

# 2.0 BACKGROUND

This chapter describes the environment in Lacey that affects stormwater management, waterbodies within the city limits and the Urban Growth Area (UGA) that receive surface water or stormwater from within the city limits, climate change considerations, applicable regulations, and a brief history of the Stormwater Utility Fund. Lacey is located at the southern tip of Puget Sound and is bordered to the west by the city of Olympia. Unincorporated areas of Thurston County border the city limits to the north, east, and south.

The city limits encompass approximately 20 square miles, and the current population is 60,380 (Thurston Regional Planning Council [TRPC] 2025). Since the 1960s, Lacey has ranked among the fastest growing communities in the region (Lacey and Thurston County 2023). As the city expanded its boundaries and experienced steady residential and commercial development, the extent of impervious surfaces also grew substantially. The increase in paved and built areas has amplified stormwater runoff, intensifying demands on Lacey's stormwater infrastructure and underscoring the importance of maintaining a resilient and adaptive SWMP. The relationship between land use and stormwater is discussed further in Section 2.1.



Central Lacey Circa 1963, Prior to  
Incorporation as a City

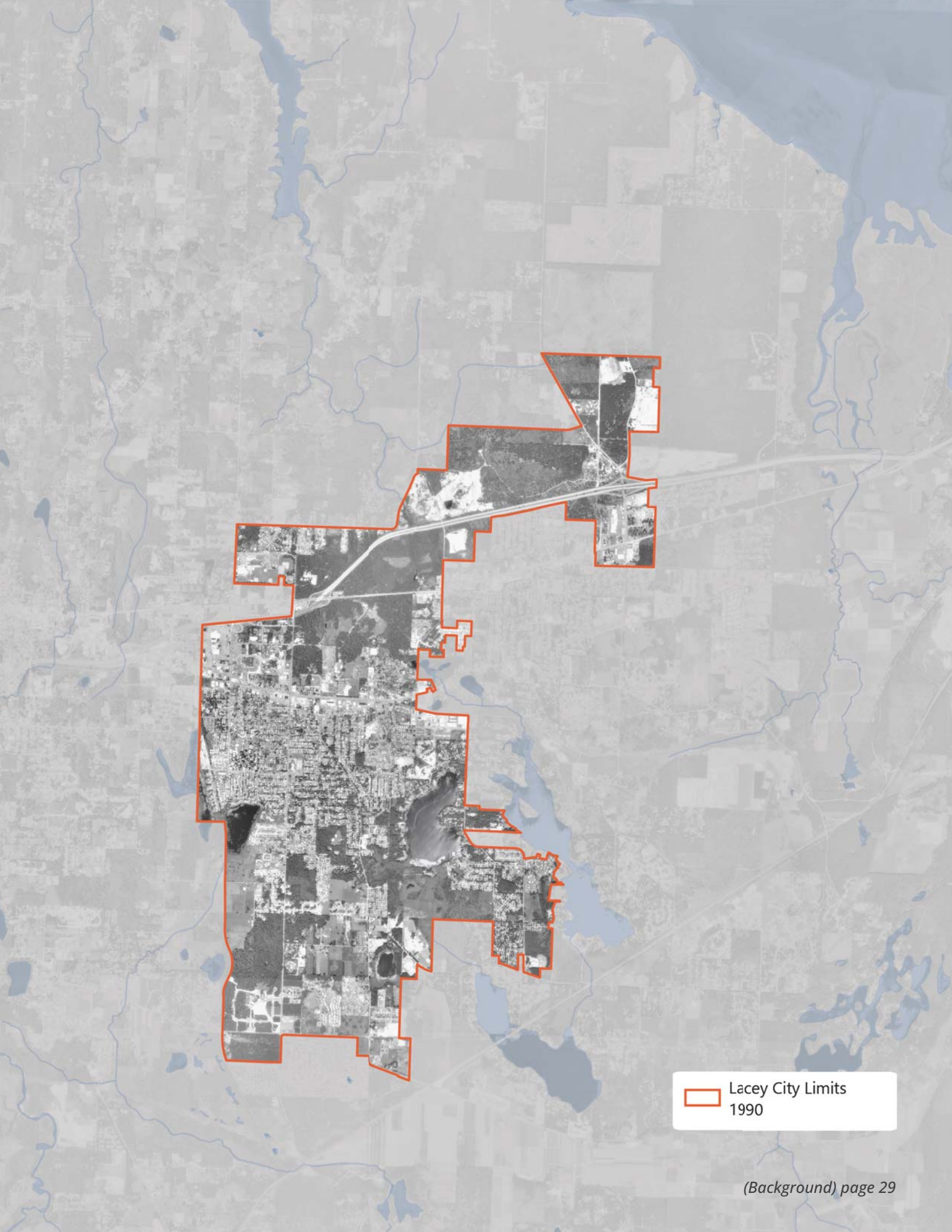
## 2.1 Land Use

Land uses in Lacey reflect a small-town heritage modified by more recent residential and commercial development. City growth and changes in land use are guided by the City of Lacey Comprehensive Plan (Lacey 2025a), which was developed to comply with the requirements of the Growth Management Act (GMA), though Lacey has been doing non-mandated planning since 1983. One of the goals of the GMA is to promote development inside the municipal Urban Growth Area (UGA), which was designated as part of Lacey's land use plan that was adopted in 1994, to eliminate costly and environmentally damaging urban sprawl. This means that within the city limits the focus will be on redevelopment and infill development. Lacey has identified prime areas for commercial and residential redevelopment, which include, but are not limited to:

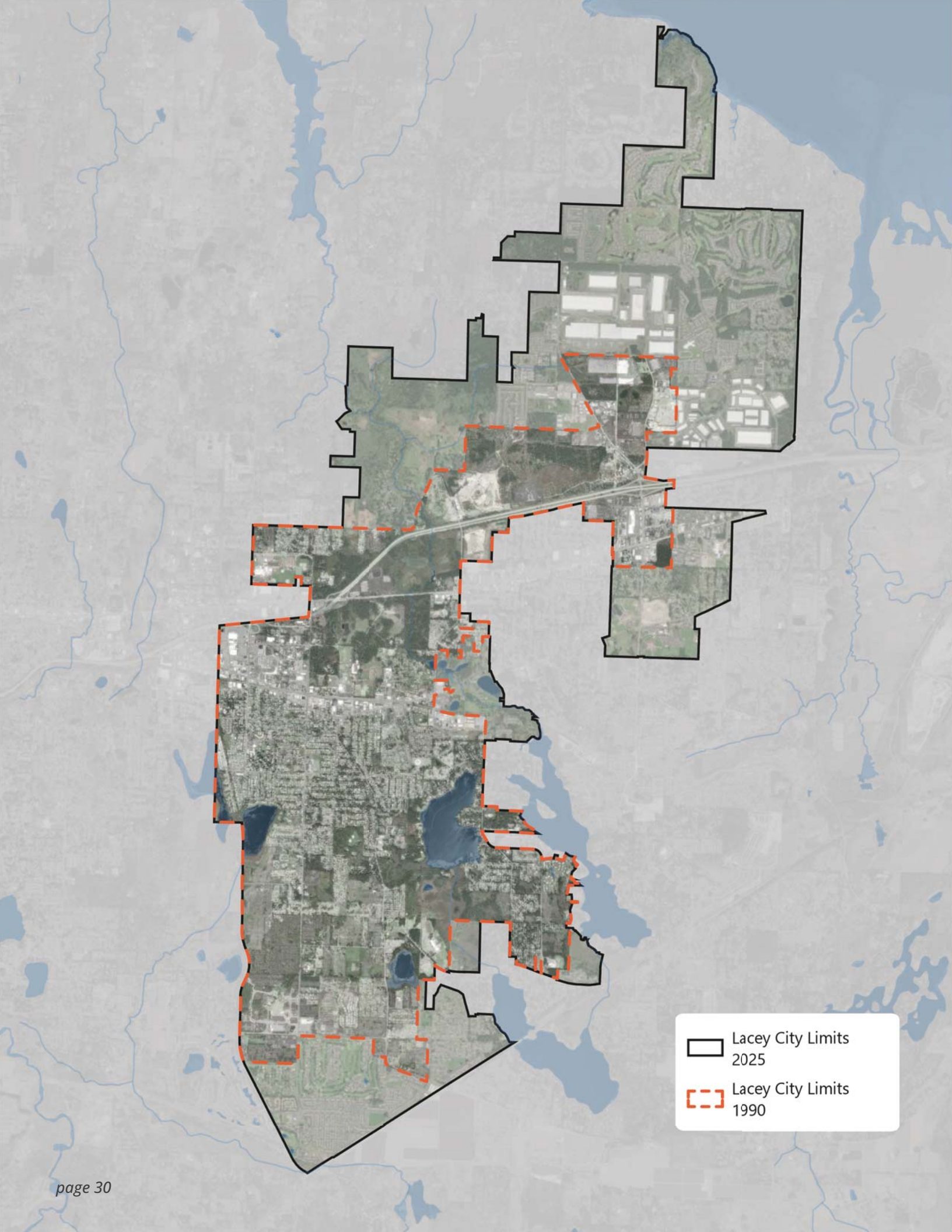
- **Commercial Redevelopment Areas:** old South Sound Center mall (west side of Sleater-Kinney Road) and the Martin Way East corridor (from Carpenter Road eastward)
- **Residential Redevelopment Areas:** south of Pacific Avenue between Sleater-Kinney Road and Carpenter Road, particularly near the College Street and Ruddell Road corridors, and near (just south of) Pacific

In addition to redevelopment, Lacey is experiencing infill development in residential areas. One example of infill development is the use of accessory dwelling units (ADUs). These ADUs increase density and the amount of housing options in Lacey while also increasing the amount of impervious surfaces on residential lots. The increase in impervious surfaces is expected with a growing population and economy, further emphasizing the need for a resilient and adaptive SWMP.

*Figure 2-1. Aerial of Lacey City Limits Circa 1990.*




 Lacey City Limits  
1990



Legend:

-  Lacey City Limits 2025
-  Lacey City Limits 1990

An aerial photograph of a river valley, likely the Lewis and Clark River, with a semi-transparent white box overlaid in the upper center. The river flows from the top left towards the bottom center. The surrounding land is a mix of developed areas with buildings and parking lots, and undeveloped, open fields. The white box contains two paragraphs of text.

As these development, redevelopment, and infill development projects occur, developers will be required to comply with the Lacey Municipal Code (LMC) and Stormwater Design Manual (SDM). The SDM includes increasingly stringent standards for low impact development (LID) practices, on-site infiltration, stormwater treatment, and flow control. Therefore, it is expected that, over time, these new projects are likely to have a net benefit on stormwater management as more of Lacey is brought under the umbrella of contemporary stormwater management strategies.

Likewise, as Lacey annexes area inside the UGA, stormwater management services will need to be expanded to the new area to remain in compliance with the Phase II Permit. This, too, will result in more stormwater control, but will also increase the need for maintenance staff and equipment. Within the unincorporated UGA, development of undeveloped land will continue because the UGA still has large areas of undeveloped land (Lacey 2025a). These greenfield developments will also be required to manage stormwater in accordance with the LMC and SDM. Many of these greenfield properties have been developed and the greenfield areas remaining typically have poor drainage, which requires more technical expertise in hydrology during development review.

*Figure 2-2. Aerial of Lacey City Limits Circa 2025.*

## 2.2 Soils and Groundwater

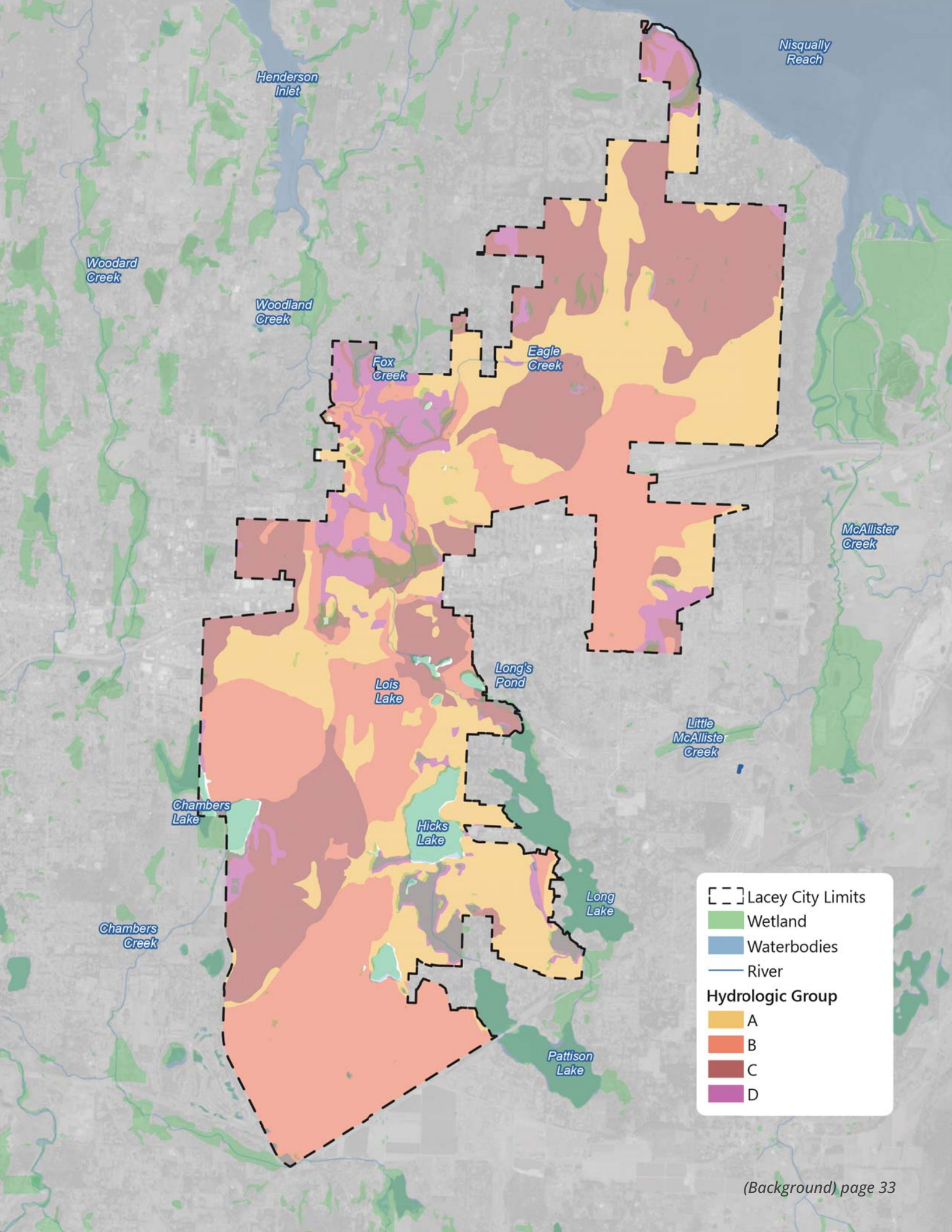
Soils within Lacey are typical for the south Puget Sound Region, consisting of well-drained glacial outwash, intermixed with zones of glacial till and wetland peat bogs. Most of the city is dominated by Hydrologic Soil Groups A and B, which are soils that generally have high infiltration capacities. These soils are generally most suitable for stormwater infiltration applications and constitute the following percentage of area in the city:

- **Group A Soils: 27 percent**
- **Group B Soils: 33 percent**

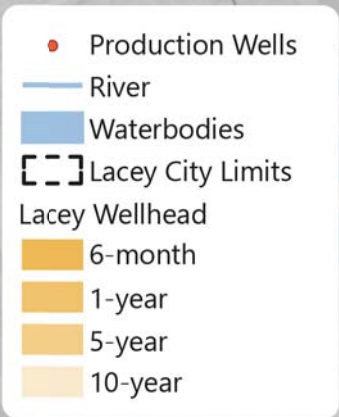
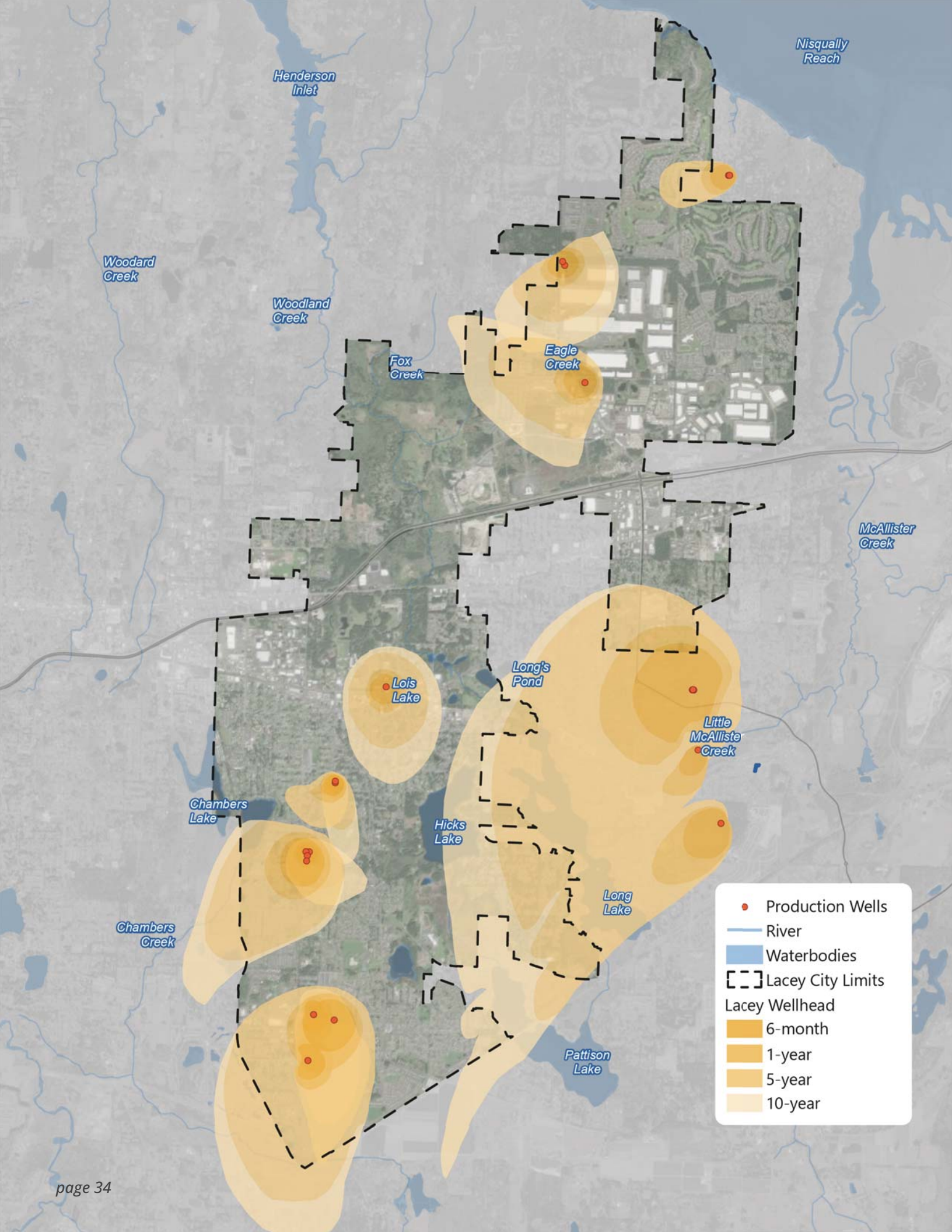
Hydrologic Soil Groups C and D are sandy or silty soils characterized by low permeability and relatively high runoff potential, making them less suitable for stormwater infiltration applications. A portion of Lacey is also occupied by wetlands and waterbodies. These soil groups constitute the following percentage of area in the city:


- **Group C Soils: 26 percent**
- **Group D Soils: 7 percent**
- **Wetlands and Waterbodies: 6 percent**

*Figure 2-3. Hydrologic Soil Groups in the City of Lacey.*



- Lacey City Limits
- Wetland
- Waterbodies
- River
- Hydrologic Group**
- A
- B
- C
- D



An aerial photograph of the City of Lacey, Washington, showing a network of waterways (likely the Lewis and Clark River) and surrounding land use. The map is overlaid with a semi-transparent white box containing text and a light blue box containing a bulleted list.

Sensitive groundwater areas in the city include Wellhead Protection Areas (WHPAs) and Critical Aquifer Recharge Areas (CARAs). WHPAs consist of a sanitary control area and time-based capture zones that are used to identify the area of influence around each drinking water well, and where land use management can help to reduce the risk of contamination (Lacey 2020). CARAs are defined in the Washington Administrative Code (WAC) as “areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge” (WAC 365-190-030).

Because WHPAs identify areas where land use is carefully regulated to avoid contamination of drinking water, groundwater in these areas should be protected. Heightened land use and infiltration regulations in these areas are governed through Lacey’s wellhead protection program in the Environmental Element of the City of Lacey Water Comprehensive Plan (Lacey 2025) and SDM to prevent contamination of drinking water. Future development in wellhead protection areas through land use and activity regulation is defined and enforced through LMC 14.27 and LMC 14.36. These protected areas constitute the following percentage of the city:

- **Wellhead Protection Areas (WHPAs): 40 percent**
- **Critical Aquifer Recharge Areas (CARAs; Inclusive of WHPAs): 100 percent**

*Figure 2-4. Critical Aquifer Recharge Areas (CARA) and Wellhead Protection Areas (WHPA) Sourced in the City of Lacey.*

## 2.3 Waterbodies and Stormwater Infrastructure

### Waterbodies

Stormwater runoff within the city limits and the UGA drains to three watersheds along the Puget Sound: Henderson Inlet, the Deschutes River to Budd Inlet, and McAllister Creek to the Nisqually Reach. The Department of Ecology assesses the quality of all waterbodies in the state to determine whether they are impaired by pollutants and require a water improvement project, or Total Maximum Daily Load (TMDL). Summaries of Henderson Inlet, Nisqually Reach, and Budd Inlet watersheds are included below.

Additional information related to watersheds and waterbodies in the city and the specific activities required by the TMDLs can be found in Appendix B.

#### *Henderson Inlet*

Tributaries to Henderson Inlet include Woodard Creek and Woodland Creek, which flows out of a chain of connected lakes: Hicks Lake, Pattison Lake, Long Lake, and Lake Lois. Other tributaries to Woodland Creek within Lacey city limits include College Creek, Palm Creek, and Eagle Creek. Other tributaries to Woodland Creek within Lacey's UGA include Fox Creek and Jorgenson Creek.

Henderson Inlet and its tributaries are subject to a TMDL for impairment due to fecal coliform bacteria and dissolved oxygen. Other concerns include high temperature and high peak flows in Woodland Creek and phosphorus and invasive vegetation in the four lakes.

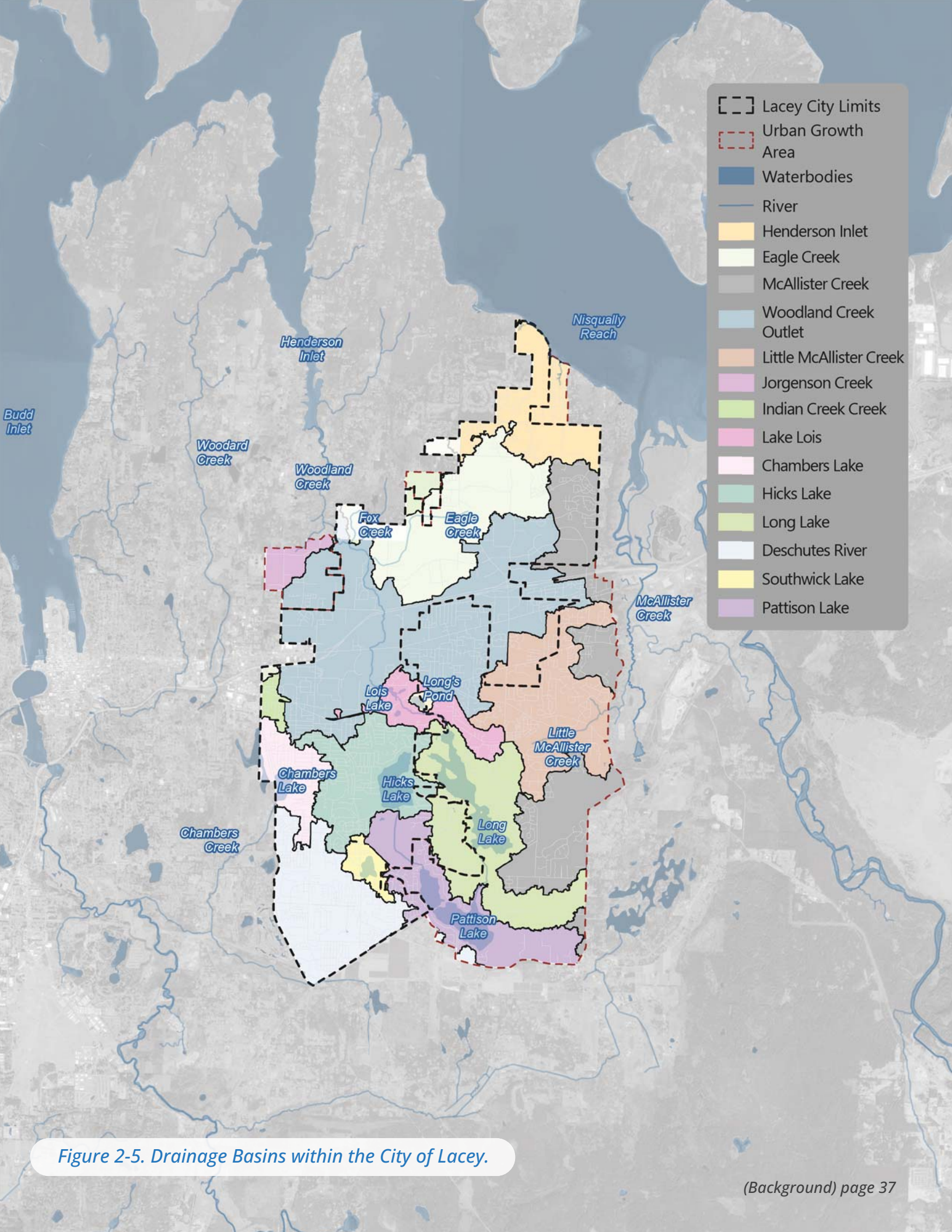
#### *Nisqually Reach*

Runoff from Lacey flows east to the Nisqually Reach from Little McAllister Creek, which is a tributary of McAllister Creek. The Nisqually Reach and its tributaries are subject to a TMDL to address fecal coliform bacterial and dissolved oxygen impairments, though Little McAllister Creek and the City of Lacey are not specifically identified in this plan.

#### *Budd Inlet*

Runoff from Lacey flows northwest to Budd Inlet from Chambers Lake through the Deschutes River. Budd Inlet and its tributaries are subject to two TMDLs to address temperature and dissolved oxygen impairments. In 2015, Lacey constructed the Chambers Lake Stormwater Treatment Facility to provide stormwater treatment for 187 acres that drain into Little Chambers Lake, and ultimately to the Deschutes River and Budd Inlet. Lacey is continuing to work on other projects to address impairments to Budd Inlet.

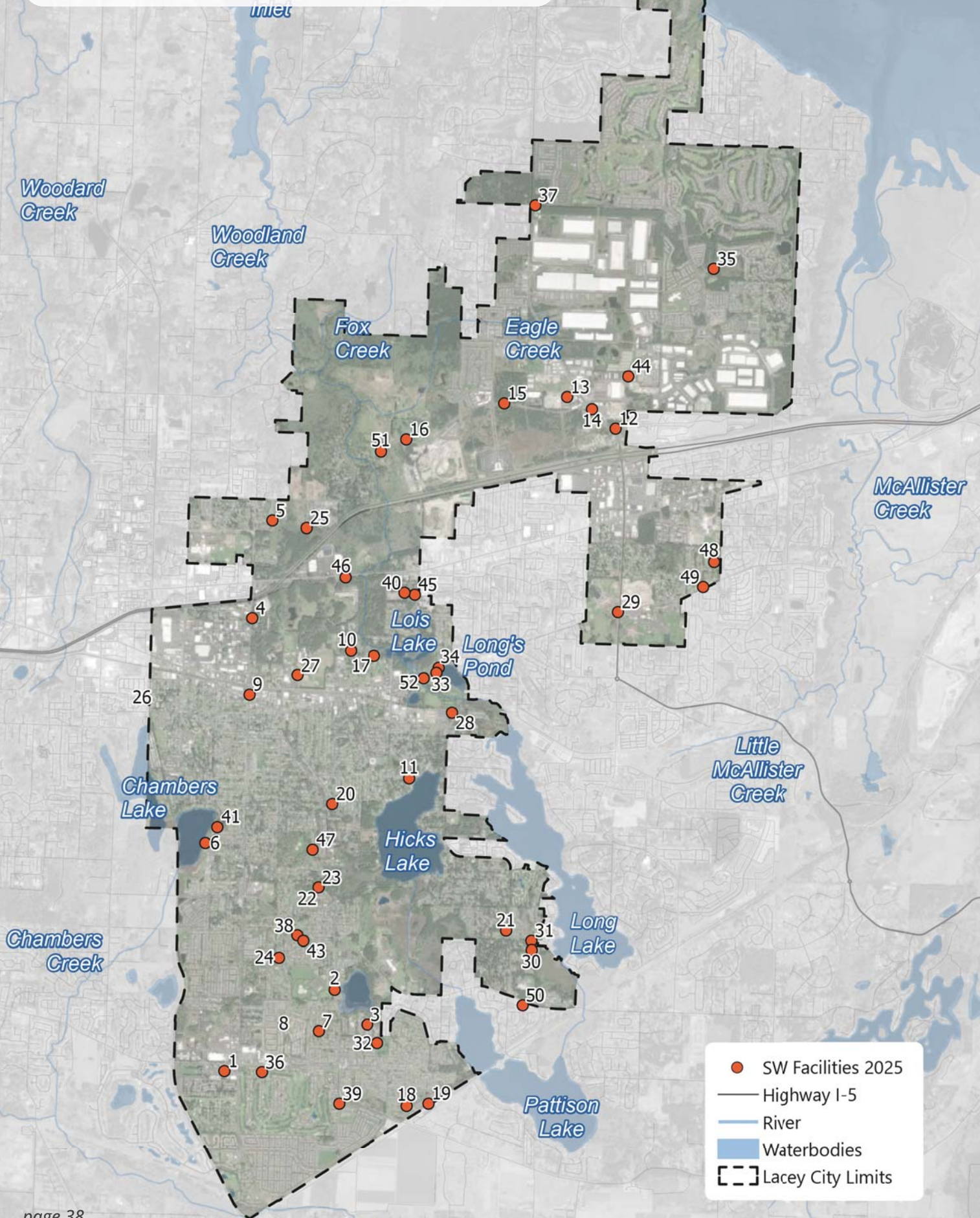




- Lacey City Limits
- Urban Growth Area
- Waterbodies
- River
- Henderson Inlet
- Eagle Creek
- McAllister Creek
- Woodland Creek Outlet
- Little McAllister Creek
- Jorgenson Creek
- Indian Creek Creek
- Lake Lois
- Chambers Lake
- Hicks Lake
- Long Lake
- Deschutes River
- Southwick Lake
- Pattison Lake

Figure 2-5. Drainage Basins within the City of Lacey.

Figure 2-6. Stormwater Facilities in the City of Lacey.



# Stormwater Infrastructure

Lacey’s stormwater utility manages a large and complex storm drainage system in the public right-of-way (Table 2-1). This storm drainage system is important to protecting public and private property, ensuring public safety, and providing flow control and water quality treatment to stormwater runoff before it discharges to receiving waters. A table of Lacey’s stormwater facilities including information related to drainage area, function, and discharge waterbody is included in Appendix C.

**Table 2-1. Summary of Lacey’s Stormwater System.**

Item	Quantity	Units
Catch basins and storm drains <sup>a</sup>	7,140	each
City stormwater conveyance (including pipes, ditches, and culverts) <sup>a</sup>	150	miles
Outfalls (discharging to surface water) <sup>a</sup>	65	each
Drywells (discharge via infiltration to groundwater) <sup>a</sup>	159	each
Infiltration trenches (discharge via infiltration to groundwater) <sup>a</sup>	53	each
Water quality treatment facilities – Constructed wetlands <sup>a,b</sup>	7	each
Water quality treatment facilities – Wet ponds <sup>a,b</sup>	28	each
Water quality treatment facilities – Other <sup>a,b</sup>	106	each
Retention/Detention ponds and infiltration basins <sup>a,c,d</sup>	47	each
Regional facilities primarily discharging to groundwater <sup>a,e</sup>	38	each
Regional facilities primarily discharging to surface water <sup>a,e</sup>	14	each
Municipal streets, centerline miles <sup>a</sup>	184.9	CL miles
Municipal streets, lane miles <sup>a</sup>	419.7	lane miles
Impervious surface area in the city <sup>f</sup>	36	percent

<sup>a</sup> Based on input from City Lacey staff and review of Geographic Information Systems (GIS) data and files provided by the Lacey.

<sup>b</sup> Water quality treatment facilities include wet ponds and constructed wetlands that are designed to remove pollutants from stormwater runoff. Other types of water quality treatment facilities include bioswales, filter strips, filter vaults, and sedimentation vaults.

<sup>c</sup> Detention facilities include detention ponds that temporarily store stormwater runoff, reducing peak flows but eventually discharging the same volume. Detention facilities provide little or no infiltration of stored stormwater.

<sup>d</sup> Retention facilities include retention ponds, swales and infiltration basins that are designed to hold stormwater runoff and release it by evaporation, plant transpiration,

and/or infiltration into the ground, reducing peak flows and the volume discharged.

<sup>e</sup> Regional facilities are large stormwater facilities (typically detention or retention ponds) that are designed to detain stormwater runoff from a number of new developments or areas within a drainage basin.

<sup>f</sup> Impervious area calculated in 2025 using 2022 aerial imagery.

## 2.4 Climate Change

Climate change poses both immediate and long-term challenges for management of Lacey's stormwater system. Projected increases in annual and extreme temperatures are likely to exacerbate water quality issues such as low dissolved oxygen and frequent algal blooms in lakes and downstream receiving waters. In addition, higher temperatures can have impacts on vegetation communities and require additional water usage. Lacey's reliance on groundwater for its water supply underscores the growing importance of stormwater infiltration and groundwater recharge as climate impacts intensify. Additionally, altered precipitation patterns are anticipated to increase flood risks and stress stormwater facilities that were designed for historic conditions. Sea level rise may also affect water quality through saltwater intrusion in drinking water wells. More details about the relationship between climate change and stormwater management, including projected changes in temperature, precipitation, and sea level rise, can be found in Appendix D.

## 2.5 Stormwater Utility Fund

To meet the growing needs for stormwater management, Lacey created its Stormwater Utility Fund on January 24, 1985 under Ordinance No. 712. This new fund was established as an enterprise fund, similar to Lacey's sewer and water enterprise funds, with dedicated revenues and expenditures which made the stormwater utility self-supporting. The following year, Ordinance No. 794 established interim stormwater utility fees, which became effective on January 1, 1987. These were flat fees assessed to property owners on a per-parcel basis, which enabled Lacey to collect storm and surface water utility charges to provide services to residents, including operation of the stormwater utility, drainage basin analysis, and construction of facilities.

On April 26, 1990, LMC Chapter 13.70 was amended under Ordinance No. 886 to establish a more permanent rate structure, with a flat rate for single-family and two-family residential parcels and a seven-step sliding rate for commercial parcels. The new rate structure became effective on July 1, 1990, and is still in use today.

Funds received by the stormwater utility are used in the management and control of stormwater, operation and maintenance of the drainage system, and construction of stormwater facilities. Over the years, stormwater utility fees collected by Lacey have been used for an increasing number of purposes as stormwater issues and regulatory requirements have grown.

## 2.6 Applicable Regulations

Lacey's SWMP supports efforts to comply with the following local, state, and federal regulations and other requirements:



*Underground Injection Control (UIC) Well*

### ***Underground Injection Control (UIC) Rule***

The UIC program is a federal program intended to ensure that underground sources of drinking water are protected from surface discharges to the ground. In Washington, the UIC program is administered by Ecology through Chapter 173-218 of the Washington Administrative Code (WAC). The Guidance for UIC Wells that Manage Stormwater (Ecology 2006) lays out the requirements for UIC wells, and Ecology has included additional guidance in the latest update of the Stormwater Management Manual for Western Washington, released in 2024.



*Maintenance Crews at College Regional Stormwater Facility*

### ***Ecology Total Maximum Daily Load (TMDL) Implementation Plans***

Waterbodies that have been identified as impaired on Ecology's Section 303(d) list (Ecology 2026) due to poor water quality are required to have a TMDL implementation plan. The TMDL implementation plan includes actions to prevent, reduce, and/or clean up excess pollution. Refer to Appendix B for more information about Lacey's waterbodies.



*Puget Sound and Mount Rainier*

### ***Action Agenda for the Puget Sound***

The Puget Sound Partnership (PSP) is the regional organization that the Washington State Legislature established to coordinate and lead the effort to recover the Puget Sound (PSP 2022). The current action agenda implementation plan does not list any specific actions for Lacey at this time.



*Southern Resident Killer Whales (Orcas)*



*Commercial Development within Lacey*



*Example of Low Impact Development (LID)*

### **Federal Endangered Species Act**

The Federal Endangered Species Act (ESA) prohibits the take of all listed species, including a take that could result from Lacey's stormwater facility operations or private development stormwater management activities that are permitted by Lacey.

### **Washington State Growth Management Act**

The Washington State Growth Management Act (GMA) requires Lacey to inventory and protect environmentally critical areas (such as steep slopes, wetlands, and streams) (Chapter 36.70A of the Revised Code of Washington [RCW]). The GMA also requires Lacey to develop comprehensive plans in order to ensure environmentally responsible and economically sustainable development, including planning for stormwater-related capital facilities.

### **Lacey Municipal Code**

Several sections of the Lacey Municipal Code (LMC) govern aspects of stormwater management on new development and redevelopment project sites, as well as inspection and maintenance requirements for private stormwater facilities. These sections include, but are not limited to:

- LMC 14.27 – Stormwater Management
- LMC 14.29 – Illicit Discharges
- LMC 14.36 – Wellhead Protection and Critical Aquifer Recharge Areas



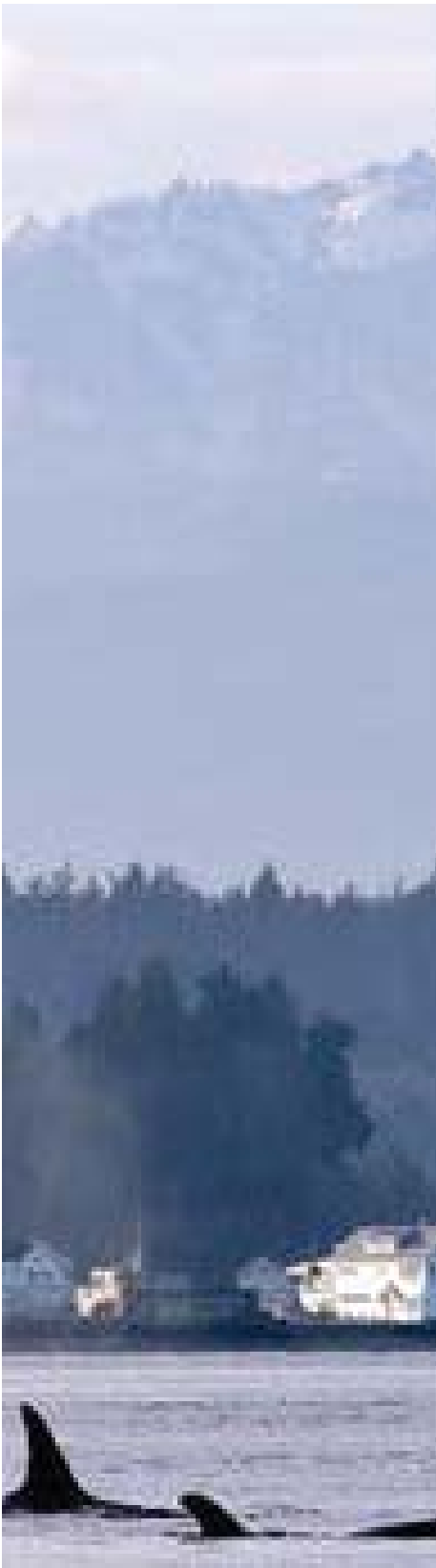
*Puget Sound and Mount Rainier*

## ***NPDES Phase II Municipal Stormwater Permit***

The NPDES Phase II Municipal Stormwater Permit (Phase II Permit; Ecology 2024) has broad requirements associated with stormwater runoff and requires Lacey to develop several distinct SWMP components. The first Phase II Permit was issued by Ecology in 2007, reissued in 2012 and 2019, and again in 2024. The requirements for Lacey's stormwater program SWMP have become more stringent with each new issuance. The Phase II Permit requires that the Lacey's SWMP meet requirements in 12 primary areas:

1. Stormwater planning
2. Public education and outreach
3. Public involvement and participation
4. Municipal separate storm sewer system (MS4) mapping and documentation
5. Illicit discharge detection and elimination (IDDE)
6. Controlling runoff from new development, redevelopment, and construction sites
7. Stormwater management for existing development (SMED)
8. Source control program for existing development
9. Operations and maintenance
10. TMDL requirements
11. Monitoring and assessment
12. Reporting requirements

Refer to [Ecology's Western Washington Phase II Municipal Stormwater Permit webpage](#) for a complete list of requirements.



*Southern Resident Killer Whales (Orcas)*

## **NPDES Phase II Municipal Stormwater Permit Major New Requirements**

The latest Phase II Permit requires Lacey to take on several new activities between 2024 and 2029 in addition to the many ongoing requirements that carry over from the 2020-2024 Phase II Permit. The new activities listed below will have the greatest demand on staff time.

### **Stormwater Planning**

Complete and submit a Stormwater Management Action Plan (SMAP) for at least one new high priority catchment area or additional actions for an existing SMAP by March 2027.

Adopt and implement tree canopy goals and policies to support stormwater management by December 2028.

### **MS4 Mapping and Documentation**

Develop and implement methodology to identify tree canopy for stormwater management purposes by December 2026.

Map and assess acreage of MS4 tributary basins to outfalls with a 24-inch nominal diameter or larger that have stormwater treatment and flow control best management practices (BMPs)/facilities. Estimate areas managed by stormwater treatment and flow control BMPs/facilities by March 2028.

Map overburdened communities in relation to stormwater treatment and flow control BMPs/facilities, outfalls, discharge points, and tree canopy by December 2028.

### **Controlling Runoff from New Development, Redevelopment, and Construction Sites**

Update local regulations and permitting processes to meet criteria specified in the Phase II Permit by June 2027.

Update Lacey's 2022 Stormwater Design Manual (SDM) by June 2027.



*Puget Sound and Mount Rainier*

## ***NPDES Phase II Municipal Stormwater Permit Major New Requirements Continued. . .***

### **SMED**

Fully fund, start construction, or completely implement project(s) that meet the 9.3 equivalent acres in Appendix 12 of the Phase II Permit.

### **Operations and Maintenance**

Develop and implement a municipal street sweeping program by July 2027.

Update practices, policies, and procedures to address polychlorinated biphenyls (PCBs) in City-owned buildings.

### **TMDL**

Begin using existing data to conduct spatial analysis of nutrient loading from the MS4 to Budd Inlet by December 2027.

Develop and implement priority BMPs to minimize the transport of nutrients via the MS4 to Budd Inlet by August 2028.

Designate areas discharging via the MS4 to Budd Inlet as high priority areas for IDDE. Complete IDDE screening for nutrient sources in 100% of these areas by July 2029.

# SOUTH SOUND RESTAURANTS PROTECTING PUGET SOUND



In your restaurant, follow the simple tasks below to ensure kitchen waste and dirty wash water does not enter storm drains. Storm drains are meant only for stormwater runoff and flow directly into our streams and Puget Sound.

## KITCHEN MATS



- Wash kitchen mats indoors near a floor drain or in a sink.
- Dispose dirty wash water down a toilet or sink.



- Wash kitchen mats outside.
- Dump dirty wash water into the streets, alleys, or storm drains.

## GREASE DISPOSAL



- Collect all grease in containers and keep covered with tightly fitting lids.
- Contact a grease or tallow company to collect and haul grease away.



- Pour grease down storm drains, into street gutters, or into trash bins.
- Dump grease into sinks where they will clog the drain pipes!

## TRASH BINS



- Clean dumpsters and parking areas by sweeping, and dispose of swept-up debris into a trash bin.
- For spills, use kitty litter or a spill product that encapsulates or absorbs oil, then bag, and discard into a trash bin.



- Hose down trash bins, grease storage areas or parking lots.
- Allow dirty water or any other debris into the storm drain.

*Caution! Large spill volumes will need to be disposed of at a hazard waste site such as HazoHouse.*

## EXHAUST FILTERS



- Wash exhaust filters in a sink or container and dump the dirty water down a drain or toilet.

*SUGGESTION: Contract with a hood cleaning service.*



- Power wash exhaust filters in an alley or parking lot.
- Pour or allow dirty wash water into the storm drain.

**VIOLATORS MAY BE SUBJECT TO FINES.**



This poster was a collaboration between the Cities of Olympia, Lacey, Tumwater and Thurston County. For more information or to request a new poster, please contact your local utility, or visit: [www.olympiawa.gov](http://www.olympiawa.gov); [www.ci.lacey.wa.us](http://www.ci.lacey.wa.us); [www.ci.tumwater.wa.us](http://www.ci.tumwater.wa.us); or [www.co.thurston.wa.us](http://www.co.thurston.wa.us).