STORMWATER MASTER PLAN

City of
COBURG
OREGON
est. 1865

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January 2026

STORMWATER MASTER PLAN

PREPARED FOR:

THE CITY OF COBURG, OREGON

City of COBURG OREGON est. 1865

PREPARED BY:

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List of Acronyms

AAGR	=	Annual Average Growth Rate
ACOE	=	United States Army Corps of Engineers
BMP	=	Best Management Practice
CCMP	=	Comprehensive Conservation and Management Plan
CFR	=	Code of Federal Regulations
CIP	=	Capital Improvement Plan
CSO	=	Combined Sewer Overflow
CWA	=	Clean Water Act
CWSRF	=	Clean Water State Revolving Fund
DLCD	=	Oregon Department of Land Conservation and Development
DSL	=	Oregon Department of State Lands
ESA	=	Endangered Species Act
ESWMM	=	Eugene Storm Water Management Manual
FEMA	=	Federal Emergency Management Agency
FIRM	=	Flood Insurance Rate Map
GO	=	General Obligation
GWMA	=	Groundwater Management Area
HUC	=	Hydrologic Unit Code
LID	=	Low Impact Development
LWI	=	Local Wetland Inventory
MEP	=	Maximum Extent Practicable
MS4	=	Municipal Separate Storm Sewer System
NEP	=	National Estuary Program
NFIP	=	National Flood Insurance Program
NMFS	=	National Marine Fisheries Service
NPDES	=	National Pollution Discharge Elimination System
NPS	=	Nonpoint Source
OAR	=	Oregon Administrative Rules
ODFW	=	Oregon Department of Fish and Wildlife
ODOT	=	Oregon Department of Transportation
SCA	=	Small City Allotment
SDC	=	System Development Charge
SDWA	=	Safe Drinking Water Act
SFHA	=	Special Flood Hazard Area
SWI	=	State Wetland Inventory
TMDL	=	Total Maximum Daily Load
UGB	=	Urban Growth Boundary
UIC	=	Underground Injection Control
USEPA	=	United States Environmental Protection Agency
USFWS	=	United States Fish and Wildlife Service

1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION AND STUDY AREA

The City of Coburg contracted with Branch Engineering, Inc. (BEI) to develop this stormwater master plan. The purpose of this plan is to provide a comprehensive catalog of the existing storm drain system, an analysis of drainage deficiencies, recommendations for system improvements, and review of funding options.

The City of Coburg is in Lane County, 8-miles north of Eugene, Oregon and approximately 2.2-miles northeast of the confluence of the McKenzie River and Willamette Rivers. According to the 2020 census, the population within city limits was determined to be 1,306 people. In 2024, the Portland State University Population Research Center (PSU PRC) estimated a population of 1,419 for Coburg. The City resides in an area of relatively flat topography with slopes within city limits generally not exceeding 20-percent (approximately 11-degrees), and then only for short distances. The average elevation within city limits is approximately 400-feet above sea level.

Two Hydrologic Unit Code (HUC) 12 subwatersheds overlap the City of Coburg, the Dry Muddy Creek-Muddy Creek subwatershed (1709000306) and Sring Creek – Willamette River (170900030601). A contributing channel to the Muddy Creek Irrigation Canal flows through the industrial areas along the east side of Coburg. The Mill Slough lies west of Coburg, with contributing drainageways bordering Coburg to the south and west. The County roads running through Coburg have corresponding stormwater infrastructure owned by the County. The County stormwater infrastructure drains to City swales. Soils within the City are well drained and suitable for a variety of retention-based stormwater infrastructure. As a result, stormwater infrastructure is primarily retention focused, utilizing infiltration facilities with overflows connected to the County drainage system or to adjacent drainageways. A more detailed description to the study area is provided in Section 4.

The scope of this document includes an analysis of existing City stormwater infrastructure, identification of drainage deficiencies, an analysis of existing regulations affecting stormwater development within the City, and a discussion of current and potential funding mechanisms for future stormwater capital improvement projects. An analysis of existing County stormwater infrastructure within city limits and streams crossing the City is beyond the scope of this document.

1.2 EXISTING FACILITIES

The City of Coburg manages stormwater primarily through infiltration-based facilities supported by a combination of City and Lane County drainage infrastructure. The City operates several key stormwater facilities that detain and treat runoff from surrounding residential, commercial, and industrial areas, including the following.

- Two connected detention swales in the northeast part of the City,
- A series of detention swales in the northwest near the Hatfield Estates subdivision, and
- A retention facility in the southwest near Vintage Way.

Several of these facilities include overflow pathways that discharge to local surface waters, including Mill Slough and an unnamed tributary to Muddy Creek. These facilities, along with other components of the City's drainage network, are described in detail in Section 5.1.

Lane County manages storm drain systems within County rights-of-way along Willamette Street and E. Pearl Street. These piped systems collect roadway runoff and convey flows to swales on the west side of Coburg. The County system also includes storm drain stub-outs intended for potential future connection to City drainage infrastructure.

Some recent City development projects have included connections to the County drainage system to allow large storm events to overflow City stormwater facilities into the County system. The City prioritizes maximizing on-site stormwater retention and limiting reliance on the County system; however, where site constraints restrict retention capacity, connections may be considered based on proximity to County rights-of-way and drainage infrastructure. These connections are designed to safely convey flood-scale flows while protecting both City and County assets. Any connection to the County system requires a hydrologic and hydraulic analysis demonstrating that post-development discharge rates will not exceed pre-development conditions or adversely affect County facilities and is reviewed through the County's Public Works Facility Permit process.

Across the remainder of Coburg, stormwater management relies heavily on infiltration into native, well-drained soils. Older residential areas drain to gravel shoulders, while newer subdivisions use rock-filled infiltration trenches. Recent developments, such as Hatfield Estates and Coburg Creek, are designed to retain runoff on site with overflows directed to City swales or local tributaries during larger storm events. Other developments, including Coburg Crossing, fully retain stormwater on site without overflow connections.

Interviews with City Public Works staff were performed to determine where known drainage problems exist across the City. BEI staff performed site visits that included observations of City facilities after rainfall events and later in the rainy season when soils are saturated to determine how well runoff is managed by existing facilities.

Figure 1: Detention swales in NW of Coburg, with overflow draining into tributary to Muddy Creek.

Figure 2: Detention swales in NW Coburg, with overflow to Mill Slough.

Figure 3: Infiltration swale in SW area of city.

1.3 RECOMMENDATIONS

Two types of recommendations are provided in this document; recommendations for expanding stormwater development standards and recommendations for infrastructure improvement projects.

Recommended updates to City stormwater development are based on preparing the City for future National Pollution Discharge Elimination System (NPDES) permitting requirements, specifically Phase

II municipal separate storm sewer system (MS4) permitting. Updates to stormwater standards should clearly define triggers for stormwater requirements and provide guidance for implementation. The analysis of current City stormwater development code and recommendations are provided in Section 3.3.

Recommendations for infrastructure improvements were based on observations of drainage deficiencies, an analysis of past improvements, the resulting performance of said improvements, discussion with City staff, and an analysis of best management practices suited to the site conditions. Recommended improvements were categorized by relation to street infrastructure deficiencies or directly to stormwater facility malfunction. Recommendation details are provided in Section 5.2.

City streets in Coburg generally do not include sidewalks for pedestrian and bicycle traffic, instead relying on gravel shoulders and street access. Streets with inadequate drainage cause hazards to vehicular, bicycle, and pedestrian traffic. Extensive ponding across street surfaces restricts bicycle and pedestrian access, increases safety risks for all users, and accelerates deterioration of pavement and sub-base materials, ultimately harming the structural integrity of road surfaces.

Street grading deficiencies and degraded pavement surfaces reduce drainage efficiency, causing ponding and reducing the life of the pavement surfaces. When stormwater is allowed to pond on pavement surfaces, it can seep into the subgrade, causing degradation and leading to severe distresses. The highest priority improvement projects involve reconstructing degraded pavement and regrading deficient street surfaces to improve stormwater drainage and eliminate ponding. These recommended projects include the construction of adjacent stormwater infiltration facilities to effectively manage stormwater runoff.

Two high priority areas are E. McKenzie St. between N. Coleman St. and N. Skinner St., where pavement is severely distressed and ponding is present in road surfaces after minor rainfall events, and S. Skinner St. where pavement is deficient and water ponds along the sides of the road. Figures 4 and 5 show the deficiencies in these two areas. This section of E. McKenzie St. is part of Phase 1 of the Coburg Collector Street Reconstruction Project, currently in design.

Figure 4: E. McKenzie St. between N. Coleman St. and N. Skinner St. showing degraded pavement and resulting ponded water after a mild rainfall event, looking east.

Figure 5: S. Skinner St. just south of E. Pearl St. and looking to the north, showing roadside ponding and pavement distresses.

The other category of stormwater deficiencies identified within city limits are related to a lack of infiltration capacity in existing roadside stormwater facilities, which may indicate clogged infiltration media, or a lack of capacity in roadside shoulder media. Property owner alteration or manipulation of existing infiltration systems by paving, landscaping, or re-contouring also contributes to degradation of infiltration facilities, a loss of capacity, or the interruption of proper stormwater flow to these facilities as was originally designed. In these cases, the recommendation includes the installation of new infiltration trenches for retention of stormwater runoff. These projects are lower priority, as street surfaces adequately drain and ponding occurs within roadside shoulders, extending only partially across road surfaces after smaller rainfall events. They should be addressed after higher priority projects with the understanding that large rainfall events will lead to ponding extending across travel ways increasing the risk to traffic.

Figures 6 and 7 show ponded water extending from the edge of road surfaces into the travel way. Figure 6 shows E. McKenzie St. looking west toward N. Miller St. Figure 7 shows E. Locust St. looking west to N. Diamond St. where ponded water accumulates just east of the curve in N. Diamond St., extending from the north side of the road and partway across the street surface. The recommendation to resolve these drainage deficiencies is to install new infiltration trenches along the road shoulders.

Figure 6: E. McKenzie St. looking west to N. Miller St. showing ponded water on road surfaces due to a lack of infiltration capacity in shoulder facilities.

Figure 7: Ponded water on E. Locust St. due to deficient roadside infiltration, looking west to N. Diamond St.

1.4 FUNDING FOR CAPITAL IMPROVEMENTS

The City may fund capital improvement projects through a variety of funding mechanisms including through avenues currently utilized like the General/Street Funds and government grants. Other options include establishing stormwater service fees, system development charges, expanding the utilization of federal and state grants and loans, and utilizing bonds. These options are discussed in full in Section 6.

2.0 INTRODUCTION

This stormwater master plan documents the current state of the City of Coburg's stormwater system, provides guidance on managing the City's existing stormwater infrastructure, and managing stormwater for the following 20-year planning period. The overall need and objectives of this master plan, the approach taken in preparing the plan, and the overall plan organization are discussed in this section.

2.1 NEED FOR THE MASTER PLAN

The City of Coburg contracted with KCM, Inc. to develop a Storm Drainage Master Plan in 1999. The 1999 Storm Drainage Master Plan made a series of recommendations for improvement projects that aligned with the City's goals at the time. The City was much smaller with the US Census Bureau reporting the City's population in 1999 as 845. Significant new developments and infrastructure improvements have occurred within the City during the last 25 years. The direction taken by development during this time frame no longer aligns with the 1999 master plan. The PSU PRC estimates a population in 2024 of 1,419, with a forecasted Average Annual Growth Rate (AAGR) between 2020 to 2045 in the City of Coburg is 1.6%. Based on this population growth rate, the population in 2045 is expected to be 1,945. The City's updated recommendations provided throughout this document and provided in Section 7.0 reflect the needs of this larger population and the City's current development goals and needs.

The 1999 Storm Drainage Master Plan made the following series of recommendations, given in **bold**. The current status related to each recommendation includes actions the City has taken related to the recommendation and current City plans related to the recommendations. These are given under the recommendation entries.

1) **Enter into an agreement with Lane County to discharge stormwater to the County's system in Coburg and Van Duyn Roads.**

   Current Status: The City currently works under an agreement with Lane County, which needs to be reevaluated and updated as necessary.

2) **Determine the feasibility of implementation and projected rates for a city-wide stormwater utility. Considering the current makeup of residential and industrial lands, a stormwater utility should be capable of generating annual funds for maintenance and small works needs in the range of $25,000.**

   Current Status: The City plans to pursue city-wide stormwater utility service charge once this Stormwater Master Plan is implemented.

3) **Set aside funds for annual maintenance needs and small capital projects from the General/Street Funds or from a new stormwater utility.**

   Current Status: The City intends to create a stormwater fund for annual operations and maintenance needs and capital projects subsequent to adoption of the Stormwater Master Plan and creation of stormwater specific revenues.

4) **Prepare and apply stormwater design standards for new development.**

   Current Status: The City implemented and currently requires design standards to be utilized for new developments and will continue to evaluate and update the standards as needed.

5) **Implement Miller Street/Mill Street project in coordination with Lane County, to resolve existing flooding problems in the area. Total project costs assuming a 24-inch diameter**

pipeline for 1,100 feet, @ $5 per inch-diameter-foot, and a 50% markup for contingency and engineering, are estimated at $200,000.

Current Status: Planned future improvement projects focus on areas with current deficiencies causing flooding. The intersection of Miller Street and Mill Street is maintained through pavement preservation techniques such as crack sealing. If flooding concerns in this area once again become a critical issue, the City will address it with other future improvement projects.

6) **Implement new two-stage dry wells on an as-needed basis using stormwater utility funds or the General/Street Funds.**

Current Status: This project has not been undertaken by the City.

Some of the recommendations have been implemented in the time span since the 1999 master plan was issued. The City of Coburg relies upon the County drainage system to connect overflow pipes from storm facilities in newer developments. During the last 25 years since the previous master plan, annual maintenance and small capital projects have been implemented from the General/Street Funds, Small City Allotment Grants and other grant funds, and a transportation utility fee for transportation related projects. Flooding was not visible in the intersection of N. Miller St. and E. Mill St. and overall roadway conditions are fair to good.

The remaining recommendations were not implemented during this time span, some of which are still critical items. Implementing additional funding mechanisms for future capital projects is a high priority for the City. A more thorough and current inventory of City stormwater infrastructure is critical to planning and obtaining capital funding. Expanding and providing more detailed design standards, including specific triggers for stormwater requirements is another critical goal for the City during the next planning period.

2.2 OBJECTIVES

The primary objectives of this master plan are to provide guidance for future city stormwater improvement projects. The specific objectives of the master plan are the following:

1. Provide a stormwater regulatory assessment.
2. Provide a current inventory and assessment of public stormwater facilities with supportive location maps.
3. Provide prioritized improvement recommendations with associated cost estimates and priorities.
4. Provide a comprehensive analysis of the City's current funding mechanisms and options to fund future capital projects.

2.1 AUTHORIZATION

BEI was authorized by the City in 2018 to provide municipal stormwater planning services and assist in the expansion of the City's stormwater management program. BEI worked closely with City personnel to determine the master plan goals and areas with known drainage problems.

3.0 REGULATIONS AND POLICIES

3.1 FEDERAL REGULATIONS

3.1.1 CLEAN WATER ACT

The Clean Water Act (CWA) defines the federal regulations governing the discharge of pollutants into Waters of the US, providing the guidelines for permitting programs implemented at the state level and federal level. Regulatory requirements defined by the CWA cover both point and non-point sources of pollutants. Point source pollution from municipal, industrial, and construction sources are regulated under the NPDES permit program. Non-point sources of pollution include stormwater runoff from existing and new public and private developments that may carry pollution from impervious surfaces, primarily when these developments require disturbing Waters of the US (Waters of the State).

3.1.1.1 CWA SECTION 303(D)

While NPDES permits cover point sources of pollution in stormwater, the CWA also provides regulations for non-point sources of pollution in stormwater, primarily through the Total Maximum Daily Load (TMDL) program under section 303(d). The Oregon Department of Environmental Quality (ODEQ) identified beneficial uses for all waters of the state, including the following:

- Fish and aquatic life
- Water contact recreation
- Domestic water supply
- Fishing
- Industrial water supply
- Boating
- Livestock watering
- Aesthetic quality
- Wildlife and hunting
- Hydropower
- Commercial navigation and transportation

As part of the TMDL process, ODEQ developed water quality standards to protect beneficial uses and performed testing to identify pollutant sources that impact beneficial uses and the levels of these pollutants in surface waters. ODEQ identified and included impaired surface waters on the 303(d) list of impaired waters of the state and developed TMDLs to define the pollutant loading capacity of impaired waterbodies.

The City of Coburg is required to implement ODEQ's water quality management plan for the Willamette Basin TMDLs, Upper Willamette Subbasin TMDLs, and TMDLs for streams and drainageways within or receiving water from Coburg. The three Willamette Basin TMDLs are for temperature, bacteria, and mercury. Other water quality impairments are grouped together under "All Pollutants" to address the complexities of waterways impaired by multiple contaminants. The Temperature TMDL for the Willamette Subbasins was replaced in August of 2024. The City of Coburg's TMDL Implementation Plan developed in 2008 defines how Coburg plans to address these TMDLS. TMDL updates are addressed in The City's TMDL Annual Reports, and in the five-year updates to the TMDL Implementation Plan. The most recent of which was approved in 2023 and is in effect through 2028.

The City's current strategy to address temperature involves addressing solar radiation and wastewater effluent. To address solar radiation, the City prioritizes riparian restoration and protection areas by protecting and enhancing existing shading vegetation to reduce the effects of solar radiation and provides outreach and education to property owners about importance of riparian functions, protection and enhancement. To manage wastewater effluent temperature, the

City monitors temperature and tests effluent and utilizes the treatment plant's cooling water system to maintain lower temperatures.

The City currently addresses the bacteria TMDL by targeting pet and animal waste, maintaining the wastewater treatment plant in compliance with the NPDES permit for the facility, and the City's stormwater runoff management program. To address pet waste, the City has installed pet waste stations, which are supplied and maintained, with a plan to install additional stations. The City also enforces the existing pet waste pick-up ordinance (ORD A-171). The stormwater runoff management program includes educating residents about stormwater quality and the need to regularly inspect and maintain septic systems, investigating and tracking illegal discharges, requiring state erosion control permit (1200C) approval prior to new development approval, and requiring water quality control facilities for new and redevelopment residential and commercial areas.

The strategies the City of Coburg identified to address the mercury TMDL are similar to the bacteria strategies. Sources of mercury in the Willamette Basin are primarily from eroded native soil carried to waterways by stormwater runoff. Establishing water quality treatment requirements for new developments, requiring state erosion control permit (1200C) approval prior to new development approval, and informing single lot developers of state erosion control permit (1200C) requirements are three of the ways identified in the City's TMDL Implementation Plan for reducing mercury concentrations in stormwater discharges. Additionally, the City emphasizes proper maintenance and operation of storm facilities to prevent the discharge of mercury related pollutants, and provides opportunities for public education, engagement, and participation.

Additional TMDLs and impairment classifications are also identified for smaller watersheds. TMDLs assigned at the Subbasin level, watershed level, and stream level should be taken into consideration when developing stormwater management strategies. The HUC12 watersheds that overlap Coburg area are also classified as impaired for different water quality parameters. The Dry Muddy Creek-Muddy Creek HUC12 Watershed is classified as impaired for Dissolved Oxygen during the spawning season and for E. coli. The Sring Creek-Willamette River HUC12 watershed is impaired for Dissolved Oxygen year-round, Dissolved Oxygen during the spawning season, and for E. coli. Two of the waterways within the vicinity of Coburg, an unnamed tributary to Muddy Creek and Muddy Creek, are also impaired. The unnamed tributary to Muddy Creek that flows along Coburg Industrial Way is impaired for E. coli, and Muddy Creek is impaired for dissolved oxygen during the spawning season.

To address All Pollutants, the City's approach is to restore riparian areas through collaboration with the Muddy Creek Irrigation Project and the City of Tangent, continue planting native trees on City property to aid in retaining stormwater runoff, continue public outreach and education activities, continue annual and biannual staff training and provide staff education opportunities, and track and report TMDL implementation progress and updates.

3.1.1.2 CWA SECTION 319

Section 319 established a national program to help focus state and local nonpoint source (NPS) efforts. Under federal guidance, states develop assessment reports and programs for implementing NPS pollution control plans. Oregon implements Section 319 through its Nonpoint Source Management Program, which sets goals for improving water quality in rivers, streams, and groundwater from diffuse runoff sources. There are no specific enforceable standards or permits for local communities to obtain. However, small cities, like Coburg, are expected to align stormwater planning with Oregon DEQ NPS priorities, which include reducing sedimentation, reducing nutrients (nitrogen/phosphorus), managing bacteria/pathogens from urban runoff, protecting watershed health, and supporting TMDL implementation.

USEPA awards Section 319 grant funds to states to support enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects to achieve best management practices (BMPs). Coburg can apply for Section 319 grants to fund projects like the following:

- Stormwater master planning
- Green infrastructure (rain gardens, bioswales, detention, infiltration)
- Water quality monitoring
- Public education and outreach
- Restoration of local streams or wetlands
- Agricultural/urban runoff reduction projects

3.1.1.3 CWA SECTION 401

Section 401 requires that applicants for Federal permits or licenses, including removal/fill permits under Section 404 and NPDES permits under Section 402, obtain a 401 Water Quality Certification demonstrating that the permitted or licensed activity does not violate applicable water quality standards. Section 401 Water Quality Certifications are issued by ODEQ.

3.1.1.4 CWA SECTION 402

Non-point sources of pollution common in small cities include waste generated from traffic, residential areas, sediments, and any other waste deposited on the ground surface. Sources of non-point source pollution include traffic, which generates hydrocarbon and metal pollution; residential areas, which are sources of excess nutrients from fertilizers, toxic chemicals from pesticides and herbicides, and bacteria from pet wastes; atmospheric deposition, which is a primary source of mercury pollution in the Willamette Valley; deposited sediments, which are sources of metals and chemical contaminants that are carried into storm drain systems and into surface waters; and eroding drainageways, which are another source of sediments in surface waters.

One of the primary ways the CWA regulates stormwater is through the National Pollutant Discharge Elimination System (NPDES), which defines permit requirements for municipal, industrial, and construction stormwater. Oregon is authorized by the USEPA to implement these permits at the state level. Municipal NPDES MS4 Phase I and Phase II permits are required for cities based on population size. Cities with populations greater than 100,000 require Phase I MS4 permits. Cities with populations less than 100,000 require a Phase II MS4 permit when they are either designated by the Census Bureau as an urban area or designated by ODEQ as requiring a Phase II MS4 permit. According to the Code of Federal Regulations (CFR), Title 40, Part 122.34, the purpose of Phase II MS4 permits is “to reduce the discharge of pollutant to the maximum extent practicable (MEP), to protect water quality, and to satisfy the water quality requirements of the Clean Water Act.”

The City of Coburg is not designated as an urban area and has not been required by ODEQ to obtain a Phase II MS4 permit. The City of Coburg can prepare for future growth and the need to update TMDLs by continuing to develop stormwater management strategies that align with the Phase II MS4 permit. There are many reasons why aligning with Phase II MS4 requirements is recommended for small cities like Coburg. These reasons are provided below.

1. Future population growth may push Coburg into permit territory in the future. Planning and implementing the Phase II MS4 permit requirements sooner allows the cost to be distributed over multiple years and demonstrates a history of regulatory compliance.
2. The six Phase II MS4 measures directly reduce impacts to City infrastructure including blocked culverts and pipes, sedimentation in stormwater facilities, and the impacts of

potential flooding events. Avoiding these impacts can reduce system maintenance costs in the long term.

3. Meeting Phase II MS4 requirements helps preserve high-value local resources by reducing the introduction of contaminants into surface waters.
4. Many Phase II MS4 requirements overlap TMDL plan requirements, which means that the City's TMDL Implementation Plan already includes many of the Phase II MS4 requirements. By meeting the MS4 requirements, the City maintains TMDL compliance while preparing for future MS4 designation or regulatory changes.
5. Implementing the Phase II MS4 requirements will make the City competitive for various funding sources and grants.

Phase II MS4 permitting requires implementing the following six control measures. The City currently has programs in place to implement these control measures as part of their TMDL Implementation Plan, with the current Five-Year Implementation Plan approved in 2023 and effective through 2028. A description of the plan elements including how these six measures are met is provided in Section 3.1.1.1.

1. Public education and outreach program about the impacts of stormwater on receiving waterbodies.
2. Public involvement and participation program.
3. Illicit discharge and detection program.
4. Construction site runoff control program.
5. Post-construction site runoff control program for new development and redevelopment.
6. Pollution prevention and good housekeeping program for municipal operations.

NPDES permits covering industrial facilities within city limits only apply to private industry, while construction sites within the City are all subject to NPDES permitting depending on the total land area that is disturbed. The NPDES 1200-C Construction Stormwater General Permit was partially implemented by the Phase I stormwater rule, for construction sites disturbing five acres or more of land, and expanded as part of the Phase II stormwater rule to cover construction sites disturbing one to five acres. The 1200-C permit regulates the release of stormwater runoff that encounters disturbed soils on construction sites and applies to all construction activity occurring within city limits, including public improvement projects.

3.1.1.5 CWA SECTION 404

Section 404 relates to impacting wetlands and waterways through dredging or filling activities, and requires that no discharge of dredged or fill material be permitted in waters of the U.S. if a practicable alternative exists that is less damaging to the aquatic community, or the nation's waters would be significantly degraded. These permits are usually obtained from the US Army Corps of Engineers (ACOE) and DSL as a joint permit and apply to private and public developments.

The ACOE and DSL have different events that trigger the need for a permit. The ACOE requires a permit for any amount of material to be removed or placed within waters of the US. DSL maintains a statewide wetland inventory (SWI) map showing approximate locations of wetlands within the City. Additionally, a Local Wetland Inventory (LWI) was performed for the City about 25 years ago. These two resources can inform developers and the City of the likelihood of wetlands being present in desired development areas. If wetlands are located near these areas, a wetland delineation should be performed to determine if wetlands exist on the sites of interest. When wetlands are found on desired development sites, developers should submit a jurisdictional determination request to the

ACOE to find out if a permit will be needed from the agency. DSL has different triggering events, which are discussed in Section 3.2.2 of this report.

The SWI and LWI identify wetlands along the east and west edges of the City, primarily along the drainageway bordering the west edge of the City and contributing to the Mill Slough, and along the west side of the Interstate-5. Additional areas of wetlands are found at the north end of Coburg Industrial Way. There is some variation between the SWI and LWI. As a result, both of these resources should be consulted prior to initiating development projects. Additional information about the LWI is included in Section 4.8. The wetlands identified on the LWI is included in Figure 11.

3.1.2 SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA) regulates public drinking water systems and requires treatment, disinfection, testing, and source water protections. The USEPA sets the standards under the SDWA, and state drinking water programs provide the direct oversight of water systems. Source water protections include protecting surface water and groundwater sources through protecting the integrity of streambanks and riparian zones, implementing best management practices for agriculture and forestry activities, as well as reducing runoff pollution and implementing stormwater best management practices.

The SDWA provides the requirements for state-implemented Underground Injection Control (UIC) programs, regulated under 40 CFR part 144-146, to prevent contamination of underground drinking water sources. The SDWA in conjunction with the CWA and the Oregon Groundwater Quality Protection Act of 1989 all require protection of groundwater from contamination. The Water Quality Division of the ODEQ oversees the implementation of the Groundwater Quality Protection Act and the related sections of the CWA and SDWA through the designation of Groundwater Management Areas, Underground Injection Control Programs, and wastewater and onsite sewage permitting programs. More information about state UIC and groundwater protection regulations is provided in Section 3.2.3.

3.1.3 ENDANGERED SPECIES ACT

The purpose of the Endangered Species Act (ESA) of 1973 is to conserve and protect endangered and threatened species and their habitats. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) administer the ESA. The USFWS is responsible for terrestrial and freshwater organisms, while the NMFS is responsible for marine wildlife. Under the ESA, wildlife may be classified as “endangered” or “threatened.” According to the USFWS, an endangered species means any species which is in danger of extinction throughout all or a significant portion of its range. A threatened species means any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

The nearest areas containing threatened and endangered species are southeast of the City of Coburg at the Coburg Ridge Preserve and south to the McKenzie River. There are no threatened and endangered species within the Coburg planning area.

3.1.4 FEMA FLOODPLAIN MANAGEMENT REQUIREMENTS – FEMA 480

Floodplains are areas that have a 1% chance of becoming inundated with floodwaters within any given year. Floodplains create important habitat including river channels, riparian area, and wetlands, which provides the elements needed for diverse flora and fauna in these areas. See Figure 11 for mapped flood hazard areas in and around the City of Coburg. The Oregon Department of Land Conservation and Development (DLCD) works with FEMA and local governments to implement the National Flood Insurance Program (NFIP) and help local governments maintain their NFIP status.

Local governments must regulate activities that occur within FEMA Special Flood Hazard Area (SFHA) including ensuring that new developments adhere to FEMA floodplain permitting and requirements. Additionally, local governments must educate residents of local flood hazards, floodplain regulations, and other state and federal permits required for development. Development projects within the FEMA SFHA and/or within a threatened or endangered species habitat may also require a Biological Assessment to describe how the proposed development will impact the existing floodplain and instream habitat functions.

3.2 OREGON STATUTES, REGULATIONS, AND PERMITS

3.2.1 OREGON DRAINAGE LAW

Oregon drainage law, which comes from court decisions rather than legislative law, protects the normal course of natural drainage across adjoining properties. For a landowner to drain water onto lands of another in the State of Oregon, one of two conditions must be satisfied initially: 1. the lands must contain a natural drainage course; or, 2. the landowner must have acquired the right of drainage supported by valuable consideration. Oregon drainage law applies to city development projects just as it does to private land development projects.

Case law dictates the following:

1. A landowner may not divert water onto adjoining land that would not otherwise have flowed there. “Divert water" includes but is not necessarily limited to:
    a. water diverted from one drainage area to another, and,
    b. water collected and discharged which normally would infiltrate into the ground, pond, and/or evaporate.
2. The upper landowner may not change the place where the water flows onto the lower owner's land. (Most of the diversions not in compliance with this element result from grading and paving work and/or improvements to water collection systems.)
3. The upper landowner may not accumulate a large quantity of water, then release it, greatly accelerating the flow onto the lower owner’s land. This does not mean that the upper landowner cannot accelerate the water at all; experience has found the drainage to be improper only when the acceleration and concentration were substantially increased.

3.2.2 OAR 141, DIVISION 85 AND 86

Oregon Administrative Rule 141, Divisions 85 and 86 regulate removal and fill activities in Oregon wetlands, streams, lakes, rivers, and other Waters of the State. Developers who plan to remove, add, or move more than 50 cubic yards of material from within wetlands or other waters, or any amount of material from within streams designated as Essential Salmonid Habitat, are required to obtain a removal-fill permit from the Oregon Department of State Lands (DSL). Removal-fill permits are usually issued as joint permits from DSL and the ACOE along with permits from other state and federal agencies.

Local governments are required to conduct local wetland inventories and adopt wetland protection programs to meet Statewide Planning Goal 5. This involves performing a wetland inventory and assessment of the value and significance of the mapped wetlands. Wetland protection plans help local communities meet Stateside Planning Goal 14, requiring cities to estimate future growth needs, without impacts to wetlands by allowing local governments to remove significant wetlands from the inventory of buildable land.

3.2.3 OAR 340, DIVISION 40

This OAR implements the CWA and SDWA regulations relating to protecting the quality of groundwater resources in alignment with Statewide Planning Goal 6. The ODEQ designates Groundwater Management Areas (GWMAs) when elevated contaminant concentrations are present in groundwater in a certain region. Designating a GWMA allows for the formation of a groundwater management committee focused on developing an action plan and coordinating with state regulators to restore groundwater quality. The Southern Willamette Valley Groundwater Management Area, designated as such for elevated nitrate levels, overlays the City of Coburg, which allows regulatory bodies to require additional protections from new developments to demonstrate that Nitrate levels in stormwater runoff will not impact groundwater within the GWMA.

The ODEQ also regulates waste injection into the ground through the UIC program. While Coburg relies on infiltration to control stormwater throughout most of the City, the ODEQ currently shows no active UIC permits within the city limits. The most common UIC systems are stormwater drywells and requirements for permitting systems depends on the depth to the groundwater table, and the land use for the property implementing the infiltration facilities. Coburg uses shallow stormwater infiltration systems due to the presence of well drained soils, rather than deep infiltration facilities.

3.2.4 OAR 340, DIVISION 42

The ODEQ is required to meet the requirements of the CWA and USEPA to develop TMDLs for water bodies on the state's polluted waters list, the 303(d) list. Local governments were identified as Designated Management Agencies and tasked with developing TMDL Implementation Plans as a tool to reduce pollutants and meet water quality goals in the future. The City of Coburg developed a TMDL Implementation Plan in 2008 to meet this requirement.

Two HUC12 watersheds that cover part of Coburg are classified as impaired for 1st through 4th order streams. The Dry Muddy Creek-Muddy Creek HUC12 watershed streams have impaired statuses for water quality parameters. The Unnamed Tributary to Muddy Creek that flows north through eastern Coburg has a Category 4 classification as impaired for E. coli. The main Muddy Creek channel, northeast of Coburg, has a Category 5 classification as impaired for dissolved oxygen during the spawning season. The Sring Creek-Willamette River watershed also has an impaired status for dissolved oxygen and E. coli, but the Mill Slough flowing from west Coburg is currently in compliance with water quality standards.

3.2.5 OAR 635, DIVISION 412

The Oregon Department of Fish and Wildlife (ODFW) implements fish passage regulations under this OAR, which require developers altering or placing artificial obstructions in waterways to allow for passage of native migratory fish both upstream and downstream. This affects the placement of bridges and culverts in waterways containing these fish species, and affects not only new structures, but existing structures under certain conditions. Existing structures that do not provide for fish passage must be brought into compliance when trigger events occur, including installation, major replacement, abandonment, or a fundamental change in permit status. ODFW determines what constitutes a trigger event in specific cases. Meeting fish passage requirements should be a consideration when the City plans road widening or reconstruction projects over waterways.

3.2.6 OAR 660, DIVISION 15

OAR 660, Division 15 establishes statewide planning goals carried out by the DLCD and implemented by local governments. Goal 5 is to protect natural resources and conserve scenic and historic areas and open spaces, including resources impacted by stormwater practices like riparian corridors, wetlands, scenic waterways, and groundwater resources. Goal 5 includes guidelines for local governments to protect streamflow and water levels to maintain an adequate level for fish and wildlife, pollution abatement, recreation, aesthetics, and agriculture. Significant natural areas that are historically, ecologically, or scientifically unique should be inventoried, evaluated, and plans prepared to conserve these areas.

Goal 6 is to maintain and improve the quality of the air, water, and land resources of the state. The goal states that "all waste and process discharges from future development, when combined with such discharges from existing developments shall not threaten to violate, or violate applicable state or federal environmental quality statutes, rules, and standards." This goal affects how stormwater runoff is managed, requiring that discharges not exceed the carrying capacity of water resources, degrade water resources, or threaten the availability of water resources.

Goal 7 is to protect people and property from natural hazards, which requires local governments to adopt comprehensive plans that take inventory, implement policies and measures to reduce the risk to people and property from natural hazards, including flood and landslide hazards. Local governments are required to adopt and implement local floodplain regulations that meet the minimum National Flood Insurance Program (NFIP) requirements to be in compliance with Goal 7. Additionally, local governments should implement stormwater management programs to help address risks from these hazards.

3.2.7 OAR 660, DIVISION 11

OAR 660, Division 11 implements Statewide Planning Goal 11 by requiring cities and counties having populations of 2,500 or larger to implement public facility plans for water, sanitary sewer, storm sewer, and transportation facilities. Public Facility Plans are supportive documents to local comprehensive plans with the purpose of assuring that urban development within the UGB is guided and supported by the types and levels of urban facilities and services appropriate for the needs and requirements of the urban areas to be serviced, and that those facilities are provided in a timely, orderly, and efficient arrangement. The City of Coburg does not require a Public Facility Plan for stormwater to meet the requirements of OAR 660, Division 11.

3.2.8 ORS 223.297 TO 223.316

Oregon Revised Statutes 223.297 through 223.316 creates the framework for local governments to impose system development charges (SDCs), one-time charges on new development and certain types of redevelopment. SDCs are a tool to allow cities to recover the cost of expanding infrastructure and the increased demands new developments place on the system.

3.3 LOCAL REGULATIONS

3.3.1 EXISTING CITY POLICIES

The City of Coburg zoning code identifies City regulations for stormwater management. Basic requirements and allowances are outlined for each Zoning District in the City. For example, Highway Commercial (Article VII D.4.d.) allows water quality treatment in setback yards, and Light Industrial (Article VII E.4.b(3) and 5.e.) allows water quality treatment to be provided in setback yards and landscape areas with City approval. Water quality facilities on Campus industrial lots (Article VII F.4.b(3)) can be incorporated into landscape areas.

The Downtown Coburg Overlay District (Article VII K.5.) has more extensive stormwater requirements including that runoff control and requirements to include vegetated stormwater infrastructure.

Article VII 5.a.(1) includes the following text:

The role of landscape has also evolved to promote environmental stewardship, addressing sustainability concerns particularly in relation to biofiltration stormwater management. This section focuses on the ways in which site designs can integrate practices of sustainable stormwater management known as "Low Impact Development (LID)."

Article VII 5.a.(2) reads as follows:

New developments must provide on-site vegetated stormwater infrastructure as necessary, appropriately sized by the site designers to mitigate any increase in stormwater runoff post-development.

Article VII 5.b.(1) reads as follows:

LID is an approach to land development that works with nature in managing stormwater as close to its source as possible to minimize stormwater runoff from buildings and impervious surfaces. Unlike a conventional system that would simply pipe unfiltered stormwater through metal grates straight into drainage channels, LID-based stormwater management approach relies on vegetated natural systems to collect, infiltrate, and filter rainwater on site, often reducing the need for costly underground structures.

Article VII 5.c.(3)(ii) includes recommendations for the use of alternative paving materials in parking areas when conditions allow as well as specific stormwater requirements for parking areas in the Downtown Coburg Overlay District that read as follows:

Landscaping using a combination of vegetated stormwater infrastructure, planters, and shade trees within and/or around the parking area must be provided at a minimum ratio of 10 percent of the gross area of the parking lot.

Article XI E.2.j. includes design standards within the Downtown Coburg Overlay District Development Checklist, which includes the following sections:

a. Applicant or developer of new development, redevelopment, alteration to the footprint, height, or massing of an existing building, or improvement to parcels, demonstrates post-development runoff at or below pre-development rates.

b. New development, redevelopment, alteration to the footprint, height, or massing of an existing building, or improvement to parcels provides on-site vegetated stormwater infrastructure as necessary, appropriately sized by the site designers to mitigate any increase in stormwater runoff post-development.

3.3.2 RECOMMENDED NEW CITY POLICIES

The expansion of City stormwater regulations will prepare Coburg for the potential future implementation of Phase II MS4 permit requirements. Stormwater design standards should include specific language identifying triggers for each requirement, and how to apply each requirement in infrastructure design. The language used in article VII 5.a. and b. does not set specific standards. The City should modify the language to identify triggers with specific numerical limits and requirements.

Stormwater quantity and quality requirements should be triggered for developments of half an acre or more in size <u>and</u> proposing 3,000 or more square feet of new impervious surface. Flow control requirements should be implemented for all new developments to the same standard as the Downtown Coburg Overlay District, with post-development flows not to exceed pre-development flows. Designers should be directed to Eugene's Stormwater Management Manual (ESWMM) for design storm requirements, and detention facilities should be designed to the 25-year, 24-hour design storm.

It is recommended that Coburg enact a policy change determining that ESWMM be the required stormwater specification for all development within the City, ensuring that designers have clear direction on design methodology for water quality and water quantity design. The existing City policies encourage Low Impact Development (LID), or vegetated stormwater treatment. These should be emphasized as the preferred water quality treatment method, with the ESWMM providing the design requirements for these types of facilities. Developers should be required to provide operations and maintenance plans for proposed stormwater facilities, in accordance with ESWMM requirements.

Erosion control requirements should be included in City policy updates to match the Lane County requirements, with developments disturbing a quarter of an acre or more requiring erosion and sediment control permitting. Additionally, all new development, redevelopment, and land disturbing activities should be required to implement erosion and sediment practices to avoid any construction-related impacts to stormwater quality.

Article VIII should also include more detailed language to prohibit illicit discharges into the storm drain system. The City should expect to respond to reported illicit discharges within two days, faster if the discharge is a risk to public health or the environment. Serious spills must be reported immediately to the Oregon Emergency Response system. These spills include a spill of any amount of oil to waters of the state, oil spills on land of more than 42 gallons, and hazardous materials and reportable quantities equal to 40 CFR Part 302.4.

4.0 WATERSHED CHARACTERISTICS

4.1 DESCRIPTION OF STUDY AREA

The City of Coburg is in Lane County 8-miles north of Eugene, Oregon at the approximate coordinates of 44.136584˚ West latitude, and -123.063305˚ East longitude. It is located near the southern terminus of the Willamette Valley Geologic Province, with the confluence of the McKenzie River and Willamette Rivers located 2.2-miles to the southwest. The Coburg Hills, a range of foothills of the western Cascades Mountains rise within a mile of city limits to the southeast, and the Coast Range Mountains are approximately 13.5-miles to the west. The City's western limit is approximately bounded by the intersection of Coburg Bottom Loop Road and Coburg Road, on the south near Roberts Court, on the east by an intermittent tributary of Dry Muddy Creek's crossing of Van Duyn Road, and on the north by the City's water treatment facility.

The City of Coburg is located within the Willamette Basin, specifically within the Muddy Creek – Willamette River watershed. Within city limits, two sub watersheds exist and the hydrologic boundary follows the approximate north-south alignment of Coburg Road and North Willamette Street. On the east, the subwatershed is Dry Muddy Creek -Muddy Creek, and on the west, it is Sring Creek – Willamette River. The watershed levels and Hydrologic Unit Codes for the City of Coburg are summarized in the following table.

Table 1: NRCS Watersheds

Level	Name	Hydrologic Unit Code (HUC)	Area (acres)
Basin – HUC-6	Willamette	170900	7338445.5
Subbasin HUC-8	Upper Willamette	17090003	4136960.1
Watershed- HUC-10	Muddy Creek – Willamette River	1709000306	300680.2
Subwatershed 1 - HUC-12	Dry Muddy Creek – Muddy Creek	1709000306	29435.2
Subwatershed 2 - HUC-12	Sring Creek - Willamette River	170900030601	29305.8

4.2 POPULATION

According to the latest U.S. Census data collected in 2020, the population within city limits was determined to be 1,306 people. Based on data presented by the PSU PRC, the forecasted population growth for the years 2020 to 2045 within Urban Growth Boundaries (UGB) in Lane County is expected to have an Average Annual Growth Rate (AAGR) of 0.6%. Additionally, the City of Coburg is forecasted to have an AAGR of 1.6%. The most recent population estimate from PSU for 2024 is 1,419. Based on a population growth rate of 1.6%, the population in 2045 is expected to be 1,945, as shown in Figure 8.

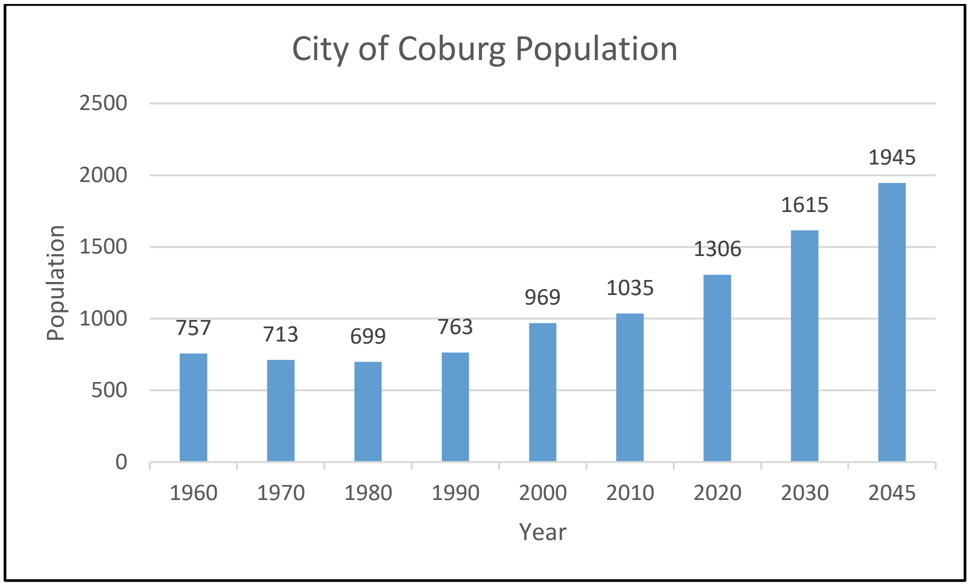


Figure 8: City of Coburg historical and projected population growth.

4.3 LAND USE AND ZONING

Land use in Coburg currently consists of a mix of residential, commercial, and industrial properties with a block of agricultural zoned land at the far eastern side of the UGB. Existing land use is defined as the current developed area within the study area while future land use is defined as the full build-out of land within the UGB. The City of Coburg currently has seven zoning districts. The current zoning and existing land use designations are shown in Table 2, with areas provided by the City during an evaluation of Land Use Policy performed in 2018.

Table 2: Land Analysis by Zoning

Zoning	Number of Lots	Acreage	Min Lot	Max Lot
Highway Commercial	25	93.88	0.17	16.66
Light Industrial	58	240.38	0.05	64.5
Parks/Recreation	2	28.8	3.93	24.88
Public Facility	2	52.9	1.53	51.3
Campus Industrial District	1	105.7		
Central Business Districts	63	19.16	0.011	2.33
Traditional Medium Residential	2	2.1	N/A	N/A
Traditional Residential	470	195.32	0.000524	14.37

Effective stormwater management is essential for maintaining water quality, reducing flood risk, and preserving natural ecosystems. In Coburg, land use and zoning play a crucial role in determining how stormwater is managed and mitigated. This section outlines the land use and zoning strategies proposed in the stormwater master plan to achieve sustainable stormwater management goals.

A. Residential Areas:
    - Residential areas in Coburg shall adhere to stormwater management practices that prioritize infiltration, retention, and detention techniques.
    - Zoning regulations will require the implementation of green infrastructure, or LID, stormwater facilities such as rain gardens, permeable pavements, and vegetated swales to manage stormwater at its source for developments having triggering characteristics.
    - Homeowners' associations and developers will be encouraged to incorporate sustainable stormwater management practices in their designs, and provide operations and maintenance plans for the facilities.

B. Commercial and Industrial Zones:
    - Commercial and industrial developments must comply with stormwater management standards to minimize pollutant runoff and prevent erosion.
    - Zoning ordinances will require the installation of stormwater management facilities such as bioretention ponds, sediment traps, and oil-water separators, in commercial and industrial zones. Developers will provide operations and maintenance plans for proposed stormwater facilities.

C. Mixed-Use Areas:
    - Mixed-use developments will be encouraged to integrate stormwater management practices into their designs to promote sustainable urban environments.
    - Zoning regulations will require the incorporation of vegetated buffers, water quality facilities, and underground storage systems to manage stormwater runoff effectively. Developers will provide operations and maintenance plans for proposed stormwater facilities.
    - Collaboration between public and private stakeholders will be fostered to implement innovative stormwater management solutions in mixed-use areas.

D. Natural and Open Spaces:
    - Natural areas, parks, and open spaces will be preserved and enhanced to serve as vital components of the stormwater management system.
    - Zoning ordinances prioritize the protection of wetlands, riparian zones, and natural drainage corridors to promote infiltration and groundwater recharge.
    - Green infrastructure elements such as constructed wetlands, retention ponds, and bioswales will be integrated into natural and open spaces to improve water quality and habitat diversity. Developers will provide operations and maintenance plans for proposed stormwater facilities.

E. Transportation Corridors:
    - Stormwater management strategies will be integrated into transportation infrastructure projects to minimize the impact of runoff from roads and highways.
    - Zoning regulations will require the implementation of low-impact development techniques such as permeable pavement, vegetated medians, and roadside swales to mitigate the effects of urbanization on stormwater quality and quantity for triggering transportation developments. Developers will provide operations and maintenance plans for proposed stormwater facilities.

- Collaboration with transportation agencies will be essential to ensure the effective implementation of stormwater management practices along transportation corridors.

By incorporating stormwater management considerations into land use and zoning policies, Coburg can proactively address the challenges of population growth, mitigate flood risks, and protect water quality. Implementation of these strategies will require collaboration among local governmental agencies, private developers, and community stakeholders to achieve the shared goal of sustainable stormwater management.

4.4 CLIMATE AND RAINFALL

Based on the Koppen Climate Classification, the City of Coburg has a warm-summer Mediterranean climate (Csb). The Csb climate classification is characterized by warm, dry summers, and chilly to mild, rainy winters. Snowfall typically happens on an annual basis, but is generally less than 5-inches and generally melts within a day. Precipitation and temperature data was obtained from the Eugene-Mahlon Sweet Field (Network ID GHCND:USW00024221), which is located approximately 7.5-miles to the southwest of the City, at the Eugene Airport. Records have been kept at this station since June 1, 1938.

The annual mean precipitation is 43-inches, and the annual mean temperature is 53-degrees Fahrenheit. Precipitation and temperature fluctuate seasonally, with the coldest months being December and January, and the hottest months being July and August.

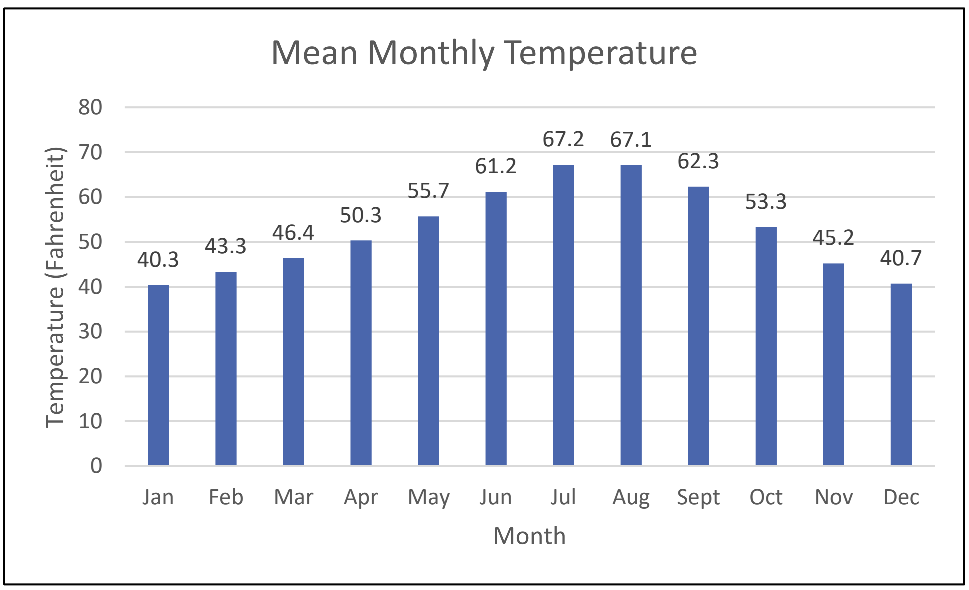


Figure 9: Mean monthly temperature in the City of Coburg.

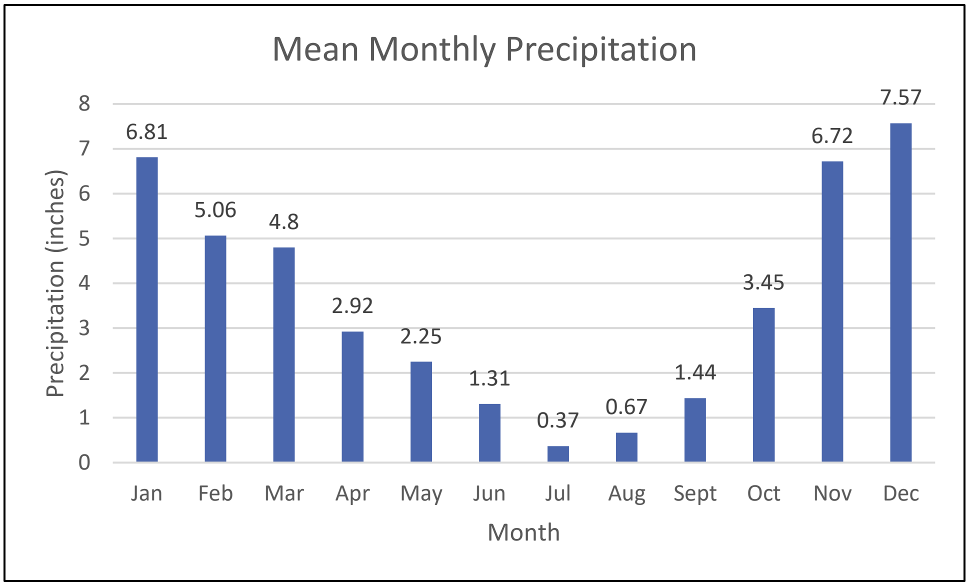


Figure 10: Mean monthly precipitation in the City of Coburg.

4.5 TOPOGRAPHY

Coburg is located on a broad valley terrace just north of the confluence of the McKenzie and Willamette Rivers. The area is characterized by relatively flat topography shaped by the alluvial processes which formed the Willamette Valley. Slopes within city limits generally do not exceed 20-percent (approximately 11-degrees), and then only for short distances. Steeper slopes are found outside of city limits to the east in the Coburg Hills. The average elevation within city limits is approximately 400-feet above sea level. Figure 12 shows the contours in and around Coburg.

4.6 GEOLOGIC CONDITIONS

The subject site lies within the central portion of the Willamette Valley, east of the Coast Range and west of the Cascade Mountains Provinces. In Oregon, the Willamette Valley is an elongated basin which narrows at both ends before terminating in the Calapooya Divide to the south and the Columbia River to the north. The basin is approximately 130 miles long and 40 miles wide. The valley is drained by the Willamette River and drops from an elevation of approximately 400-feet at Eugene, to near sea level at the northern end of the basin where the Willamette River drains into the Columbia River.

The Willamette River Valley around the subject site is believed to be underlain by undifferentiated sedimentary rock, tuffs, and basalt from the Miocene and Oligocene epochs (approximately 15 to 35 million years ago). Deposits of silt and clay from fluvial and lacustrine environments covered the bedrock to various depths during the presence of low energy streams and lakes in the mid-Willamette Valley. Subsequent compression forces and uplifting of the Cascade and Coast Range Mountains depressed the Willamette River Valley. The rapid uplift of the Cascade and Coast Range mountains steepened stream gradients causing increased erosion of the mountains and resulting deposition of thick gravel layers incised within the fluvial and lacustrine deposits.

During the last deglaciation and the resulting termination of the Last Glacial Maximum in North America, the Willamette Valley was cyclically flooded by catastrophic breaks in the ice dams of

Glacial Lake Missoula. Occurring several times over an approximately 2,000-year period between 13,000 to 15,000 years ago, these flood events filled the valley to an elevation of 350- to 400-feet before retreating, causing sequences of upward fining deposits of silt and clay that may or may not still be present in areas depending on erosion by subsequent fluvial actions. (Orr and Orr, 2012).

The Geologic Map Open File Report O-10-03 Digital Geologic Map of the Southern Willamette Valley maps the City as Older Alluvium (HOA), dated to the Holocene period. Described as unconsolidated deposits of gravel, sand, silt, and clay that formed on low river terraces, and high river benches along major streams and along older abandoned stream channels that postdate withdrawal of the last Missoula Flood. Stream channel patterns suggest that Holocene streams, or possibly receding Missoula floodwaters eroded into the cover of Willamette Silt, locally exposing, and reworking the upper parts of underlying gravel beds. Areas underlain by this unit may be subject to flooding and channel migration hazards during major flood events. The southwest area of the City is mapped as Alluvium (Ha), and is described as unconsolidated gravel, sand, silt, and clay deposited by active stream channels on adjoining flood plains.

Groundwater in the area is typical of alluvial deposition, with high well yields in the unconsolidated surficial strata, and lower well yields in material that is slightly consolidated. Localized confined aquifer systems often exist where clay creates aquitards and greatly reduces the vertical hydraulic conductivity of groundwater. The low recharge rate of these confined aquifers typically makes them poor well locations.

4.7 SOILS

The soils within city limits are classified as well drained per the NRCS websoilsurvey, and suitable for infiltration facilities. Soils play a critical role in planning and design of stormwater infrastructure due to the influence of soils on stormwater runoff rates and volumes. A map of the soils and description of the soil characteristics is provided in Appendix A.

4.8 WETLANDS

The LWI was completed for the City by professionals from Satre Associates, PC, Environmental Solutions, and Ethen Perkins Consulting, with field work beginning in June 1999, and a final report dated March 2000. According to the final report, Local Wetland and Riparian Area Inventories and Assessments Report of Findings, a combination of on-site and off-site methodologies were used to complete the LWI for an approximately 700-acre study area. The report states that 19.4-acres of jurisdictional wetlands were identified, and very little of the historic wetland resources remain. The study found that waterways have been filled, disconnected, diked, piped, rerouted, and removed from some of the historic locations causing wetlands to become more isolated from historic hydrology sources. The table below summarizes the findings, see Figure 11 for mapped LWI wetland areas. Regulations and additional description of wetlands in the City are included in Section 3.1.1.

Table 3: Jurisdictional Wetlands within the study area

Wetland Number	Cowardin Classification	Wetland Area
MS-W1	60% Palustrine Emergent, 40% Palustrine Scrub-Shrub	0.8 PEM / 0.5 PSS
MCN-W1	98% Palustrine Emergent, 2% Palustrine Scrub-Shrub	2.9 PEM / 0.1 PSS
MCN-W2	99% Palustrine Emergent, 1% Palustrine Scrub-Shrub	10.1 PEM / 0.1 PSS
MCN-W3	100% Palustrine Emergent	3.7 PEM
MCS-W1	99% Palustrine Emergent, 1% Palustrine Scrub Shrub	0.2 PEM
MCS-W2	100% Palustrine Emergent	0.6 PEM
MCS-W3	100% Palustrine Emergent	1.1 PEM
Total Wetland Area	Palustrine Emergent (PEM) Palustrine Scrub-Shrub (PSS)	19.4 acres 0.7 acres
20.1-Acres		

The Federal Emergency Management Agency (FEMA) maps the western and southwestern peripheries, in addition to land on either side of the south-north aligned ditch which runs along Coburg Industrial Way. The majority of the City lies outside of mapped flood hazard areas, as shown in Figure 11. FEMA Flood Insurance Rate Maps (FIRM) panels are attached in the Appendix B.

4.9 FUTURE GROWTH AREAS

In planning the future of land use in Coburg, strategic planning aims to balance growth and sustainability within the Urban Growth Boundary (UGB). Anticipated developments include expanding residential areas to accommodate population growth. Commercial zones are slated for enhancement to bolster economic activities and local services. Industrial areas will likely see growth, or adaptation to meet evolving industrial needs and support economic expansion. Concurrently, careful consideration is given to preserving agricultural zones, crucial for maintaining the area's rural character and supporting local farming endeavors. The approach to future land use in Coburg will emphasize sustainability, community engagement, and infrastructure planning to ensure a prosperous and harmonious development trajectory.

5.0 DRAINAGE SYSTEM

The City of Coburg manages stormwater primarily by utilizing well-drained soils and on-site retention and infiltration facilities. Localized runoff is retained on site, or flows to adjacent drainageways, generally through City and County infrastructure. The Muddy Creek Irrigation Canal is located east of Coburg, with a contributing channel flowing through the industrial areas along the east side of Coburg. The Mill Slough lies west of Coburg, with contributing drainageways bordering Coburg to the south and west. A full description of regional hydrologic features and watershed characteristics is provided in Section 4. A map showing the regional drainageways and lidar contours is provided in Figure 12.

5.1 EXISTING SYSTEM DESCRIPTION

The City of Coburg's existing drainage system includes areas owned by Lane County and located within County right-of-way, areas of drainage along commercial and industrial roads, and areas of drainage within residential areas. The County manages the drainage system within County right-of-way and the City manages the drainage system in the rest of the City.

The County drainage system is primarily a piped system, which conveys runoff to City swales in the southwest area of the City, at the end of Vintage Way, and in the northwest area of the City, adjacent to the Hatfield Estates. The County's piped system follows County roads E. Pearl St. and Willamette St. and primarily collects runoff from paved roadway surfaces. There are also storm drain stub-outs to side streets along E. Pearl St. and in places along Willamette St. to allow for potential future connections between City stormwater infrastructure and the County drainage system.

The City of Coburg relies primarily on infiltration into native soils to manage runoff in residential, commercial, and industrial areas. Runoff generated in older residential areas drains to gravel shoulders for infiltration. Newer areas of residential development also rely on infiltration but utilize infiltration trenches filled with drain rock. For areas of the City where infiltration is not solely relied upon for stormwater management, runoff is conveyed to large swales. These swales collect, infiltrate, and convey runoff from the neighboring subdivisions to nearby streams.

The City owns the swale in the northwest area of the City, adjacent to the Hatfield Estates subdivision, which has an overflow into the Mill Slough. The City also owns the two swales in the Coburg Creek Subdivision, which overflow into the unnamed tributary of Muddy Creek. The City has an easement covering the swale in the southwest, at the end of Vintage Way, allowing for the maintenance and operation of the stormwater facility. The Vintage Way swale overflows into the Mill Slough. Stormwater Overflows to the Mill Slough, the tributary to Muddy Creek, and to the County storm drain system. The City Stormwater facilities are shown on Figure 14.

These large downstream swales do not act as the destination for runoff from all recent subdivision and city infrastructure development projects. The exception is the Coburg Creek subdivision, which also utilizes infiltration ditches, with any excess runoff being conveyed to the City-owned pair of swales north of the subdivision that overflow to the Muddy Creek tributary. All recent subdivision developments utilize infiltration to the maximum extent possible while also utilizing storm drain overflows. The Hatfield Estates subdivision in the northwest area of the City has an overflow directly to the Mill Slough from the system of infiltration ditches. Additionally, the Coburg Travel Center of America, located on the corner of E. Pearl St. and Coburg Industrial Way, has a stormwater outfall to the Muddy Creek tributary on the east side of the industrial property.

Recent City infrastructure improvements, including on E. Mill St., and E. McKenzie St., have overflows to the County storm drain system. These overflows function only for the largest rainfall events, with smaller rainfall events being retained on site and infiltrated into native soils.

See Figure 14 for an overview of the City and County storm drain system including locations of major City-operated stormwater facilities. Figures 16 and 17 are upstream and downstream photos of the City-owned swale adjacent to Hatfield Estates, Figure 18 is a photo of the City-operated and maintained Vintage Way swale, and Figures 19 and 20 are upstream and downstream photos of the City-owned swales north of the Coburg Creek subdivision. Figures for Section 5 are located at the end of the section.

5.1.1 COUNTY STORMWATER CONNECTIONS

Some recent City infrastructure projects have connected to the County storm drain system, generally to allow for excess runoff generated by large storm events to overflow City stormwater facilities and discharge through the County system. The City's first goal is to make the most efficient use of development areas to limit connection to the County system and maximize on-site retention. However, if site constraints limit the retention capacity of a development site, the City will consider the proximity of the project site to the County Right-of-Way and drainage system. These connections are intended to control flood-scale storm events by switching from a retention strategy to a conveyance strategy to protect City and County property.

When the City connects to the County drainage system, the City submits an analysis of the existing hydrologic and hydraulic conditions, the capacity of the proposed stormwater facilities to retain the stormwater, the proposed flow control devices to be installed with the facility, and the resulting hydraulic performance and flow rate of runoff to be released to the County system. This is to demonstrate that the proposed drainage connection will not adversely impact the County's drainage system. For example, when McKenzie Street was reconstructed on the east and west side of North Willamette Street, the stormwater analysis showed that runoff generated by the new development did not exceed the rate of runoff the entered the County drainage system by the area under pre-development conditions. This analysis is submitted with a Public Works Facility Permit application for consideration by the County.

5.1.2 CONSTRUCTION COST INDEX AND COST ESCALATION

Planning-level cost estimates presented in this Stormwater Master Plan are expressed in present-day dollars and are intended to support long-term capital planning, prioritization of improvements, and evaluation of funding needs. Because many recommended stormwater improvements will be implemented over a multi-year planning horizon, it is important to account for changes in construction costs over time.

Construction costs are influenced by market conditions, labor availability, material prices, fuel costs, and regulatory requirements. To provide a consistent and transparent method for adjusting future project costs, the Engineering News-Record (ENR) Construction Cost Index (CCI) may be used to escalate costs from the base year of this plan to the anticipated year of construction.

The ENR CCI is a nationally recognized index that tracks changes in construction costs over time using a standardized basket of labor and materials. Index values are published monthly and are referenced to a baseline value of 100 established in the year 1913. The current index value for December of 2025 is 14,118.46.

Use of the ENR CCI allows estimated costs developed at different times to be compared on a consistent basis and provides a defensible method for projecting future construction expenditures. Cost escalation using the ENR CCI may be calculated using the following equation:

$$Current\ Cost(\$) = Base\ Estimate\ x\ \frac{CCI}{14118.46}$$

Where:

Base Estimate = The planning-level cost estimate presented in this Stormwater Master Plan, expressed in base-year dollars

Base Year CCI = The ENR Construction Cost Index value for the month and year in which the cost estimates were developed. This is 14,118.46 for December 2025.

Current CCI = The ENR Construction Cost Index value for the month and year in which the cost adjustment is being made.

Escalated (Current) Cost ($) = The estimated cost of construction expressed in current-year dollars for the year in which the cost adjustment is being made.

For example, if a stormwater improvement project has a base-year estimated construction cost of $100,000 and the ENR CCI has increased by 10 percent since the base year, the escalated construction cost would be approximately $110,000.

Recent trends indicate that construction costs have increased at an average annual rate of approximately 4 to 6 percent in the Pacific Northwest, though year-to-year variability can be significant. If similar trends continue, projects implemented several years after adoption of this Stormwater Master Plan are expected to experience noticeable increases in construction costs relative to the planning-level estimates presented herein.

The cost estimates provided in this Stormwater Master Plan are intended for planning and budgeting purposes only. Final project costs will depend on site-specific conditions, level of design, permitting requirements, bidding climate, and timing of construction. Prior to implementation, each project should be refined through detailed engineering design and updated cost estimating using current ENR CCI values and prevailing local construction conditions.

5.1.3 COST OF VARIOUS STORMWATER FACILITIES

There are a couple of types of facilities the City has constructed for stormwater management in recent infrastructure development projects including narrow infiltration trenches; and facilities that combine rain gardens for treatment with separate rock storage facilities for storage and infiltration. The cost of these facilities varies depending on the size and whether or not there are underdrains and overflow connections to the County system.

<u>Infiltration Trenches</u>

The infiltration trenches recently installed are 2-foot roadside strips bordering roadway improvement developments. The trenches are 30-inches deep and filled with drain rock to allow for infiltration into native soil. A recent example of a narrow infiltration trench is Pavilion Park, which is described in more detail in Section 5.1.3.

<u>Rain Gardens</u>

A typical rain garden follows the City's Standard Drawing, which specifies a minimum depth of growing medium, minimum depth of drain rock for storage, a perforated underdrain, and type of vegetation. These facilities usually have a flow control outlet with a connection to an existing storm drain system. A recent example of a rain garden facility was constructed with street improvements along McKenzie Street, with an overflow connection to the County storm drain system in North Willamette Street.

Piped Drainage System

Most of the City infrastructure improvement projects do not include piped system elements but instead rely on infiltration. The minimum mainline size is 12-inches for storm drain lines, with laterals ranging in size. and. Storm drain structures like manholes and catch basins, as well as the depth of pipe installations and the backfill, or bedding, must be considered in the cost. The McKenzie Street improvement project also included constructing a new length of mainline and a 6-inch lateral that conveys discharge from the rain garden overflow outlet to the County system. More information about the McKenzie Street improvement project is given in Section 5.1.3.

Table 4 shows a comparison of the construction cost for each type of facility by linear foot, as well as structures common to systems with piped storm drains. These estimates do not include mobilization, site preparation, erosion control, or excavation costs.

Table 4: Cost Estimates for Storm Facility Types by Linear Foot

Facility Type	Estimate (LF)
2-Foot-Wide Infiltration Trench	$65
Water Quality Swale with Underdrain	$450
6-inch storm sewer pipe, class E backfill, 5 ft depth	$131
12-inch storm sewer pipe, class B backfill, 5 foot depth	$130
48-inch shallow manhole w/ flat top	$3,800
24-inch Concrete Inlet Manhole with beehive grate	$2,200

5.1.4 RECENT PUBLIC IMPROVEMENT PROJECTS

Recent public improvement projects have focused on repairing pavement degradation through resurfacing and reconstruction. Reconstruction projects include stormwater management features. The City encourages and implements water quality facilities within the City right-of-way, as demonstrated in recent public infrastructure improvement projects, shown in Figure 23, but focuses first on retention of stormwater runoff through infiltration. Recent development projects described in this section include reconstruction projects with a stormwater management element.

PAVILION PARK EXPANSION PROJECT – COMPLETED APRIL 2025

Pavilion Park was expanded to include accessible restrooms, pathways, and parking, as well as additional landscaping. This expansion required the installation of a 30-inch-deep infiltration trench along the east edge of Pavilion Park in the N. Harrison St. right-of-way. Figure 24 shows the conditions at the beginning of constructing the improvements.

N. WILLAMETTE, E. MACY ST., N. HARRISON ST. RECONSTRUCTION – COMPLETED NOVEMBER 2024

N. Willamette St., E. Macy St, and N. Harrison St., north of E. Van Duyn St. suffered from pavement and grading deficiencies in the form of multiple severe pavement distresses including potholes, depressions, longitudinal cracking, alligator pattern fatigue cracking, and edge cracking. Reconstruction of all three streets was completed at the end of 2024 and included regrading, repaving, and constructing roadside stormwater facilities. Storm facilities are primarily infiltration facilities, some with grassy swales for stormwater treatment. Figure 25 shows the project location and stormwater infrastructure improvements. Figures 26-28 show the condition of N Harrison St., E. Macy St, and N. Willamette prior to the improvements. Figures 29 – 31 show the finished construction.

E. MCKENZIE ST. RECONSTRUCTION – COMPLETED 2022

E. McKenzie Street, including a short length west of N. Willamette St and between N. Willamette St. and N. Harrison St., was reconstructed at the end of 2022 to repair damaged pavement and ponding issues. The reconstruction involved installing a new rain garden along the north edge of Pavilion Park with an overflow connection to the County storm drain system. Figure 32 shows the location of improvements, as well as a sketch of the improved storm drain system. See Figures 36 and 37 for conditions prior to the improvement project, Figure 38 for McKenzie Street after improvements, and Figure 39 for the rain garden.

SHANE CT. AND RUSTIC CT. STORM FACILITY RECONSTRUCTION – COMPLETED 2020

The stormwater infiltration facilities on Shane Ct. were replaced in 2020, and on Rustic Ct. were replaced in 2023. Areas of Shane Ct. and Rustic Ct. experienced frequent surface ponding. Sections of drain rock adjacent to these ponded areas were removed and replaced with new drain rock, improving the infiltration capacity of the facilities. Figure 45 shows the location of improvements. Figure 46 shows the new infiltration facilities on Shane Ct. and Figure 47 shows the new infiltration facilities on Rustic Ct.

N. HARRISON ST. AND E. MCKENZIE ST, REHABILITATION – COMPLETED 2018

The rehabilitation of the N. Harrison St. and E. McKenzie St. intersection in 2018 repaired extensive ponding and degraded road surfacing and included the installation of a rain garden in the northeast corner of the intersection. See Figure 32 for a map showing the location of recent public and private improvement projects, Figure 33 for a photo prior to the restoration project, Figure 34 for a photo of the restored roadway surface, and Figure 35 for a photo of the rain garden installation.

E. MILL ST. AND N. HARRISON ST. RECONSTRUCTION – COMPLETED 2018

The reconstruction of Mill Street in 2018 also repaired drainage issues and surface ponding at the edges of the road surface and in the adjacent parking areas. Construction included regrading E. Mill Street between N. Willamette St. and N. Harrison St., widening the pavement from 24-feet to 40-feet to provide on-street parking, and the installation of rain gardens at the east and west ends of E. Mill St. Figure 40 shows the location of the improvements and a sketch of the storm drain facilities. See Figures 41, 42, and 43 for conditions prior to the road and drainage improvements, Figure 44 for Mill St. after the improvements were complete.

COBURG INDUSTRIAL WAY, ROBERTS RD., AND E. PEARL ST IMPROVEMENTS – COMPLETED 2013

An Oregon Department of Transportation (ODOT) project constructed in 2012 and 2013 included improvements to Coburg Industrial Way North and South, Roberts Rd, and E. Pearl St. The improvements included roadside swales along Industrial Way and Pearl St., a detention pond at the northeast corner of Industrial Way and Pearl St., and a detention pond at the northwest corner of South Industrial Way and Roberts Rd. The facilities along South Industrial Way and at the intersection of South Industrial Way and Roberts Rd are shown in Figures 89 through 93.

OTHER RECENT STORMWATER IMPROVEMENT PROJECTS

Small infrastructure projects developed recently also include stormwater facilities designed for retention. For example, the addition of a sidewalk along the south side of Van Duyn Rd., east of N. Willamette St., included an infiltration ditch to capture and retain runoff from the length of new sidewalk concrete. Other infrastructure projects that have a minor impact on drainage include repaving projects along Roberts Rd and Roberts Court. Roberts Rd. and Roberts Ct. projects did not included construction of new stormwater facilities or any change in stormwater management and are not included on figures showing recent public improvements.

5.1.5 RECENT PRIVATE DEVELOPMENTS

Private developments in recent years include the installation of storm drains, water quality facilities, and retention facilities within City right-of-way. The primary private developments that have added to the City storm drain system include three subdivisions, Hatfield Estates, constructed in 2015, Coburg Crossing, constructed in 2017, and Coburg Creek, constructed in 2021. Figure 48 provides a map showing the location of recent public and private improvement projects.

Hatfield estates included the construction of shallow infiltration ditches along both sides of subdivision roads, as shown in Figure 49. These ditches are designed to fully infiltrate smaller rainfall events, while allowing runoff from larger storms to flow into an overflow, shown in Figure 50. The system overflow discharges into the Mill Slough. The outlet pipe is shown in Figure 51.

The Coburg Crossing subdivision utilizes infiltration ditches along E. McKenzie St., E. Lincoln St, and Spores St., with trench depths of 3-feet to 5-feet. These facilities utilize area drains for individual facility overflows to a piped system. The piped system connects swales to allow stormwater runoff to fill and infiltrate in smaller facilities, with the overflow volume conveyed to larger infiltration chambers, for a system that retains all stormwater within the subdivision. Figure 52 shows the location and layout of the storm drain system, and Figures 53 and 54 show the streetside facilities in the subdivision.

Coburg Creek, with the first phase constructed in 2021, also utilizes roadside infiltration trenches. Each trench has a standard depth of 2-feet and area drains that flow through a piped storm drain into the two City-owned swales that overflow into Muddy Creek. Figure 55 shows the location of the subdivision and the storm drain infrastructure. Figures 56 and 57 show the roadside infiltration trenches.

5.2 DRAINAGE DEFICIENCIES AND RECOMMENDED INFRASTRUCTURE IMPROVEMENTS

With the City relying heavily on infiltration, the drainage deficiencies throughout the City are primarily caused by road surface/grading issues or insufficient infiltration. Areas of standing water throughout the City mark these areas during the rainy season. See Figure 58 to see the locations of drainage deficiencies throughout the City. Recommended improvements are prioritized according to the following criteria and summarized in Table 5.

Priority 1

These projects should be implemented as soon as feasible when taking into consideration budget constraints and construction time requirements. The current conditions at the Priority 1 project sites will worsen and cause additional drainage problems while creating a hazard to both foot and vehicular traffic.

Priority 2

These projects represent a future hazard but are not currently critical. They are generally located in low traffic and low speed areas, but localized ponding occurs during the wet season, with larger storm events likely to lead to difficulties for local traffic. These projects should be considered after the Priority 1 projects, or if conditions worsen rapidly.

Priority 3

These projects are low priority because they do not currently represent a hazard to the community. Areas identified as Priority 3 are mostly areas where roadside infiltration facilities show signs of clogging, with ponding water on the surface of the facilities, but not extending into the roadway during the most frequent storm events. These projects should be considered if conditions worsen, or after Priority 2 projects are addressed.

Table 5: Recommended Improvement Project Summary

Pavement and Grading Projects	Priority	Cost
E. McKenzie St. from N. Coleman St. to N. Skinner St.	1	$202,100
S. Skinner St. from E. Delaney St. to E. Pearl St.	1	$296,194
S. Coleman St. from E. Maple St. and E. Dixon St.	2	$161,473
W. Dixon St. and S. Willamette St.	2	$162,129
W. Dixon St. at the entrance to Pioneer Mobile Home Park	3	$75,277
Storm Facility Projects	Priority	Cost
E. McKenzie St. east of N. Miller St.	2	$15,428
E. Lincoln Wy. east of N. Miller St.	2	$11,096
SE Corner of Austin St. and Abby Rd.	2	$11,096
E. Locust St. and N. Diamond St.	2	$18,026
Abby Rd. and W. McKenzie St.	2	$15,428
N. Skinner St. north of E. Locust St.	2	$18,026
E. Locust St., east of N. Willamette St.	3	$115,393
Austin St. inner curve	3	$23,183
NW Corner of E. Lincoln and N. Coleman St.	3	$15,428
NW Corner of E. Lincoln Wy. And N. Miller St.	3	$11,096

5.2.1 GRADING/PAVING DEFICIENCIES

Severe grading and paving deficiencies impede proper drainage across roadways, allowing stormwater to accumulate on road surfaces, which further degrades asphalt surfaces. Complete reconstruction of degraded roads accompanied by appropriate stormwater facilities to either retain runoff on site or convey it to the existing drainage system is the recommended solution for severe grading and paving deficiencies. Complete roadway reconstruction includes removing the damaged asphalt, base course, and any native soil necessary to rebuild and ensure structural stability of the pavement section to prevent future pavement distresses.

E. MCKENZIE ST. GRADING DEFICIENCIES FROM N. COLEMAN ST. TO N. SKINNER ST.

Multiple severe distresses are present on E. McKenzie St. between N. Coleman St. and N. Skinner St. including potholes, depressions, and alligator pattern fatigue cracking. Regrading and reconstruction of this stretch of E. McKenzie St. is recommended along with infiltration trenches on either side of E.

McKenzie St. to capture and retain stormwater runoff. The infiltration trenches should be sized with an adequate storage volume to avoid needing an overflow connection to the County storm drain system, if possible. Figure 59 shows the location of the deficiency, and Figures 60 and 61 are photos showing the roadway deficiencies.

The most severely distressed section of E. McKenzie St., extending west approximately 90-feet from N. Coleman St., is included in the Coburg Collector Street Reconstruction Project. Proposed construction includes reconstructing the roadway and installing roadside infiltration trenches. Table 6 provides a preliminary cost estimate to reconstruct the full stretch of E. McKenzie St. between N. Coleman St. and N. Skinner St. The portion of E. McKenzie St. included in the Coburg Collector Street Project is expected to cost approximately one quarter of the cost for the full length.

Table 6: E. McKenzie St. from N. Coleman St. to N. Skinner St. Reconstruction Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$2,000	$2,000
Temporary Traffic Control	Lump Sum	1	$3,200	$3,200
General Excavation	CY	$29,400	$29,400	$29,400
Road Reconstruction (Aggregate and Pavement)	SQYD	$66,885	$66,885	$66,885
Infiltration Trench (~100LF)	Lump Sum	$21,000	$21,000	$21,000
	Pavement and Stormwater Construction Total			$122,485
	Mobilization, Bonds, Insurance			$18,373
	Contingency (25%)			$30,621
	Engineering (20%)			$24,497
	Administrative Costs (5%)			$6,124
	Total Estimated Project Cost			$202,100

S. SKINNER ST. GRADING DEFICIENCIES FROM E. DELANEY ST. TO E. PEARL ST.

S. Skinner St., just south of E. Pearl St., has deficient pavement with raveling, longitudinal cracks, and potholes present, and has deficient infiltration along the sides of the road, shown in Figures 63-65. The ponding water appears to be caused by a lack of infiltration capacity on the sides of the road. The infiltration deficiency is more critical than the pavement issues. Approximately 380 feet spanning from E. Pearl St. south to the south side of the S. Skinner St. and E. Delaney St. intersection is part of the Fiscal Year 2027 planned SCA grant application, with a complete conceptual design. The conceptual design matches the recommended course of action, which is to reconstruct the pavement section with infiltration trenches on both sides of the road. Figure 59 shows the location of the drainage deficiencies. Table 7 provides a high-level preliminary cost estimate to reconstruct this stretch of S. Skinner St.

Table 7: S. Skinner St. from E. Delaney St. to E. Pearl St. Reconstruction Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$3,000	$3,000
Temporary Traffic Control	Lump Sum	1	$4,700	$4,700
General Excavation	CY	592	$42	$24,864
Road Reconstruction (Aggregate and Pavement)	SQYD	890	$68	$60,743
6" Storm Sewer Pipe	Foot	200	$137	$27,300
12" Storm Sewer Pipe	Foot	150	$168	$25,200
Shallow storm manhole	Each	1	$4,725	$4,725
Beehive overflow inlet	Each	2	$3,150	$6,300
Connect to existing storm drain system	Each	1	$1,680	$1,680
Infiltration Trench (~100LF)	Lump Sum	2	$10,500	$21,000
	Pavement and Stormwater Construction			$179,512
	Mobilization, Bonds, Insurance			$26,927
	Contingency (25%)			$44,878
	Engineering (20%)			$35,902
	Administrative Costs (5%)			$8,976
	Total Estimated Project Cost			$296,194

S. COLEMAN ST. GRADING DEFICIENCIES FROM E. MAPLE ST. TO E. DIXON ST.

S. Coleman St., between E. Maple St. and E. Dixon St., has deficient grading, pavement, and infiltration along both sides of the road. An approximately 80-foot section on the East side of S. Coleman St. holds standing water within the travel lane and has a lack of positive drainage to the shoulder. Stormwater runoff ponds along the shoulder in several other areas along this stretch of S. Coleman St. Reconstructing the length of S. Coleman St. from E. Maple St. to E. Dixon St. including regrading, repaving, and replacing the shoulder in several places with infiltration trenches is recommended. The infiltration trenches should be sized with an adequate storage volume to avoid needing an overflow connection to the County storm drain system. This section of S. Coleman St. is included in the Collector Street Reconstruction Project as shown on the map of proposed future improvements, Figure 94. See Figure 70 for the location of the deficiencies, and Figures 71-73 for photos showing the deficiencies. Table 8 provides a preliminary cost estimate to reconstruct this stretch of S. Coleman St.

Table 8: S. Coleman St. from E. Maple St. to E. Dixon St. Reconstruction Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$2,000	$2,000
Temporary Traffic Control	Lump Sum	1	$3,200	$3,200
General Excavation	CY	520	$42	$21,840
Road Reconstruction (Aggregate and Pavement)	SQYD	730	$68	$49,823
Infiltration Trench (~50LF)	Lump Sum	2	$10,500	$21,000
	Pavement and Stormwater Construction Total			$97,863
	Mobilization, Bonds, Insurance			$14,679
	Contingency (25%)			$24,466
	Engineering (20%)			$19,573
	Administrative Costs (5%)			$4,893
	Total Estimated Project Cost			$161,473

W. DIXON ST. AND S. WILLAMETTE ST. GRADING DEFICIENCIES

Deficient grading is present on W. Dixon St., just west of S. Willamette St. with standing water on the south side of the road covering the pavement in the right-of-way. The pavement fails to drain to the adjacent gravel shoulder. A valley gutter installation along the low point, sloped to drain toward S. Willamette St., with a catch basin installed west of the sidewalk and a drainpipe connection to the catch basin south of W. Dixon St. on the west side of S. Willamette St. is recommended. See Figure 66 for the location and Figure 69 for a photo of the drainage deficiency. Table 9 provides a preliminary cost estimate to reconstruct this stretch of W. Dixon St.

Table 9: W. Dixon St. and S. Willamette St. Reconstruction Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$2,000	$2,000
Temporary Traffic Control	Lump Sum	1	$2,600	$2,600
General Excavation	CY	520	$42	$21,840
Road Reconstruction (Aggregate and Pavement)	SQYD	730	$68	$49,823
Valley Gutter	SQFT	165	$53	$8,663
Grated Catch Basin	Each	1	$2,100	$2,100
6" Storm Sewer Pipe	Foot	70	$137	$9,555
Connect to existing storm drain system	Each	1	$1,680	$1,680
	Pavement and Stormwater Construction			$98,260
	Mobilization, Bonds, Insurance			$14,739
	Contingency (25%)			$24,565
	Engineering (20%)			$19,652
	Administrative Costs (5%)			$4,913
	Total Estimated Project Cost			$162,129

W. DIXON ST. GRADING DEFICIENCIES AT THE ENTRANCE TO PIONEER MOBILE HOME PARK

Flooding along W. Dixon St., at the entrance to the Pioneer Mobile Home Park is likely causing severe pavement deficiencies. The driveway entrance to the Mobile Home Park drains to a dry well that is no longer performing. This causes regular flooding across the driveway and extending into W. Dixon St., which is not equipped with infiltration facilities. Regular flooding impacts roadway surfaces, causing damage like that seen along this stretch of W. Dixon St. The flooding and road surface is shown in Figures 67 and 68. Pavement deficiencies in W. Dixon St. include alligator pattern fatigue cracking. Just east of the Pioneer Mobile Home Park is minor ponding due to the lack of infiltration facilities.

Addressing the flooding concern requires private drainage remediation, involving repairing or replacing the dry well. Once flooding concerns are addressed by property owners, grading and road reconstruction is recommended as part of future improvements of W. Dixon St. Figure 66 shows the location of the deficiencies. Table 10 provides a preliminary cost estimate to reconstruct this stretch of W. Dixon St. at such time that flooding concerns are resolved.

Table 10: W. Dixon St. and Pioneer Mobile Home Park Reconstruction Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,500	$1,500
Temporary Traffic Control	Lump Sum	1	$3,750	$3,750
General Excavation	CY	360	$42	$15,120
Road Reconstruction (Aggregate and Pavement)	SQYD	270	$68	$18,428
Stormwater Facility, Complete	Lump Sum	1	$6,825	$6,825
	Pavement and Stormwater Construction Total			$45,623
	Mobilization, Bonds, Insurance			$6,843
	Contingency (25%)			$11,406
	Engineering (20%)			$9,125
	Administrative Costs (5%)			$2,281
	Total Estimated Project Cost			$75,277

5.2.2 STORM FACILITY DEFICIENCIES

Where inadequate infiltration occurs during rainfall events and the native soil has the infiltration capacity for retention facilities, the recommended corrective action is to replace the gravel shoulders with new infiltration facilities, similar to the retrofit performed on Rustic Ct. and Shane Ct. and described in Section 5.1. The reconstruction of gravel shoulders into infiltration facilities would require removing the existing gravel to a minimum depth of two feet, or until native soil is encountered, placing a geotextile to separate the new gravel from the natural soil, and placing open graded drain rock back to the original surface elevation. This is recommended at the following locations across Coburg.

E. MCKENZIE ST. AND E. LINCOLN WAY, EAST OF N. MILLER ST. DRAINAGE DEFICIENCIES

East of N. Miller St, E. McKenzie St. and E. Lincoln Wy. show areas of standing water across a portion of the road surfaces and shoulders. This appears to be at least in part due to low areas in the road surface, but stormwater still drains and accumulates on the side of the road. An additional length, approximately 150 feet, of McKenzie on the west side of N. Miller St. shows ponding along the gravel shoulders indicating inadequate infiltration capacity along this section of roadway. Reconstructing the shoulders into infiltration facilities is the recommended solution. If these facilities cannot provide the necessary capacity, an overflow or underdrain should be installed and connected to the County storm drain system in E. Pearl St. Figure 74 shows the locations of the drainage deficiencies. Figures 75-78 are photos of the deficient areas after rainfall. The estimated cost for each infiltration basin is provided below. Table 11 provides a preliminary cost estimate to construct storm facilities along this stretch of E. McKenzie St.

Table 11: E. McKenzie St. & E. Lincoln Wy., east of N. Miller St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Infiltration Trench (~50LF)	Lump Sum	1	$7,350	$7,350
	Stormwater Construction Total			$9,350
	Mobilization, Bonds, Insurance			$1,403
	Contingency (25%)			$2,338
	Engineering (20%)			$1,870
	Administrative Costs (5%)			$468
	Total Estimated Project Cost			$15,428

SE CORNER OF AUSTIN ST. AND ABBY RD. DRAINAGE DEFICIENCY

Ponding has been observed along the southeast corner of Austin St. and Abby Rd. A location map of the area is shown in Figure 85. This condition reflects an infiltration deficiency that is likely to worsen over time. Ponding occurs along the roadway shoulder and on the surface of the infiltration media, indicating that the media is clogged. Figure 88 shows the ponded area as photographed in 2024. Table 17 provides a preliminary cost estimate for constructing a stormwater facility at the corner of Austin St. and Abby Rd.

Table 12: SE Corner of Austin St. and Abby Rd. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Stormwater Facility, Complete	Lump Sum	1	$4,725	$4,725
	Stormwater Construction Total			$6,725
	Mobilization, Bonds, Insurance			$1,009
	Contingency (25%)			$1,681
	Engineering (20%)			$1,345
	Administrative Costs (5%)			$336
	Total Estimated Project Cost			$11,096

E. LOCUST ST. AND N. DIAMOND ST. DRAINAGE DEFICIENCY

At the intersection of E. Locust St. and N. Diamond St., an area of the road surface fails to drain, with the ponded area shown in Figure 80 covering part of the shoulder and part of the road surface. This indicates that infiltration is inadequate along that shoulder and replacing the shoulder with an infiltration trench is the recommended course of action to remedy the drainage issue. The infiltration trench should be sized with an adequate storage volume to avoid needing an overflow connection to the County storm drain system. Figure 79 shows the location of the infiltration deficiency. This project is included in the Collector Street Reconstruction Project, discussed in Section 5.3 and shown on the map of proposed future improvements, Figure 94. Table 12 provides a preliminary cost estimate to construct a storm facility along this stretch of E. Locust St.

Table 13: E. Locust St. and N. Diamond St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Infiltration Trench (~60LF)	Lump Sum	1	$8,925	$8,925
	Stormwater Construction Total			$10,925
	Mobilization, Bonds, Insurance			$1,639
	Contingency (25%)			$2,731
	Engineering (20%)			$2,185
	Administrative Costs (5%)			$546
	Total Estimated Project Cost			$18,026

ABBY RD. AND W. MCKENZIE ST. DRAINAGE DEFICIENCY

On the southeast corner of Abby Rd. and W. McKenzie St. standing water covers a third of the road surface and fails to infiltrate into the rocked shoulder, as shown in Figure 86. Ponding water in this area is likely due to both road grading issues and inadequate infiltration along the shoulder. The ponding occurs along the side of the road, covering the shoulder, which indicates that improving infiltration along the shoulder will solve the ponding issue. It is recommended to replace the granular media in the shoulder with an infiltration trench that has the capacity to store the necessary volume of water to avoid ponding while stormwater infiltrates. If this is not feasible, the infiltration trench should have an overflow connection to the drainage pipe located northeast of the deficient area with an outflow to the Mill Slough, as shown on the location map in Figure 85. Table 13 provides a preliminary cost estimate to construct a storm facility on the corner of Abby Rd. and E. McKenzie St.

Table 14: Abby Rd. and W. McKenzie St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Infiltration Trench (~50LF)	Lump Sum	1	$7,350	$7,350
	Stormwater Construction Total			$9,350
	Mobilization, Bonds, Insurance			$1,403
	Contingency (25%)			$2,338
	Engineering (20%)			$1,870
	Administrative Costs (5%)			$468
	Total Estimated Project Cost			$15,428

N. SKINNER ST. DRAINAGE DEFICIENCIES, NORTH OF E. LOCUST ST.

N. Skinner St. north of E. Locust St. has an area where water ponds on the roadway surface, covering half of the road surface over to the shoulder. Low pavement slopes may be partly to blame, but an increase in the infiltration capacity along the shoulder in this area will improve drainage and reduce ponding. Replacing the infiltration media along the shoulder with an infiltration basin having the necessary capacity is recommended. Figure 79 shows the location and Figure 81 shows the deficiency. Table 14 provides a preliminary cost estimate to construct a storm facility along this stretch of N. Skinner St.

Table 15: N. Skinner St. north of E. Locust St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Infiltration Trench (~60LF)	Lump Sum	1	$8,925	$8,925
	Stormwater Construction Total			$10,925
	Mobilization, Bonds, Insurance			$1,639
	Contingency (25%)			$2,731
	Engineering (20%)			$2,185
	Administrative Costs (5%)			$546
	Total Estimated Project Cost			$18,026

E. LOCUST ST. DRAINAGE DEFICIENCY, EAST OF N. WILLAMETTE ST.

The south side of E. Locust St., east of N. Willamette St., has inadequate infiltration capacity with ponding water on the shoulder adjacent to the Dari Mart, and the opposite shoulder. The road surface drains properly, with ponding water only on gravel shoulder areas. Replacing the gravel in the shoulder with infiltration trenches having an overflow connection to the County storm drain system stub at the west end of E. Locust St. is the recommended course of action. This project is a planned future improvement, discussed in Section 5.3. Figure 79 shows the location of the drainage deficiencies, and Figures 82-84 are photos of the ponding water. Table 15 provides a preliminary cost estimate to construct a storm facility along this stretch of E. Locust St.

Table 16: E. Locust St., east of N. Willamette St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,500	$1,500
Temporary Traffic Control	Lump Sum	1	$2,600	$2,600
Infiltration Trench (~40 LF)	Lump Sum	2	$5,775	$11,550
6" Storm Sewer Pipe	Foot	120	$137	$16,380
12" Storm Sewer Pipe	Foot	150	$168	$25,200
Shallow storm manhole	Each	1	$4,725	$4,725
Beehive overflow inlet manhole	Each	2	$3,150	$6,300
Connect to existing storm drain system	Each	1	$1,680	$1,680
	Stormwater Construction Total			$69,935
	Mobilization, Bonds, Insurance			$10,490
	Contingency (25%)			$17,484
	Engineering (20%)			$13,987
	Administrative Costs (5%)			$3,497
	Total Estimated Project Cost			$115,393

<u>AUSTIN ST. INNER CURVE DRAINAGE DEFICIENCY</u>

There are minor infiltration deficiencies present in some areas of the City that are likely to worsen over time. These include clogged infiltration media at the bend of Austin St., approaching Abby Rd, shown in Figure 85. Mild ponding is present at these locations on the surface of the infiltration media. Figure 87 is a photo of the ponded areas. Table 16 provides a preliminary cost estimate to construct storm facilities along this stretch of Austin St.

Table 17: Austin St. Inner Curve Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,500	$1,500
Stormwater Facility, Complete	Lump Sum	1	$11,550	$11,550
	Stormwater Construction Total			$14,050
	Mobilization, Bonds, Insurance			$2,108
	Contingency (25%)			$3,513
	Engineering (20%)			$2,810
	Administrative Costs (5%)			$703
	Total Estimated Project Cost			$23,183

NW CORNER OF E. LINCOLN AND N. COLEMAN ST. DRAINAGE DEFICIENCY

The northwest corner of E. Lincoln Wy and N. Coleman St. accumulated runoff along the edge of the roadway and over the rock shoulder. This is a fairly minor issue that can be solved by replacing a section of the shoulder media with an infiltration trench. However, there is a mature tree located at this corner and an arborist should be consulted prior to installation of stormwater facilities. Figure 59 shows the location of the deficiency and Figure 62 shows a photo of the area after rainfall. Table 18 provides a preliminary cost estimate to construct a storm facility along the corner of E. Lincoln St. and N. Coleman St. This is included in the future Coburg Collector Street Reconstruction project.

Table 18: NW Corner of E. Lincoln and N. Coleman St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Stormwater Facility, Complete	Lump Sum	1	$7,350	$7,350
	Stormwater Construction Total			$9,350
	Mobilization, Bonds, Insurance			$1,403
	Contingency (25%)			$2,338
	Engineering (20%)			$1,870
	Administrative Costs (5%)			$468
	Total Estimated Project Cost			$15,428

NW CORNER OF E. LINCOLN WY. AND N. MILLER ST. DRAINAGE DEFICIENCY

The northwest corner of E. Lincoln Wy and N. Miller St. ponds after rainfall, a minor issue since the ponding covers a small area. Replacing a section of the grassy area at the corner with an infiltration trench is the recommended solution to drain this corner. Figure 74 shows the location of the deficiency and Figure 68 shows a photo of the ponded stormwater. The northeast corner of S. Coleman St. and E. Dixon St. has similar minor ponding issues along the gravel shoulder. However, this is included in the future Coburg Collector Street Reconstruction project. A small section of the shoulder media can be replaced with an infiltration basin of approximately the same length as the facility recommended for E. Lincoln Wy and N. Miller St. Figure 70 shows the location of the deficiency and Figure 73 shows a photo of the ponded stormwater. The cost estimate for each infiltration basin is provided below.

Table 19: E. Lincoln Wy and N. Miller St. Storm Facility Cost Estimate

Line Item	Unit	Quantity	Unit Cost	Estimate
Erosion Control	Lump Sum	1	$1,000	$1,000
Temporary Traffic Control	Lump Sum	1	$1,000	$1,000
Stormwater Facility, Complete	Lump Sum	1	$4,725	$4,725
	Stormwater Construction Total			$6,725
	Mobilization, Bonds, Insurance			$1,009
	Contingency (25%)			$1,681
	Engineering (20%)			$1,345
	Administrative Costs (5%)			$336
	Total Estimated Project Cost			$11,096

Mild drainage problems are also present along Coburg Industrial Way, south of E. Pearl St. Curb inlets drain Coburg Industrial Way into roadside infiltration swales on both sides of Coburg Industrial Way. The infiltration swales are placed between the sidewalk and the road, as shown in Figures 90 and 91. These infiltration swales are regularly clogged with leaves from the deciduous trees planted in the basins, inhibiting infiltration into the underlying soil. In a few spots, this leads to puddles on the road surface. It is recommended that annual maintenance to remove leaves is performed in the infiltration swales. If regular maintenance does not improve the performance of the swales, removal and replacement of media is recommended in clogged areas.

COBURG INDUSTRIAL WAY AND ROBERTS RD. DRAINAGE MAINETENANCE

On the northwest corner of Coburg Industrial Way and Roberts Rd. is a retention basin which receives runoff from the paved surfaces from the intersection. Figure 93 shows the retention basin. Maintenance of outlets to the retention basin to remove vegetation from the pipeline vicinity is recommended before the rainy season begins and as needed throughout the season to allow for functionality. Figure 89 shows the location of the stormwater features along Coburg Industrial Way.

5.3 PLANNED FUTURE IMPROVEMENTS

There are several upcoming infrastructure improvement projects, several of which are to address grading and drainage deficiencies identified in Section 5.2. An overall map of proposed future improvements is provided in Figure 94. These projects represent the highest priority projects for the City of Coburg.

5.3.1 SOUTH SKINNER FROM DELANY TO PEARL

S. Skinner St. including areas with pavement deficiencies will be reconstructed in 2027. S. Skinner St. will be reconstructed for the length of from E. Pearl St. to E. Delaney St, and including the intersection of E. Delaney St. and S. Skinner St. This project includes reconstructing the road, installing gravel shoulders and installing infiltration trenches along both sides of the road. Existing gravel driveway aprons in the right-of-way will also be replaced with asphalt aprons, and on-street parking will be provided. The infiltration trenches will be two feet in width to a depth of 30-inches. Preliminary design work is complete and the City is applying for a Small City Allotment (SCA) grant to cover project costs. SCA grants are discussed in detail in Section 6.3.3, and the project location is shown in Figure 94.

5.3.2 COLLECTOR STREET PROJECT

The City of Coburg Collector Street Reconstruction Project includes reconstructing road surfaces, installing storm infiltration facilities, and constructing sidewalks, in some locations. This project includes reconstructing collector streets running through the City including almost the full length of Coleman St. The project extent runs through the Coburg Historic District, including lengths of E. Van Duyn St, N. Harrison St., E. Locust St., N. Skinner St, E. Mill St., N. and S. Coleman St., and E. Dixon St. Figures 97-103 show stretches of the streets included in this project.

Phase 1 of the Collector Street Project is under design and is scheduled for construction in 2026. Phase 1 includes the reconstruction of N. Coleman St. from north of E. McKenzie St. south to the north side of E. Pearl St. The intersection of E. McKenzie and N. Coleman is included extending west along E. McKenzie St. for approximately 90 feet. The intersection of N. Coleman St. and E. Lincoln St. is also included in Phase 1. The proposed construction includes removing the existing pavement and base rock, regrading, and constructing a new pavement section, constructing new infiltration stormwater facilities, and constructing new sidewalks and ADA ramps on the west side of N. Coleman St.

5.3.3 E. LOCUST ST. RECONSTRUCTION PROJECT

Reconstructing E. Locust St., between N. Willamette St and N. Harrison St. is in the City's future development plans. This project will be similar to the improvements constructed for the E. Mill St. and E. McKenzie St. improvement projects described in Section 5.2.1. The project is likely to include the construction of curb, gutter, sidewalk, and storm facilities. Figures 95 and 96 show the length of E. Locust St. from the east end and from the west end, respectively.

6.0 CAPITAL IMPROVEMENT PROGRAM

The City of Coburg reviews and updates the Capital Improvement Program (CIP) annually to inform the annual Capital Budget and to act as a planning document for scheduled improvements to the City's general government and utility infrastructure.

The City of Coburg currently utilizes the General/Street Funds for annual maintenance and small capital projects, supplemented by state grants where appropriate, including Small City Allotment Grants. Additionally, the City utilizes a transportation utility fee for transportation related projects. Capital improvements may be financed by stormwater user fees, system development charges (SDCs), federal or state grant and loan programs, and bonds. To address current system deficiencies, the City will need to utilize a combination of funding sources, discussed further in this section.

6.1 GENERAL OBLIGATION BONDS

General Obligation (GO) bonds are not backed by a specific revenue stream but are backed by the "full faith and credit" of the issuer, or by the local government's pledge to levy taxes, usually in the form of property taxes, to pay the debt. To fund a project with a GO bond, the community must pass a vote to sell the bonds. GO bonds have lower associated costs than other forms of financing for capital projects, which results in low interest rates.

6.2 REVENUE BONDS

Revenue bonds are repaid by the revenue from the specific project for which they are issued. This may be in the form of stormwater service fees and system development charges. Revenue bonds are at higher risk for investors compared to GO bonds, which results in higher interest rates.

6.3 STATE/FEDERAL GRANTS AND LOANS

6.3.1 ODEQ CLEAN WATER STATE REVOLVING FUND

The Clean Water State Revolving Fund (CWSRF) is a partnership program between the USEPA and Oregon which provides low interest loans to public agencies for the planning, design, or construction of water quality projects. The loan program offers loans for water quality infrastructure projects in four categories, point source, nonpoint source, planning, and local community loans.

The CWSRF provides assistance for the implementation of stormwater management projects that meet the eligibility requirements of the CWA Section 319 for the control of NPS pollution. These projects can be publicly or privately owned but must support the implementation of a currently approved NPS management program plan or nine-element watershed-based plan. These projects cannot directly implement a final NPDES permit. The CWSRF also provides assistance for the following types of borrowing identified in USEPA's document Overview of Clean Water State Revolving Fund Eligibilities, published in 2016, and still provided as a guiding document at the time this Master Plan was written:

- to borrowers that implement a Section 320 National Estuary Program (NEP) Comprehensive Conservation and Management Plan (CCMP).
- to any municipality for publicly owned stormwater projects.
- to any borrower for projects that manage, reduce, treat, or recapture stormwater or subsurface drainage water.
- to any municipality or municipal entity for the management of municipal wet weather discharges.

- to any municipality or municipal entity for stormwater BMPs in MS4s for the purpose of demonstrating and determining controls that are cost effective and use innovative technologies.
- to any municipality or municipal entity for efforts of municipalities and property owners to develop or implement watershed partnerships to address nonpoint sources of pollution.
- to any municipality or municipal entity for the development and implementation of a municipality-wide stormwater management plan.
- to any borrower for projects to reuse stormwater or subsurface drainage water.

Watershed management projects eligible for CWSRF loans include projects related to management of wet weather discharges, stormwater best management practices (BMPs), watershed partnerships, integrated water resource planning, municipality-wide stormwater management planning, and increased resilience of treatment works. Funding for these projects is only available to municipalities.

USEPA published a list of stormwater projects eligible for funding under the CWSRF in their Overview of Clean Water State Revolving Fund Eligibilities document. These projects include gray and green infrastructure, stormwater harvesting, and surface water protection and restoration through stormwater management and habitat restoration. Gray and green infrastructure projects must have a water quality benefit to qualify for CWSRF loans. These projects include the following.

Gray Infrastructure:

- Traditional pipe, storage, and treatment systems
- Real-time control systems for Combined Sewer Overflow (CSO) management
- Sediment controls (filter fences, storm drain inlet protection, street sweepers, vacuum trucks)

Green Infrastructure:

- Green roofs, green streets, and green walls
- Rainwater harvesting collection, storage, management, and distribution systems
- Real-time control systems for harvested rainwater
- Infiltration basins
- Constructed wetlands, including surface flow and subsurface flow wetlands
- Bioretention/bioswales including rain gardens, and tree boxes
- Permeable pavement
- Wetland/riparian/shoreline creation, protection, and restoration
- Establishment/restoration of urban tree canopy
- Replacement of gray infrastructure with green infrastructure including the purchase and demolition costs.

6.3.2 ODEQ SECTION 319 NONPOINT SOURCE IMPLEMENTATION GRANT

Section 319 of the CWA requires USEPA to award grants to states to implement approved Nonpoint Source Management Programs to maintain beneficial uses of water. ODEQ makes funding available to local governments and other agencies to implement programs that address a Watershed Based Plan. In the Coburg area, the Southern Willamette Valley Groundwater Management Area is listed as an eligible watershed in the Oregon Section 319 Nonpoint Source Implementation Grant 2024 Request for Proposals handbook for projects that will reduce nitrate and other pollutant loading to groundwater per the Southern Willamette Valley GWMA Action Plan.

6.3.3 SMALL CITY ALLOTMENT PROGRAM (SCA)

SCA grants are state grant funds allocated to transportation projects for cities with populations of 5,000 or less. The requirement for funding under an SCA grant is that funds be used for streets that are “inadequate for the capacity they serve or are in a condition detrimental to safety” per ORS 366.805. While transportation projects are not exclusively drainage related, streets with severe deficiencies are a cause of drainage problems and street reconstruction projects generally involve an element of stormwater infrastructure.

6.4 SYSTEM DEVELOPMENT CHARGES

System Development Charges (SDCs) are one-time fees on new development based on an increased or new use of property and the associated increased impact on City infrastructure. SDCs are paid at the time of development and the revenue may only be used by the City for growth-related capital improvements. The City of Coburg currently has approved SDCs for water, sewer, transportation, and parks and these fees are adjusted annually on January 1st for inflation. Stormwater SDCs are based on projected growth, generally measured in impervious surface area and the number of trips the new development is expected to generate.

6.5 STORMWATER SERVICE CHARGES

Stormwater system development charges are generally used for maintaining stormwater infrastructure and treatment facilities; maintaining street cleanliness to reduce contaminants entering stormwater runoff; providing education to the community; protecting, restoring, and maintaining natural waterways; and administering water quality regulations for construction, new development, and industrial sites. The City of Coburg does not currently charge a stormwater service charge for stormwater infrastructure maintenance and improvements. The City of Coburg should conduct a rate study to analyze the costs associated with system operations, maintenance, and future improvements, and to determine a rate structure to support the City’s planned level of service.

7.0 POLICY, IMPROVEMENT, MAINTENANCE, AND FUNDING RECOMMENDATIONS

7.1 RECOMMENDATIONS FOR EXPANDING CITY STORMWATER DEVELOPMENT STANDARDS

Recommendations related to the City Development standards can be found in Sections 1.3 and 3.3.2 and are summarized in the list below.

- Add clear triggers for stormwater requirements (using specific numerical thresholds).
- Require stormwater quantity and quality treatment for:
  - Developments 0.5 acres or larger, or
  - Projects adding 3,000 sq ft impervious surface or more.
- Require post-development flows to be less than or equal to pre-development flows (apply Downtown Overlay District standard citywide).
- Adopt ESWMM (Eugene Stormwater Management Manual) design methodology for:
  - Flow control based on the 25-yr, 24-hr design storm
  - Water quality design
  - Facility sizing and criteria
- Require LID/vegetated stormwater facilities as the preferred treatment method.
- Require Operations & Maintenance Plans for all private stormwater facilities.
- Align erosion control policies with Lane County:
  - Require erosion & sediment control permits for disturbances of 0.25 acres or more.
- Require erosion control BMPs for all development, redevelopment, and land-disturbance activity.

7.2 INFRASTRUCTURE IMPROVEMENT RECOMMENDATIONS (DRAINAGE & STREET DEFICIENCIES)

Recommendations for infrastructure improvement projects are found in Sections 1.3, 5.2, and 5.3 and are summarized in the list below.

1. High-Priority Street Reconstruction & Drainage Improvements
   - McKenzie St. (Coleman to Skinner) - reconstruct pavement, regrade, and add infiltration facilities. This improvement is included in the Coburg Collector Street Reconstruction project currently in design.
   - S. Skinner St. - pavement reconstruction, drainage improvements, infiltration trench installation. This improvement is also a planned future improvement. Areas with pavement deficiencies will be reconstructed in 2027.

2. Medium-Priority Street & Shoulder Repair Projects
   - McKenzie St. & E. Lincoln Way (east of N. Miller)
     - Replace gravel shoulders with infiltration trenches.
     - Add underdrain/overflow to County system if needed.
   - E. Locust St. & N. Diamond St.
     - Install an infiltration trench to eliminate ponding. This is included in the future Coburg Collector Street Reconstruction project.
   - S. Coleman St. (Maple to Dixon)
     - Full reconstruction, regrading, repaving, and replacing shoulders with infiltration facilities. This is included in the future Coburg Collector Street Reconstruction project.

- W. Dixon St. (near Willamette & near Pioneer Mobile Home Park)
    - Install valley gutter, catch basin, reconstruct road surfaces, and install storm facility near intersection of W. Dixon St. and S. Willamette St. Road reconstruction adjacent to Pioneer Mobile Home Park once private stormwater improvements resolve flooding issue.
- NW Corner of E. Lincoln Way & N. Coleman
    - Add small infiltration basin to eliminate corner ponding. This is included in the future Coburg Collector Street Reconstruction project.
- NW Corner of E. Lincoln Way & N. Miller St.
    - Replace grassy corner section with infiltration trench.
- Minor ponding at S. Coleman & E. Dixon
    - Replace localized shoulder media with a short infiltration facility. This is included in the future Coburg Collector Street Reconstruction project.

3. General Drainage Facility Upgrades

- Where shoulders have poor infiltration, retrofit gravel shoulders into infiltration trenches.

7.3 ROUTINE MAINTENANCE RECOMMENDATIONS

Routine maintenance recommendations are found in Section 5.2.2 and 5.2.3 and are summarized in the list below.

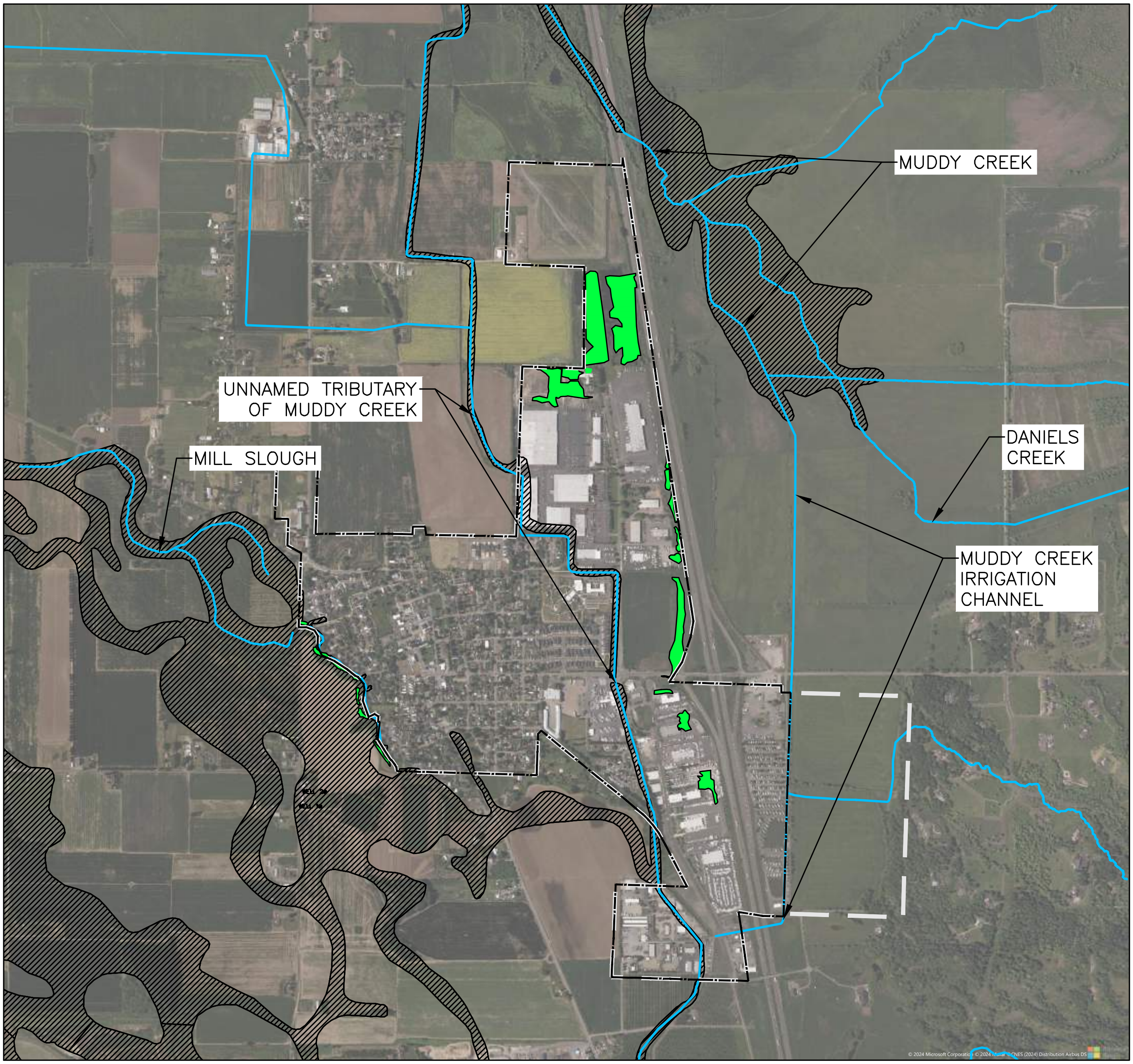
- Coburg Industrial Way (south of E. Pearl)
    - Annual cleaning of infiltration swales to remove leaf accumulation.
    - Replace infiltration media where swales remain clogged.
- Coburg Industrial Way & Roberts Road retention basin
    - Clear vegetation blocking outlets before rainy season and as needed during winter.
- Maintain roadside infiltration swales, curb inlets, and gravel shoulders on all collector and local streets.
- Continue annual inspection of rain gardens, bioswales, infiltration trenches, and subdivision overflows.

7.4 FUNDING RECOMMENDATIONS

Recommendations for funding programs are in Section 1.4, 2.1 and summarized in the list below.

- Establish a stormwater utility fee to fund maintenance and capital improvements.
- Consider implementing System Development Charges (SDCs) for stormwater.
- Expand use of state & federal grants and loan programs (e.g., CWSRF).
- Consider bonds for large capital projects.
- Improve and maintain a current inventory of stormwater infrastructure to support budgeting and grant applications.

APPENDIX A: FIGURES



LEGEND

URBAN GROWTH BOUNDARY
CITY LIMITS
STREAMS
FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
LWI WETLAND AREAS

N

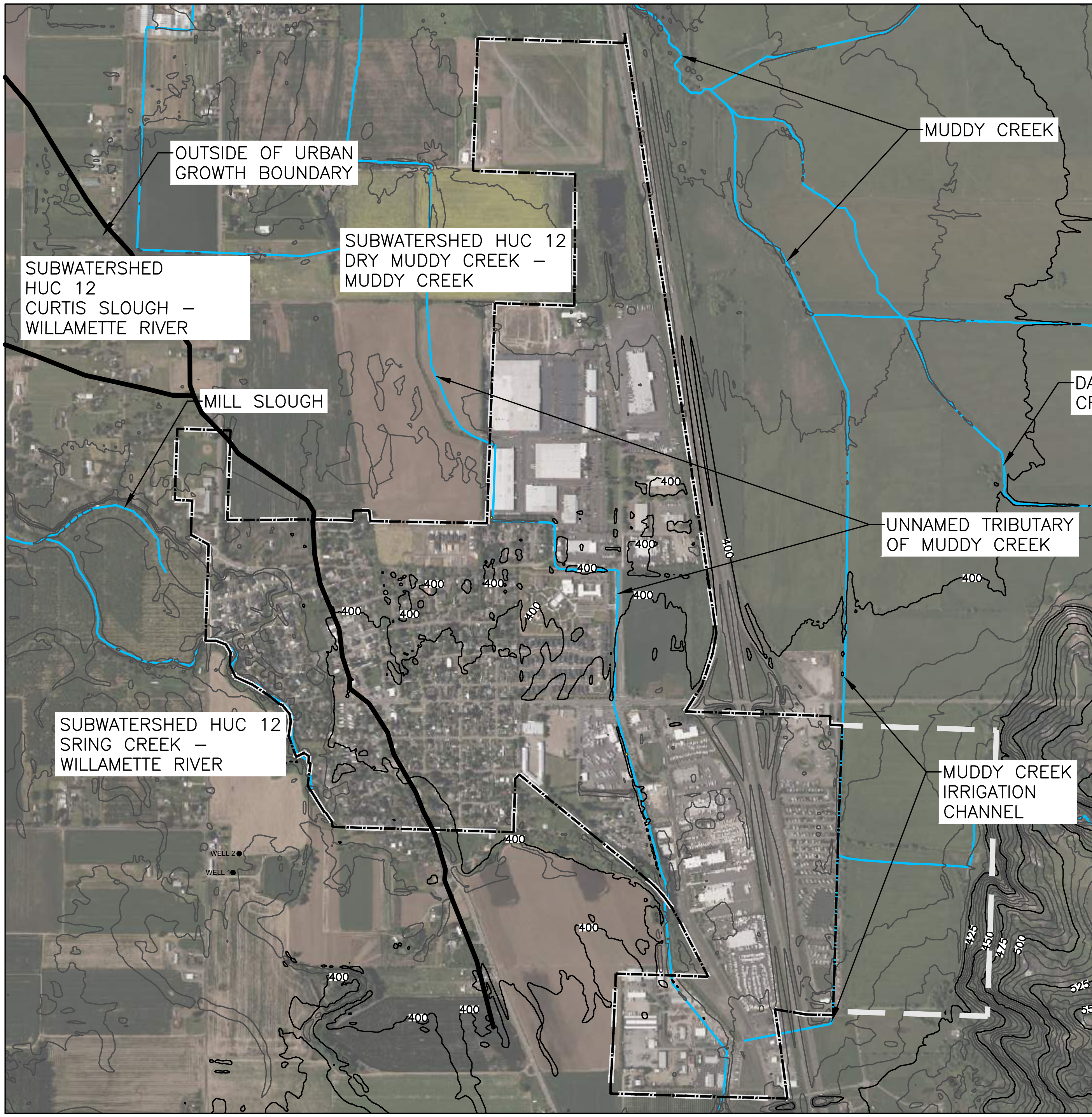
GRAPHIC SCALE
0 1000 2000
(IN FEET)

CITY OF COBURG STORMWATER MASTER PLAN

FIGURE-11

Coburg FEMA Floodplain and LWI Wetland Areas

BEI PROJECT NO. 18-004G



LEGEND

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- SUBWATERSHED BOUNDARY
- STREAMS
- 400 — 25'–CONTOUR INTERVAL
- 5'–CONTOUR INTERVAL

N

GRAPHIC SCALE
0 750 1500
(IN FEET)

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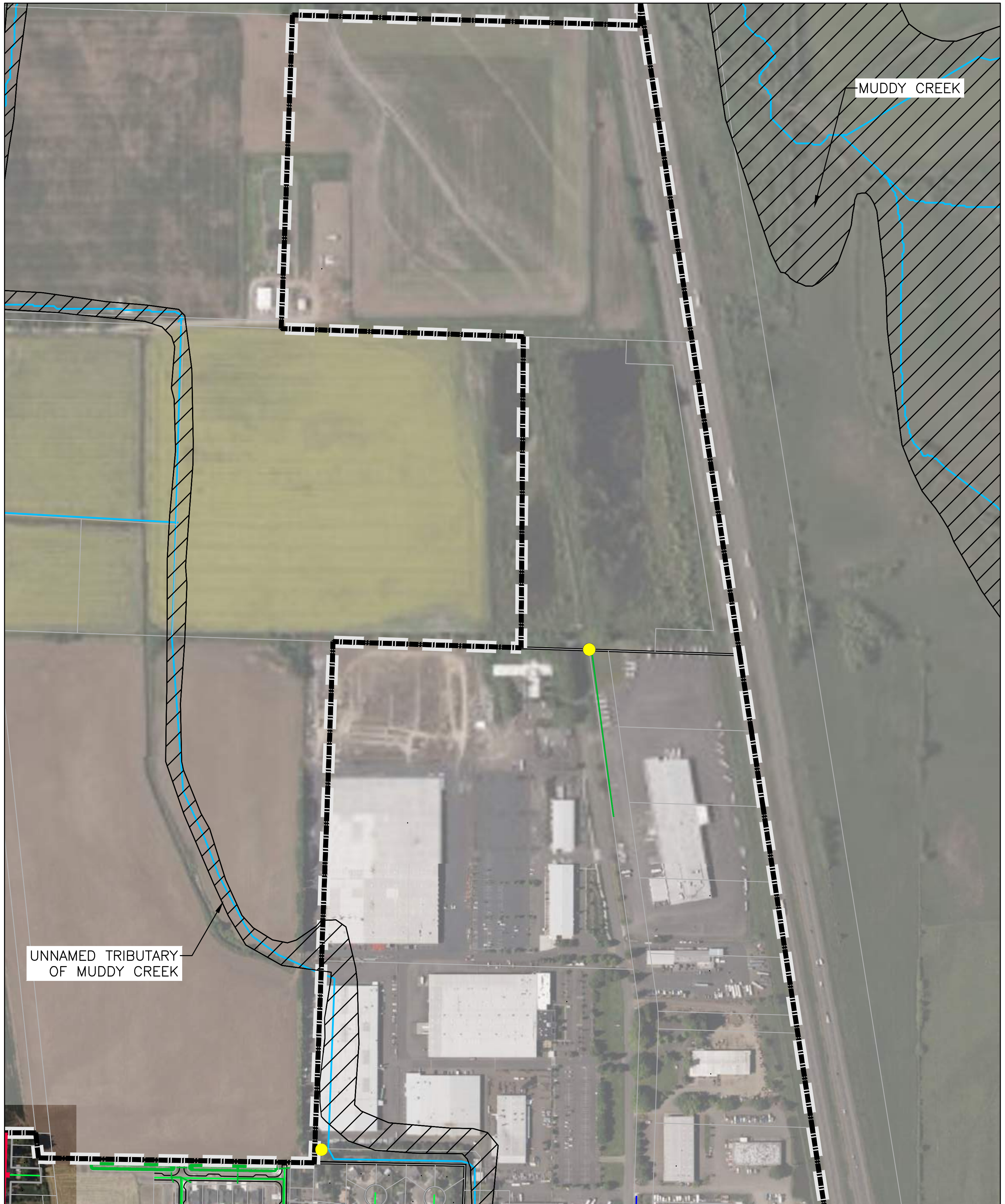
CITY OF COBURG STORMWATER MASTER PLAN

FIGURE-12

Coburg Watershed Boundary and Contours

BEI PROJECT NO. 18-004G



LEGEND

- CITY LIMITS
- URBAN GROWTH BOUNDARY
- FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
- STREAMS
- CITY STORM DRAIN SYSTEM
- STORMWATER OVERFLOW

N

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

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CITY OF COBURG
STORMWATER MASTER PLAN

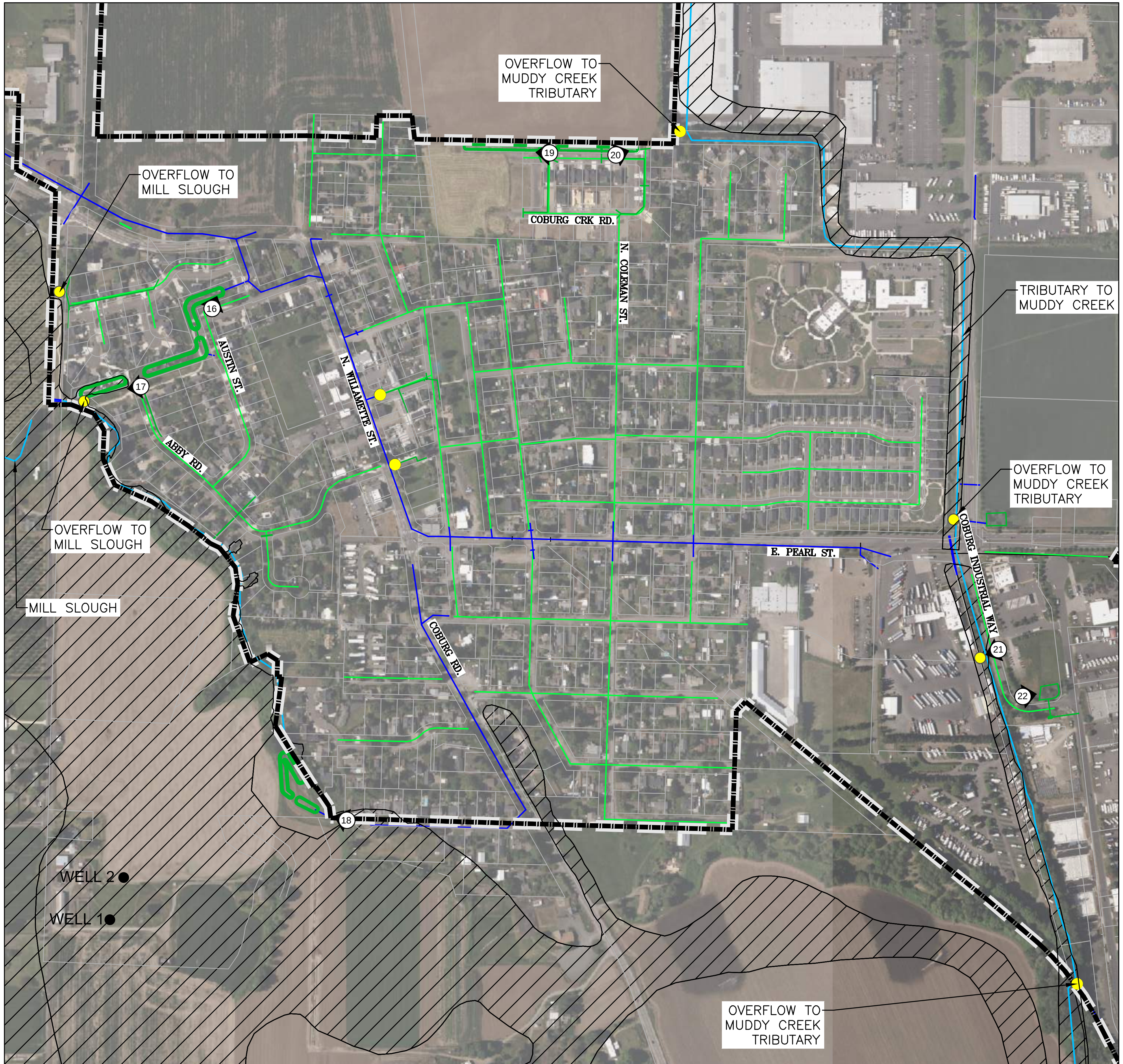
COBURG, OREGON

revisions:

COBURG NORTH STORM DRAIN SYSTEM

sheet:

FIGURE-13



LEGEND

- CITY LIMITS
- URBAN GROWTH BOUNDARY
- FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
- STREAMS
- DRAINAGE BASINS
- COUNTY STORM DRAIN SYSTEM
- CITY STORM DRAIN PIPES
- CITY STORMWATER QUALITY FACILITIES
- INFILTRATION FACILITIES
- STORMWATER OVERFLOW
- COUNTY SYSTEM CATCH BASIN
- COUNTY SYSTEM MANHOLE
- CITY SYSTEM CATCH BASIN
- CITY SYSTEM MANHOLE
- FIGURE XX

N

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

PRELIMINARY

NOT FOR CONSTRUCTION

A-4

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CITY OF COBURG STORMWATER MASTER PLAN

COBURG, OREGON

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COBURG CENTRAL STORM DRAIN SYSTEM

sheet:

FIGURE-14

LEGEND

- CITY LIMITS
- URBAN GROWTH BOUNDARY
- FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
- STREAMS
- DRAINAGE BASINS
- COUNTY STORM DRAIN SYSTEM
- CITY STORM DRAIN PIPES
- CITY STORMWATER QUALITY FACILITIES
- INFILTRATION FACILITIES
- STORMWATER OVERFLOW
- COUNTY SYSTEM CATCH BASIN
- COUNTY SYSTEM MANHOLE
- CITY SYSTEM CATCH BASIN
- CITY SYSTEM MANHOLE

N

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

PRELIMINARY

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CITY OF COBURG STORMWATER MASTER PLAN

COBURG, OREGON

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COBURG SOUTH STORM DRAIN SYSTEM

sheet:

FIGURE-15

Z:\2018\18-004G Coburg SW Master Plan\Drawings\Utility Map - South\Utility Map SWMP Update - 2025_1216.dwg 12/27/2025 7:57 PM KERYN

Figure 16: Upstream end of city-owned swale adjacent to Hatfield Estates in 2024.

Figure 17: Downstream end of city-owned swale adjacent to Hatfield Estates in 2024.

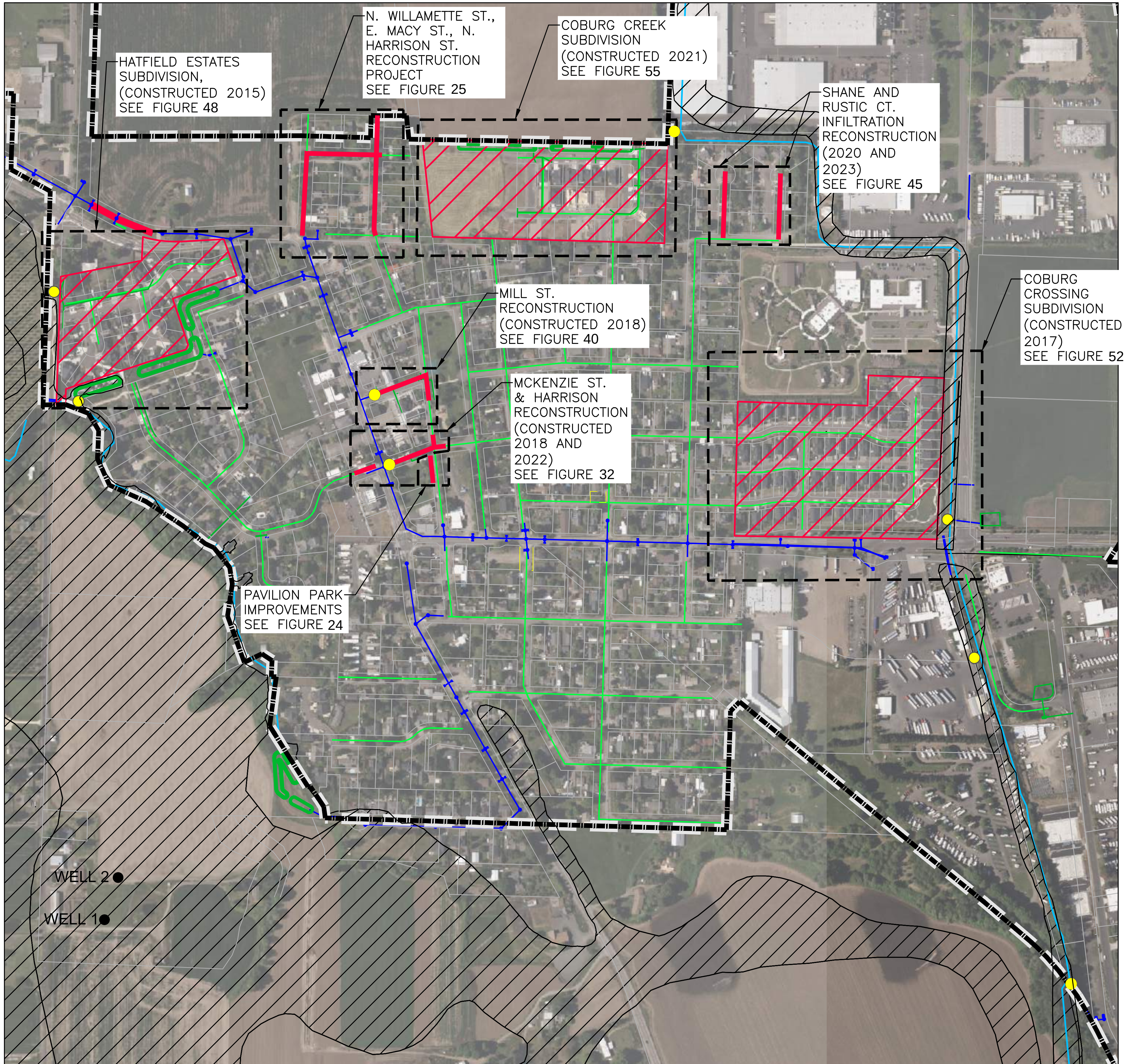
Figure 18: City-operated swale located at the end of Vintage Way in 2024.

Figure 19: Upstream end of city-owned swale located north of Coburg Creek subdivision in 2024.

Figure 20: Downstream end of city-owned swale located north of Coburg Creek subdivision, showing overflow to Muddy Creek tributary in 2024.

Figure 21: Coburg Travel Center of America outfall to Muddy Creek along Coburg Industrial Way in 2024.

Figure 22: Stormwater pond at south end of Coburg Industrial Way.



LEGEND

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
- STREAMS
- DRAINAGE BASINS
- COUNTY STORM DRAIN SYSTEM
- CITY STORM DRAIN SYSTEM
- INFILTRATION FACILITIES
- STORMWATER OVERFLOW
- RECENT IMPROVEMENTS TO CITY INFRASTRUCTURE
- RECENT PRIVATE DEVELOPMENTS
- COUNTY SYSTEM CATCH BASIN
- COUNTY SYSTEM MANHOLE
- CITY SYSTEM CATCH BASIN
- CITY SYSTEM MANHOLE

N

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

PRELIMINARY

NOT FOR CONSTRUCTION

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CITY OF COBURG STORMWATER MASTER PLAN

COBURG, OREGON

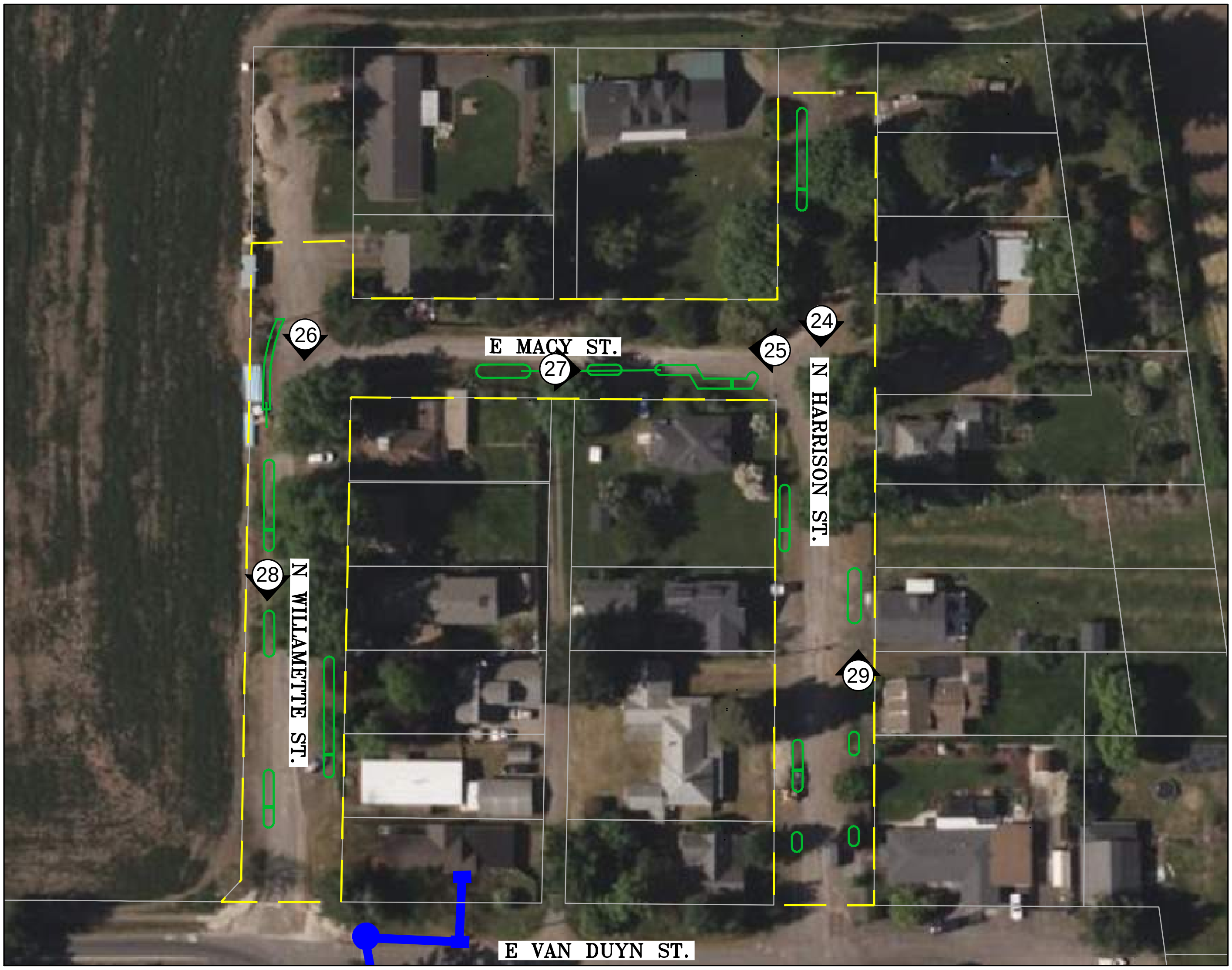
revisions:

COBURG CENTRAL RECENT DEVELOPMENTS

sheet:

FIGURE-23

Figure 24: Construction of Pavilion Park improvements including an infiltration trench began in spring of 2024 and completed in mid-2025.



LEGEND

(yellow dashed line)	IMPROVEMENT EXTENTS
(grey line)	TAX LOT LINES
(green line)	CITY STORM DRAIN PIPES
(green rounded outline)	CITY WATER QUALITY FACILITIES
(marker symbol)	FIGURE XX

N

GRAPHIC SCALE

50

0 (IN FEET) 100

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CITY OF COBURG STORMWATER MASTER PLAN

Willamette, Macy, and Harrison Improvements

FIGURE-25

BEI PROJECT NO. 18-004G

Figure 26: N. Harrison St. pavement deficiencies prior to reconstruction project in 2024.

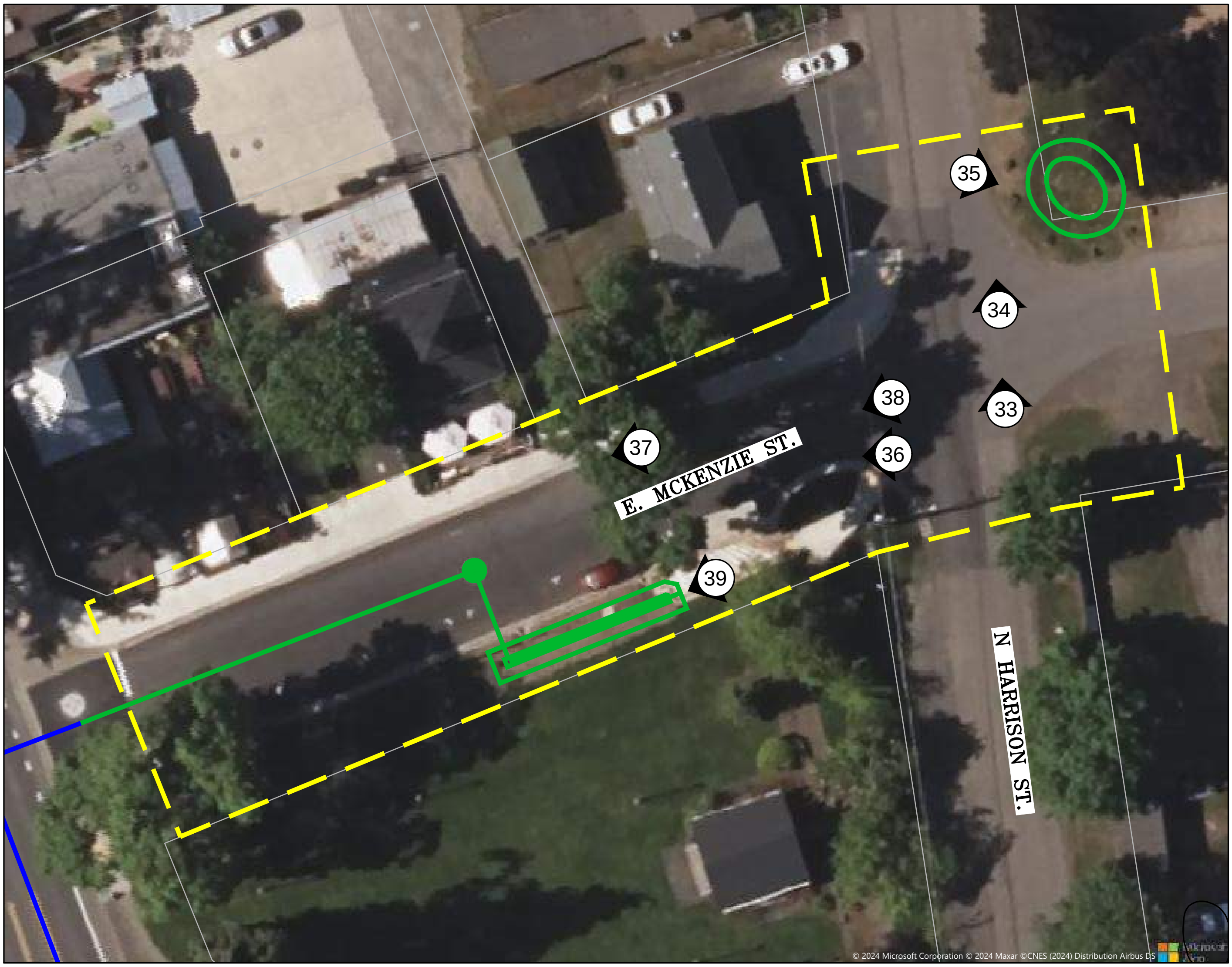
Figure 27: E. Macy St. pavement deficiencies prior to reconstruction project in 2024.

Figure 28: N. Willamette St. pavement deficiencies prior to reconstruction project in 2024.

Figure 29: E. Macy St. completed storm facility at construction completion in 2024.

Figure 30: N. Willamette St. completed storm facility at construction completion in 2024.

Figure 31: N. Harrison St. constructed storm facility at project completion in 2024.



LEGEND

Yellow dashed line	IMPROVEMENT EXTENTS
Gray line	TAX LOT LINES
Blue line	COUNTY STORM DRAIN SYSTEM
Green line	CITY STORM DRAIN PIPES
Green outline	CITY WATER QUALITY FACILITIES
Green dot	CITY SYSTEM MANHOLE
##	FIGURE XX

N

GRAPHIC SCALE

20

0 (IN FEET) 40

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CITY OF COBURG STORMWATER MASTER PLAN

McKenzie St. and Harrison St. Improvements

FIGURE-32

BEI PROJECT NO. 18-004G

Figure 33: McKenzie and Harrison pavement and drainage condition in 2017, prior to the reconstruction project.

Figure 34: McKenzie and Harrison intersection in 2021, after the reconstruction project.

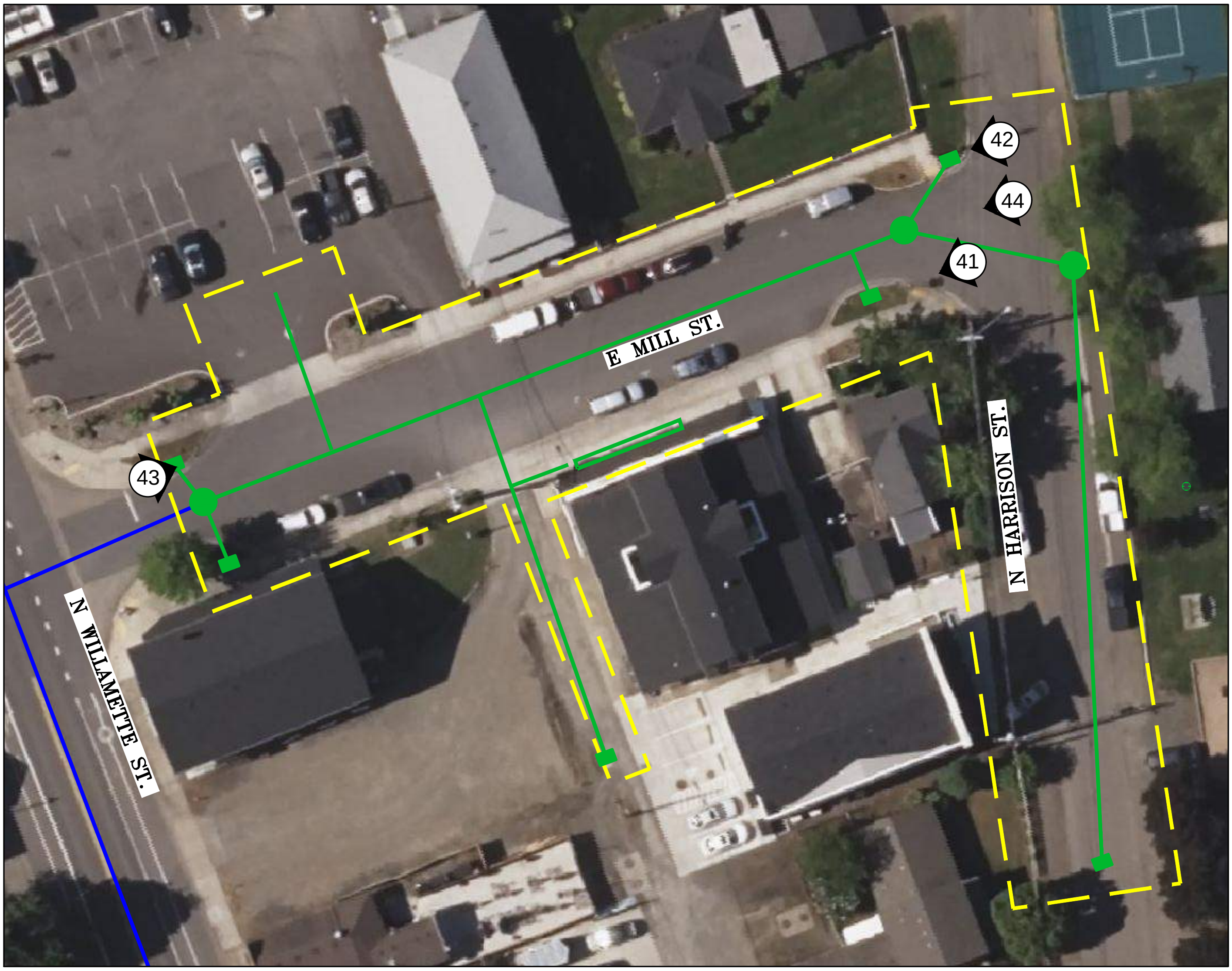
Figure 35: Rain garden at the northeast corner of McKenzie and Harrison, constructed during the intersection reconstruction project. Photo taken in 2021.

Figure 36: McKenzie St. in 2021, prior to the 2022 reconstruction project.

Figure 37: McKenzie St. drainage condition in 2021 prior to the 2022 reconstruction project.

Figure 38: McKenzie St. in 2024, after the reconstruction project.

Figure 39: McKenzie St. rain garden in 2024, included in the 2022 reconstruction project.



LEGEND

IMPROVEMENT EXTENTS

TAX LOT LINES

CITY STORM DRAIN PIPES

CITY WATER QUALITY FACILITIES

CITY SYSTEM CATCH BASIN

CITY SYSTEM MANHOLE

FIGURE XX

N

GRAPHIC SCALE

0 25 50

(IN FEET)

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CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-40**

Mill St. Reconstruction

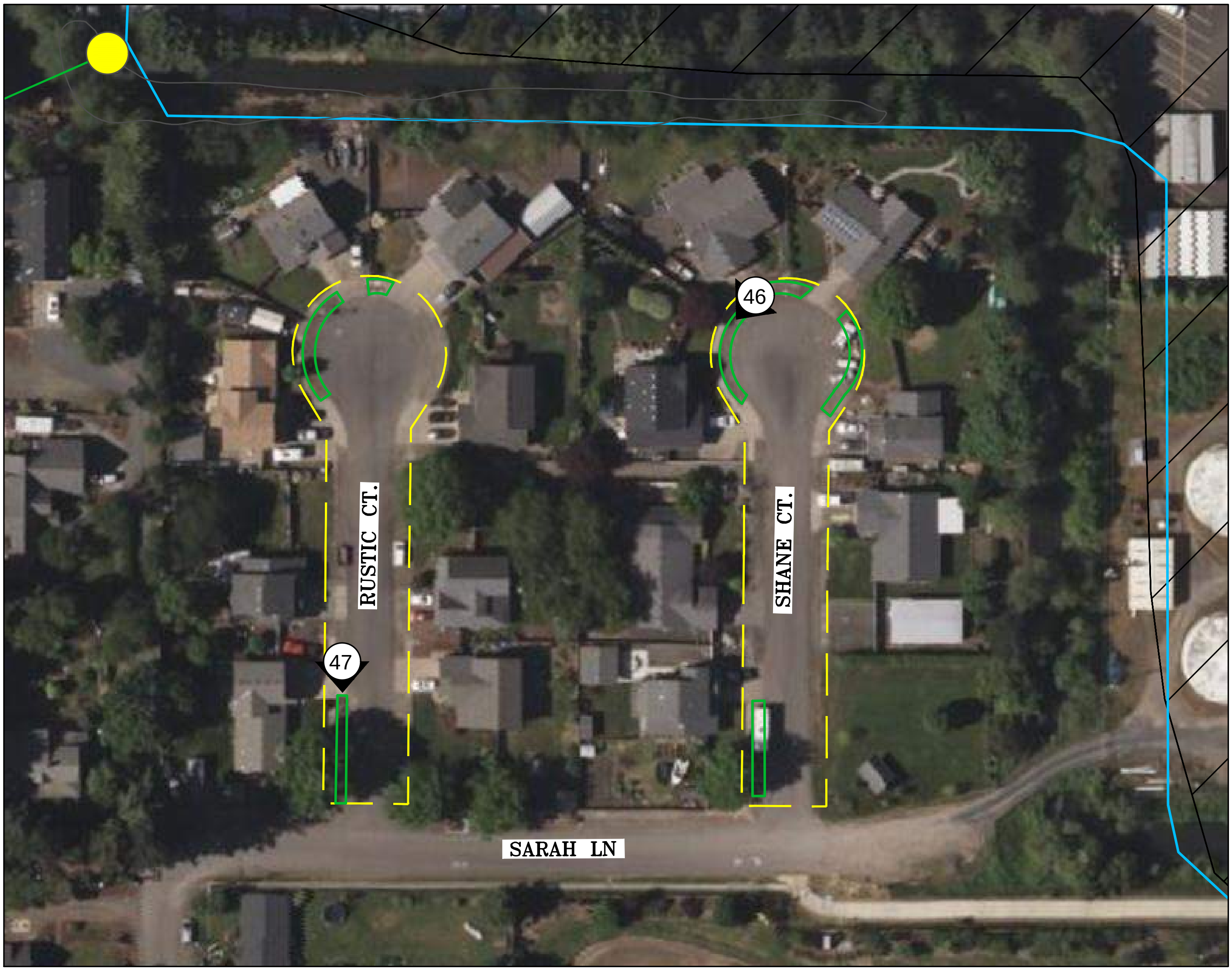
BEI PROJECT NO. 18-004G

Figure 41: South side of Mill St. in 2018, prior to 2018 reconstruction project.

Figure 42: North side of Mill Street in 2018 prior to 2018 reconstruction project.

Figure 43: South side of Mill St. taken in 2018 from the west, prior to 2018 reconstruction project.

Figure 44: Mill Street in 2024, after the reconstruction project.



LEGEND

IMPROVEMENT EXTENTS

TAX LOT LINES

CITY STORM DRAIN PIPES

CITY WATER QUALITY FACILITIES

CITY SYSTEM CATCH BASIN

CITY SYSTEM MANHOLE

FIGURE XX

N

GRAPHIC SCALE

0 25 50

(IN FEET)

Branch ENGINEERING inc Since 1977

CITY OF COBURG STORMWATER MASTER PLAN

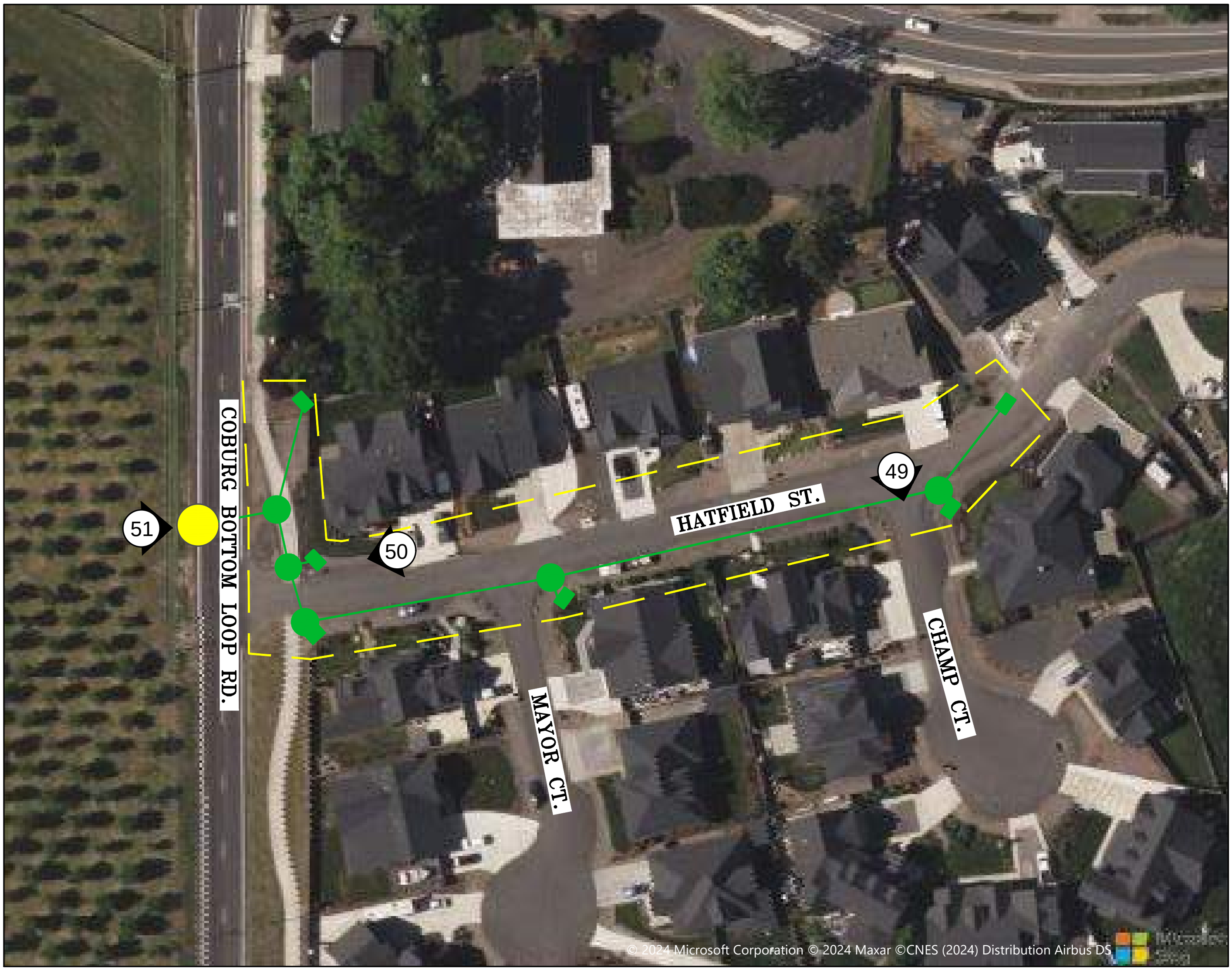
FIGURE-45

Shane and Rustic Ct. Infiltration Reconstruction

BEI PROJECT NO. 18-004G

Figure 46: Reconstructed infiltration trench in 2024 on Shane Ct.

Figure 47: Reconstructed infiltration trench in 2024 on Rustic Ct.



LEGEND

IMPROVEMENT EXTENTS

TAX LOT LINES

CITY STORM DRAIN PIPES

CITY SYSTEM CATCH BASIN

CITY SYSTEM MANHOLE

CITY STORM DRAIN OVERFLOW

FIGURE XX

N

GRAPHIC SCALE

0 50 100

(IN FEET)

Branch ENGINEERING inc Since 1977

CITY OF COBURG STORMWATER MASTER PLAN

FIGURE-48

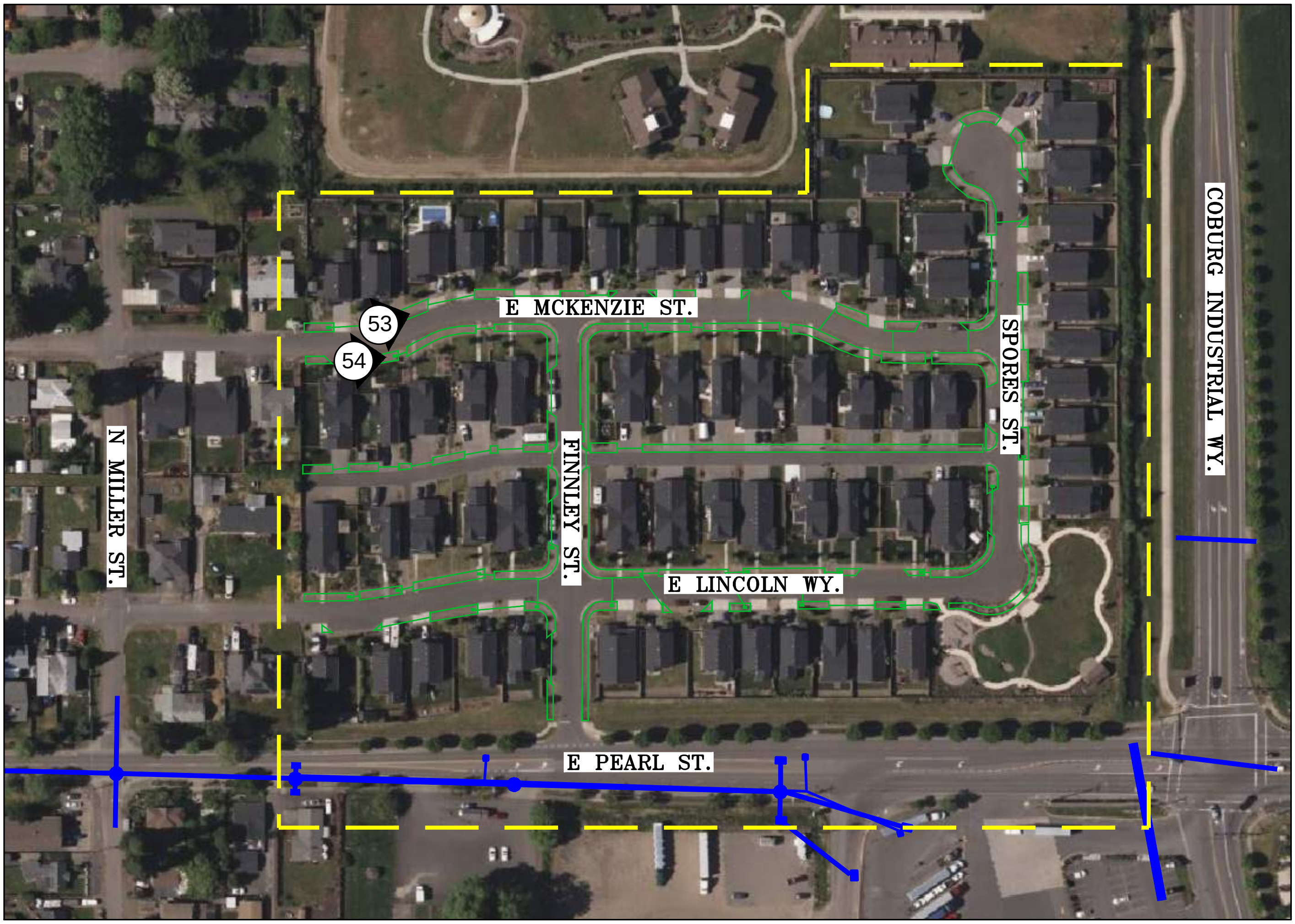
Hatfield Estates Stormwater Infrastructure

BEI PROJECT NO. 18-004G

Figure 49: Hatfield Estates roadside stormwater facilities in 2024.

Figure 50: One of the two overflows at the west end of Hatfield St. in 2024.

Figure 51: Outlet from the Hatfield Estates stormwater system in 2024, draining to the Mill Slough.



LEGEND

IMPROVEMENT EXTENTS

TAX LOT LINES

CITY STORM DRAIN PIPES

COUNTY STORM DRAIN SYSTEM

CITY WATER QUALITY FACILITIES

CITY SYSTEM CATCH BASIN

COUNTY SYSTEM CATCH BASIN

COUNTY SYSTEM MANHOLE

FIGURE XX

N

GRAPHIC SCALE

0 100 200

(IN FEET)

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CITY OF COBURG STORMWATER MASTER PLAN

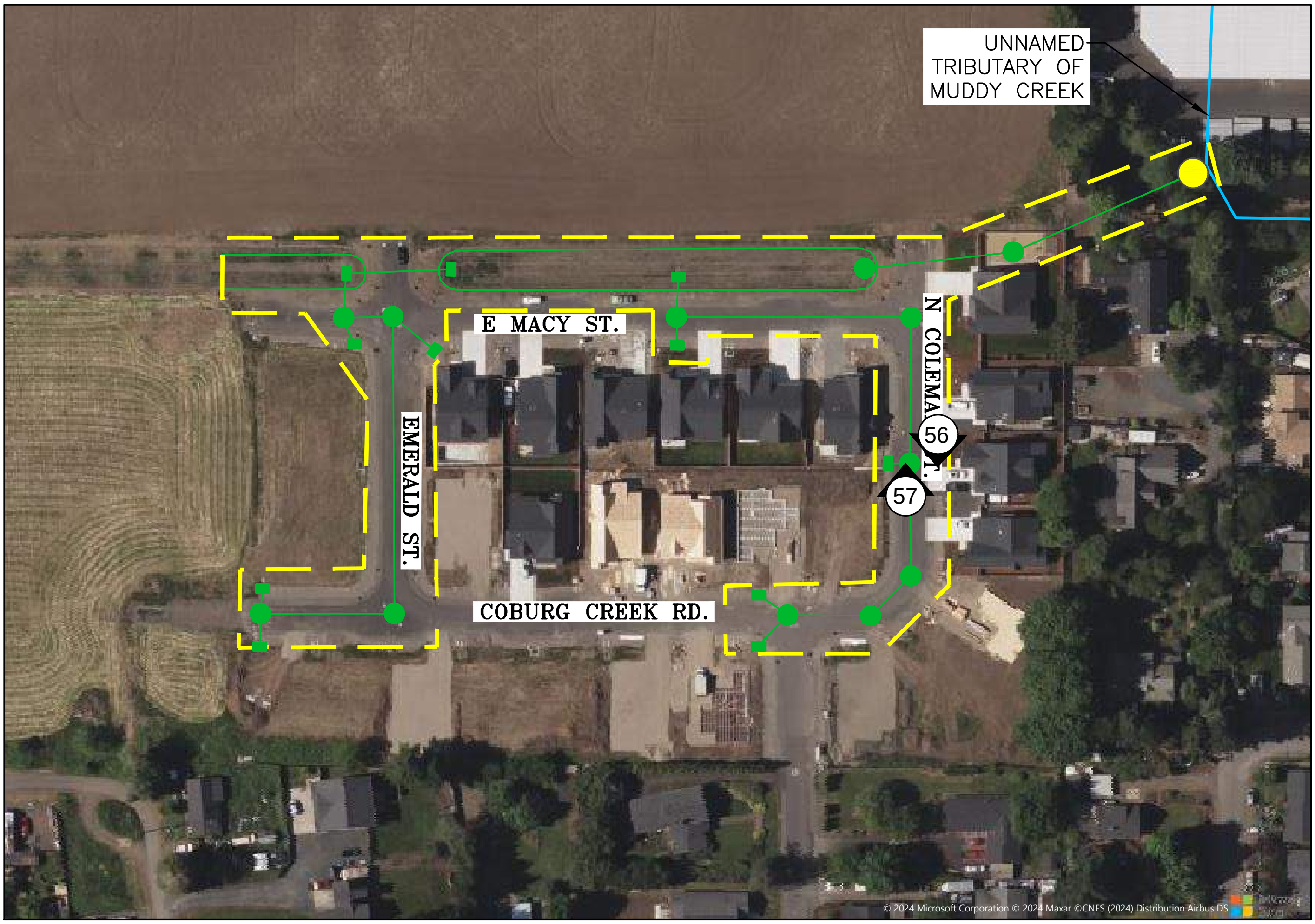
Coburg Crossing Stormwater Infrastructure

FIGURE-52

BEI PROJECT NO. 18-004G

Figure 53: Coburg Crossing roadside stormwater facilities in 2024.

Figure 54: Coburg Crossing roadside infiltration trench in 2024.



LEGEND

IMPROVEMENT EXTENTS

TAX LOT LINES

CITY STORM DRAIN PIPES

COUNTY STORM DRAIN SYSTEM

CITY WATER QUALITY FACILITIES

CITY SYSTEM CATCH BASIN

CITY SYSTEM MANHOLE

CITY STORM DRAIN OVERFLOW

FIGURE XX

N

GRAPHIC SCALE

75

0 (IN FEET) 150

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CITY OF COBURG STORMWATER MASTER PLAN

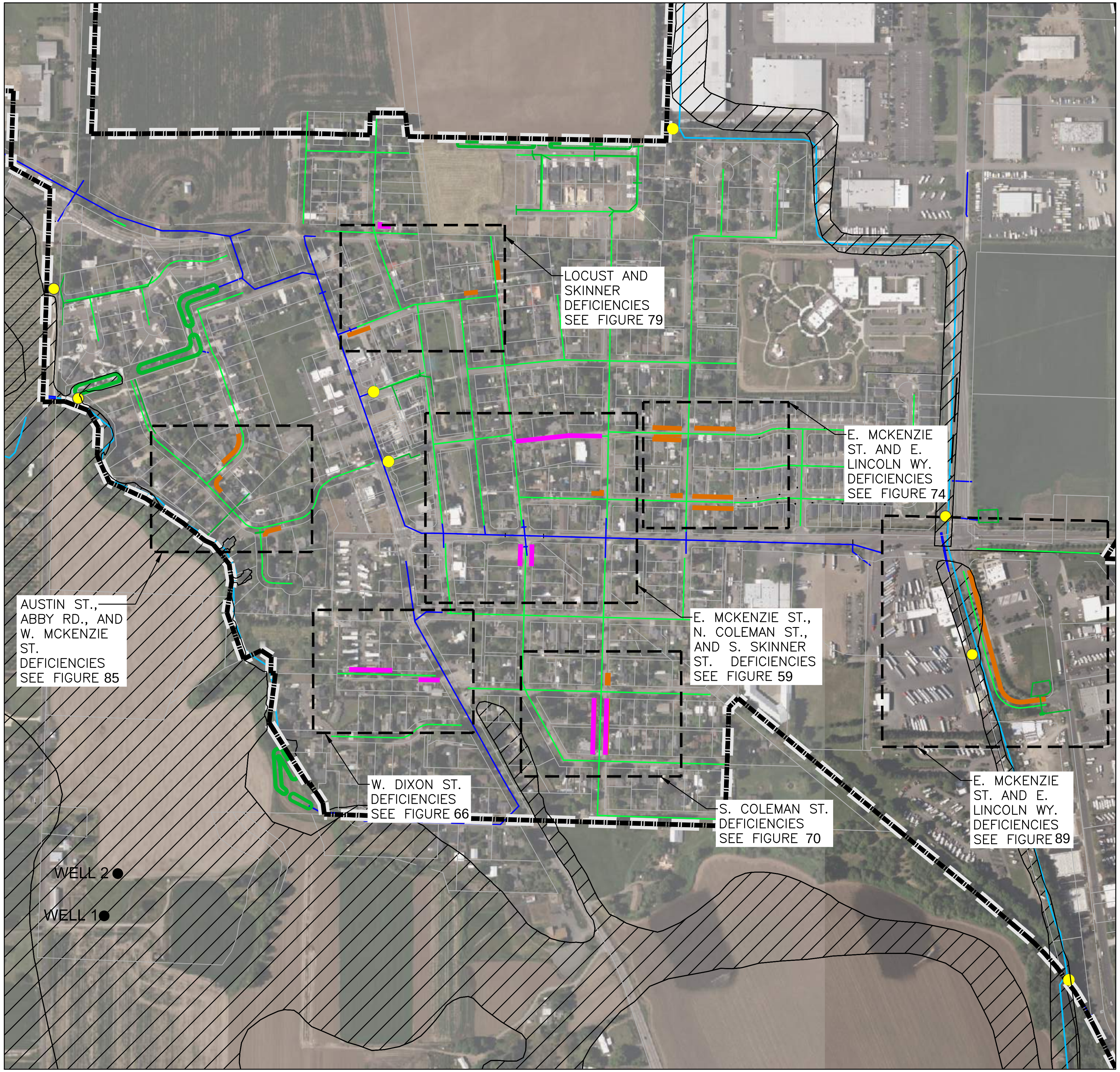
FIGURE-55

Coburg Creek Stormwater Infrastructure

BEI PROJECT NO. 18-004G

Figure 56: Coburg Creek roadside stormwater facilities along Coburg Creek Rd. in 2024.

Figure 57: Coburg Creek roadside stormwater facilities on N. Coleman St. in 2024.



LEGEND

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
- STREAMS
- DRAINAGE BASINS
- COUNTY STORM DRAIN SYSTEM
- CITY STORM DRAIN SYSTEM
- INFILTRATION FACILITIES
- STORMWATER OVERFLOW
- STORM FACILITY DEFICIENCY
- GRADING/PAVING DEFICIENCY
- COUNTY SYSTEM CATCH BASIN
- COUNTY SYSTEM MANHOLE
- CITY SYSTEM CATCH BASIN
- CITY SYSTEM MANHOLE

N

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

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CITY OF COBURG STORMWATER MASTER PLAN

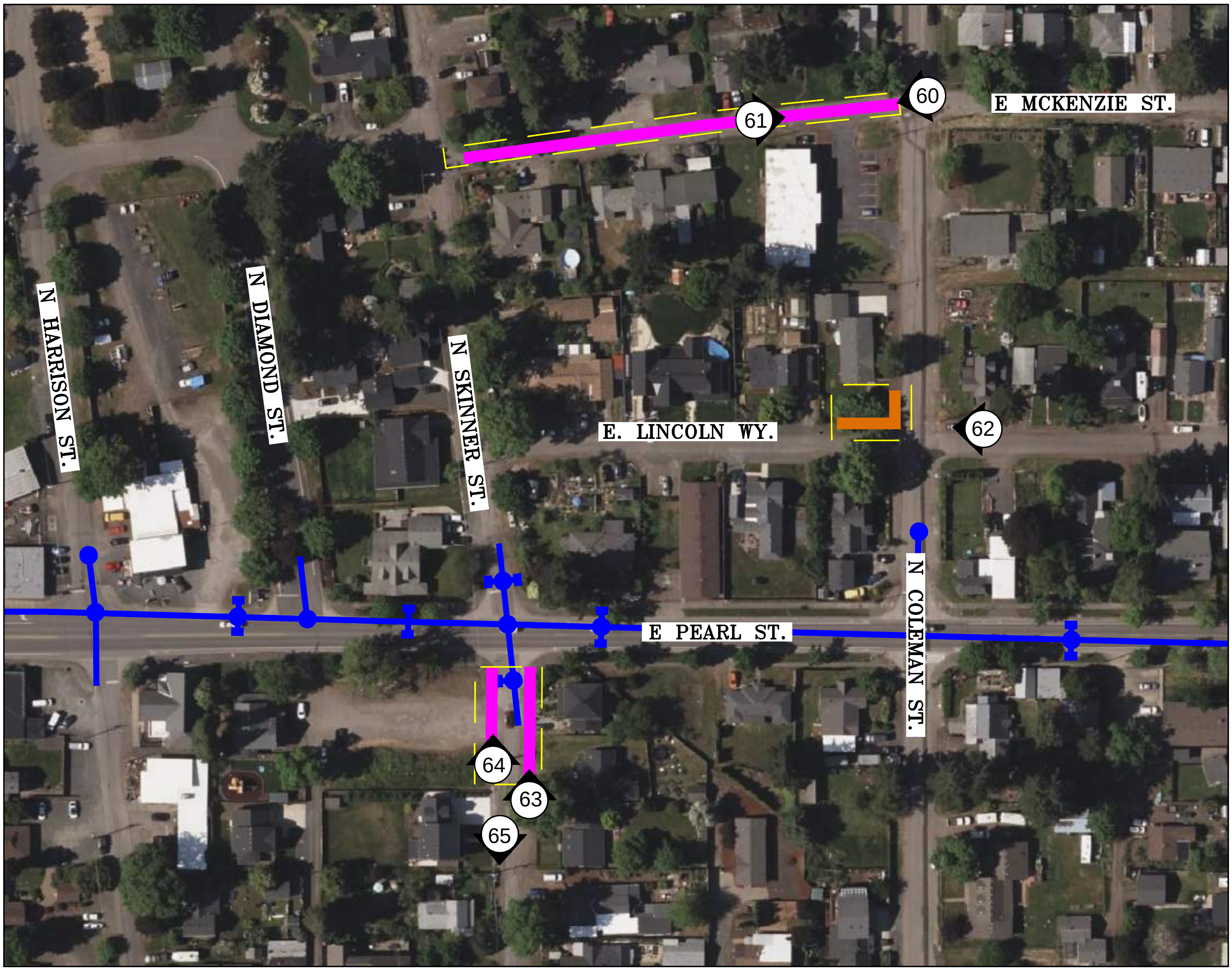
COBURG, OREGON

revisions:

COBURG CENTRAL STORM DRAIN PROBLEM AREAS

sheet:

FIGURE-58



LEGEND

TAX LOT LINES

IMPROVEMENT EXTENTS

STORM FACILITY DEFICIENCY

GRADING/PAVING DEFICIENCY

COUNTY STORM DRAIN SYSTEM

COUNTY SYSTEM CATCH BASIN

COUNTY SYSTEM MANHOLE

FIGURE XX

N

GRAPHIC SCALE

0 75 150 (IN FEET)

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CITY OF COBURG STORMWATER MASTER PLAN

FIGURE-59

McKenzie, Skinner, and Coleman Deficiencies

BEI PROJECT NO. 18-004G

Figure 60: E. McKenzie St. from N. Coleman St. looking to the west in 2024.

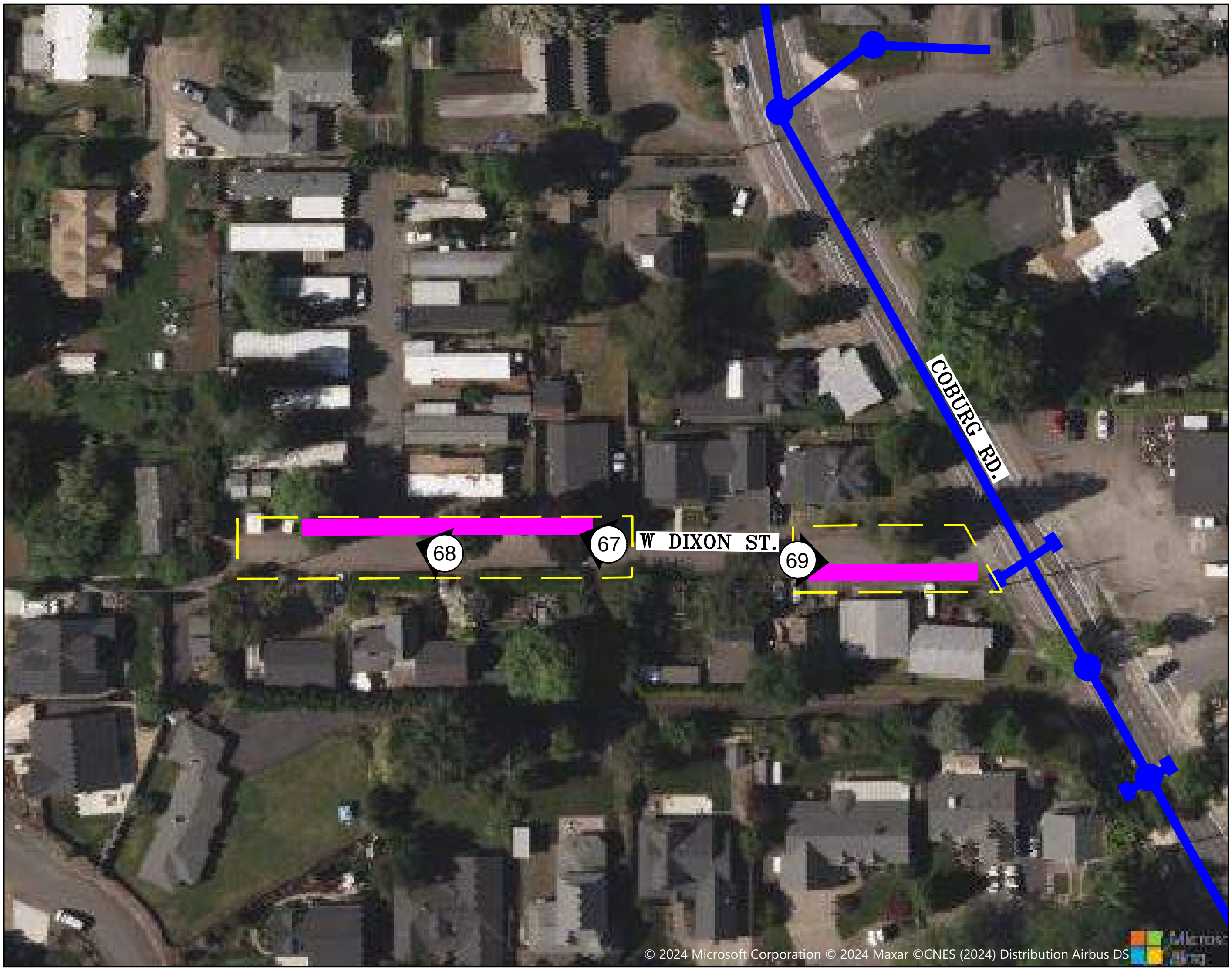
Figure 61: E. McKenzie St. looking west to N. Coleman St. in 2024.

Figure 62: E. Lincoln St. from N. Coleman St. looking to the west in 2024.

Figure 63: S. Skinner St. pavement condition, looking north at E. Pearl St. in 2024.

Figure 64: S. Skinner St. looking north at E. Pearl St. in 2024.

Figure 65: S. Skinner St. looking south from E. Pearl St. in 2024.



LEGEND

TAX LOT LINES

IMPROVEMENT EXTENTS

GRADING/PAVING DEFICIENCY

COUNTY STORM DRAIN SYSTEM

COUNTY SYSTEM CATCH BASIN

COUNTY SYSTEM MANHOLE

FIGURE XX

N

GRAPHIC SCALE

50

0 (IN FEET) 100

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CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-66**

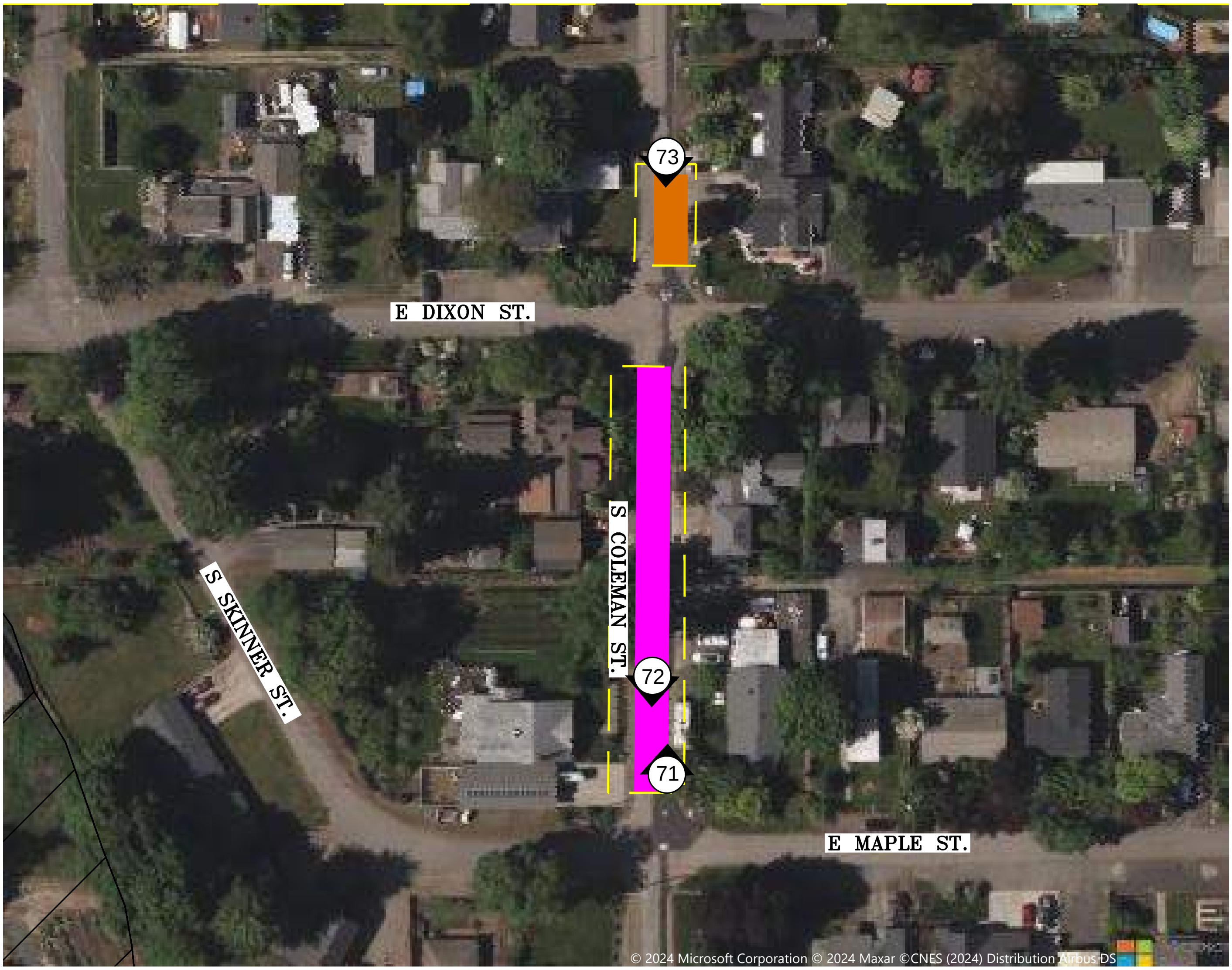
W. Dixon St. Deficiencies

BEI PROJECT NO. 18-004G

Figure 67: W. Dixon St. at Pioneer Mobile Home Park pavement in 2024.

Figure 68: Ponding water at Pioneer Mobile Home Park in 2024.

Figure 69: W. Dixon St. looking east at N. Willamette St. in 2024.



LEGEND

TAX LOT LINES

IMPROVEMENT EXTENTS

STORM FACILITY DEFICIENCY

GRADING/PAVING DEFICIENCY

FIGURE XX

N

GRAPHIC SCALE
50
0 (IN FEET) 100

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CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-70**

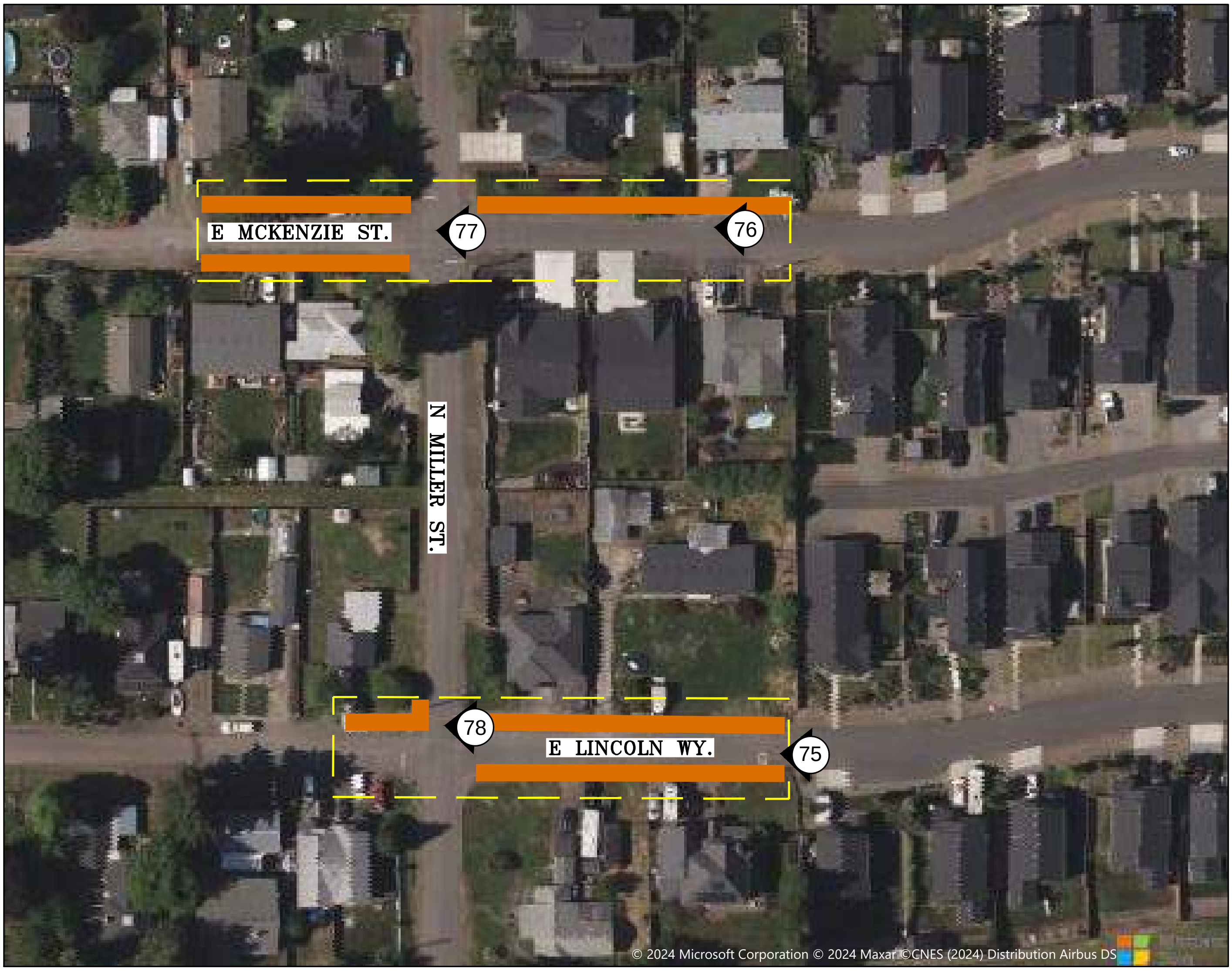
S. Coleman St. Deficiencies

BEI PROJECT NO. 18-004G

Figure 71: S. Coleman St. and E. Maple St. looking north in 2024.

Figure 72: S. Coleman St. north of Maple looking south in 2024.

Figure 73: S. Coleman St. and E. Dixon St. looking south in 2024.



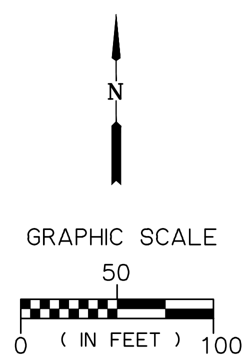
LEGEND

TAX LOT LINES

IMPROVEMENT EXTENTS

STORM FACILITY DEFICIENCY

FIGURE XX



CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-74**

Lincoln and McKenzie Deficiencies

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BEI PROJECT NO. 18-004G

Figure 75: E. Lincoln Wy looking west toward N. Miller St. in 2024.

Figure 76: E. McKenzie St. looking west toward N. Miller St. in 2024.

Figure 77: E. McKenzie St. and Miller St. looking west in 2024.

Figure 78: E. Lincoln Wy and N. Miller St. ponding, looking to the west in 2024.

LEGEND

TAX LOT LINES

IMPROVEMENT EXTENTS

STORM FACILITY DEFICIENCY

FIGURE XX

N

GRAPHIC SCALE

0 50 100

(IN FEET)

CITY OF COBURG STORMWATER MASTER PLAN

FIGURE-79

Locust and Skinner Deficiencies

BEI PROJECT NO. 18-004G

Figure 80: E. Locust St. looking west at N. Diamond St. in 2024.

Figure 81: E. Locust St. and N. Skinner St. looking North along N. Skinner St. in 2024.

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CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-80&81**

Locust and Skinner Deficiencies

BEI PROJECT NO. 18-004G

Figure 82: E. Locust St. looking at the Dari Mart in 2024.

Figure 83: South side of E. Locust St., east of N. Willamette St. in 2024.

Figure 84: North side of E. Locust St., east of N. Willamette St. in 2024.

LEGEND

TAX LOT LINES

IMPROVEMENT EXTENTS

STORM FACILITY DEFICIENCY

FIGURE XX

N

GRAPHIC SCALE
50
0 (IN FEET) 100

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CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-85**

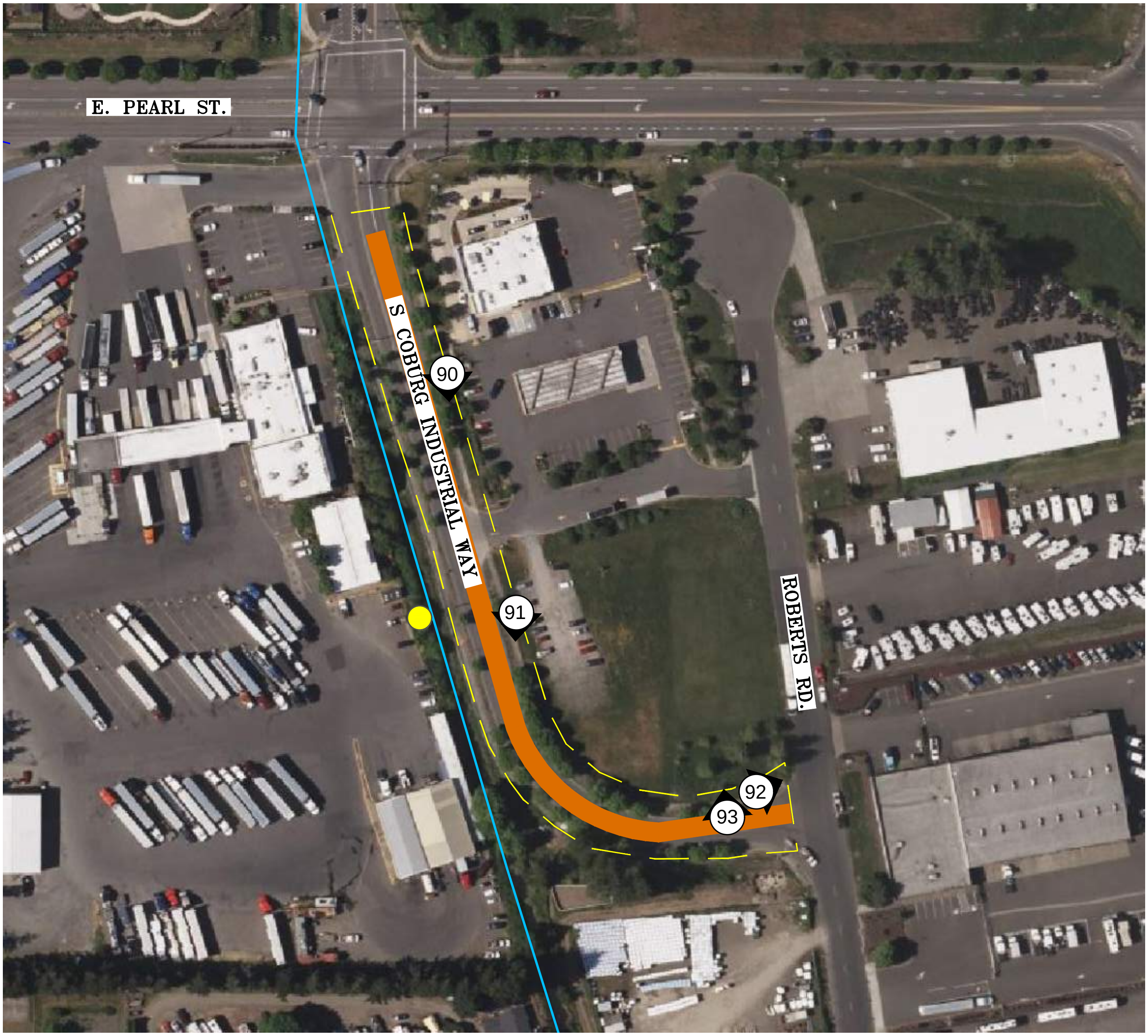
Austin St. **and Abby Rd. Drainage Deficiencies**

BEI PROJECT NO. 18-004G

Figure 86: Abby Rd. and W. McKenzie St. standing water in 2024.

Figure 87: Austin St. infiltration deficiency in 2024.

Figure 88: SE Corner of Austin Rd. and Abby Rd. infiltration deficiency in 2024.



LEGEND

- TAX LOT LINES
- IMPROVEMENT EXTENTS
- STORM FACILITY DEFICIENCY
- GRADING/PAVING DEFICIENCY
- CITY STORM DRAIN OVERFLOW
- FIGURE XX

N

GRAPHIC SCALE
0 50 100
(IN FEET)

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CITY OF COBURG STORMWATER MASTER PLAN **FIGURE-89**

Coburg Industrial Way Stormwater Facilities

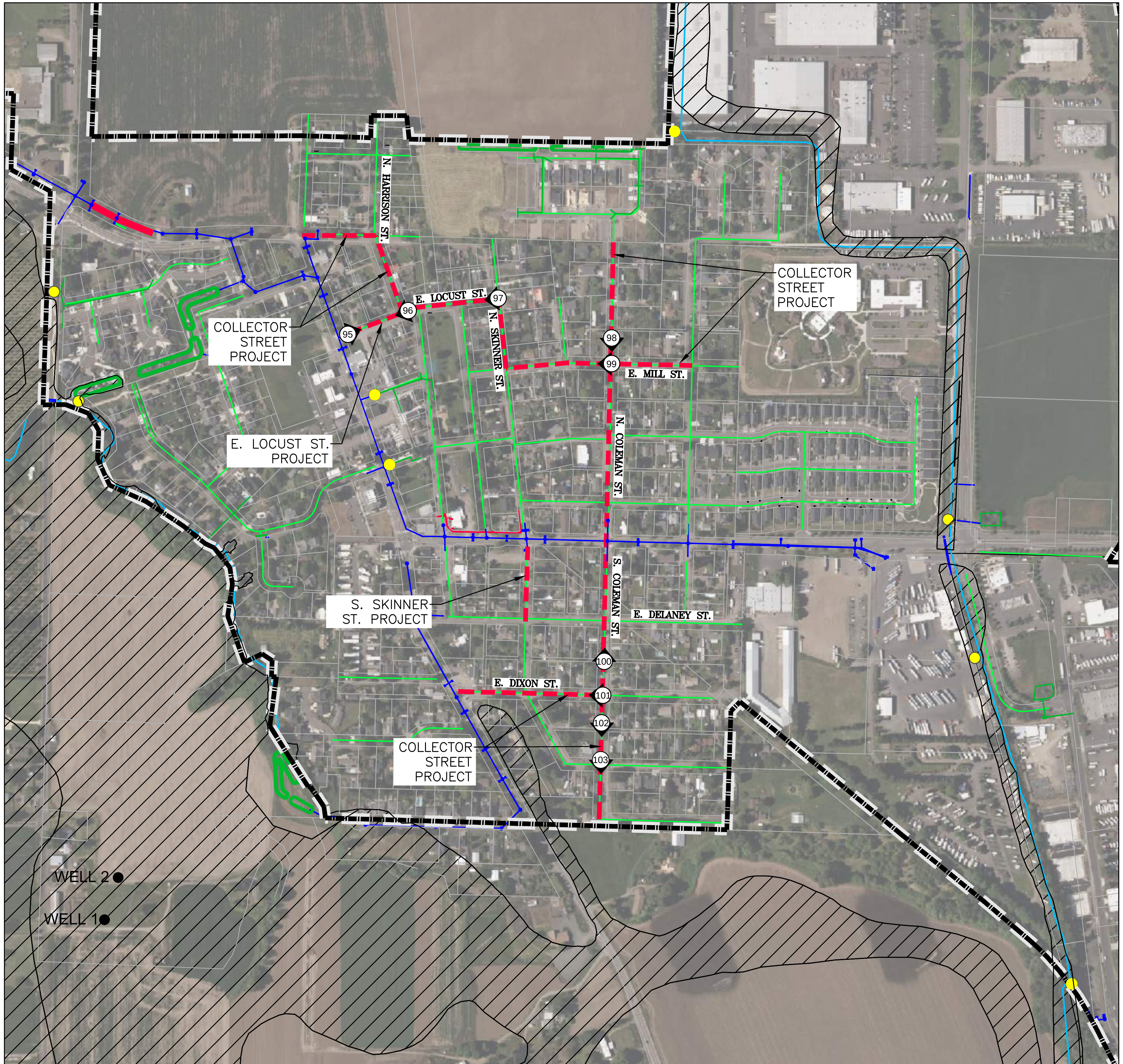
BEI PROJECT NO. 18-004G

Figure 90: Coburg Industrial Way curb inlet in 2024.

Figure 91: Coburg Industrial Way curb infiltration swale in 2024.

Figure 92: Coburg Industrial Way overgrown culvert in 2024.

Figure 93: Coburg Industrial Way and Roberts Rd. retention basin inlet in 2024.



LEGEND

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- FEMA SPECIAL FLOOD HAZARD AREA IN ZONE A
- STREAMS
- DRAINAGE BASINS
- COUNTY STORM DRAIN SYSTEM
- CITY STORM DRAIN SYSTEM
- INFILTRATION FACILITIES
- STORMWATER OVERFLOW
- FUTURE CITY INFRASTRUCTURE PROJECTS
- COUNTY SYSTEM CATCH BASIN
- COUNTY SYSTEM MANHOLE
- CITY SYSTEM CATCH BASIN
- CITY SYSTEM MANHOLE
- FIGURE XX

N

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

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CITY OF COBURG STORMWATER MASTER PLAN

COBURG, OREGON

revisions:

date: JAN. 20, 2021
drawn by: .
designer: .
project no: 21-xxx

COBURG CENTRAL FUTURE DEVELOPMENTS

sheet:

FIGURE-94

Figure 95: E. Locust St. to the east from Willamette in 2024.

Figure 96: E. Locust St. to the west from N. Harrison St. in 2024.

Figure 97: E. Locust St. from N. Skinner to the west in 2024.

Figure 98: N. Coleman St. from E. Mill St. to the south in 2024.

Figure 99: E. Mill St. from N. Coleman St. to the west in 2024.

Figure 100: N. Coleman St. from E. Dixon St. to the north in 2024.

Figure 101: E. Dixon St. from N. Coleman St. to the west in 2024.

Figure 102: N. Coleman St. from E. Dixon St. to the south in 2024.


Figure 103: S. Coleman St. from E. Maple St. looking south in 2024.

APPENDIX B: NRCS WEBSOILSURVEY

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Lane County Area, Oregon

August 23, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

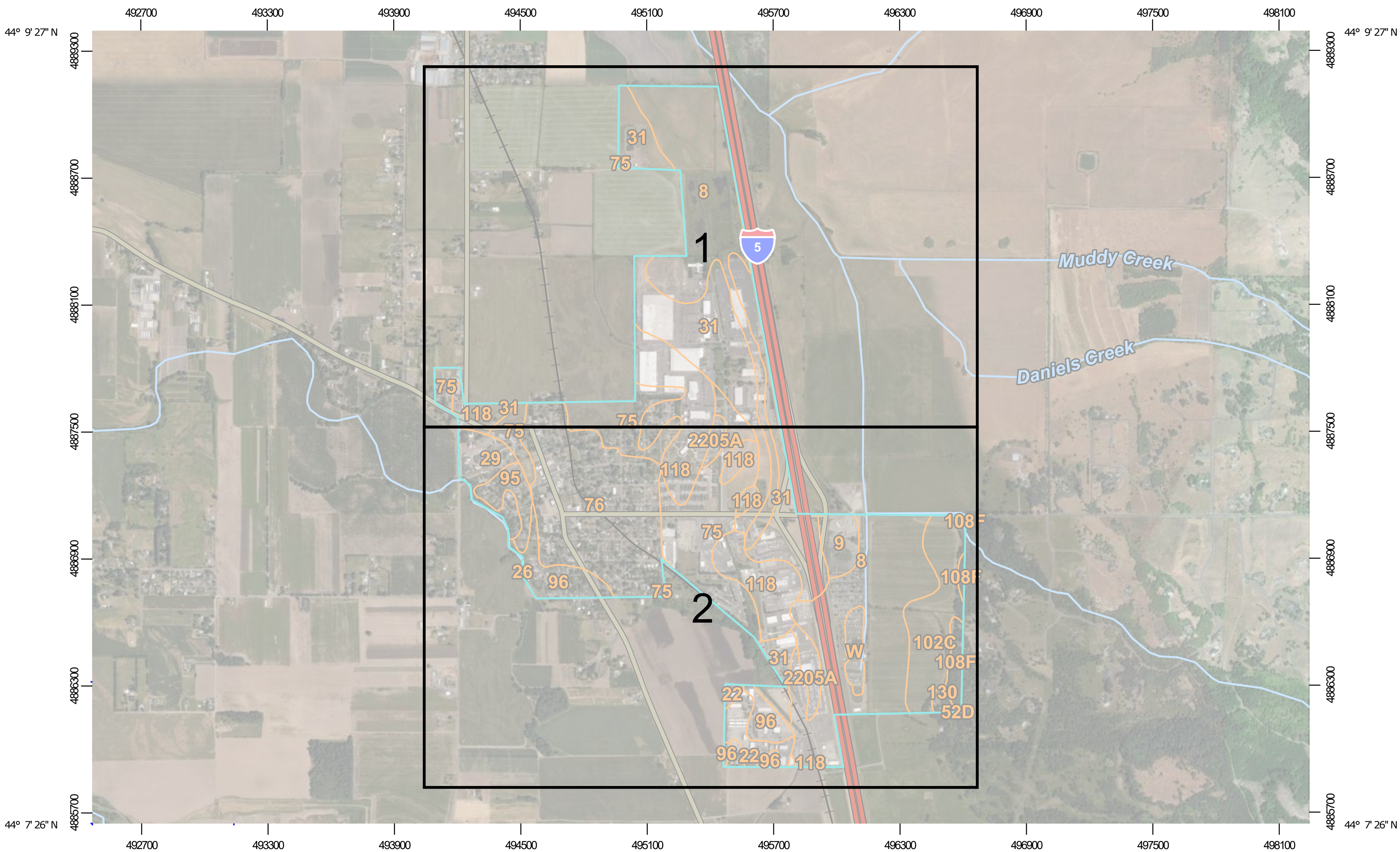
A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Soil Map—Lane County Area, Oregon
Index Sheet



Map Scale: 1:26,400 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 350, 700, 1400, 2100

Feet: 0, 1000, 2000, 4000, 6000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Map Scale: 1:12,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

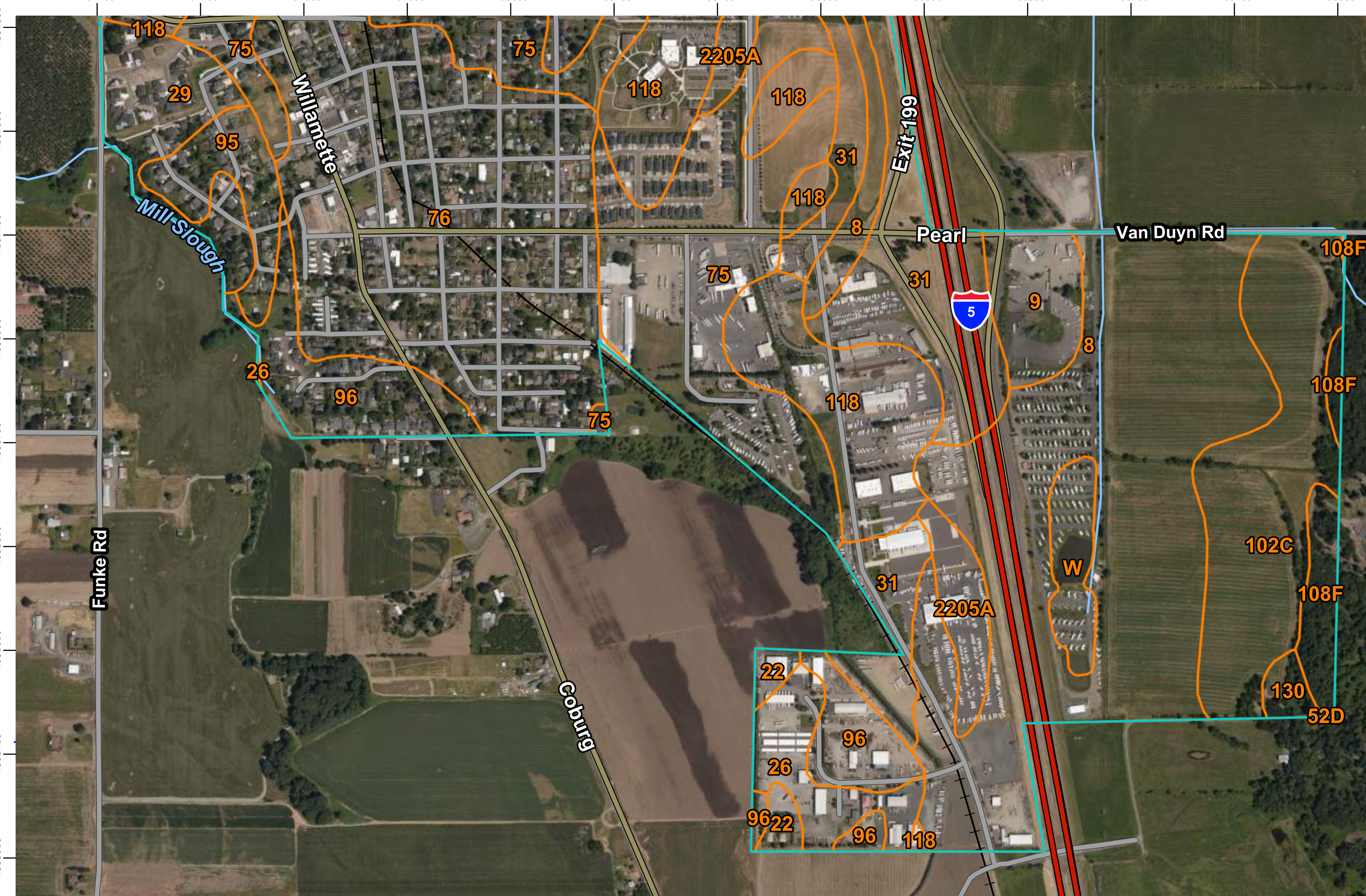
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

1

Map Sheet Location

Soil Map—Lane County Area, Oregon
Map sheet 2 of 2

Joins sheet 1



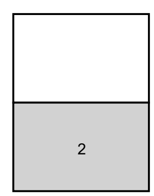
Map Scale: 1:12,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

Map projection: Web Mercator   Corner coordinates: WGS84   Edge tics: UTM Zone 10N WGS84



Map Sheet Location

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lane County Area, Oregon
Survey Area Data: Version 16, Sep 10, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 17, 2015—Jun 19, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Bashaw clay	202.6	26.5%
9	Bashaw-Urban land complex	11.9	1.6%
22	Camas gravelly sandy loam, occasionally flooded	3.7	0.5%
26	Chehalis silty clay loam, occasionally flooded	11.8	1.5%
29	Cloquato silt loam	17.6	2.3%
31	Coburg silty clay loam	123.5	16.1%
52D	Hazelair silty clay loam, 7 to 20 percent slopes	0.0	0.0%
75	Malabon silty clay loam	95.2	12.4%
76	Malabon-Urban land complex	105.3	13.8%
95	Newberg fine sandy loam	11.4	1.5%
96	Newberg loam	27.6	3.6%
102C	Panther silty clay loam, 2 to 12 percent slopes	40.9	5.3%
108F	Philomath cobbly silty clay, 12 to 45 percent slopes	7.9	1.0%
118	Salem gravelly silt loam	84.6	11.1%
130	Waldo silty clay loam	2.5	0.3%
2205A	Conser silty clay loam, 0 to 3 percent slopes	11.2	1.5%
W	Water	7.7	1.0%
Totals for Area of Interest		**765.5**	**100.0%**

Lane County Area, Oregon

8—Bashaw clay

Map Unit Setting

National map unit symbol: 2391
Elevation: 100 to 1,300 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bashaw and similar soils: 85 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bashaw

Setting

Landform: Flood plains, terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 41 inches: clay
H2 - 41 to 63 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R002XC005OR - High Flood Plain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Conser

Percent of map unit: 3 percent
Landform: Stream terraces
Hydric soil rating: Yes

Courtney

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: Yes

Awbrig

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: Yes

Natroy

Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

9—Bashaw-Urban land complex

Map Unit Setting

National map unit symbol: 239l
Elevation: 100 to 1,300 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bashaw and similar soils: 55 percent
Urban land: 35 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bashaw

Setting

Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 41 inches: clay
H2 - 41 to 63 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 6 inches

Frequency of flooding: NoneOccasional
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R002XC005OR - High Flood Plain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Courtney

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

Natroy

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: Yes

Conser

Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: Yes

Awbrig

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

22—Camas gravelly sandy loam, occasionally flooded

Map Unit Setting

National map unit symbol: 235x
Elevation: 290 to 850 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Camas, occasionally flooded, and similar soils: 85 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Camas, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium

Typical profile

H1 - 0 to 14 inches: gravelly sandy loam
H2 - 14 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 9 to 17 inches to strongly contrasting textural stratification
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Ecological site: F002XC001OR - Riparian Group
Hydric soil rating: No

Minor Components

Fluvents

Percent of map unit: 4 percent
Landform: Flood plains
Hydric soil rating: Yes

Riverwash

Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

26—Chehalis silty clay loam, occasionally flooded

Map Unit Setting

National map unit symbol: 2361
Elevation: 290 to 1,000 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chehalis, occasionally flooded, and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chehalis, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed sources

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 55 inches: silty clay loam
H3 - 55 to 70 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F002XC003OR - Low Flood Plain Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)
Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

29—Cloquato silt loam

Map Unit Setting

National map unit symbol: 2365
Elevation: 290 to 800 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cloquato and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cloquato

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed sources

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 50 inches: silt loam
H3 - 50 to 60 inches: stratified sand to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F002XC003OR - Low Flood Plain Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)
Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

31—Coburg silty clay loam

Map Unit Setting

National map unit symbol: 2368
Elevation: 100 to 1,300 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Coburg and similar soils: 85 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coburg

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium over clayey alluvium

Typical profile

H1 - 0 to 18 inches: silty clay loam
H2 - 18 to 53 inches: silty clay
H3 - 53 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: R002XC006OR - Stream Terrace Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Conser

Percent of map unit: 4 percent
Landform: Stream terraces
Hydric soil rating: Yes

43C—Dixonville-Philomath-Hazelair complex, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: 236x
Elevation: 200 to 2,000 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dixonville and similar soils: 35 percent
Philomath and similar soils: 30 percent
Hazelair and similar soils: 20 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dixonville

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, toeslope
Landform position (three-dimensional): Base slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basalt

Typical profile

H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 26 inches: silty clay
H3 - 26 to 36 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R002XC011OR - Low Hill Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)
Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

Description of Philomath

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, toeslope
Landform position (three-dimensional): Base slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basic igneous rock

Typical profile

H1 - 0 to 6 inches: cobbly silty clay
H2 - 6 to 14 inches: cobbly silty clay
H3 - 14 to 24 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 12 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R002XC009OR - Bald Group
Hydric soil rating: No

Description of Hazelair

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, toeslope
Landform position (three-dimensional): Base slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 11 inches: silty clay loam
H2 - 11 to 15 inches: silty clay
H3 - 15 to 36 inches: clay
H4 - 36 to 46 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R002XC010OR - Claypan Low Hill Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Panther

Percent of map unit: 4 percent
Landform: Swales
Hydric soil rating: Yes

43E—Dixonville-Philomath-Hazelair complex, 12 to 35 percent slopes

Map Unit Setting

National map unit symbol: 236y
Elevation: 400 to 1,800 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dixonville and similar soils: 35 percent
Philomath and similar soils: 30 percent
Hazelair and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dixonville

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, toeslope
Landform position (three-dimensional): Base slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basalt

Typical profile

H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 26 inches: silty clay
H3 - 26 to 36 inches: weathered bedrock

Properties and qualities

Slope: 12 to 35 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R002XC011OR - Low Hill Group
Forage suitability group: Well Drained > 15% Slopes (G002XY001OR)
Other vegetative classification: Well Drained > 15% Slopes (G002XY001OR)
Hydric soil rating: No

Description of Philomath

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, toeslope
Landform position (three-dimensional): Base slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basic igneous rock

Typical profile

H1 - 0 to 6 inches: cobbly silty clay
H2 - 6 to 14 inches: cobbly silty clay
H3 - 14 to 24 inches: weathered bedrock

Properties and qualities

Slope: 12 to 35 percent
Depth to restrictive feature: 12 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R002XC009OR - Bald Group
Hydric soil rating: No

Description of Hazelair

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, toeslope
Landform position (three-dimensional): Base slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 11 inches: silty clay loam
H2 - 11 to 15 inches: silty clay
H3 - 15 to 36 inches: clay
H4 - 36 to 46 inches: weathered bedrock

Properties and qualities

Slope: 12 to 35 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R002XC010OR - Claypan Low Hill Group
Hydric soil rating: No

52B—Hazelair silty clay loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 237b
Elevation: 200 to 2,000 feet

Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hazelair and similar soils: 85 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hazelair

Setting

Landform: Mountains, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 11 inches: silty clay loam
H2 - 11 to 15 inches: silty clay
H3 - 15 to 36 inches: clay
H4 - 36 to 46 inches: weathered bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R002XC010OR - Claypan Low Hill Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Panther

Percent of map unit: 4 percent
Landform: Swales
Hydric soil rating: Yes

52D—Hazelair silty clay loam, 7 to 20 percent slopes

Map Unit Setting

National map unit symbol: 237c
Elevation: 200 to 2,000 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hazelair and similar soils: 85 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hazelair

Setting

Landform: Mountains, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 11 inches: silty clay loam
H2 - 11 to 15 inches: silty clay
H3 - 15 to 36 inches: clay
H4 - 36 to 46 inches: weathered bedrock

Properties and qualities

Slope: 7 to 20 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R002XC010OR - Claypan Low Hill Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)

Hydric soil rating: No

Minor Components

Panther

Percent of map unit: 3 percent
Landform: Swales
Hydric soil rating: Yes

75—Malabon silty clay loam

Map Unit Setting

National map unit symbol: 238s
Elevation: 300 to 650 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Malabon and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Malabon

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium

Typical profile

H1 - 0 to 12 inches: silty clay loam
H2 - 12 to 42 inches: silty clay
H3 - 42 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1

Hydrologic Soil Group: C
Ecological site: R002XC006OR - Stream Terrace Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)
Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

76—Malabon-Urban land complex

Map Unit Setting

National map unit symbol: 238t
Elevation: 300 to 650 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Malabon and similar soils: 50 percent
Urban land: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Malabon

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium

Typical profile

H1 - 0 to 12 inches: silty clay loam
H2 - 12 to 42 inches: silty clay
H3 - 42 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C
Ecological site: R002XC006OR - Stream Terrace Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)

Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

95—Newberg fine sandy loam

Map Unit Setting

National map unit symbol: 239v
Elevation: 290 to 850 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Newberg and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newberg

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent silty alluvium

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: A
Ecological site: F002XC001OR - Riparian Group
Hydric soil rating: No

96—Newberg loam

Map Unit Setting

National map unit symbol: 239w
Elevation: 290 to 3,000 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Newberg and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newberg

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent silty alluvium

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F002XC001OR - Riparian Group
Hydric soil rating: No

102C—Panther silty clay loam, 2 to 12 percent slopes

Map Unit Setting

National map unit symbol: 233b
Elevation: 90 to 1,200 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Panther and similar soils: 80 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panther

Setting

Landform: Swales on hills, benches on hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basic igneous and sedimentary rock

Typical profile

H1 - 0 to 10 inches: silty clay loam
H2 - 10 to 42 inches: clay
H3 - 42 to 52 inches: weathered bedrock

Properties and qualities

Slope: 2 to 12 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: R002XC010OR - Claypan Low Hill Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Bashaw

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

108C—Philomath cobbly silty clay, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: 233k
Elevation: 200 to 2,000 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Philomath and similar soils: 85 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Philomath

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basic igneous rock

Typical profile

H1 - 0 to 6 inches: cobbly silty clay
H2 - 6 to 14 inches: cobbly silty clay
H3 - 14 to 24 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 12 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R002XC009OR - Bald Group
Hydric soil rating: No

Minor Components

Panther

Percent of map unit: 4 percent
Landform: Swales
Hydric soil rating: Yes

108F—Philomath cobbly silty clay, 12 to 45 percent slopes

Map Unit Setting

National map unit symbol: 233l
Elevation: 350 to 1,400 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Philomath and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Philomath

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from basic igneous rock

Typical profile

H1 - 0 to 6 inches: cobbly silty clay
H2 - 6 to 14 inches: cobbly silty clay
H3 - 14 to 24 inches: weathered bedrock

Properties and qualities

Slope: 12 to 45 percent
Depth to restrictive feature: 12 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R002XC009OR - Bald Group
Hydric soil rating: No

118—Salem gravelly silt loam

Map Unit Setting

National map unit symbol: 2340
Elevation: 300 to 800 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Salem and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Salem

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly mixed alluvium

Typical profile

H1 - 0 to 7 inches: gravelly silt loam
H2 - 7 to 26 inches: gravelly clay loam
H3 - 26 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: R002XC006OR - Stream Terrace Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)

Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

130—Waldo silty clay loam

Map Unit Setting

National map unit symbol: 234q
Elevation: 90 to 2,500 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 150 to 235 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Waldo and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldo

Setting

Landform: Flood plains, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Mixed silty and clayey alluvium

Typical profile

H1 - 0 to 11 inches: silty clay loam
H2 - 11 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R002XC005OR - High Flood Plain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Bashaw

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Wapato

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

138G—Witzel very cobbly loam, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: 2355
Elevation: 300 to 1,500 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Witzel and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Witzel

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Colluvium derived from basic igneous rock

Typical profile

H1 - 0 to 4 inches: very cobbly loam
H2 - 4 to 17 inches: very cobbly clay loam
H3 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R002XC009OR - Bald Group
Hydric soil rating: No

2205A—Conser silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xpsk
Elevation: 150 to 610 feet
Mean annual precipitation: 39 to 59 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Conser and similar soils: 86 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conser

Setting

Landform: Depressions on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey alluvium

Typical profile

A - 0 to 9 inches: silty clay loam
BAg - 9 to 14 inches: silty clay
Btg1 - 14 to 27 inches: clay
Btg2 - 27 to 41 inches: silty clay
2Cg1 - 41 to 49 inches: loam
2Cg2 - 49 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.07 in/hr)
Depth to water table: About 0 to 9 inches
Frequency of flooding: NoneRare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R002XC005OR - High Flood Plain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Awbrig

Percent of map unit: 4 percent
Landform: Terraces on depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Courtney

Percent of map unit: 3 percent
Landform: Drainageways on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

2212A—Awbrig silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2xpsj
Elevation: 180 to 610 feet
Mean annual precipitation: 39 to 51 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Awbrig and similar soils: 87 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Awbrig

Setting

Landform: Terraces on depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave

Across-slope shape: Concave
Parent material: Silty alluvium over silty and clayey glaciolacustrine deposits

Typical profile

Ap1 - 0 to 2 inches: silty clay loam
Ap2 - 2 to 7 inches: silty clay loam
2Btssg1 - 7 to 18 inches: clay
2Btssg2 - 18 to 29 inches: silty clay
2Btg - 29 to 48 inches: silty clay loam
2Cg - 48 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.07 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R002XC005OR - High Flood Plain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Courtney

Percent of map unit: 2 percent
Landform: Drainageways on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Bashaw

Percent of map unit: 2 percent
Landform: Depressions on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

2224A—Courtney gravelly silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xpsh
Elevation: 160 to 800 feet
Mean annual precipitation: 39 to 59 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Courtney and similar soils: 85 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Courtney

Setting

Landform: Drainageways on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

A1 - 0 to 8 inches: gravelly silty clay loam
A2 - 8 to 17 inches: gravelly silty clay loam
2Btg1 - 17 to 24 inches: gravelly clay
2Btg2 - 24 to 33 inches: gravelly clay
3Cg - 33 to 48 inches: very gravelly clay loam
4C - 48 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 19 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R002XC005OR - High Flood Plain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)

Hydric soil rating: Yes

Minor Components

Awbrig

Percent of map unit: 6 percent
Landform: Drainageways on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Bashaw

Percent of map unit: 4 percent
Landform: Depressions on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Conser

Percent of map unit: 2 percent
Landform: Depressions on stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

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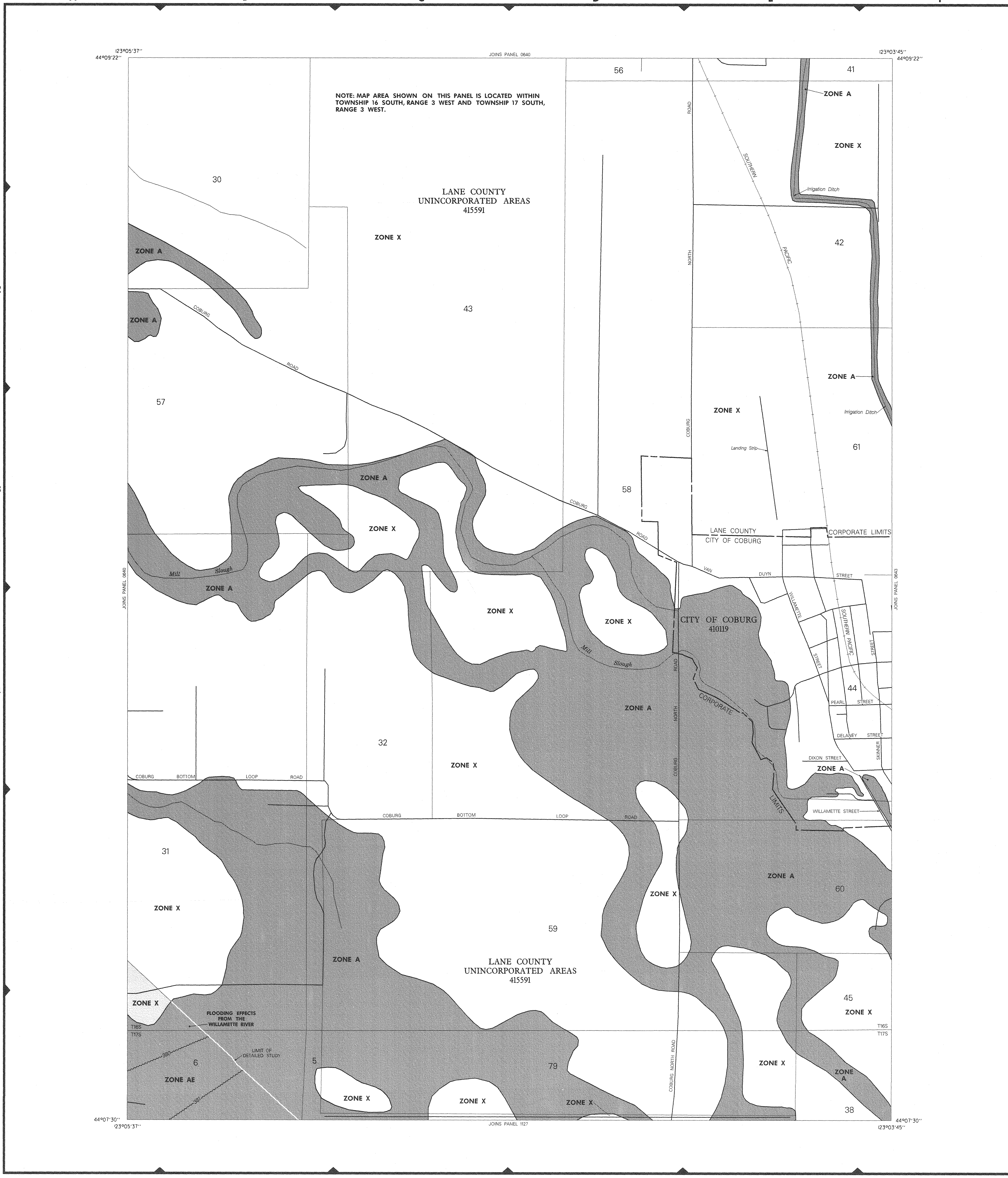
APPENDIX C: FEMA FIRM MAPS



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100–YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100–year flood by Federal flood protection system under construction ; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500–year flood; areas of 100–year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100–year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500–year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- ~~~513~~~ Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.
- (D)—(D) Cross Section Line
- (EL 987) Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.
- RM7 × Elevation Reference Mark
- • M2 River Mile
- 97°07'30'', 32°22'30'' Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for more detailed data on BFE's, and for any information on floodway delineations, prior to use of this map for property purchase or construction purposes.

Areas of Special Flood Hazard (100–year flood) include Zones A, AE, A1–A30, AH, AO, A99, V, VE and V1–V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
JUNE 2, 1999

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

LANE COUNTY,
OREGON AND
INCORPORATED AREAS

PANEL 639 OF 2975
(SEE MAP INDEX FOR PANELS NOT PRINTED)

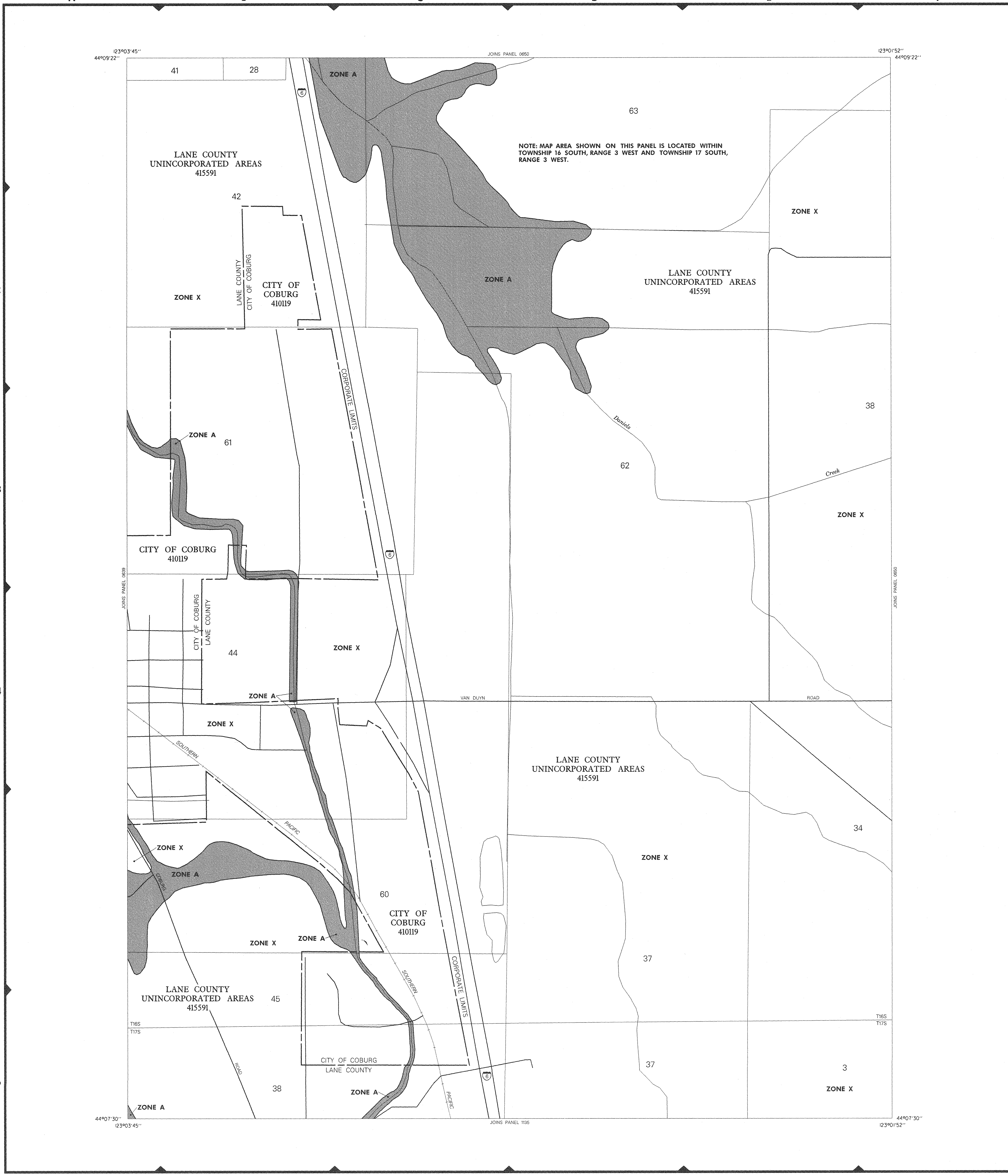
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COBURG, CITY OF	410119	0639	F
LANE COUNTY, UNINCORPORATED AREAS	415591	0639	F

MAP NUMBER
41039C0639 F

EFFECTIVE DATE:
JUNE 2, 1999

Federal Emergency Management Agency



LEGEND

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FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

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Identified 1983 | Identified 1990 | Otherwise Protected Areas

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Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

~~~513~~~ Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

(D)——(D) Cross Section Line

(EL 987) Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

RM7 × Elevation Reference Mark

● M2 River Mile

97°07'30'', 32°22'30'' Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

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For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
JUNE 2, 1999

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

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APPROXIMATE SCALE IN FEET
500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

LANE COUNTY, OREGON AND INCORPORATED AREAS

PANEL 643 OF 2975
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COBURG, CITY OF	410119	0643	F
LANE COUNTY, UNINCORPORATED AREAS	415591	0643	F

MAP NUMBER
41039C0643 F

EFFECTIVE DATE:
JUNE 2, 1999

Federal Emergency Management Agency
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