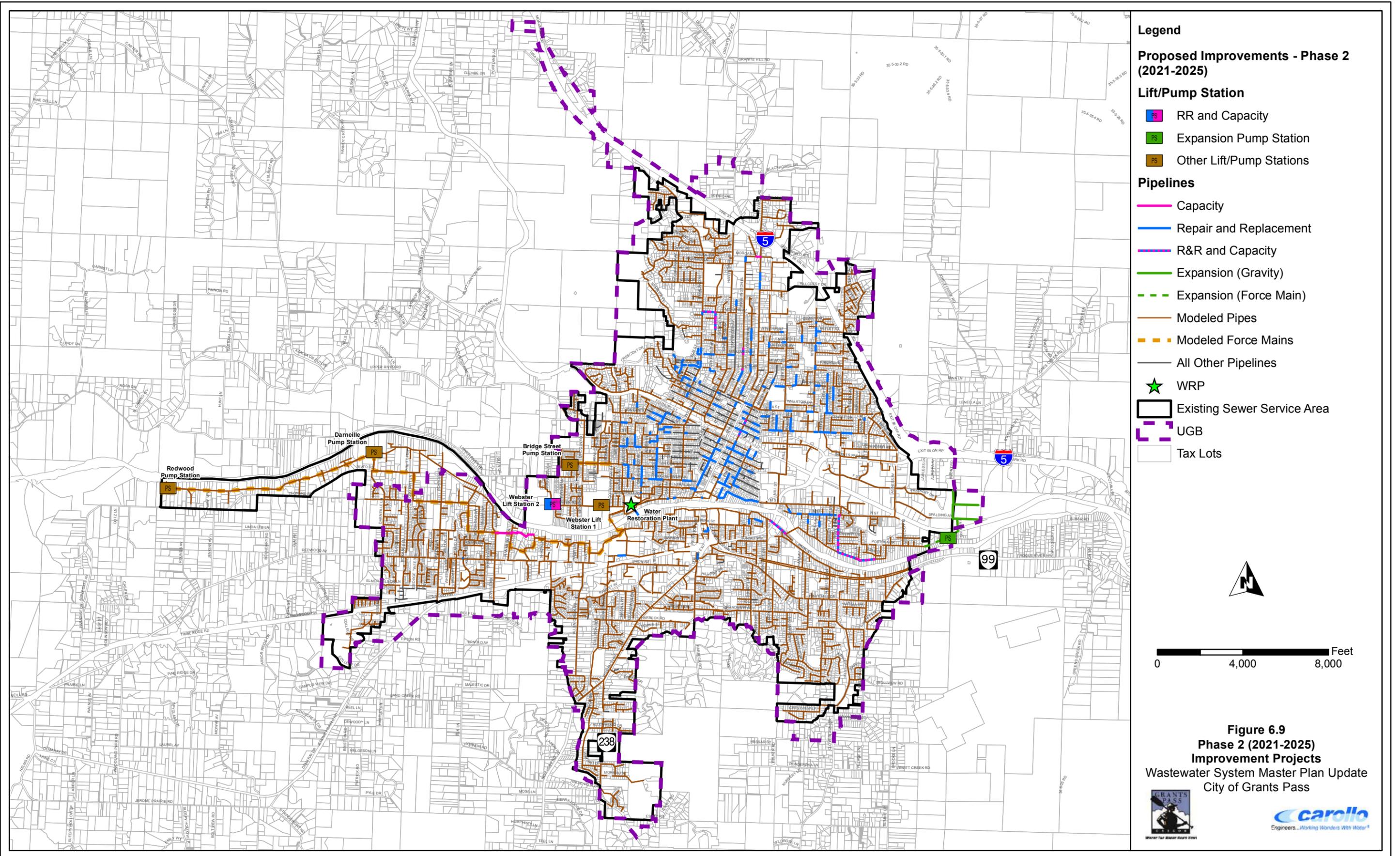
- Capacity
- Repair and Replacement
- - - R&R and Capacity
- Modeled Pipes
- - - Modeled Force Mains
- All Other Pipelines

- ★ WRP
- Existing Sewer Service Area
- UGB
- Tax Lots



**Figure 6.8**  
**Phase 1 (2015-2020)**  
**Improvement Projects**  
 Wastewater System Master Plan Update  
 City of Grants Pass



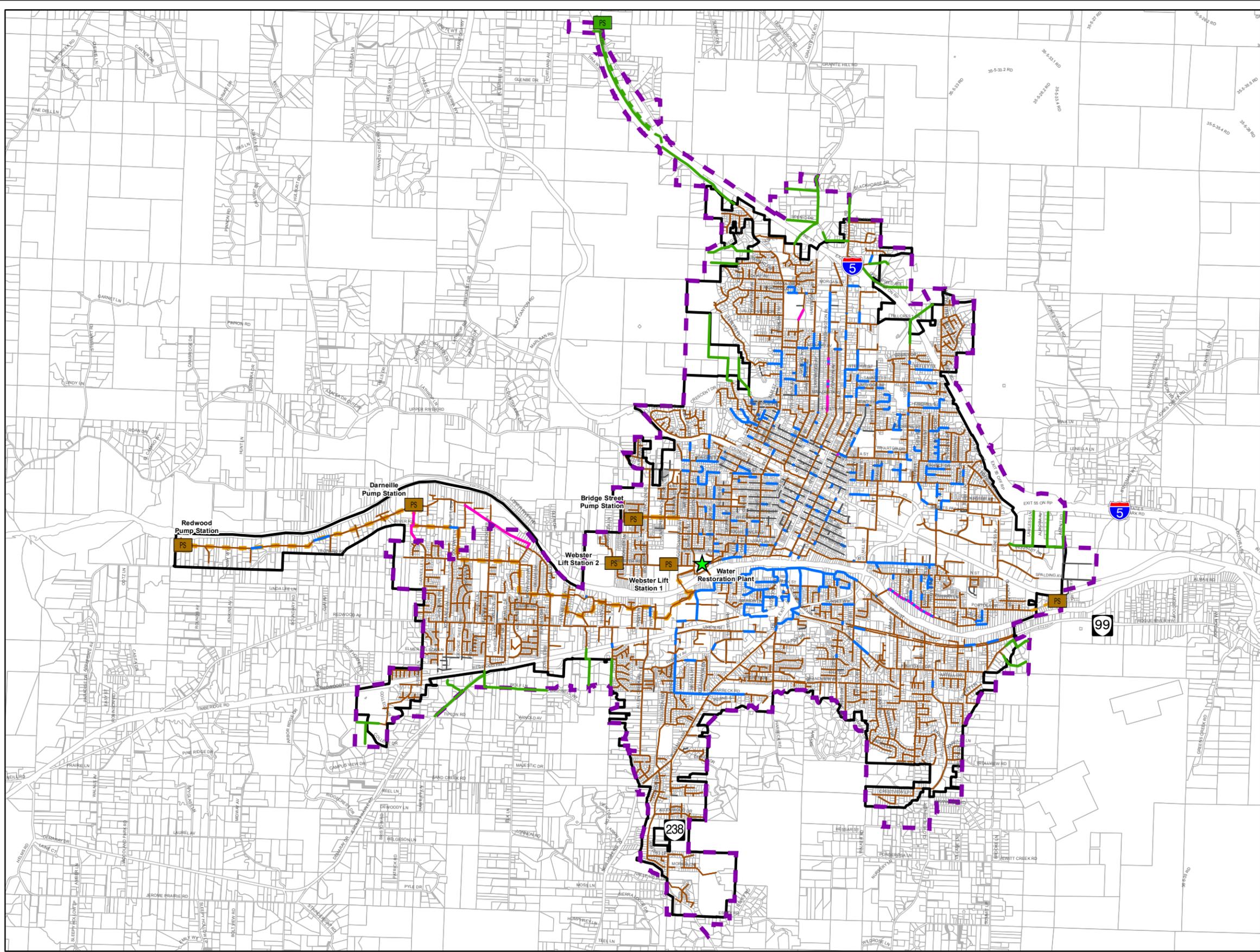


- Legend**
- Proposed Improvements - Phase 2 (2021-2025)**
- Lift/Pump Station**
- PS RR and Capacity
  - PS Expansion Pump Station
  - PS Other Lift/Pump Stations
- Pipelines**
- Capacity
  - Repair and Replacement
  - - - R&R and Capacity
  - Expansion (Gravity)
  - - - Expansion (Force Main)
  - Modeled Pipes
  - - - Modeled Force Mains
  - All Other Pipelines
- ★ WRP
  - Existing Sewer Service Area
  - UGB
  - Tax Lots



**Figure 6.9**  
**Phase 2 (2021-2025)**  
**Improvement Projects**  
 Wastewater System Master Plan Update  
 City of Grants Pass





- Legend**
- Proposed Improvements - Phase 3 (2026-2035)**
- Lift/Pump Station**
- Expansion
  - Other Lift/Pump Stations
- Pipelines**
- Capacity
  - Repair and Replacement
  - R&R and Capacity
  - Expansion (Gravity)
  - Expansion (Force Main)
  - Modeled Pipes
  - Modeled Force Mains
  - All Other Pipelines
- WRP
- Existing Sewer Service Area
- UGB
- Tax Lots



**Figure 6.10**  
**Phase 3 (2026-2035)**  
**Improvement Projects**  
 Wastewater System Master Plan Update  
 City of Grants Pass

