



Comprehensive Plan
Citizen Advisory Committee
AGENDA
Thursday, September 22, 2016

HILLSBORO CIVIC CENTER
 150 East Main Street

4:00-6:00 PM
 Conference Room 113B/C

Time	Topic	Lead	Action
4:00	A. Introductions/Welcome	All	I
4:05	B. Minutes Review – August 25 Meeting	Nick	I, D
4:10	C. Wastewater Collection a. Background Report b. Draft Goals & Policies	Laura K.	I, D, R
4:50	D. Natural Resources a. Background Report	Laura K.	I, D
5:35	E. Updates from Prior Topics a. Public Facilities	Aaron	I, D
5:45	F. Staff Updates a. September Council Work Session b. Upcoming Meetings	Aaron	I
5:50	G. Public Comment	-	
6:00	H. Adjourn		

I=Information, D=Discussion, R=Recommendation

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1. Minutes from August 25 meeting	1
2. Staff report for September 2016 meeting	5
3. Wastewater Collection	
a. Background Report	7
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4. Natural Resources	
a. Background Report	31
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a. Public Facilities	52

Next Regular Meeting:

Thursday, October 27, 2016
 4:00-6:00pm
Hillsboro Civic Center
Conference Room 113B/C
150 E. Main Street, Hillsboro

For further information on agenda items, contact Aaron Ray, Senior Planner and Comp Plan Project Manager, at (503) 681-6476 or email at aaron.ray@hillsboro-oregon.gov.

Meeting Summary

Citizen Advisory Committee – Comprehensive Plan Update

August 25, 2016 - 4:00 p.m. – 6:00 p.m.

Hillsboro Civic Center – Conference Room 113B/C

150 East Main Street

Hillsboro, OR 97123

Members Present

Steve Callaway, Marc Cardinaux, Aron Carleson, Wil Fuentes, John Godsey, Tricia Mortell, Daniel Nguyen, Ken Phelan, Ahne Oosterhof, Bryan Welsh

Members Excused

Katie Eyre, Bonnie Kookan, Glenn Miller, Gwynne Pitts

Staff Present

Nick Baker, Brad Choi, Rob Dixon, Taylor Eidt, Don Odermott, Aaron Ray, Laura Weigel

Welcome and Introductions

The meeting opened with welcome and introductions of the committee members and staff.

Minutes – June 23, 2016 & July 28, 2016

Adjustments to minutes from the June meeting included minor changes in capitalization and the corrected spelling of a member's name, and the minutes were accepted. July minutes included the same member name correction, and the minutes were accepted.

Transportation – Transportation System Plan Overview, Background Report

Brad Choi introduced the Transportation System Plan (TSP), highlighting the role of the TSP for the future. The TSP is the City's guide for development of its transportation system over the next 20-25 years. Projects must be included in the TSP to allow the City to complete them. The City has been working with the 2004 TSP with subsequent amendments since 2008. The goals and policies that this committee will review originated in the 1983 City Comprehensive Plan and have never been substantially updated. Brad provided an overview of other plans as they relate to the TSP, an update on its process to date, and the timeline for completion.

Aaron Ray presented the Cultivating Transportation Choices background report, noting that Statewide Planning Goal 12 requires the City to plan for transportation in the future and highlighting the role of growth trends in shaping this Core Area.

- A committee member questioned the need to analyze mode share from a racial standpoint, suggesting instead that income might be more constructive indicator. Staff noted that people of color tend to use modes other than driving alone for transportation, and there is a demographic difference in mode choice. While this may change in the future, the idea from this graphic is that the City needs to provide options moving forward.

At this point, staff introduced Don Odermott, Transportation Planning Manager.

Staff highlighted the regulatory framework provided by the State, which guides the content to be included in the City's TSP. Issues and challenges related to transportation in Hillsboro include safety, creating a balanced and multi-modal system, travel time and reliability, and others.

Staff solicited committee input on a six policy consideration questions focused on complete streets, context-sensitive approaches, Vision Zero, performance standards reform, active transportation funding, and transportation demand management (TDM) techniques. Committee input included the following:

- Committee members are concerned that staff is basing its Complete Streets policy on outdated information. Staff will revisit this topic.
- Committee members would like staff to ensure that in relation to roads and bicycle facilities, the focus is not only on commuting patterns. It is important to consider where the City's investments can have the most impact and improve community safety.
- Committee members believe it is important to do some marketing and to educate the public about available bicycle facilities in order to create a more complete network, especially in relation to separated bike and pedestrian facilities. They also believe the City should educate motorists so that they are aware of people on bicycles sharing their route.
- A committee member stressed that while there should be safe facilities for people on bicycles that may be shared with pedestrians, the City needs to consider how context affects what modes are vulnerable users. Staff responded that policy statements giving the City direction on how to safely treat and separate modes are very appropriate.
- A committee member wants to be sure staff's definition of active transportation is clear. Staff verified that the definition is consistent throughout and aligns with the accepted definition of the term.

Staff noted that performance standards for the City have changed during recent years, and now accept higher levels for failure to move vehicles through traffic. Staff is continuously looking for policy direction that will give the City power to alter how performance is measured, what modes it is measuring, and what levels of performance are acceptable.

- Committee members are concerned that the City is not doing enough to measure the performance of modes other than motorized vehicles. Staff responded that currently the City is only required to allow enough crossing time for pedestrians at signalized intersections. Staff is

looking for guidance on how policies can guide how the City measures performance for other modes, including measures such as delay for pedestrians and people on bicycles, and how the City can engage other resources instead of only growing roadways.

- Committee members would like staff to consider policies that allow the City to take action at problem areas along County and State transportation facilities (e.g. the intersection of Brookwood and Cornell). Staff responded that the City will continue to work with other jurisdictions to improve problem areas, and will consider policy language that will make it a City priority to make multi-modal improvements that address deficiencies.
- Committee members expressed that they would like to see better tracking of active transportation spending, and that, when appropriate, this spending should be broken out of larger roadway projects.
- A committee member voiced concern that there needs to be clear signage and policy for creating streets where bicycle and automobile facilities share the same space using a sharrow.
- Committee members noted that staff should use a context-sensitive approach to implement these facilities, with the goal of creating a “smart, complete, connected, and green” network that demonstrates intent to accommodate all modes. Staff responded that they will look to include this in policy language, while acknowledging the challenges of creating these separated networks in areas outside of downtown that do not have the same level of redundancy in the system.

Staff asked for guidance on how connectivity could be incorporated into policy language, thus giving the City more leverage to create needed connections that might face opposition from community members within the immediate vicinity. Staff looked for input regarding retrofitting older areas to improve connectivity and ways to improve connectivity in newer development, with the hope of developing a foundation for discussion relating to projects that may present challenges.

- Committee members voiced concern that previous planning decisions created a network that lacks connections, so staff must incorporate language to allow this.
- A committee member expressed a desire for the City to create an easily-referenced resource with information for current and future residents about transportation plans and their impacts on surrounding properties.

Additionally, the committee provided feedback on the background report:

- Section 2.2.2 – Hillsboro’s white and non-white Hispanic populations were listed incorrectly. Staff will check and revise.
- Section 5.1.1 – Committee members questioned why pipelines are included as a method of transportation. Staff responded that locations must be identified due their impact on future infrastructure placement. Staff also noted that not all elements of the regulatory framework apply to the City, but they must be observed. Staff will consider the addition of a policy statement specific to utilities with possible health impacts.

The next steps for the TSP and Transportation section include development of Goals & Policies for possible presentation in October. Staff will look to incorporate ideas presented in this discussion into the

formation of goals and policies. Questions should be directed to Aaron via email (aaron.ray@hillsboro-oregon.gov).

Staff Updates

- Staff presented updated goals and policies for both Public Facilities and Water Supply and Distribution. Water Supply and Distribution goals and policies reflect input from the Tualatin Valley Water District Board and the Hillsboro Utilities Commission. Water Supply and Distribution will be up for Planning Commission review in September. Staff already took the Public Facilities goals and policies to Planning Commission, and their input was incorporated.
 - Policy 2.4 – A committee member voiced support for breaking this out into two policies, so that for-profit entities are not eligible. Staff shares this concern, but due to the conditional-use nature of schools, staff will likely work with these developers during the planning process. This will likely result in maintaining a single policy for both 2.4 and 3.6.
- Staff will be meeting with City Council in a work session in late September to look through the first two Core Areas, which were accepted by Planning Commission in July.
- Staff will be at the final Tuesday Night Market seeking public input on Noise Management and Access to Healthy Food.
- Staff will be releasing surveys for all topic areas within the Promoting Health, Wellness, and Safety and the Building Economy and Infrastructure Core Areas, with the exception of the Public Facilities topic. Surveys will be posted in late September and run through the first week of October.

Upcoming Meeting Schedules and Topics

The next meeting will take place on September 22, 2016, from 4:00-6:00 p.m. in Conference Room 113 B/C at the Hillsboro Civic Center. Laura Kelly will present the background report for Natural Resources and staff will present on Wastewater Collection.

As a note, the October 27, 2016, CAC meeting will not occur in Room 113 B/C due to a schedule conflict. The meeting will cover Natural Resources goals and policies and Stormwater Management. The November 17, 2016, meeting will be dealing with Air Quality. Staff will determine if a December meeting is required.

Public Comment

No members of the public offered comment at the meeting.

Adjournment

The CAC meeting adjourned.



MEMORANDUM

To: Comprehensive Plan Update Citizen Advisory Committee (CAC)
From: Long Range Planning Staff
Date: September 16, 2016
Subject: Background Report and/or Draft Goals and Policies Review for Wastewater, Natural Resources, and Public Facilities

Requested Technical Advisory Committee Action:

Review and provide feedback on:

- The Background Report and draft goals and policies for Wastewater
- The Background Report covering Natural Resources, and
- Updated goals and policies for Public Facilities.

Background:

This month, the committee will examine the *background report* and *goals and policies* from:

Core Area	Topic
Advancing Environmental Sustainability	• Wastewater

And the *background report only* for:

Core Area	Topic
Fostering Healthy Ecosystems	• Natural Resources

Staff is requesting that CAC members read the materials prior to the meeting. The meeting will include, if needed, discussion of suggested revisions to these materials, primarily focused on the draft goals and policies.

Wastewater

Statewide Planning Goal 6 requires cities to plan for the maintenance and improvement of the quality of air, water, and land resources, including the development of wastewater collection and treatment resources. As with other infrastructure-related topics in the Comprehensive Plan update, this issue was previously covered in a combined Public Facilities chapter. The updated plan will include a section dedicated to wastewater goals and policies, alongside dedicated sections for other major infrastructure categories including water supply and stormwater management.

The Background Report and draft goals and policies were developed by an internal working group including the Planning and Public Works departments, along with the City Manager's Office. The draft

has been submitted for review by Clean Water Services (CWS), who will provide additional comment later in September.

The Technical Advisory Committee (TAC) reviewed the attached materials at their September 2016 meeting. TAC members suggested minor clarifications to the Background Report, and some revisions to proposed goals and policies, particularly concerning aging infrastructure and sustainability. These modifications have been incorporated into the attached drafts. TAC also suggested that staff consider a financing-specific goal as found in other infrastructure-related topics, although thus far, staff has not added an additional goal, as the capital planning policies in the Public Facilities section should adequately address wastewater infrastructure.

Natural Resources

Goal 5 of the Statewide Planning Goals requires cities to address natural and cultural resource conservation in their Comprehensive Plans. In urban contexts such as Hillsboro, Goal 5 compliance focuses on conservation of wetlands, riparian zones, and wildlife habitats. The current Comprehensive Plan includes natural resources in a section combining all Goal 5-related resources, including cultural resources, which was last updated in 2007.

The Background Report was developed by a working group including the Planning, Public Works, and Parks & Recreation departments, City Manager's Office, CWS, and Washington County Department of Land Use and Transportation. Review of Natural Resources materials will occur in two phases. First, both TAC and CAC will review and discuss the Background Report at their respective September meetings, with substantive changes communicated to both committees. Then, in November, TAC and CAC will review Natural Resources goals and policies.

At their September meeting, TAC members suggested some edits and reorganization of the Background Report for clarity. Those changes have been incorporated into the attached draft. Staff have also updated language in the report to reflect pending updates to the City's Environmental Sustainability Plan.

Public Facilities

An updated draft of Public Facilities goals and policies is included in this month's packet, including revisions following TAC, CAC, and Planning Commission review. The next step for this topic is to gather input from the community on the Background Report and draft goals and policies this fall.

Cost:

Costs for preparation of these documents includes staff time only.

Attachments:

1. Wastewater Background Report, draft goals and policies, and existing Comp Plan language.
2. Natural Resources Background Report
3. Updated Public Facilities draft goals and policies

Wastewater

Background Report Draft

Review History

Date	Reviewed By
9/1/2016	Internal Review, comments incorporated

1. Introduction

[NOTE: Goals and policies that refer to waterways, wetlands, floodplains, and groundwater will be covered in the Natural Resources section; goals and policies that refer to stormwater will be covered in the Stormwater Management section; goals and policies that refer to drinking water supply and distribution will be covered in the Water Supply section; and goals and policies that refer to the extension of public facilities for new development will be covered in both the Urbanization section and the Public Facilities section of the Comprehensive Plan update.]

The collection and treatment of wastewater is vital to public health, the environment, and clean water. After water is no longer suitable for use, it is considered to be wastewater (generally referred to as sewage) which must be treated before being reused or returned to the environment. Treatment typically involves using physical, chemical and biological processes to remove contaminants and produce environmentally safe wastewater discharge.

In urban Washington County, after more than 560,000 home, business, and industry customers use water, it is conveyed as wastewater through sanitary sewer pipelines to one of four treatment facilities where it is cleaned to some of the highest standards in the nation before being discharged to the Tualatin River. Wherever possible, gravity moves the wastewater, with boosts from pump stations where needed. The City of Hillsboro and Clean Water Services (CWS) share responsibility for the conveyance of Hillsboro's wastewater and CWS is solely responsible for wastewater treatment facilities.

Figure 1: Simplified Urban Water Cycle

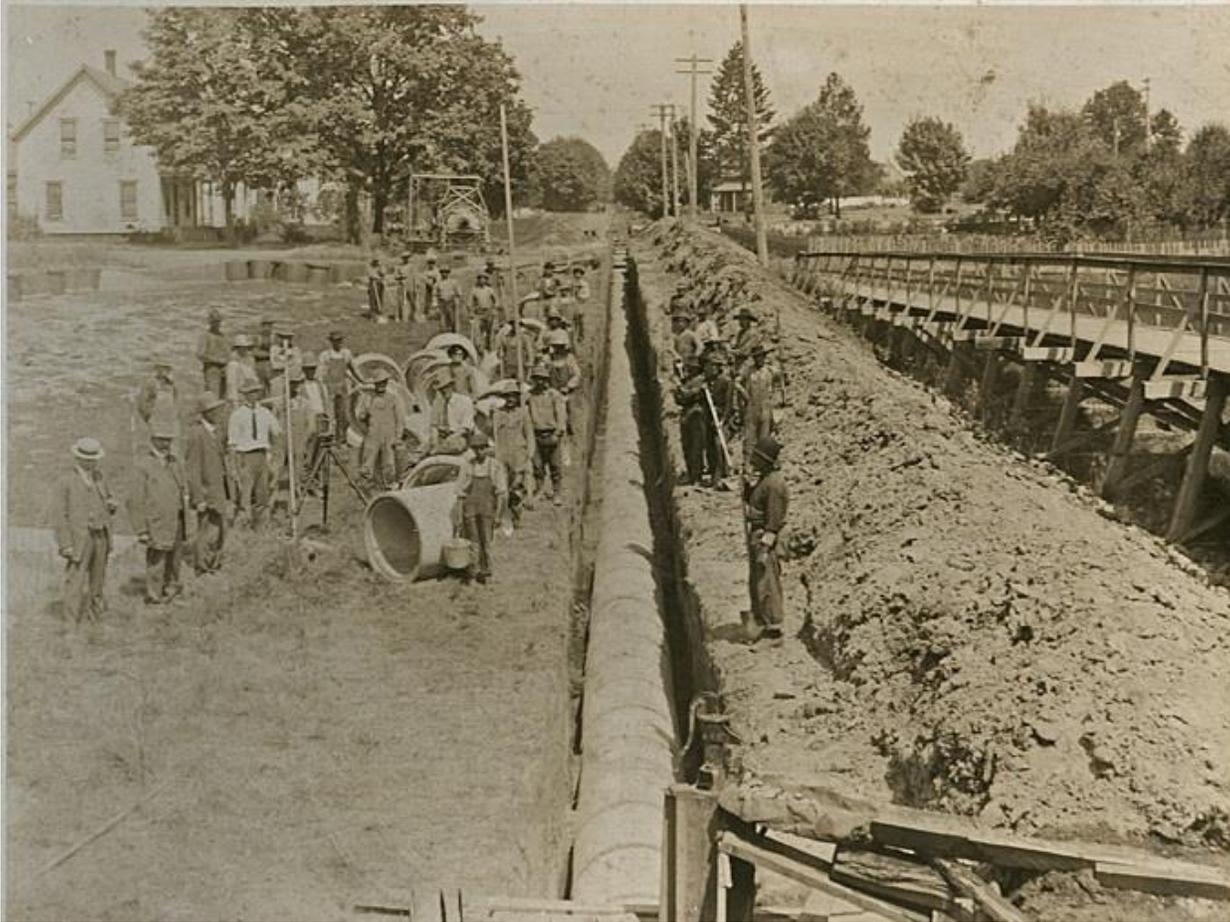


(Environmental Protection Agency, 2004)

2. Background

In 1911, the City of Hillsboro began work to construct its first sanitary sewer system, which, over the next two decades, replaced the informal open sewer pipes that previously connected to a septic tank located in the north end of Jackson Bottom. In 1935, the City constructed a sewage treatment plant along Highway 219 to replace the earlier system. However, the new system was inadequate and for decades, agricultural and sewage disposal practices created a highly degraded Tualatin River. Separate municipal and local sewerage agencies operated throughout Washington County and by 1969, pollution in the Tualatin River watershed was so bad that the Oregon Department of Environmental Quality (DEQ) stepped in. State officials imposed a moratorium on development in Washington County until the 26 municipal and local sewer agencies stopped dumping their partially-treated sewage into the Tualatin River and its tributaries.

Figure 2: Construction of Hillsboro's First Sewer



County and local officials went to voters in February 1970 to get approval to combine the patchwork of smaller sewage agencies into the Unified Sewerage Agency (now Clean Water Services). Two months later, voters approved a \$36 million bond measure to allow the new countywide agency to begin building and upgrading wastewater treatment facilities. In response, DEQ lifted the moratorium on construction while limiting the number of new sewer hookups until the new treatment plants were operating. In 1976, the Durham Treatment Facility opened in Tigard, replacing 14 smaller plants. Two years later, the Rock Creek Treatment Facility opened, replacing 6 plants. By 1986, 550 miles of new sewer lines were built in Washington County, opening vast new stretches of farmland to development¹.

2.1. Provision of Services

Today, the City owns, operates, and maintains the gravity sewer collection system for lines less than 24" in diameter within Hillsboro's urban services boundary. The City is also responsible for approving the installation of new collection system components and for approving and inspecting new service connections within City limits. The City is responsible for the billing and collection of fees and service charges for all residential and commercial sanitary sewer accounts (see Funding, below).

Lines 24" and larger in diameter, pump stations, force mains, and treatment facilities are owned, operated, and maintained by CWS. CWS is also responsible for industrial permitting and billing.

Laterals extending from homeowner and private business properties to the public sewer main lines are considered private utilities and are the property owners' responsibility to maintain. The roles and responsibilities for the

¹ Lewis, P. G. (1996). *Shaping suburbia: How political institutions organize urban development*. P. 100

conveyance and treatment of sewage were established through a 1970 intergovernmental agreement (IGA). This IGA has been updated numerous times over the years to comply with federal and state regulations.

2.2. Funding

Since 1970 when the Unified Sewage Agency of Washington County (USA) was formed, Hillsboro has relied on the ratemaking authority of USA (now Clean Water Services) for funding. When USA was formed in 1970, the sewer revenue split between the District and cities was 70% to USA and 30% to the cities. Over the years, this revenue sharing percentage has changed. Currently, CWS retains 86% of sewer rate revenue and the cities retain the remaining 14%. This shift in sewer revenue sharing was the result of higher CWS debt service for treatment plant expansions. For fiscal year 2016-17, the sewer rate was increased by three percent, which added \$1.21 a month to the average residential sewer charge².

The City pays for new lines, replacement lines, and size upgrades up to and including 12-inch lines. CWS pays for sizes over 12-inches. When a new line is installed or a line is upsized from less than 12-inches to greater than 12-inches, the cost is pro-rated between the City and CWS.

This was an additional outcome of the rate studies which was a result of the new distribution of System Development Charge (SDC) revenue where CWS retains 96% and the City 4%. This is due to the fact that the majority of SDC revenue spent is for expansion at the treatment plants.

2.3. Treatment Facilities Serving Hillsboro

CWS operates four separate but connected wastewater treatment plants with different levels of treatment. Currently, two operate year-round; two operate only in the summer (in 2017, one will start year-round operation).

2.3.1 Hillsboro Treatment Facility

The Hillsboro facility, located at 770 S First Avenue, provides wastewater treatment for the cities of Banks, the north portions of Cornelius and Forest Grove, and the western region of Hillsboro. Constructed in 1970, the facility was upgraded in 1993 and 1997 to achieve maximum versatility, and now operates predominantly in the rainy season from November through April. In the summer, the wastewater is pumped to the Rock Creek Facility on River Road for treatment.

Since completion of the Hillsboro facility expansion in 1997, every parameter of the National Pollution Discharge Elimination System (NPDES) permit³ has been met. The Hillsboro facility won an Environmental Protection Agency (EPA) Operation and Maintenance Excellence Award in 2003.⁴

2.3.2 Rock Creek Treatment Facility

The Rock Creek facility (3235 SW River Road, Hillsboro) provides wastewater treatment for the City of Hillsboro, portions of Beaverton, Aloha, North Plains, and unincorporated areas in Washington County. The Rock Creek facility provides advanced treatment to wastewater, including phosphorous and ammonia-nitrogen nutrient removal, and effluent filtration. Cleaned wastewater is also used for local irrigation, and natural by-products of the treatment process are converted to electricity, commercial grade fertilizer, and used as soil amendments throughout the state. Biosolids streams from the Hillsboro and Forest Grove facilities as well as a portion of these plants' influent flow are treated at Rock Creek. Biosolids are digested, processed, and dewatered at the

² <http://www.cleanwaterservices.org/for-residents/utility-billing/our-rates/budget-faqs/>

³ An NPDES permit is necessary for anybody discharging "pollutants" through a "point source" into a "water of the United States". The permit contains limits on what can be discharged and specifies monitoring and reporting requirements. These provisions are designed to prevent damage to water quality and human health. See <https://www.epa.gov/npdes/npdes-frequent-questions>

⁴ <https://www.cleanwaterservices.org/about-us/one-water/our-facilities/>

facility. These biosolids are then recycled and applied to agricultural lands in the Willamette Valley and eastern Oregon as fertilizer, reducing the need for chemical fertilizers on nearby farmland.

The Rock Creek Advanced Wastewater Treatment Facility won the EPA 2006 National Clean Water Act Recognition Award for operations and maintenance excellence in large facilities with advanced treatment. The facility cleans 39 million gallons of wastewater on an average day, releasing water so clean it improves Tualatin River water quality.⁵ The facility is currently under expansion.

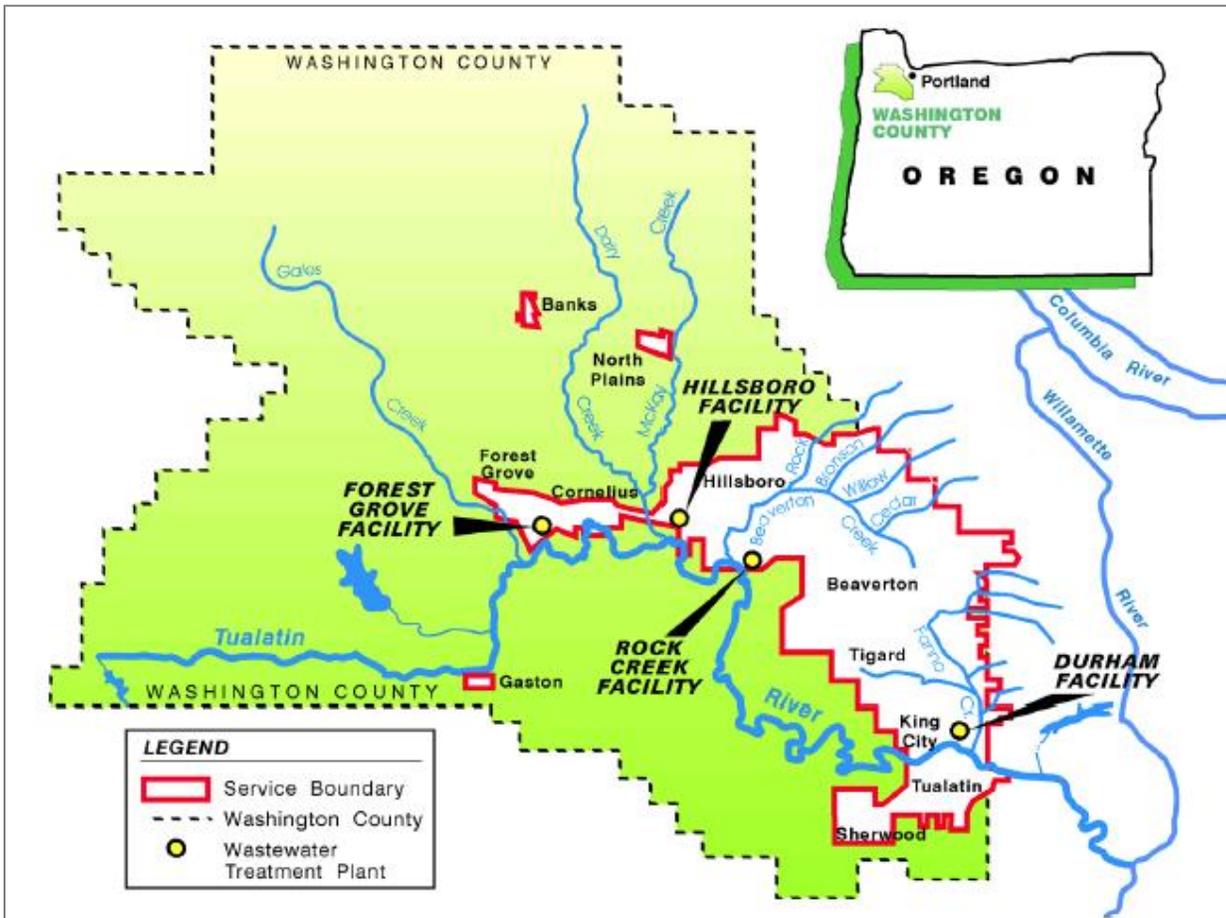
2.3.3 Forest Grove Treatment Facility

The Forest Grove Treatment Facility (1345 Fern Hill Road, Forest Grove) does not serve Hillsboro directly, but is connected by pipeline to the Hillsboro and Rock Creek facilities and integrated in terms of operational requirements.

DRAFT

⁵ <https://www.cleanwaterservices.org/media/1227/rock-creek-at-a-glance.pdf>

Figure 3: Locations of CWS Treatment Facilities



(Clean Water Services, 2014)

2.4. Watershed⁶

CWS cleans 60 million gallons of wastewater each day at the treatment facilities where resources are recovered and the used water is cleaned before being returned to the Tualatin River. Each year, CWS releases water from reservoirs into the Tualatin River starting in July to sustain flows. This water augments the discharges from the treatment facilities, with approximately 28% of the water coming from the Rock Creek Treatment Facility.

The Tualatin River and its tributary streams drain approximately 712 square miles of land, mostly within Washington County. The river is approximately 83 miles long and flows from the eastern side of the Coast Range to the Willamette River. The first 25 river miles descend about 1,800 feet in elevation, swiftly flowing through forests and scattered pasture lands in Oregon’s Coast Range. The river then slows down, because it drops only 100 feet in elevation over the remaining 55 river miles. Here the river drains largely urban and agricultural lands, and flows into the Willamette River near West Linn. Major tributaries include Scoggins, Gales, Dairy, McKay, Rock, Beaverton and Fanno Creeks. The predominant uses of land in the Tualatin Watershed are: Urban (20%), Agriculture (30%) and Forestry (50%).

Figure 4: Land Use Based on Zoning- Tualatin Subbasin

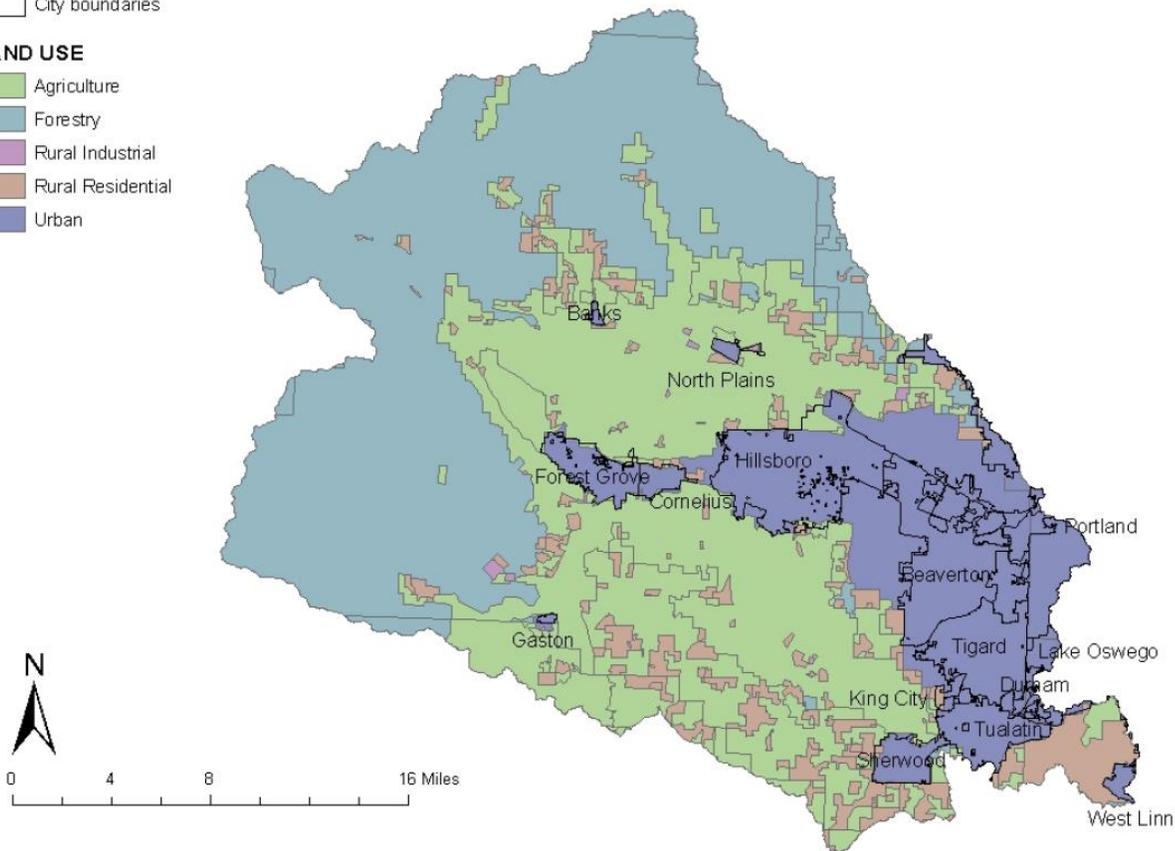
⁶ Defined as: *The area that catches rain and snow and drains into a corresponding river, stream, or other waterbody and covering a geographic area that begins at ridge tops (highest elevations) and ends at a river, lake, or wetland (lowest elevation).*

Legend

City boundaries

LAND USE

- Agriculture
- Forestry
- Rural Industrial
- Rural Residential
- Urban



(Oregon DEQ, 2012)

The watershed is home to a variety of wildlife including elk, deer and bears found in the Coast Range; ducks and geese that overwinter in the basin; and eagles, osprey, herons, hawks, and other birds. The river itself is home to winter steelhead, coho salmon, and resident cutthroat trout. Winter steelhead are currently listed as threatened by the National Marine Fishery Service under the Endangered Species Act. These fish are generally in decline in the subbasin and have been lost from some tributaries due to a variety of factors that include changes in habitat and water quality.

Recreation opportunities in the watershed include boating and fishing on Hagg Lake and canoeing on the Tualatin River. Parks and trails can be found throughout the area.

According to DEQ⁷, many streams in the watershed do not meet Oregon water quality standards. These streams have high water temperatures and low dissolved oxygen levels that can harm fish and other aquatic life. Some water bodies have bacteria counts that are higher than the Oregon’s water quality standard.

2.5. Common Water Pollutants

Water pollution occurs when materials are added to a water body in excessive quantities, causing adverse effects. Pollution can be caused by many different sources; among the most common are domestic sewage discharges from stormwater or sanitary sewer systems, agricultural waste and fertilizers, industrial discharges of heated water, and improper disposal of hazardous chemicals. Table 1 describes common water pollutants and their sources.

Table 1: Common Water Pollutants and their Sources

Pollutant Category	Examples	Common Sources
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⁷ See <http://www.deq.state.or.us/wg/pubs/factsheets/tmdls/Tualatin12NWR021.pdf>

Oxygen demanding substances	Organic matter, ammonia	Domestic sewage; agricultural and industrial wastes
Pathogens	Bacteria, viruses, parasites	Domestic sewage, including failing septic systems; agricultural wastes; animal wastes
Nutrients	Carbon, nitrogen, and phosphorous found in wastewater discharges, fertilizers, and detergents	Industrial and household waste; agricultural runoff; roads; golf courses; failing septic system
Inorganic and synthetic organic chemicals	Acids, bases, metals, and salts from detergents, household cleaning supplies, pharmaceuticals, pesticides and herbicides, industrial chemicals and other chemicals	Industrial effluents; processing fossil fuels; mining; household chemicals; agricultural; road salt; surface runoff
Thermal	Heat	Power plants; industrial cooling; loss of streambank vegetation; treated wastewater discharge

3. Regulatory Context

3.1. Federal

The 1972 Amendments to the Federal Water Pollution Control Act, known as the Clean Water Act (CWA), established the foundation for wastewater discharge control in this country. The CWA's primary objective is to 'restore and maintain the chemical, physical and biological integrity of the nation's waters.'

The CWA established a control program for ensuring that communities have clean water by regulating the release of contaminants into our country's waterways. Permits that limit the amount of pollutants discharged are required of all municipal and industrial wastewater dischargers under the National Pollutant Discharge Elimination System (NPDES) permit program. In addition, a construction grants program was set up to assist publicly-owned wastewater treatment works build the improvements required to meet these new limits.

3.2. State

3.2.1 State Regulations on Wastewater Treatment

EPA delegates authority to states for implementation of the CWA. The Oregon DEQ is responsible for operation of the CWA statewide, including issuing permits and water quality monitoring of specific rivers and streams.

When technology-based controls are not sufficient to meet water quality standards and support the beneficial uses of a water body, the CWA requires Total Maximum Daily Loads (TMDLs) to be developed for the pollutant(s) causing the issue. Simply put, a TMDL is the total amount of pollutant that can be added to a waterbody without violating water quality standards or impairing beneficial uses.

In 1988, DEQ established the nation's first TMDL for the Tualatin River, to be met by 1993. DEQ developed an ammonia TMDL to address problems with low dissolved oxygen (DO) and a total phosphorus TMDL to address problems with high pH and nuisance algal growth in the slower moving section of the Tualatin River. In 2001, the TMDLs for ammonia and total phosphorus were revised and new TMDLs for temperature, bacteria and volatile solids were added to address dissolved oxygen issues. The 2001 TMDL was updated in 2012 to include phosphorus and ammonia allocations for all four of CWS' treatment facilities.

In February 2004, DEQ issued to CWS the nation's first integrated, municipal, watershed-based permit under the CWA. This innovative permit integrates CWS' four municipal wastewater treatment facilities and the municipal stormwater system permits into a single bundle, which changed the regulatory framework to allow CWS greater

flexibility to take advantage of creative approaches and new solutions. This is particularly important for temperature regulation, as technologies for cooling effluent on-site are very limited and standard treatments including shading treatment units and installing mechanical refrigeration units can be ineffective and costly. According to DEQ, CWS' permit allows CWS to "trade" its thermal load by a combination of the following actions:

- Improving riparian shade along the river and its tributaries, e.g., planting trees and vegetation along the stream banks. Ancillary benefits to planting trees include improved habitat for wildlife and reduced bank erosion.
- Augmenting flow. By increasing base flows in the Tualatin, the travel time of the river is decreased, which reduces the amount of heating by solar radiation.
- Using reclaimed water (effluent) for irrigation. It should be noted that reuse of the reclaimed water is not strictly speaking a "trade"; it is simply a means by which CWS can reduce its thermal load to the river.⁸

According to DEQ, in the first 10 years CWS operated its temperature water quality trading program, it saved ratepayers \$100 million and CWS is meeting its DEQ permit at a 95% cost savings compared to conventional wastewater treatment technologies⁹.

In April 2016, DEQ renewed CWS' NPDES permit. The new permit accommodates population growth, provides for an innovative Natural Treatment System, continues the trading program, and increases standards for wastewater effluent quality and management of the stormwater system.

3.2.2 State Regulations on Wastewater Reuse and Biosolids

In 2011, the Oregon Environmental Quality Commission approved rules that created a new, statewide program for the permitting of graywater¹⁰ reuse and disposal systems. House Bill 2080, passed by the 2009 Oregon Legislature, required the development and adoption of these rules. Under Oregon law, graywater refers to shower and bath wastewater, bathroom sink wastewater, kitchen sink wastewater, and laundry wastewater. Graywater does not include toilet or garbage wastes or wastewater contaminated by soiled diapers. DEQ began accepting permits for graywater systems in spring, 2012¹¹. While the City does not have specific guidance or a program for graywater systems, applicants for the DEQ graywater reuse and disposal system permit must also "satisfy all local permitting authority requirements, including but not limited to securing all applicable building permits, plumbing permits and inspections."¹²

DEQ recognizes the benefits of biosolids when used in accordance with federal and state regulations. Guidelines and rules developed over the years have always emphasized the need for protecting public health and the environment through proper management and monitoring of biosolids operations¹³. Oregon Administrative Rules 340-050-0006 defines the state's policy on biosolids under the direction of the Environmental Quality Commission. The policy identifies the benefits of biosolids land application stating that "these beneficially recyclable materials improve soil tilth, fertility, and stability and their use enhances the growth of agricultural, silvicultural, and horticultural crops."

⁸ <http://www.deq.state.or.us/wq/trading/faqs.htm#11>.

⁹ More information at <http://www.deq.state.or.us/wq/wqpermit/docs/natTreatSysWP.pdf>

¹⁰ Household wastewater (as from a sink or bath) that does not contain serious contaminants such as from toilets or diapers.

¹¹ More information at <http://www.deq.state.or.us/wq/reuse/graywater.htm#Reg>

¹² More information at <http://www.deq.state.or.us/wq/wqpermit/docs/general/wpcf2401/permit.pdf>

¹³ More information at <http://www.deq.state.or.us/wq/biosolids/overview.htm>

Biosolids are regulated under DEQ's water quality program, specifically through a NPDES or Water Pollution Control Facility permit, a biosolids management plan, and site authorization letters.

3.2.3 Oregon Statewide Planning Goals

Statewide Planning Goal 6 relates to the maintenance and improvement of the quality of the air, water, and land resources of the state. It requires that all waste and process discharges comply with applicable state and federal environmental quality statutes, rules, and standards.

Pursuant to Oregon Statewide Planning Goal 6, discharges may not:

- a) exceed the carrying capacity of such resources, considering long range needs;
- b) degrade such resources; or
- c) threaten the availability of such resources.

3.3. Regional

Metro Code 3.09 *Local Government Boundary Changes*, governs local jurisdictions' provision of urban services, including sanitary sewer, in accordance with Oregon Revised Statutes 268.347 to 268.354. Metro Code 3.09 is consistent with Goal 11 and its implementing rules, which generally prohibit the establishment or extension of sewer systems outside urban growth boundaries or unincorporated community boundaries and prohibit extensions of sewer lines from within urban growth boundaries or unincorporated community boundaries to serve land outside those boundaries, except where the new or extended system is the only practicable alternative to mitigate a public health hazard and will not adversely affect farm or forest land¹⁴. Metro Code 3.09.090 specifically prohibits cities and districts from extending "water or sewer service from inside a UGB to territory that lies outside the UGB".

3.4. Local

CWS, as the holder of the NPDES permit, is responsible for meeting all State and Federal wastewater regulations. The City of Hillsboro and other jurisdictions assist in this effort by conforming to CWS standards and maintenance requirements. The City's maintenance responsibilities include:

- Annual inspection and maintenance of sewer manholes, including manholes in stream corridors or environmentally sensitive areas.
- Televised inspection¹⁵ every 8 years and cleaning at least every 4 years of over 260 miles of sewer lines. Some "hot spot"¹⁶ lines are inspected and cleaned on a bi-annual, annual or semi-annual basis depending upon the amount of grease discharged to the system.
- Annual inspection of food service establishments for Fats, Oils and Grease (FOG) management and FOG separator and pump out inspections.
- Emergency response to sanitary sewer system issues including overflows, clogging, and customer complaints.
- Ongoing maintenance of at risk pipelines to prevent sewer system overflows and to reduce inflow and infiltration¹⁷ also known as I&I abatement.

4. Hillsboro 2020 and Hillsboro 2035

As part of Hillsboro's ongoing community visioning efforts, the public has provided input on the issues and opportunities that are important to those who live, work, and play in Hillsboro. In 2000, the Hillsboro 2020 Vision and Action Plan

¹⁴ These exceptions, including extraterritorial extensions of services, are detailed in [ORS 199](#) (Boundary Change Procedure).

¹⁵ Televising is performed by a remotely controlled camera that is lowered into a sewer line through a manhole. This inspection method can reveal blockages (including from debris, roots, and grease), and damage (including cracks, breaks, or deterioration of a pipe).

¹⁶ A gravity sewer identified as requiring frequent preventive maintenance to reduce the likelihood of sanitary sewer overflows.

¹⁷ Water that enters the wastewater collection system from stormwater and groundwater that increases the quantity of flow. Infiltration enters through defects in the wastewater collection system after flowing through the soil. Inflow enters the sanitary sewer without flowing through the soil. Typical points of inflow are holes in manhole lids and direct connections to the sanitary sewer (e.g. storm drains, area drains, and roof leaders).

Implementation Committee distilled more than 1,500 comments from community members into a shared community vision—known as Hillsboro 2020—and accompanying implementation measures. Building upon the success of Hillsboro 2020, the City began developing the next iteration of the community’s vision, Hillsboro 2035¹⁸, in 2013.

4.1. 2020 Vision

Action & Summary	Status
25.1 Pollution Codes Review: Review and establish appropriate codes treating aesthetic, sign, and noise related pollution issues and stormwater management.	To be implemented by 2010
25.3 Surface Water Pollution Education: Educate citizens, businesses and youth regarding pollution from surface water runoff	Implemented, Ongoing
25.5 Pollution Hot-Lines: Promote existing environmental "hot-lines" for reporting pollution.	Implemented, Ongoing
27.1 Environmentally Friendly Construction Education and Demonstration: (A) Identify environmentally-friendly materials and techniques (such as energy-efficient building construction, rainwater recycling, native plant landscaping, "green" roofs and porous paving). (B) Educate development community and public about environmentally-friendly materials and techniques. (C) Demonstrate techniques in new construction of public buildings and facilities. (D) Enable broader application of environmentally-friendly materials and techniques.	Implemented, Ongoing
27.2 Environmentally-Friendly Construction Incentives: Develop/establish incentives for use of environmentally friendly construction and landscaping techniques	To be implemented by 2010
29.1 Resource Conservation Incentives: Create incentives and educational programming to promote conservation of water, electricity, gas and other limited resources.	Ongoing

4.2. 2035 Vision

Action & Summary	Status
Economy and Infrastructure 2. C. Develop and enhance Hillsboro’s globally competitive infrastructure essential to supporting and attracting traded-sector employers including development ready sites, transportation, workforce, communications systems, water supply and incentives	To be implemented by 2020

4.2.1 Sustainability Plan

The Hillsboro 2035 Community Plan includes an Environmental Sustainability Plan that addresses wastewater. On June 16, 2015, the Hillsboro City Council adopted the first community-wide Hillsboro Environmental Sustainability Plan. The Environmental Sustainability Plan includes a number of objectives relating to waste reduction and reuse. The plan contains three primary goal areas:

Energy Objectives

- Reduce greenhouse gas emissions

¹⁸ Hillsboro 2035. (2015). *Hillsboro 2035 Community Plan*.

- Reduce use of non-renewable energy resources
- Expand use of renewable energy resources to meet demand

Resource Conservation Objectives

- Enhance understanding of the importance of natural assets and ecosystem services
- Protect and enhance environmental assets (air, land, water and habitat)
- Foster healthy human and wildlife populations

Resource Recovery and Renewal Objectives

- Reduce waste stream volumes
- Repurpose waste stream elements for beneficial use
- Pursue a “one-water”¹⁹ use and reuse strategy

Table 2: Hillsboro Environmental Sustainability Plan Wastewater-Related Goals and Targets

Indicator	Target	Target Year	Baseline	Baseline Year
18. Percentage of water naturally treated before entering stream system	Net increase in # of projects completed or underway to enhance water pretreatment	N/A	425	2014
19. Gallons of water reclaimed for beneficial use	Net increase	N/A	86 million	2013

Potential projects and policies:

- Capture grease for anaerobic digester use
- Conduct reclaimed water pilot project
- Convert biogas from wastewater treatment to natural gas for fleet and other energy use
- Implement tree planting campaign with nonprofit partners
- Coordinate with Metro, Clean Water Services and other agencies that provide land owner education and incentives
- Install green infrastructure in developing portions of Hillsboro where appropriate; retrofit existing areas where possible
- Promote community/neighborhood/business/school rain garden projects
- Promote wetland restoration projects
- Develop sustainable development incentives/rules into code for new development

5. Existing Comprehensive Plan

5.1. Existing Goals and Policies

- **Section 2: Urbanization**

- **Goal 1D**—“Establishing land use designations in particular areas will be based upon the need to...provide for the orderly and efficient extension of public facilities and service.”
- **Policy C**—“Any land use implementation measure adopted by the City or other government agency shall be consistent with and support the need to expand public facilities and services as outlined in this goal, and shall be designed in a manner that accommodates increased public demands for urban services and

¹⁹ ‘One Water’ is a concept that encourages the planning, management, allocation and use of water to broadly consider all of the increasing demands for clean water locally, regionally and globally.

is responsive to both expected growth in the commercial and industrial sectors and to population growth in the area.”

- **Section 3: Housing**
 - **Policy A**—“The development of housing shall be coordinated with the extension of public facilities and services necessary to assure safe, healthy, and convenient living conditions.”
 - **Policy L**—“New residential areas shall have water, sewers, storm drainage, street lights and underground utilities.”
 - **Policy W**—“In determining residential densities, developers may be given credit for land donated and accepted by the City for needed public facilities.”
- **Section 7: Air, Water, and Land Resource Quality**
 - **Policy B**—“The City shall design a storm sewer and sanitary sewer master plan and develop implementation measures necessary to assure that a storm sewer and sanitary system are provided to areas designated urban. The plan shall be designed to accommodate the growth anticipated in undeveloped portions of the Hillsboro Planning Area.”
 - **Policy B**—“The City shall promote and encourage the maintenance of Dawson, Dairy, Rock, Beaverton and McKay Creek channels in the planning area to maintain water flow, lower flood potential and improve the quality of the water and surrounding greenway.”
 - **Policy D**—“Industrial and commercial activities in the planning area shall operate within all applicable state and federal environmental standards regarding waste and process discharges.”
 - **Policy F**—“Land use activities which result in conflicting impacts on the air, land, or water should be separated and/or buffered to minimize the negative effects of the conflicting activities.”
 - **Policy G**—“New development shall be allowed only if urban services such as water, sewer, and streets, are available, and only in accord with the Urban Planning Area Agreement.”
 - **Policy H**—“All government agencies responsible for assuring air, water, and land resource quality in the planning area shall be contacted when plans affecting waste and process discharges are proposed.”
 - **Policy I**—“Implementation measures designed to maintain and improve the air, land and water resources and manage land use and development shall be consistent with, and reflective of, the community’s desires for a quality living environment, state and federal environmental quality statutes, rules, standards and implementation plans.”
- **Section 10: Economy**
 - **Policy B4**—“Public facilities and services necessary to meet the special needs of industrial activities should be planned for those areas designated industrial on the Comprehensive Plan Map and should be provided at a level sufficient to support proposed activities.”
- **Section 11: Energy**
 - **Policy G**—“Processing techniques designed to recycle sludge and other solid waste materials shall be encouraged and utilized where feasible to conserve energy resources.”
- **Section 12: Public Facilities and Services**
 - **Goal A**—“Provide public facilities and services in an orderly and efficient manner consistent with the expansion of urbanization into rural areas.”
 - **Goal B**—“Utilize the availability of public facilities and services as a tool for guiding urbanization with the Hillsboro Planning Area.”
 - **Goal C**—“Provide a safe and healthy living environment.”
 - **Goal D**—“Provide that existing land uses are and will continue to be supported by needed public facilities and services.”
 - **Goal E**—“Provide that future development is appropriately guided and supported by the provision of public facilities and services in a timely, orderly, and efficient manner.”

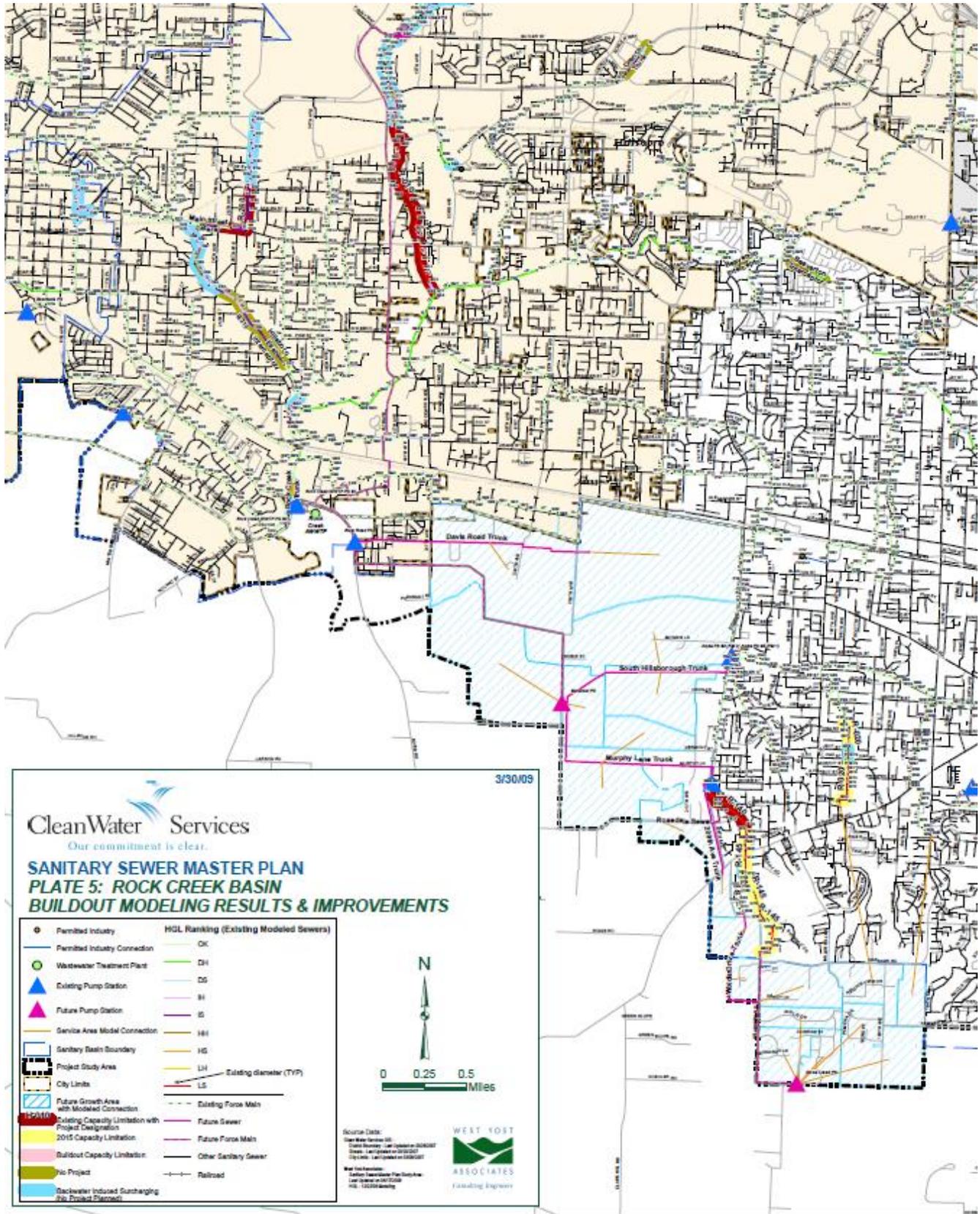
- **Policy A**—“The extension of a public facility, utility or service outside the urban area shall occur only in conjunction with an expansion of the Urban Growth Boundary and shall be provided at a level consistent with the intended density and designated land use for the area.”
- **Policy D**—“Public facilities and services shall be provided at a level sufficient to create and maintain an adequate supply of housing and service an increasing level of commercial and industrial activity.”
- **Policy E**—“The ability of residents to pay for public facilities and services at varying densities of development should be a prime consideration in determining appropriate densities and land uses in the planning area.”
- **Policy L**—“Citizens should assist in the development of funding methods and programs for public facility and service projects.”
- **Policy M**—“The City shall promote coordination among the City and other governmental and interested parties including special districts to facilitate the most effective uses of public facilities serving the planning area.”

6. Wastewater Projects

6.1. CWS Wastewater Projects

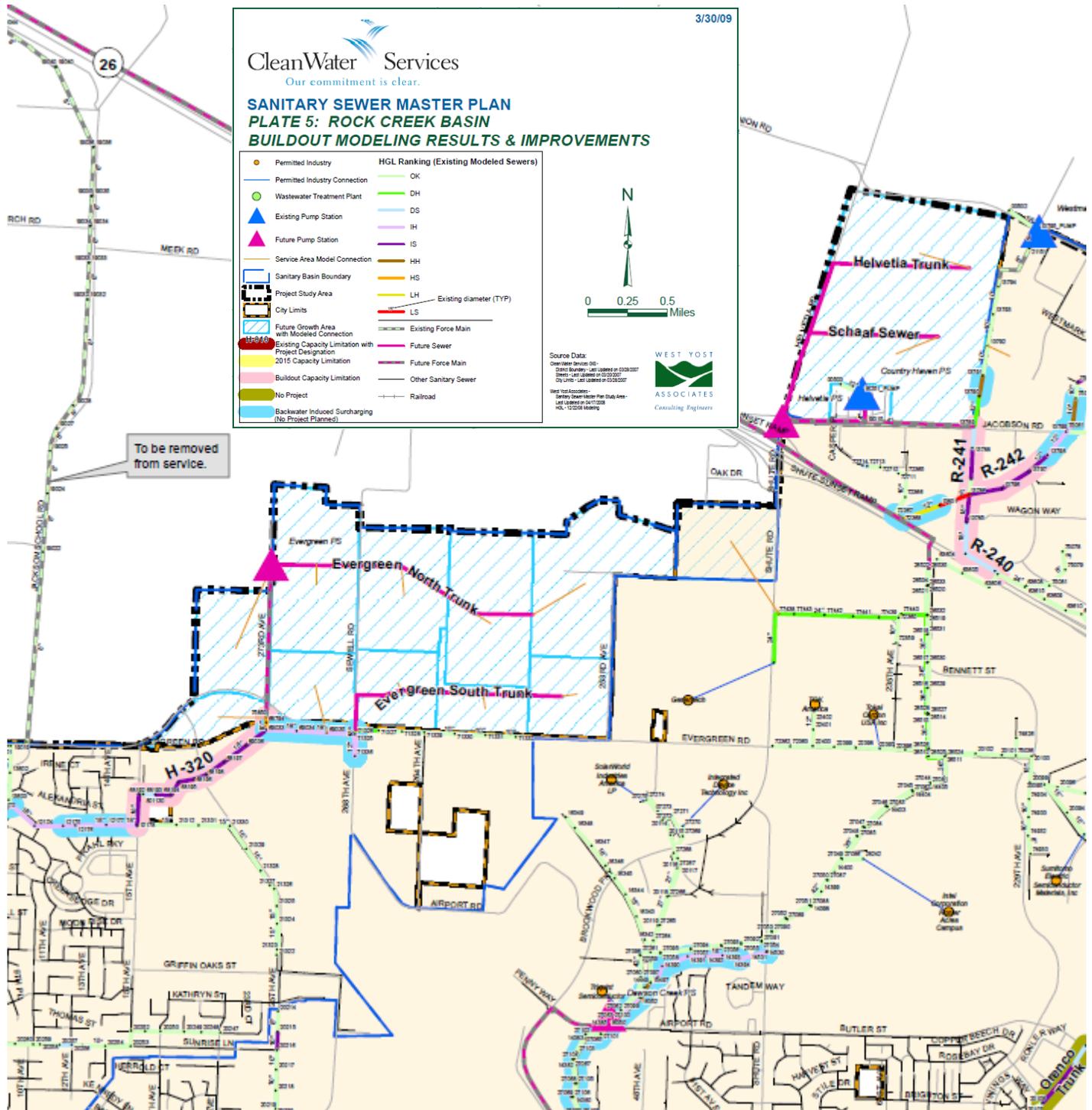
CWS developed a Sanitary Sewer Master Plan in 2000, which was updated in 2009. The 2009 Sanitary Sewer Master Plan Update modeled the capacity of the sanitary sewer system and treatment plants to determine the types, locations, and timing of projects needed. The system was extensively modeled using both existing and future build out conditions, including areas of future growth such as South Hillsboro and parts of the North Hillsboro Industrial Area. The findings from the modeling were used to develop a comprehensive list of projects which are incorporated into the agency’s 5-year Capital Improvement Project plans. A model calibration effort was completed in 2013 which updated and improved the 2009 model and resulted in a refined capital project list.

Figure 5 and Figure 6 show the project maps associated with the future growth areas. Figure 5: CWS Planned Wastewater Projects in Future Growth Areas: South Hillsboro



(Clean Water Services, 2009)

Figure 6: CWS Planned Wastewater Projects in Future Growth Areas: North Hillsboro



(Clean Water Services, 2009)

6.2. City of Hillsboro Wastewater Projects

The City's Public Works Department is in the process of converting antiquated hand-written records to an electronic Asset Management software system. When fully implemented, the asset management system will assist staff in identifying a 5-year capital replacement plan based on a pipe condition rating system to determine when facility replacement is needed, much like the rating system used in the pavement management program (PMP). The City currently has a Sanitary Sewer Master Plan and associated CIP program and listing which is updated regularly with CWS. Additionally, a local 10 year CIP is funded by a local sewer service fee of \$2.50 per equivalent dwelling units (EDU)²⁰.

Additional City Projects

- Participation in CWS' Healthy Streams Tree Challenge- tree planting and riparian area improvement
- Sewer line extensions/ replacements in coordination with road projects
- 1911 & 1936 sewer district mainline replacements and replacement of deteriorated property owner laterals
- Upsizing undersized pipes
- Point repairs such as pipe bursting, re-lining, crack/joint sealing, and connection repairs.

6.3. Issues, Opportunities, and Trends

6.3.1 Wastewater infrastructure condition

As is the case with most municipal infrastructure, system deterioration through aging is a problem. Some of the City's sanitary sewer pipes are more than 100 years old and the system is constructed from a variety of materials ranging from clay pipes installed downtown in 1911 to concrete and the more modern PVC pipe material. As the City replaces these older systems, additional unforeseen problems may arise, including shared laterals, lines that extend under homes and buildings, and pipelines that exist on private property without easements.

Many of the system's pump stations, which are owned and operated by CWS, are also aging and require part replacements and upgrades. As the system gains more users, additional pump stations and trunk lines are needed, and existing pipes may require upsizing to accommodate the additional volumes. These repairs and upgrades can be costly.

6.3.2 Climate change risk and resiliency

As the wastewater system is directly tied to the water system, fluctuations in water volumes can impact the efficacy of wastewater treatment. For example, gravity systems can be susceptible to malfunction due to low water flow caused by extreme drought or water conservation measures. Conversely, high water flow caused by excessive demand may result in the collection, recycling, and outflow of sewage overtaxing the system as wastewater volumes, energy demands, and the need for operational efficiencies increase. Additionally, lower volumes in surface water bodies may lead to higher pollutant concentrations. To develop wastewater utilities that are less vulnerable to climate change, the EPA recommends scenario planning and

²⁰ The term used for billing purposes to designate the amount of sewage flow for an equivalent dwelling unit.

climate change modeling to determine future policy, operations/management, and infrastructure needs²¹.

6.3.3 Contaminants

The character and quantity of contaminants presenting problems today are far more complex than those of the past. Fats, oils and grease (a.k.a. FOG) are persistent problems for the wastewater agencies because they don't break down in water and tend to separate from liquids. Large amounts of oil and grease from kitchen drains cause trouble in the pipe system and at the wastewater treatment facility. FOG decreases pipe capacity and requires pipe systems to be cleaned more often and sometimes replaced sooner than otherwise expected. As the liquid cools, the grease or fat hardens and causes mats on the surface of settling tanks, digesters, inside pipes and other surfaces which may cause a shutdown of treatment plant equipment. At its Durham facility, CWS uses 100,000 gallons of FOG delivered weekly from local restaurants to enhance energy production. In the past, this significant energy source was disposed of in landfills or to the sewer system, but it is increasingly being used as feedstock to produce energy.

Another common nuisance is the disposal of disposable wipes, rags and other solids into the sewers which get stuck and further cause blockages and sometimes overflows.

Other complex contaminants such as prescription drugs, have been found in water supplies nationwide, although they have not been found to be problematic in this watershed. As a precaution, CWS partners with municipalities to provide safe disposal facilities for medications.

6.3.4 Regulatory changes

Regulations governing wastewater have evolved and expanded since the CWA's passage in 1972. Requirements range from limits on the specific type and quantities of pollutants in discharges to the frequency and timing of water quality monitoring. Municipal wastewater treatment providers must adapt their facilities and practices in order to keep up with new regulations. While this can be extremely costly, the changing regulatory environment has also been the impetus for developing innovative and cost-effective treatments. CWS' watershed-based approach to permitting under the CWA has allowed for greater flexibility and cost savings in the face of regulatory changes.

6.3.5 Security/ natural disaster/ terrorism resilience

Wastewater systems may be targets for terrorists and other would-be criminals wishing to disrupt and cause harm. The facilities can be located in isolated areas and may be difficult to secure and patrol. In addition, natural disasters such as earthquakes can leave the system vulnerable to damage. The EPA assists communities with tools and strategies to enhance the security of the systems and to quickly recover from contamination and other system disruptions. Electrical grid failures can be particularly problematic for wastewater treatment facilities and onsite power generation and uninterrupted power supply can protect against such emergencies.

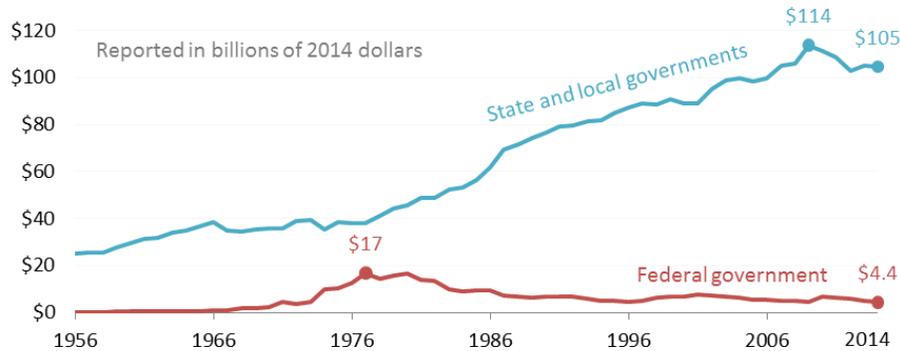
6.3.6 Funding

Funding for wastewater infrastructure has changed in recent decades. State and local government spending on water and wastewater utilities continued to grow while federal

²¹ More information at: https://www.epa.gov/sites/production/files/2015-04/documents/updated_adaptation_strategies_guide_for_water_utilities.pdf

spending declined since the 1980s. State and local governments spent 24 times as much as the federal government in 2014.

Figure 7: Water and Wastewater Infrastructure Spending



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
 Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure-specific price indexes.

6.3.7 Water reuse

The practice of recycling water after it has been used and before it enters the sanitary sewer system is growing in popularity. Recycled water is most commonly used for non-potable (not for drinking) purposes, such as irrigation for agriculture, landscaping, public parks, and golf courses. Other non-potable applications include cooling water for power plants and oil refineries, industrial process water for facilities such as paper mills, toilet flushing, dust control, construction activities, concrete mixing, and artificial lakes. A growing awareness of resource recovery and conservation as a result of recent droughts and as potential cost-saving measures has made water reuse a more common practice. DEQ currently issues graywater permits to residential, commercial and industrial users wishing to operate such systems.

6.3.8 Energy efficiency and generation in wastewater treatment systems

Approximately 3% of electricity generated nationwide is used to treat wastewater²². Wastewater itself has untapped energy producing potential, which has led some wastewater treatment plant operators, including CWS, to rethink its prospects.

Using anaerobic digestion (utilizing bacteria in the absence of oxygen), CWS breaks down organics in wastewater and food waste to generate methane. This methane is used to produce electricity in cogeneration systems at the Rock Creek and Durham facilities, which help power the wastewater treatment plants. At the Rock Creek facility, 30 percent of the energy needs are met through cogeneration²³.

6.3.9 Nutrient recovery and reuse

CWS' Rock Creek treatment facility (in addition to its Durham treatment facility) use Ostara technology to recover magnesium ammonium phosphate from wastewater processed at the

²² <http://usedtouseful.com/post/125191616890/changing-the-paradigmwastewater-treatment-to>

²³ <http://www.cleanwaterservices.org/about-us/one-water/resource-recovery/energy/>

plant. Biosolids²⁴ remaining from the treatment process, are trucked to agricultural land the Willamette Valley and eastern Oregon to be applied to the land as fertilizer for crops.

6.3.10 Natural Treatment System

Natural Treatment Systems create an “ecological bridge between treatment and the watershed, where water is cleansed further, cooled and naturalized before its return to the river”²⁵. At Fernhill in Forest Grove, CWS is creating a Natural Treatment System wetland using cleaned wastewater pumped from the Rock Creek facility. As the facility is expanded and fully functioning, it will receive water from the Forest Grove treatment facility and will begin to produce cleaned water.

6.3.11 Non-regional treatment facilities

In areas of new development, particularly where concentrations of high-water industrial users are expected, CWS is considering local, rather than regional, treatment of wastewater. New industry would sponsor smaller, more efficient local treatment systems which do not require downstream conveyance systems to transport the sewage to the regional facilities.

7. Policy Considerations

Hillsboro’s existing Comprehensive Plan lacks a specific set of goals and policies that address wastewater treatment. This update of the Comprehensive Plan represents an opportunity to set clear land use policies relating to wastewater.

²⁴ The nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. See <https://www.epa.gov/biosolids/frequent-questions-about-biosolids>

²⁵ <http://www.fernhillnts.org/watertreatment/>

Wastewater

Goals and Policies (DRAFT)

[NOTE: Goals and policies that refer to waterways, wetlands, floodplains, and groundwater will be covered in the Natural Resources section; goals and policies that refer to stormwater will be covered in the Stormwater Management section; goals and policies that refer to drinking water supply and distribution will be covered in the Water Supply section; and goals and policies that refer to the extension of public facilities for new development will be covered in both the Urbanization section and the Public Facilities section of the Comprehensive Plan update.]

Review History

Date	Reviewed By
9/1/2016	Internal Review, comments incorporated

GOAL 1 Provide for the collection and treatment of wastewater to meet current and future needs.

- POLICY 1.1 **Coordination.** Coordinate wastewater* collection and treatment with local and regional agencies and stakeholders.
- POLICY 1.2 **System expansion.** Plan for the expansion of the sanitary sewer network to meet projected demand.
- POLICY 1.3 **Capital improvement projects.** Support capital improvement projects that enhance Hillsboro’s and Clean Water Services’ ability to deliver an adequate wastewater collection and treatment system to current and future users.
- POLICY 1.4 **Industrial users.** Plan for the diverse wastewater needs of industrial water users, including high contaminant levels and heavy water use.
- POLICY 1.5 **Aging infrastructure.** Improve and maintain the wastewater system using asset management principles to optimize preventative maintenance, reduce unplanned reactive maintenance, achieve scheduled service delivery, and protect the quality, reliability, and adequacy of services.
- POLICY 1.6 **Resiliency.** Create and maintain a resilient system to reduce risk posed by seismic events and other hazards.

GOAL 2 Provide responsible stewardship of the Tualatin River watershed.

- POLICY 2.1 **Regulatory standards.** Support partner agency efforts to ensure that wastewater discharges meet regulatory standards.
- POLICY 2.2 **Watershed protection.** Coordinate with local and regional stakeholders to protect the quality of the Tualatin River watershed*.

* Asterisks indicate terms with specific definitions included at the end of this section.

GOAL 3 Encourage sustainable practices in the collection and treatment of wastewater.

- POLICY 3.1 **Conservation.** Promote development practices that have a smaller draw on the system and make efficient use of water and wastewater, including graywater.
- POLICY 3.2 **Energy reduction.** Support partners' efforts to pursue renewable energy generation and energy reduction practices as part of wastewater facilities when economically and operationally appropriate.
- POLICY 3.3 **Resource recovery.** Support partners' use of nutrient recovery and materials reclamation as part of wastewater facilities when economically and operationally appropriate.

DEFINITIONS

Graywater: Shower and bath wastewater, bathroom sink wastewater, kitchen sink wastewater and laundry wastewater. Graywater does not mean toilet or garbage wastes or wastewater contaminated by soiled diapers.

Wastewater: Liquid waste discharged by domestic residences, commercial properties, industry, or agriculture.

Watershed: The area that catches rain and snow and drains into a corresponding river, stream, or other waterbody and covering a geographic area that begins at ridge tops (highest elevations) and ends at a river, lake, or wetland (lowest elevation).

* Asterisks indicate terms with specific definitions included at the end of this section.

(C) WATER SYSTEM.

- (1) The water system shall be coordinated with the Land Use Map in the provision of public facilities, especially sanitary sewers and fire protection.
 - (a) The City shall coordinate with applicable special districts and other intergovernmental entities and enter into agreements to ensure adequate water for planned growth.
 - (b) The City and water related districts and entities shall coordinate master planning for the water systems in the planning area. Master Plans shall include deficiencies and needed improvements. Master Plans may require changes to the City's Public Facilities Plan.

(Added by Ord. No. 5102/1-02.)

- (2) Consistent with the adopted UPAA and other agreements with service providers the City shall require properties in the urban area to annex to the City prior to the provision of water service by the City or Tualatin Valley Water District (TVWD). (Amended by Ord. No. 5102/1-02.)
- (3) Territory within the TVWD service boundary, when annexed to the City, shall maintain TVWD as the full service provider unless otherwise agreed by TVWD. (Amended by Ord. No. 5102/1-02.)
- (4) Regarding areas presently within both the Hillsboro city limits and the TVWD service boundary and that are served by the TVWD, except for the territory served by the TVWD north of Oregon Highway 26 and east of Cornelius Pass Road, Hillsboro may annex the territory within the planning area and withdraw retail water distribution services as provided by law, including assumption of debts and liabilities, and become the retail service provider within that area. (Amended by Ord. No. 5102/1-02.)
- (5) (Deleted by Ord. No. 5102/1-02.)

(D) SANITARY SEWER.

- (1) The City shall cooperate with Clean Water Services (CWS) for the provision of service in the urban area consistent with the Comprehensive Plan policies and maps.

- (a) The City and CWS will maintain an intergovernmental agreement, for approving the installation of sewage collection lines, approving and inspecting new service connections, and for operation and maintenance of the collection system. CWS is responsible for the construction and operation on the conveyance system (pipes over 24 inches and force mains) and the sewage treatment plants. CWS is responsible for adhering to CWS construction and design standards for private development. While interconnected, each entity owns its components. (Added by Ord. No. 351 1/12-84 and Amended by Ord. No. 5102/1-02.)
- (b) Consistent with the adopted UPAA and other agreements with service providers within Urban Area "A" the City shall require properties to annex to the City prior to the provision of sanitary sewer service. (Added by Ord. No. 3511/12-84 and Amended by Ord. No. 5102/1-02.)
- (c) Within Urban Area "B" as defined by the Urban Planning Area Agreement, the City may require properties to annex to the City prior to the provision of sanitary sewer service. The City shall negotiate with service districts currently providing urban services to properties in Area B, and will address service provision issues on an individual basis upon receipt of petitions for annexation. (Added by Ord. No. 3511/12-84 and Amended by Ord. No. 5102/1-02.)
- (d) The City and CWS shall coordinate Master Plans for the sanitary sewage system. Master Plans shall identify deficiencies and needed improvements. Master Plans may require changes to the City's Public Facilities Plan. (Amended by Ord. No. 5102/1-02.)
- (2) (Deleted by Ord. No. 5102/1-02.)
- (3) The City shall continue its program of sealing, repairing and replacement of sewer lines to further reduce infiltration. Most projects in the City's Capital Improvement Plan (CIP) involve the repair and/or replacement of installed components to address one of these conditions. (Amended by Ord. No. 5102/1-02.)
- (4) (Deleted by Ord. No. 5102/1-02.)
- (5) (Deleted by Ord. No. 5102/1-02.)

Natural Resources

Background Report DRAFT

Review History

8/3/16	Internal Review, comments incorporated
9/15/16	TAC Review, comments incorporated

1. Introduction

Hillsboro is a community that takes pride in its natural assets, green spaces and overall quality of life. It is also a community experiencing rapid growth, in which new development threatens to increase impacts to natural systems. Protection of these natural resources promotes the healthy functioning of ecosystems, preserves our area’s legacy, and ensures long-term community livability.

Hillsboro’s Environmental Sustainability Plan, Goal Statement¹ reads:

Hillsboro is a sustainable community that takes proactive steps to protect natural assets, minimize greenhouse gas emissions, and recover, recycle, and renew resources. Residents, businesses and community institutions understand the link between economic prosperity and environmental health, and work collaboratively to maintain a thriving city for future generations.

Natural resources is a broad topic and one that overlaps a number of other topics covered in the Comprehensive Plan. The term natural resources, for the purpose of this report, refers broadly to the relevant categories identified in *Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces*², which provides rules for specific natural resource categories (of which only a few are applicable to Hillsboro, as shown in Figure 1). The applicable resources are addressed in two separate Comprehensive Plan topics: this topic area addresses riparian corridors, wetlands, and wildlife habitat; historic resources and cultural resources are addressed in the Historic Resources topic area. Other topic areas address related issues that are not covered by Goal 5, such as flood hazards (addressed in Natural Hazards), trees (addressed in Urban Forestry), and stream water quality (addressed in Storm Water and Wastewater topics).

Although the topic of floodplains is addressed in detail in the Natural Hazards topic area, its focus is on the mitigation of risk associated with flooding. However, floodplains themselves also have beneficial functions for fish, wildlife, and watershed health and those aspects of floodplains are discussed herein.

1.1. Goal 5 resources

Statewide Planning Goal 5 directs local governments to inventory, evaluate and develop conservation programs for specific natural and cultural resources. Particularly in urban areas, the emphasis of Goal 5 is on the inventory and conservation of wetlands, riparian zones, and wildlife habitats. State and/or

¹ City of Hillsboro. *Environmental Sustainability Plan*. “Vision Statement.” June 2015. Page 5.

https://issuu.com/hillsboro2035/docs/final_sustainability-plan_061615?e=18448918/14458278 (Accessed: 31 March 2016).

² <https://www.oregon.gov/LCD/docs/goals/goal5.pdf>

federal programs are already in place to govern many Goal 5 resources, and in such cases, compliance with the associated state and/or federal program is sufficient compliance with Goal 5 for that resource. Figure 1³ lists all Goal 5 resources and indicates their applicability in Hillsboro.

Figure 1: Key Provisions and Applicability of Goal 5 Resources

Resource	Key Provisions	Applicability
Riparian corridors	Defines ‘riparian corridors’ ⁴ and requires local inventories. Provides ‘safe harbor’ definition and protection provisions: a standard setback for maintaining riparian vegetation. Does not regulate grazing, fences, farm or forest practices. On farm and forest lands, local government may defer determination of corridor boundary until permit requested.	Applicable. Addressed in this topic area.
Wetlands ⁴	In urban areas, requires local governments to inventory wetlands based on Department of State Lands (DSL) rules. Requires local governments to make decisions in advance about whether wetlands will be protected. All local governments must coordinate with DSL regarding inventories of wetlands and local decisions that affect inventoried wetlands.	Applicable. Addressed in this topic area.
Wildlife habitat	Defines ‘wildlife habitat’ ⁵ and requires local governments to update habitat inventories using information from state and federal agencies. Governments must determine significance of habitat areas, through either standard Goal 5 process or ‘safe harbor.’ The safe harbor provides objective criteria for identifying habitat significance. Local land use plans must include decisions about habitat areas, and must be coordinated with key state and federal agencies.	Applicable. Addressed in this topic area.
Federal wild & scenic rivers ⁶	Does not require a local inventory, since these rivers are designated by the federal government. Local government must designate such a river as a significant resource, identify the wild and scenic river (WSR) corridor as the ‘impact area,’ and make the local plan consistent with the federal management plan for the river.	Not applicable. No qualifying resources.
Oregon scenic waterways	Calls for local governments to designate any Oregon scenic waterway as a significant Goal 5 resource. They need not complete the Goal 5 process for such a waterway until the Oregon Parks and Recreation Commission (OPRC) has adopted a management plan for it.	Not applicable. No qualifying resources.
Groundwater resources ⁷	Requires local governments to protect three types of significant groundwater resources: (1) critical groundwater areas; (2) groundwater limited areas, as designated by the Oregon Water Resources Commission; and (3) certain large wellhead protection areas, as designated by the Oregon Health Division. Exempts all other groundwater resources from the provisions of Goal 5.	Not applicable. No qualifying resources.
Oregon recreation trails	Provides that local governments need not inventory such trails but must designate all state approved-recreation trails as significant Goal 5 resources. Local governments may rely on state programs to protect such trails or develop additional protections using the Goal 5 process.	Not applicable. No qualifying resources.

³ Adapted from <https://www.oregon.gov/LCD/pages/goal5explan.aspx>

⁴ More information at <https://www.oregon.gov/dsl/pages/index.aspx>.

⁵ “An area upon which wildlife depend in order to meet their requirements for food, water, shelter, and reproduction. Examples include wildlife migration corridors, big game winter range, and nesting and roosting sites.” (Oregon Administrative Rule 660-023-0110(1)(b)).

⁶ More information at <http://www.nps.gov/rivers/wildriverslist.html#or>.

⁷ More information at <http://www.wrd.state.or.us/>.

Resource	Key Provisions	Applicability
Natural areas ⁸	Defines natural area as any site on the state's Register of Natural Areas. Such sites are deemed 'significant' under Goal 5. At 'periodic review,' ⁹ local governments must determine whether new natural areas have been listed. Any new area must be addressed through the standard Goal 5 process.	Not applicable. No qualifying resources.
Wilderness areas	Says that local governments must recognize federally designated wilderness areas as significant resources in their local plans. They may rely on the federal protection provided to these areas. That is, they need not apply other provisions of Goal 5, unless they choose to establish additional local protections for a wilderness area.	Not applicable. No qualifying resources.
Mineral & aggregate resources ¹⁰	Calls for local governments to determine significance of aggregate sites only in response to individual plan amendment requests. It contains clear, objective criteria to determine significance of aggregate sites.	Not applicable. No qualifying resources.
Energy sources ¹¹	Requires local plans to rely upon, and be consistent with, energy facility siting decisions made by Oregon's Energy Facility Siting Council (EFSC). For sites not covered by this process, the standard Goal 5 process guides local decisions.	Not applicable. No qualifying resources.
Historic and cultural resources	Allows property owners to opt out of local inventories. New inventories are optional for local governments. Requires a local ordinance to regulate demolition and major exterior alterations of designated historic sites. Ordinance must meet US government-recommended standards and specify at least 120-day demolition delay.	Resources identified on local inventories. See Historic Resources topic.
Open space	Optional. Enables local governments to use Goal 5 process to designate open space if they choose to do so. If they do, they must complete the standard Goal 5 steps. Allows a list of open space sites for acquisition without having to apply Goal 5 to the sites unless the sites are regulated before they are acquired.	No resources identified through Goal 5 process.
Scenic views & sites	Optional. Enables local governments to use Goal 5 process for significant new scenic views and sites if they choose to do so, using the standard Goal 5 steps. No new inventories of scenic views are required.	No resources identified through Goal 5 process.

2. Hillsboro's Natural Resources

2.1. Hillsboro's Goal 5 Natural Resources

Hillsboro's Goal 5 Natural Resources include the following¹³:

- **Riparian Corridors:** The water areas, fish habitat, adjacent riparian areas, and wetlands within the riparian area boundary as defined in OAR 660-023-0090.
- **Wetlands:** Defined in OAR 660-023-0100 as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions".

⁸ More information at <http://oregonstate.edu/ornhic/>.

⁹ A process required by Oregon state law ([ORS 197.628 - 636](#)) which requires cities and counties to evaluate and update their comprehensive plans according to a periodic schedule established by the Oregon Land Conservation and Development Commission (LCDC). Hillsboro is not currently in Periodic Review.

¹⁰ More information at <https://www.oregon.gov/LCD/pages/goal5agg.aspx>.

¹¹ More information at <http://www.energy.state.or.us/siting/sitehm.htm>.

¹³ These resources are also regulated by Metro Title 13. See Section 3.2.2.

- **Wildlife Habitat:** An area upon which wildlife depends in order to meet their requirements for food, water, shelter, and reproduction as defined in OAR 660-023-0110.

In 2001, the City undertook an inventory of its natural resources as a work plan task of its Comprehensive Plan update process. The resulting inventory, “City of Hillsboro Goal 5 Natural Resource Inventory and Assessment Report”, includes a Local Wetlands Inventory and Assessment, and Riparian Corridor and Upland Wildlife Habitat Inventories and Assessments. In accordance with the process outlined in Oregon Administrative Rule 660-023-0040 and 660-023-0050, the City evaluated the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a use in conflict with an inventoried significant natural resource. The inventory of significant riparian and upland resources was incorporated into the Hillsboro Comprehensive Plan in 2001, and subsequently, a Significant Natural Resources Overlay District (SNRO) was created indicating the appropriate levels of resource protection as determined through the ESEE analysis to implement goals and policies of the program.

2.2. Hillsboro’s Optional Goal 5 Resources

- **Open Space:** includes parks, forests, wildlife preserves, nature reservations or sanctuaries, and public or private golf courses. Goal 5 gives local governments the option to inventory open space resources, in which case OAR 660-023-0030 through 660-023-0050 applies. Although the City has designated open spaces, they are not inventoried as Goal 5 resources and, accordingly, open spaces are not provided the same level of protection.
- **Scenic Views and Sites:** lands that are valued for their aesthetic appearance. Goal 5 gives local governments the option to inventory scenic views and sites, in which case OAR 660-023-0030 through 660-023-0050 applies. The City has not identified any significant scenic views and sites.
- **Historic and Cultural Resources:** This resource is addressed under the Historic Resources topic.

3. Regulatory Framework

3.1. Significant Federal and State Environmental Regulations

3.1.1. Endangered Species Act of 1973

The Endangered Species Act (ESA) was designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untempered by adequate concern and conservation." It is administered by the US Fish and Wildlife Service (FWS) and National Oceanic and Atmospheric Administration (NOAA), who maintain a list of the nation’s threatened and endangered species.

According to FWS¹⁴, the following federally-listed threatened, and endangered species may occur in Washington County. Species for which critical habitat must also be protected are shown in **bold**.

Birds

Marbled murrelet – Threatened

Northern spotted owl – Threatened

Streaked horned lark- Threatened

Yellow-billed cuckoo- Threatened

Insects

Fender’s blue butterfly- Endangered

¹⁴ US Fish and Wildlife Service IPaC Trust Resources Report for Washington County Oregon. <https://ecos.fws.gov/ipac/project/5RMLVMPMCREZJLO4SJRMR6L564> (Accessed: 15 June 2016).

Migratory Birds

Bald eagle
Caspian tern
Fox sparrow
Lewis's woodpecker
Loggerhead shrike
Marbled godwit
Olive sided flycatcher
Peregrine falcon
Purple finch
Rufous hummingbird
Short eared owl
Vesper sparrow
Western grebe
Willow flycatcher

Fish¹⁵

Steelhead (Upper Willamette River) –
Threatened

Plants

Golden paintbrush - Threatened
Willamette daisy - Endangered
Water howellia - Threatened
Bradshaw's lomatium - Endangered
Kincaid's lupine - Threatened
Nelson's checker-mallow – Threatened

Mammals

Red tree vole- Candidate

3.1.2. [Clean Water Act amendments of 1972](#)

The 1972 Amendments to the Federal Water Pollution Control Act, known as the Clean Water Act (CWA), is the federal law that governs water pollution. The CWA's primary objective is to 'restore and maintain the chemical, physical and biological integrity of the nation's waters.' The CWA established a control program for ensuring that communities have clean water by regulating the release of contaminants into waterways. It is administered by the Environmental Protection Agency (EPA). EPA delegates authority to states for implementation of the CWA. The Oregon DEQ is responsible for operation of the CWA statewide, including issuing permits and water quality monitoring of specific rivers and streams.

3.1.3. [Participation in the National Flood Insurance Program](#)

The National Flood Insurance Program (NFIP) was established in 1968 to incentivize communities to improve public safety and floodplain management by providing federally-subsidized insurance. Participation in NFIP is a prerequisite for flood insurance eligibility. Currently under the NFIP, unlimited development is allowed across the floodplain, except in the floodway (where one has been designated), so long as the structures are built either at or above the 100-year floodplain, or protected by accredited levees that provide protection from inundation during a 100-year flood event. The lowest habitable floor of a structure must be placed at least one foot above the level of the base flood elevation using an open foundation (e.g. piles or posts), stem wall foundation or fill. Structures elevated on piles and on stem wall foundations remain identified as floodplain structures and are subject to the flood insurance mandate. Only fill¹⁶ is recognized as permanently raising the structure out of the floodplain, which releases the structure from the flood insurance mandate.

¹⁵ Coho Salmon (Oregon Coast) are proposed to be added to the Threatened list.

¹⁶ According to FEMA, fill is the earthen material "sometimes placed in the Special Flood Hazard Area (SFHA) to reduce flood risk to the filled area. The placement of fill is considered

development and will require a permit under applicable Federal, state and local laws, ordinances, and regulations. Fill is prohibited within the floodway unless it has been demonstrated that it will not result in any increase in flood levels."

In 2009, Audubon Society of Portland and the Northwest Environmental Defense Center brought a lawsuit against the Federal Emergency Management Agency (FEMA) challenging NFIP's compliance with the Endangered Species Act (ESA). As a result, FEMA and National Marine Fisheries Services (NMFS) went into consultation regarding NFIP's impact on ESA listed fish species, including salmon and steelhead, and southern resident killer whales. NMFS released the resulting final Biological Opinion (BiOp) on April 14, 2016 and concluded that aspects of the NFIP threaten to jeopardize an ESA listed species or adversely modify its critical habitat. Included in the BiOp is a Reasonable and Prudent Alternatives (RPA) that describes an alternate route to implementation of the NFIP that would allow FEMA to avoid jeopardizing the species and come into compliance with the ESA. A discussion of the expected regulatory impacts of the RPA is provided in Section 7.1.1.

3.1.4. [Statewide Planning Goal 5](#)

The goal, administered by the Department of Land Conservation and Development, directs local governments to, "adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations." This is discussed in greater detail in Section 2.

3.2. [Regional Approach](#)

3.2.1. [Metro Title 3](#)

Metro's Title 3, *Water Quality and Flood Management*, was established, "to protect the beneficial water uses and functions and values of resources within the Water Quality and Flood Management Areas by limiting or mitigating the impact on these areas from development activities and protecting life and property from dangers associated with flooding."¹⁷

Hillsboro is in compliance with Title 3 of the Urban Growth Management Functional Plan (Section 3.07 of the Metro Code), which seeks to protect water quality and function from development impacts, and protect life and property from the effects of flooding. The Metro Water Quality and Flood Management Area map that is required for compliance is implemented in Hillsboro through the Significant Natural Resource Overlay (SNRO), which may be updated as new environmental data such as wetland delineations and Flood Insurance Study maps become available.

3.2.2. [Metro Title 13](#)

In 2005, Metro Council approved Title 13, *Nature in Neighborhoods*, the purpose of which is to "conserve, protect, and restore a continuous ecologically viable streamside corridor system, from the streams' headwaters to their confluence with other streams and rivers and with their floodplains in a manner that is integrated with upland wildlife habitat and with the surrounding urban landscape, and to control and prevent water pollution for the protection of public health and safety and maintain and improve water quality throughout the region".¹⁸ Local governments within Metro's jurisdiction are required to comply with Title 13 for all mapped resources located within the UGB. By meeting the requirements of Title 13, jurisdictions also comply with Goal 5 for riparian areas and wildlife habitat.

Title 13 requires the establishment of performance standards and best management practices to limit the impacts of development without prohibiting it; incentives are provided for habitat-friendly

¹⁷ Metro Code Section 3.07.320

¹⁸ Metro Council Ordinance 05-1077C

development practices in order to avoid or minimize development impacts on habitat. Metro also designated Habitat Conservation Areas for regional resources, and development activity in these areas is regulated by Title 13. Metro's inventory, *Regionally Significant Fish and Wildlife Habitat Inventory Map* (Metro Ordinance 01-1077c Exhibit a) divided the resources into categories: wildlife habitat, riparian corridors, and upland wildlife habitat and subdivided by classes: I, II and III or Class A, B and C based on their physical characteristics, development status and resource protection value.

Metro provides three options for cities and counties to comply with Title 13:

- Adopt and apply Metro's Title 13 Model Ordinance;
- "Substantially comply" with the performance standards and best practices in Metro Code Section 3.07.1340; or
- Demonstrate that it has implemented an alternative program that will achieve protection and enhancement of resources comparable with the protection and restoration that would result from one of the two previous approaches¹⁹.

Hillsboro is currently in compliance with Title 13, as confirmed by Metro in December 2014²⁰. Hillsboro came into compliance with Title 13 through the Tualatin Basin Natural Resources Coordinating Committee, described in Section 3.2.3 below.

3.2.3. [Tualatin Basin Natural Resources Coordinating Committee](#)

In the early 2000s, a consortium of eight cities, Washington County, Clean Water Services (CWS), Tualatin Hills Park & Recreation District, and Metro formed to develop a comprehensive wildlife habitat protection plan for the Tualatin Basin²¹. The group developed a program to protect, conserve and restore sensitive areas beyond the resource areas already protected through City Goal 5 and CWS vegetated corridors (described in Section 3.2.4, below). The plan identified protections for Metro inventoried categories of Class I and II riparian habitats and Class A upland habitats, referred to as Habitat Benefit Areas (HBAs), as a voluntary program. The program was initially intended to meet Goal 5 requirements and in 2007 was adopted by Metro and its implementation a requirement of Title 13 compliance for the participating jurisdictions.

Objectives of the program:

- Preserve the existing system through regulation (existing CWS Design & Construction Standards/vegetated corridor requirements) of new development and landscape alteration activities in core resource areas, and requiring mitigation of disturbances;
- Enhance overall health of regional sites through capital improvements designed to restore the natural function of riparian corridors; and
- Establish a program for HBAs that will mitigate new development impacts to significant resources throughout the Basin by encouraging the use of Low Impact Development (LID) practices, along with the removal of existing barriers to implementing those guidelines for LID approaches. Provide incentives to utilization of LID such as flexible development standards.

¹⁹ Metro Code Section 3.07.1330

²⁰ Oregon Metro. March 2015. 2014 Compliance Report. *Summary of Compliance Status as of December 31, 2014* (Appendix A).

²¹ <http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/Publications/loader.cfm?csModule=security/getfile&pageid=592831>

3.2.4. Clean Water Services

Clean Water Services (CWS) and its partners, including the City of Hillsboro, are responsible for stormwater management for urban Washington County. CWS regulates activities that can impact the watershed, including development near or within creeks and wetlands through the enforcement of buffer zones known as Vegetated Corridors (Design and Construction Standards²²). In 2005, CWS completed the *Healthy Streams Plan*, designed to improve watershed and stream health for community benefit in Washington County. The plan included a detailed inventory of the streams (including their condition), economic analysis of project options, and priorities for watershed planning.

For development within CWS's District Boundary, CWS requires that applicants secure a Service Provider Letter from the District or its designee, which specifies the conditions and requirements associated with Vegetated Corridors and Sensitive Areas necessary for the District to issue a Stormwater Connection Permit pursuant to the CWS Design and Construction Standards. Developers are required to improve Vegetated Corridors identified as "degraded" or "marginal" and mitigate for any unavoidable encroachments.

3.3. Local Programs

3.3.1. Natural Resources Management Program

The City adopted its Natural Resources Management program in 2003 to comply with Goal 5. The Natural Resources Management Program describes the degree of protection appropriate for each significant natural resources site, including wetlands, riparian corridors, and wildlife habitat throughout the City based on its ESEE. The program is based on the *City of Hillsboro Goal 5 Natural Resource Inventory and Assessment Report*²³ which was completed in the summer and fall of 2000 in accordance with OAR 141-86-180 and OAR 660-023-0090 through OAR 660-023-0110. The inventory was adopted into the Comprehensive Plan in 2001 and a new section was added to the Hillsboro Zoning Ordinance (now Community Development Code) in 2003 which established a Significant Natural Resources Overlay District (SNRO). The SNRO regulates development activities and specifies mitigation activities. More information about the SNRO can be found in Section 6.1.2.

3.3.2. ESEE for new areas

The City conducts Economic, Social, Environmental and Energy (ESEE) Consequences Analyses in accordance with statutory requirements²⁴, which includes identifying conflicting uses, determining the impact area for significant natural resources, analyzing the ESEE consequences, and determining whether to allow, limit, or prohibit identified conflicting uses for significant natural resources listed in the adopted *List of Significant Goal 5 Natural Resource Sites in the City of Hillsboro*.²⁵

As the city has grown, individual ESEE analyses are conducted for properties containing significant natural resources prior to annexation. In 2013 and 2014, ESEE analyses were performed for the addition of the North and South Hillsboro areas. ESEE analyses will be conducted for the North Industrial areas and Jackson East project as part of their planning processes.

²² <https://www.cleanwaterservices.org/media/1759/dc-chapter-3.pdf>

²³ Ord. No. 5066/9-01

²⁴ OAR 660-023-0040

²⁵ Ordinance No. 5066/9-01

3.3.3. Local Coordination with other agencies

The regulations of other agencies may apply to development proposals on lands containing natural resources. These agencies include the U.S. Army Corps of Engineers, the Oregon Division of State Lands, the U.S. Fish and Wildlife Service, the Environmental Protection Agency, the Oregon Department of Fish and Wildlife, and FEMA.

The City notifies applicable agencies for referral responses to specific development proposals prior to the issuance of City permits. The City also encourages the applicant to contact applicable agencies before development plans are completed so as to consider the requirements and restrictions that may be imposed by the agencies.

4. Hillsboro 2020 and Hillsboro 2035

The City began its visioning project, called Hillsboro 2020, in 1997. The Hillsboro Vision and Action Committee reached out to more than 1,500 citizens to create a common vision for the City, along with strategies and actions to implement this vision. The resulting Vision Action Plan was adopted by City Council in 2000, and subsequently updated in 2005 and 2010. Beginning in 2013, the City began a project to develop its next community vision, the Hillsboro 2035 Community Plan, building on the success of the original visioning project. The Hillsboro 2035 Community Plan was adopted in July 2015.

4.1. Vision 2020

The 2020 Vision and Action Plan²⁶ was organized into a series of focus areas, strategies, and actions. The actions most related to natural resources are listed below, with a brief note on the implementation status of each action.

Vision Area: Preserving the Environment	
Strategy 22: Inventory, designate and, as necessary, acquire major greenways, creeks and wetlands in the Hillsboro area for future protection and preservation.	
22.1 Natural Resource Inventory: Finalize inventory and designate resource areas	Implemented
22.2 Resource Area Regulation: Develop regulations for future preservation and protection of designated areas	Implemented
22.3 Resource Area Priority Designation and Acquisition: Prioritize designated areas for acquisition with attention to interconnected habitat systems and wildlife corridors, and acquire priority areas as appropriate. Attempt to secure dedications of conservation easements prior to purchasing land.	Implemented and ongoing
Strategy 23: Establish a community-wide stream and wetland restoration and education program.	
23.1 Stream Restoration Assessment: Assess stream restoration needs and identify priority projects.	Implemented and ongoing
23.2 Restoration Programs Coordination: Provide and coordinate technical, human, and financial resources needed for restoration and education activities.	Implemented and ongoing
23.3 Streams/Wetlands Stewardship Education: Promote stewardship of streams and wetlands through coordination and distribution of educational materials and programs	Implemented and ongoing
Strategy 24: Identify and promote the restoration of wildlife habitats in the community.	
24.1 Planting Native Species: Encourage and promote planting of native species.	Implemented

²⁶ City of Hillsboro. (2000, updated 2010). *Hillsboro's 2020 Vision & Action Plan*.

Encourage nurseries to expand availability and identification of those species.	and ongoing
24.2 New Tree Planting Program: Establish a tree planting, maintenance and preservation organization and program	Not yet implemented
24.3 Pest and Weed Control Promotion: Encourage natural methods of pest and weed control; and identify current outreach and awareness programs targeting appropriate use of chemicals. Support and promote as necessary	Implemented and ongoing
24.4 Wildlife Habitat Restoration and Education: Provide and coordinate technical, human, and financial resources needed for restoration and education activities of wildlife habitat	Implemented and ongoing
24.5 Jackson Bottom Enhancement: Maintain and expand Jackson Bottom as the community's premier environmental asset	Implemented and ongoing

4.2. Hillsboro 2035

The Hillsboro 2035 Community Plan²⁷ includes an Environmental Sustainability Plan that addresses natural resources. On June 16, 2015, the Hillsboro City Council adopted the first community-wide Hillsboro Environmental Sustainability Plan²⁸. The Environmental Sustainability Plan includes a number of objectives relating to natural resource protection and enhancement. The plan contains three primary goal areas:

Energy Objectives

- Reduce greenhouse gas emissions
- Reduce use of non-renewable energy resources
- Expand use of renewable energy resources to meet demand

Resource Conservation Objectives

- Enhance understanding of the importance of natural assets and ecosystem services
- Protect and enhance environmental assets (air, land, water and habitat)
- Foster healthy human and wildlife populations

Resource Recovery and Renewal Objectives

- Reduce waste stream volumes
- Repurpose waste stream elements for beneficial use
- Pursue a "one-water"²⁹ use and reuse strategy

Table 1: Hillsboro Environmental Sustainability Plan Natural Resource-Related Goals and Targets

Indicator	Target	Target Year	Baseline	Baseline Year
8. # of acres preserved, restored and/or under natural treatment within the Rock Creek and McKay Creek drainages	Net annual increase in # of acres under riparian cover within	N/A	835 acres	2014

²⁷ Hillsboro 2035. (2015). *Hillsboro 2035 Community Plan*.

²⁸ Resolution No. 2494.

²⁹ 'One Water' is a concept that encourages the planning, management, allocation and use of water to broadly consider all of the increasing demands for clean water locally, regionally and globally.

	the Rock and McKay Creek drainages			
11. # of acres of habitat land under active habitat management in McKay watershed	Net annual increase	N/A	70.2 acres	2015
12. # of diverse bird and amphibian species present at key locations	No net decline in species diversity	N/A	TBD	TBD
13. # of residents and/or homeowners participating in some form of natural resource conservation activity or educational programming (e.g. planting, invasive species removal, water conservation, wetlands education programs)	Net annual increase	N/A	TBD	TBD
14.a. # of businesses and institutions participating in some form of natural resource conservation activity or educational programming (e.g., waste prevention, recycling, green procurement, toxics reduction);	Net annual increase	N/A	TBD	2012
14.b. # of businesses receiving County Green Business Award	Net annual increase in awardees	N/A	25	2012

Hillsboro Environmental Sustainability Plan potential projects and policies:

- Implement tree planting campaign with non-profit partners
- Implement flow restoration during summer
- Promote golf course eco-certification
- Promote Eco Biz certification program to local organizations
- Coordinate with Metro, Clean Water Services and other agencies that provide land owner education and incentives
- Monitor bird diversity
- Monitor amphibian diversity

5. Existing Comprehensive Plan

5.1. Existing goals and policies

- **Section 3: Housing**

Policy M—“The development of housing shall allow for the retention of lands for open space and recreation within the planning area, encourage the preservation of trees within developments where possible, and be consistent with goals and policies of this Plan.”

Policy Y—“Residential land shall develop within the density range designated by the Comprehensive Plan unless higher densities are approved by the City under the Planned Unit

Development process. Density reductions and transfers may also be allowed within the Significant Natural Resource Overlay (SNRO) District and within Habitat Benefit Areas that fall outside of the SNRO District.”

- **Section 4: Agricultural Lands**

Goal—“To utilize farms as open space...”

Policy C—“Horticultural uses of agricultural lands should be encouraged to provide permanent open space within the urban area.”

- **Section 6: Natural Sites**

Goal A—“Preserve, protect and maintain for present and future residents of Hillsboro and surrounding community open space, historic sites and structures.”

Goal B—“Provide a livable and attractive environment.”

Goal C—“Promote and encourage development in character with the natural features of the land.”

Goal D—“Identify and provide appropriate protection for ‘significant’ Goal 5 natural resource sites including wetlands, riparian corridors and wildlife habitat areas, including Habitat Benefit Areas not within the Significant Natural Resource Overlay District throughout the City.”

- **Policy Section A— Open Space**

Policy A1— “The City shall assure at the time of development the preservation of open space at a level which maintains a balance of land uses within the planning area and shall encourage the creation and maintenance of open space in the urban area. A funding mechanism for public acquisition of open space shall be developed and utilized in appropriate situations.”

Policy A2— “A process shall be developed and utilized which determines the suitability of lands for open space and provides a method for preserving suitable open space lands.”

Policy A3— “The City shall promote and encourage development patterns and other techniques which preserve open space within the planning area.”

Policy A4—“The City shall promote and encourage individuals, groups and service clubs, in conjunction with adjacent property owners, to clean and maintain the beds of areas along Dawson, Dairy, Rock, Beaverton and McKay Creeks. In addition, where appropriate, public access easements to the creeks should be established.”

Policy A6— “Outdoor advertising signs (billboards) shall be regulated, especially in nonindustrial and noncommercial zones.”

Policy A7— “Signs located throughout the City should be aesthetically pleasing, though not restricted in design as to significantly limit their economic purpose. Specific sign design standards shall be applied in Station Community Planning Areas and along designated pedestrian streets.”

- **Policy Section B— Floodplain.** “The floodplain of the Tualatin River and its tributaries is being encroached upon by urban development. The floodplain is an asset to Hillsboro by providing for drainage and holding of stormwater runoff, providing fish and wildlife habitat, desirable open space, and potential land for future recreational development.”

Policy B1— “All land within the 100-year floodplain (elevations as established by the Army Corps of Engineers on the best topographic maps available) should be preserved as much as possible for open space, fish and wildlife habitat, urban buffers, neighborhood boundaries, future recreational development, drainage, and runoff retention.”

Policy B2— “In order to provide for efficient urban development within the urban growth boundary, minor areas of cut and fill and certain uses involving structures may be necessary within the floodplain. Such cut and fill activity and structures shall be regulated so as to minimize the land area affected and to prevent significant deterioration of the floodplain resource. All floodplain alterations and permanent structures, except those allowed as permitted uses, shall be subject to review by the Planning Commission. Certain open space, utility, transportation, and environmental mitigation uses may also be allowed as permitted uses in the floodplain, subject to administrative review, as specifically allowed in Section 12.27.100 of the Community Development Code.”

Policy B3— “Agricultural and residential uses not involving structures, temporary structures which can be removed during periods of flood risk, recreational uses such as picnic facilities, and underground utility facilities do not represent a significant threat to the preservation of the floodplain resource. Such uses may be appropriate in the floodplain fringe.”

- **Policy Section E— Natural Resources Management Program**

Policy E1— “The City shall adopt a Natural Resources Management Program Ordinance that contains procedures to implement its Natural Resources Management Program including describing the degree of protection appropriate for each significant natural resource site including wetlands, riparian corridors and wildlife habitat throughout the City based on its Economic, Social, Environmental and Energy (ESEE) Decision, which shall be adopted as findings.”

Policy E2— “The Natural Resources Management Program Ordinance shall include a map which generally identifies the extent and location of significant wetlands, riparian corridors and wildlife habitat areas and their impact areas, as identified in the adopted “List of Significant Goal 5 Natural Resource Sites in the City of Hillsboro” and its supporting document the “City of Hillsboro Goal 5 Natural Resources Inventory and Assessment Report”, and the ESEE analyses, completed pursuant to the Goal 5 and Oregon Administrative Rules 660, Division 23 provisions.”

Policy E3— “The maps contained in the adopted “List of Significant Goal 5 Natural Resource Sites in the City of Hillsboro” and its supporting document the “City of Hillsboro Goal 5 Natural Resources Inventory and Assessment Report”, as amended in May 2003, shall only serve as a base inventory in order to establish the Natural Resources Management Program Ordinance map and will not be amended in the future.”

Policy E4— “Procedures for amending the Natural Resources Management Program Ordinance map shall be contained within the Natural Resources Management Program Ordinance.”

Policy E5—“ Development projects located in or partially within the overlay area for the Natural Resources Management Program Ordinance map shall address preservation of wildlife habitat, natural vegetation, wetlands, water quality, open space and other natural resources important to the ecosystem in the vicinity of the proposed development site. During the Development Review process, development projects and subdivision applications in Station Community Planning Areas shall address the potential impacts of proposed projects on these resources, shall address provisions of Section 12.27.200 of the Community Development Code, and shall incorporate measures to mitigate any impacts that result from the proposed development”

Policy E6—“ In accordance with the Tualatin Basin Fish & Wildlife Habitat Program, encourage land developers and property owners to incorporate habitat friendly practices in their site design where technically feasible and appropriate. Habitat friendly development practices include a broad range of development techniques and activities that reduce the detrimental impact on fish and wildlife habitat associated with traditional development practices.”

- **Section 9: Recreation**

Policy E— “Floodplains may be used for park and recreation facilities requiring large areas of land. The development of the parks and recreation facilities shall be consistent with the provisions of the Floodplain Ordinance and shall avoid wildlife nesting, feeding and mating habitats.”

Policy K— “The preservation of some natural areas will be considered when designing and developing parks.”

6. Natural Resource Conservation and Protection Measures

6.1. Overlays

To implement existing Comprehensive Plan goals and policies relating to the protection and conservation of natural resources, the City maintains several overlay zones. The overlay zones are applied on properties to supplement the regulations of the underlying base zones. Two of these overlay zones are described below.

6.1.1. Regulatory Floodplain Overlay

The Regulatory Floodplain Overlay Zone (RFO) implements the Floodplain Comprehensive Plan Land Use Map designation. As described by Community Development Code 12.27.110.A.1, it applies within the boundaries of the Base Flood (100-year flood) as defined and delineated on the National Flood Insurance Program Boundary, Flood Insurance Study and Floodway Maps for the City and Washington County. The RFO regulates uses and activities within the RFO and within the more restrictive floodway. A use or activity may be permitted outright, permitted upon approval of a Floodplain Activity or use permit, or prohibited. Although the RFO was established to reduce risks associated with flooding, it will likely take on an expanded role of habitat protection with the implementation of new requirements associated with the NFIP (described in Sections 1.1.1 and 7.1.1).

6.1.2. Significant Natural Resource Overlay

Unlike the RFO, although the Significant Natural Resource Overlay (SNRO) implements Comprehensive Plan goals and policies, it does not implement a specific Plan map designation. Accordingly, the SNRO may overlay any of Hillsboro's zoning districts including residential, multiple use and industrial designations. SNRO boundaries are mapped areas that correspond to the adopted City's adopted Goal 5 resource inventories and ESEE analyses and are intended to be evaluated in more detail at time of a development proposal. For properties not previously inventoried, the City inventories areas that may contain natural resources prior to their annexation.

The Community Development Code Section 12.27.205 states that the SNRO was established for the following purposes:

- A. Provide Required Protection for Significant Natural Resources. The provisions...meet Statewide Planning Goal 5 (ORS 197.015(8)) and OAR 660, Division 23 to inventory and protect Significant Natural Resources according to specific procedures, standards and definitions. Significant Natural Resources are those areas designated as Significant Wetlands, Riparian Corridors and Wildlife Habitat as identified in the adopted *List of Significant Goal 5 Natural Resources Sites in Hillsboro* and the *City of Hillsboro Goal 5 Natural Resources Inventory and Assessment Report*.
- B. Balance Conservation with Economic Use. Standards...conserve and protect the functions and values of Significant Natural Resources while allowing reasonable economic use of property where adverse impacts to the resources can be mitigated.
- C. Evaluate Development Proposals. Standards...provide means to evaluate permitting developments, alterations and vegetation removal that affect Significant Natural Resources.
- D. Improve Intergovernmental Coordination. The provisions of the SNRO are intended to enhance coordination between city, county, state, federal and other jurisdictional agencies and regional planning efforts, including CWS, Metro and the Tualatin Basin Goal 5 program, regarding alterations and development activities in or near Significant Natural Resources.

Development proposals on properties containing SNRO areas are subject to the requirements of the SNRO, including limitations on uses and activities, enhancement and protection of the resource area, and mitigation of unavoidable impacts.

6.2. Habitat Benefit Areas

Habitat Benefit Areas (HBAs)³⁰ are wetland, riparian, and wildlife habitat areas mapped in accordance with the Tualatin Basin Fish & Wildlife Habitat Program and as depicted on Metro's Regionally Significant Fish and Wildlife Habitat Inventory map. The City undertook mapping of significant wetland, riparian, and upland habitat areas prior to the Tualatin Basin project, and those areas became the City's SNRO. The habitat areas identified on Metro maps that extend beyond the city's SNRO mapped boundaries are designated HBAs.

³⁰ Metro now refers to Habitat Benefit Areas as Habitat Conservation Areas.

In 2007, a policy was added to the Comprehensive Plan to encourage land developers and property owners with mapped HBAs where they extend beyond SNRO, to incorporate habitat friendly development practices in their site design where technically feasible and appropriate³¹. This policy is implemented through Community Development Code Section 12.50.930 Sustainable Development Practices, which provides a set of voluntary design and construction techniques designed to reduce environmental impacts to HBAs.

6.3. Vegetated corridors

Clean Water Services (CWS) requires environmental review before any development within 200 feet of a “water quality sensitive area” such as a wetland, creek, river, spring, lake, or pond. Development impacts to sensitive areas and vegetated corridors must be avoided and minimized. Depending on the water quality sensitive area and whether the site has steep slopes, the width of the required vegetated corridor can range from 25-200 feet from the edge of the sensitive area.

Allowable activities within both the water quality sensitive area and vegetated corridor are restricted and the vegetated corridor is required to be enhanced with dense native trees, shrubs, and ground cover. CWS’ Design and Construction Standards allow some encroachments into the vegetated corridor if the impacts are mitigated elsewhere on site or offsite (at a higher mitigation ratio).

6.4. Natural areas and greenways

The Hillsboro Parks and Recreation Department maintains both nature parks and greenways. According to the Hillsboro Parks and Trails Master Plan (2009), nature parks are “natural open space areas designed to provide access to unique or significant natural features for recreation”. Examples include Jackson Bottom Wetlands Preserve, Orenco Woods Nature Park, and Noble Woods Park. Greenways include Rock Creek Trail and other “built or natural corridors that protect open space corridors, tie park components together, provide people with trail-related outdoor recreation opportunities, and allow for uninterrupted and safe pedestrian and bicycle movement throughout the community”.

Both nature parks and greenways are established, at least in part, to protect natural areas and may contain trails, wildlife viewing, environmental interpretation, and other supporting facilities. The Hillsboro Parks and Trails Master Plan encourages the City to “consider adding new nature parks in locations where there are resources to preserve”.

6.5. Open space

The term open space is defined in the existing Comprehensive Plan as, “lands used for agricultural or forest uses, and any land that would, if preserved and continued in its present use:

- (1) Conserve and enhance natural or scenic resources.
- (2) Protect the air and water.
- (3) Conserve landscaped areas, such as golf courses, that reduce air pollution and enhance the value of abutting and neighboring properties.
- (4) Enhance recreation opportunities.
- (5) Preserve historic sites.
- (6) Promote orderly and efficient urban development.
- (7) Protect bird rookeries, spawning beds and wildlife habitat areas.”

³¹ Ordinance No. 5728/3-07

In the 1972 Comprehensive Plan, Open Space was combined with Parks to create the Parks and Open Space Plan. The 1977 Comprehensive Plan focused on the preservation of open space to maintain a balance of land uses. The need to identify a funding mechanism for the public acquisition of open space was also included. Comprehensive Plan goals related to open space also sought to encourage individuals and groups to clean and maintain open space areas, especially along creeks; public access easements to creeks was also identified as a goal. The majority of the policies included in the 1977 Comprehensive Plan pertaining to Open Space were carried forward into the current version of the Plan. Today open space policies are largely implemented through the City's acquisition and maintenance of nature parks and greenways and through development standards requiring retention of lands for open space. The City also applies an "open space" land use map designation to a handful of properties including cemeteries, a few parks, and portions of the Hillsboro Airport.

7. Emerging Issues, Challenges, and Trends

7.1. Issues & Challenges

7.1.1. Regulatory Floodplain Overlay ordinance modifications

Floodplains are not just areas susceptible to natural hazards; they are important components of ecosystems. The functioning of those ecosystems is threatened by encroaching development, vegetation removal, topography changes, the addition of impervious surfaces, and other disturbances. The longstanding approach to regulating development activities in the floodplain has been heavily influenced by the National Flood Insurance Program (NFIP), which has resulted in a significant amount of development in floodplains and correspondingly, a degradation of the natural functions that are beneficial to fish, wildlife, and bird communities. As described in Section 1.1.1, it has been determined that FEMA will need to substantially overhaul the NFIP in Oregon in an effort to halt and even reverse the negative effects caused by NFIP policies allowing development activity in the floodplain.

As a community participating in the NFIP, the City must maintain its Regulatory Floodplain Overlay (RFO) zone and apply NFIP minimum standards related to hazard mitigation within the Special Flood Hazard Area³² in compliance with NFIP program requirements. These requirements are expected to greatly evolve over the next several years (and possibly decades) in response to the NFIP overhaul, to include:

- Limitations on development activity within a defined riparian buffer adjacent the waterway³³.
- Mitigation requirements for disturbances to the floodplain (e.g. tree removal, lost flood storage)
- New mapping protocols likely resulting in an expansion of the regulatory floodplain.

As new NFIP requirements are released, the City will need to update its ordinances accordingly. The City should plan for a robust public outreach and education program when making these changes.

³² The land area covered by the floodwaters of the base flood on NFIP maps. The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

³³ In consultation regarding the NFIP's impacts on specific endangered species, the National Marine Fisheries Services (NMFS) provided Interim Measures expected to be enacted in 2018. The Interim Measures identify a 170' buffer from top of bank for areas within the Special Flood Hazard Area shown on current Flood Insurance Rate Maps.

7.1.2. Goal 5 inventory update

The City's Goal 5 inventory was adopted in 2001. Since that time, numerous ESEE analyses have been conducted for areas preparing to annex to Hillsboro. As a property annexes into the City, the ESEE analysis is used to determine the SNRO designation, which is adopted, as appropriate, as a zoning overlay. However, because the underlying Goal 5 inventory has not been updated since 2001 to reflect subsequent natural resource assessments, the City lacks a compiled list of all of its Goal 5 resources. An updated inventory which consolidates the adopted Goal 5 inventory and the subsequent natural resource assessments for newly annexed areas should be considered as an implementation measure.

7.1.3. Land use designation, zones, and overlays

The conservation, enhancement, and connection of natural resources and open spaces as a community priority is clearly articulated in existing City plans and policies including the Comprehensive Plan, Hillsboro 2035 Community Plan, and Community Development Code. However, the implementation of myriad regulations, programs, agreements, and aspirations over the decades has resulted in an interlaced set of land use map designations, zones, and overlay zones that can be difficult for property owners, applicants, and staff to navigate. As illustrated in the maps in Figure , it is not unusual for a property containing a creek to contain two or more land use map designations (including one Floodplain designation) and be subject to the provisions of a base zone, Regulatory Floodplain Overlay (RFO) zone, and Significant Natural Resource Overlay (SNRO).

Figure 2: Land Use and Zoning Designations



The City may want to consider reviewing and/or reorganizing these designations to ensure they are providing the appropriate levels of protection in a manner that is clear and consistent. Part of this review might be an analysis of whether to combine or even eliminate the Floodplain and Open Space land use map designations.

7.2. Emerging Trends & Opportunities

7.2.1. Increasing conservation of Significant Natural Resources

The loss of habitat to various types of development has resulted in a fractured landscape and increased need for intervention in order to conserve basic resources. Soil, water, fish, and wildlife can often be conserved most effectively in corridors where resources such as stream, forest, and habitat are interconnected.

Strategies to increase conservation of significant natural resources include preserving wildlife corridors, expanding/ establishing nature parks, connecting high quality habitat areas, preserving upland habitat areas, and prioritizing the protection of specific high value resources (e.g. a remnant oak savannah). Policies to support significant natural resource protection would include acquiring/ expanding nature parks, encouraging wildlife corridor linkages, and incentivizing the protection of prioritized natural resources.

7.2.2. Reducing impacts from development activity

The rapid increase in human population and rate of development can place significant stress on native wildlife populations. Land that was once habitat for wildlife species is being converted into residential and commercial subdivisions, roads, and other uses. The development of land and related activities impact both the quantity and quality of wildlife habitat. Roads in particular can be destructive to habitat as they disrupt passage, provide entrances for non-native species and predators, and increase unnatural disturbances from sources such as pollution and fire³⁴. Impervious surfaces (from roads or other development) impacts aquatic habitat by increasing runoff, reducing groundwater recharge, and increasing pollution. Loss of vegetation near stream banks not only reduces habitat for wildlife and fish, but increases stream temperature beyond the point of optimal habitat conditions.

One of the objectives of the Hillsboro Environmental Sustainability Plan is to “foster healthy human and wildlife populations”. Strategies would include regulating development activities adjacent to natural resource areas, utilizing wildlife/fish friendly culverts and bridges with new or upgraded road crossings, and limiting the number of road crossings in significant natural resource areas. Policies to support this would include maintaining development standards restricting development activity in sensitive areas, allowing flexibility in development standards to encourage larger protection areas, requiring in-kind mitigation for unavoidable impacts, encouraging the protection of tree groves and native vegetation, and recognizing the value of wildlife passages.

7.2.3. Restoration and enhancement of Significant Natural Resource Areas

Over time, the impacts of human activity have taken their toll on the landscape and degraded some of the natural features in the community. For most of the 20th Century, wetlands were lost at alarming rates due to draining and conversion to agricultural uses or urban development. Constructed irrigation and drainage systems commonly associated with agricultural uses can significantly alter water tables and, ultimately, affect the baseflow to streams, which in turn affects riparian areas. Removal of native vegetation and forests to make way for urban development or agriculture tends to decrease evapotranspiration (the movement of water to the air from sources such as soil and vegetation), increase storm runoff and soil erosion, and decrease infiltration to ground water and base flow of streams.

One of the objectives of the Hillsboro Environmental Sustainability Plan is to “protect and enhance environmental assets (air, land, water and habitat)”. Strategies to restore and enhance significant natural resource areas include restoring drained or modified wetlands back to their natural state, promoting tree and native vegetation planting campaigns, realigning streams back to their natural state, utilizing native habitats as reference sites for planting plans daylighting piped streams, and blending stormwater management with natural systems. Policies to support this would include recognizing the value of the natural functions of wetlands, streams, and floodplains, encouraging the use of natural systems for cleaning storm and waste water, and incentivizing the conversion of impervious surfaces to natural areas where feasible.

³⁴ Noss, 1993, Schonewald-Cox and Buechner 1990 and Bennett 1991, as cited in Duerksen, C., D. Elliot, N. Hobbs, E. Johnson, and J. Miller. 1997. *Habitat Protection Planning: Where the Wild Things Are*. American Planning Association, Chicago, IL.

8. Additional Plan Updates and Policy Questions to Consider

8.1.1. Habitat Benefit Area program modifications

The Habitat Benefit Area (HBA) program, discussed in Section 6.2, is a program designed to encourage the protection of natural areas and enhance ecosystem functioning through the use of voluntary development practices. However, the program is not widely used and is not yielding the intended results. The City might consider making parts of the program mandatory or providing incentives for participation. For example, in exchange for a developer's voluntary use of an eco-roof to absorb roof stormwater in an apartment development, the City could offer a building height increase or similar incentive.

8.1.2. Comprehensive Plan land use map designations

Comprehensive Plan land use maps depict the community's aspirations for how and where growth and change will occur over the long term (generally 20 years). Zoning maps implement land use maps by indicating how and where various uses and activities are allowed in the community. The City has both land use maps and zoning maps that have been adopted and acknowledged to be in compliance with state requirements. However, as described in Section 7.1.3, the designations and procedures related to natural resources are somewhat confusing and are in need of modification. Specifically, the land use map designation categories of Open Space and Floodplain are not described in the Comprehensive Plan, and it isn't clear how or when they are to be applied, particularly when, on the ground, open space and floodplain resources frequently overlap. Additionally, the term "open space" has taken on many meanings in the Comprehensive Plan over the years, making it difficult to determine what policies the Open Space map designation is intended to implement.

Although the scope of the current Comprehensive Plan update does not envision immediate changes to land use map designations, enacting natural resources policies that support clarified and reorganized land use designations could facilitate these changes at a later date as the new Comprehensive Plan is implemented.

8.1.3. Long term maintenance of natural resource areas

Once a development project is permitted and leaves the Planning desk, how can we encourage continued environmental stewardship (thoughtful maintenance and upkeep) beyond the siting and construction phase of a project? The City does not have the resources to accept ownership or maintenance responsibilities for all natural resource areas, thus measures must be adopted as developments are processed, to ensure resource areas are preserved, and that the purpose and boundaries of the preserved areas will be respected in the future.

8.1.4. Plan and policy considerations

Based on issues outlined in this report, the following updates and policy adjustments are recommended for consideration:

1. Place a greater emphasis on on-site and in-kind compensatory mitigation for development impacts.
2. Strengthen policy and regulatory language prohibiting or limiting development activities in floodplains and riparian areas. Order of priority should be: avoidance, minimization of impacts, then mitigation.

3. Implement a standard process for updating SNRO mapping based on delineations performed as part of new development projects.
4. Plan for cohesive and connected network of open space or protected lands to maximize educational and recreational returns on protected lands, open space, and natural areas.
5. Plan for connected wildlife corridors within the city and connecting to corridors beyond the city limits.
6. Create goals and policies that:
 - a. Increase flexibility, create incentives, and encourage voluntary measures, volunteer support, incentives, training, and recognition for residents who voluntarily restore natural habitats; allow alternative or innovative approaches if they provide an equivalent or better level of environmental benefit.
 - b. Create incentives for habitat-friendly development practices in new development.
 - c. Streamline the application process, eliminating jargon, offering educational materials, making available workshops for professional realtors and builders.
 - d. Develop policy or practice to apply (or delineate) HBAs rather than shifting these to SNRO, where they are available. (Or incentivize the delineation of HBAs even when it is not required).
 - e. Encourage the development or application of best practices in environmental preservation, stabilization, restoration, and long-term management.
 - f. Prevent degradation of significant natural resources in new urban areas.
 - g. Encourage or require applicant coordination with other permitting agencies at very early stages in the development process.

Public Facilities

Goals and Policies DRAFT – August 18, 2016

Review History

Date	Reviewed By
June 30, 2016	Internal Committee Meeting– <i>Comments Incorporated</i>
July 14, 2016	TAC Meeting- <i>Comments Incorporated</i>
July 29, 2016	CAC Meeting- <i>Comments Incorporated</i>
August 10, 2016	PC Worksession- <i>Comments Incorporated</i>

GOAL 1 Provide public facilities, utilities and services in a timely, orderly and efficient manner.

- POLICY 1.1 **Service Provider Coordination.** Collaborate with service providers* on extensions of public facilities, utilities and services and prioritization of capital expenditures.
- POLICY 1.2 **Intergovernmental agreements.** Clearly define roles and responsibilities through the use of interagency coordination agreements with service providers, including the Hillsboro Urban Service Area Agreement (HUSA) and Urban Planning Area Agreement (UPAA).
- POLICY 1.3 **Ultimate service provision.** Manage boundaries and agreements to ensure the City of Hillsboro is the ultimate local governance and municipal service provider to the urban area* where appropriate, except as otherwise specified in the HUSA.
- POLICY 1.4 **City department coordination.** Coordinate planning and provision of public facilities, utilities and services among City departments, as appropriate.
- POLICY 1.5 **Public facility plan.** Develop and maintain a Public Facility Plan* as a 20-year strategy to ensure delivery of public facilities, utilities and services to the planning area at urban levels of service.
- POLICY 1.6 **School facility plans.** Coordinate with public school districts in developing and updating their facility plans designed to meet enrollment increases and population growth, including land supply analysis for future school siting.
- POLICY 1.7 **Regulatory consistency.** Collaborate with state and regional partners on the regulations that address regional environmental and infrastructure impacts, such as transportation, stormwater mitigation, and floodplain development standards.
- POLICY 1.8 **State and federal regulations.** Work toward ~~cost-effective~~ **fiscally sustainable** compliance with state and federal mandates through intergovernmental coordination and problem solving.
- POLICY 1.9 **Data and information exchange.** Develop processes to ensure a timely and accurate exchange of data with service providers to facilitate utilization of best available information.
- POLICY 1.10 **Urban service extension.** Allow the extension or provision of public facilities,

Commented [LK1]: CAC wondered whether this should also be about funding

Commented [LK2]: PC wondered whether we should broaden this so it isn't just about expenditures, or whether specific funding should be dealt with in individual infrastructure chapters (e.g. wastewater)

utilities or services outside of City limits only in conjunction with annexation or in cases where the City has agreements or contracts in place.

GOAL 2 Utilize the availability of public facilities, utilities and services as a tool for guiding urbanization within the Hillsboro Planning Area*.

- POLICY 2.1 **Future levels of service.** Improve the capacity of public facilities, utilities or services where feasible and cost effective, in order to provide future delivery of services to urbanizable areas upon annexation.
- POLICY 2.2 **Concurrency.** Require the provision of public facilities, utilities and services prior to or concurrent with development, in accordance with state statute.
- POLICY 2.3 **Feasible and cost effective service.** Ensure that properties to be annexed can be reasonably served by public facilities, utilities and services and that any public costs associated with annexation are minimized.
- POLICY 2.4 **Future school siting.** Collaborate with public school districts to identify acceptable sites for new schools within the Urban Growth Boundary (UGB) or, if inadequate land supply exists within the UGB, work with the school district to rezone, aggregate existing lots or parcels in separate ownership, or expand the UGB.
- POLICY 2.5 **School capacity planning.** Provide notification to public school districts when new residential development is proposed and encourage their participation when master planning activities are initiated.

Commented [LK3]: PC felt this should also include private schools but not daycares, karate schools, etc. But addition of private schools presents a conflict with UGB expansion regulations. Break up into 2 policies?

GOAL 3 Equitably support existing and planned land uses with needed public facilities, utilities and services.

- POLICY 3.1 **Balanced service extension.** Balance the extension of public facilities, utilities and services in a manner that accommodates expected population and employment growth while maintaining the City's ability to continue providing existing services citywide.
- POLICY 3.2 **Adequate service provision.** Establish, improve, and maintain public facilities, utilities and services at levels appropriate to support land use patterns, densities, and anticipated residential and employment growth, as physically feasible and as sufficient funds are available.
- POLICY 3.3 **Appropriate service levels.** Maintain facilities and systems, including public buildings, technology, fleet, rights of way, and internal service infrastructure, to enable service provision at appropriate levels.
- POLICY 3.4 **Collocation of community amenities.** Collaborate with public and private entities such as schools, businesses, and recreation providers to facilitate the shared use of multi-purpose venues to help meet the education, recreation and civic needs of the community, particularly in neighborhoods with limited access to parks, meeting venues, and public spaces.
- POLICY 3.5 **Community and business group partnerships.** Partner with community and business groups to improve the appearance, maintenance, and functionality of public spaces, rights-of-way, and community venues.
- POLICY 3.6 **School access planning.** Collaborate with public school districts education

providers* to provide-facilitate safe routes to existing schools and to consider safety and access when determining attendance boundaries, new school locations and school designs.

- POLICY 3.7 **Waste management.** Ensure development review, rights-of-way regulations, and public facility investments to allow the City to manage solid waste effectively and in a manner that is consistent with regional and state waste reduction and recovery goals.
- POLICY 3.8 **Equitable access to services.** Ensure access to services in all areas of the city, reduce disparities in capacity and affordability, and provide reliable service for the community.

Commented [LK4]: Modified language to include private schools, higher education, but not commercial schools and daycare. Per PC and CAC discussion

GOAL 4 Provide and manage the public facilities, utilities, and services necessary for a safe, healthy, and livable environment.

- POLICY 4.1 **Efficiency of facilities.** Endeavor to reduce the energy and resource use, waste, and carbon emissions from public facilities.
- POLICY 4.2 **Risk management.** Work with service providers to ensure the facilities, utilities and services for the community are maintained and improved to minimize or eliminate risks to the economy, public health, safety, and the environment.
- POLICY 4.3 **Infrastructure resiliency.** Create durable and resilient infrastructure through monitoring, planning, investment, maintenance, adaptive technology, asset management, and continuity planning.
- POLICY 4.4 **Minimize visible utilities.** Minimize overhead and other visible electrical and telecommunications utility infrastructure, especially in Regional Centers, Town Centers and in areas where higher density development is allowed.
- POLICY 4.5 **Technology and communication.** Work with service providers to ensure the community's technology and communication facilities are adequately maintained and enhanced to support public safety, facilitate access to information, accommodate new technology, and maintain City operations.
- POLICY 4.6 **Temporary use of right of way.** Support temporary commercial or community use of rights-of-way, such as for public gatherings, events, outdoor dining, and other unique uses, with appropriate permits when required, as long as they provide a community benefit, maintain safety, and minimize conflict with the ultimate use and purpose of rights-of-ways.

Commented [LK5]: Modified language to include new technology, per PC discussion

GOAL 5 Provide public facilities, utilities, and services in a cost-effective manner.

- POLICY 5.1 **Capital improvement program.** Maintain a long-term capital improvement program to include a comprehensive list of projects from service providers' adopted master plans, and identifies costs and funding sources for achieving desired types and levels of public facilities, utilities and services.
- POLICY 5.2 **Funding sources.** Adopt additional funding methodologies, as needed, to ensure that new development and redevelopment fund the adequate and equitable extension and long term maintenance of public facilities, utilities and services
- POLICY 5.3 **Asset management.** Improve and maintain public facility systems using asset

management principles to optimize preventative maintenance, reduce unplanned reactive maintenance, achieve scheduled service delivery, and protect the quality, reliability, and adequacy of City services.

POLICY 5.4 **Investment coordination.** Encourage capital improvements* that complement and leverage other major capital improvements.

POLICY 5.5 **Funding priorities.** Prioritize funding for facilities, utilities and services considered critical to the livability and safety of the community, including but not limited to those that protect life and safety, as well as contractual obligations such as debt service.

Commented [LK6]: Added language per PC suggestion

Definitions

- a) **Capital Improvement.** Facilities or assets used for the following: water supply, treatment and distribution; waste water collection, transmission, treatment and disposal; drainage and flood control; transportation; or parks and recreation. Capital improvement does not include costs of the operation or routine maintenance of capital improvements.
- b) **Capital Improvement Program.** A list of the capital improvements that the City intends to fund, in whole or in part, with revenues from an improvement fee* and the estimated cost, timing and percentage of costs eligible to be funded with revenues from the improvement fee for each improvement.
- c) **Education Providers.** Public or private entities providing state mandated basic education to students in kindergarten through 12th grade and state accredited public or private colleges, universities and institutions which offer courses of study leading to an associate, bachelors and/or advanced degree or trade certification.
- d) **Improvement Fee.** A fee for costs associated with capital improvements to be constructed.
- b)e) **Planning Area.** In this section planning area corresponds to the adopted Hillsboro Urban Service Area (HUSA).
- f) **Public Entity.** Refers to any elected or appointed authority under state law which is authorized to exercise a legislative, policy making, quasijudicial, administrative or advisory function.
- e)g) **Public Facilities and Services.** Facilities and services provided by government agencies, service districts, or other public entities to meet the health, safety and welfare needs of the public, including but not limited to police and fire protection, recreation facilities and services, transportation system and services, energy and communication services, health and education services, zoning and subdivision control, and local government services.
- e)h) **Public Facilities Plan.** A plan, required by Goal 11 and OAR 660-011, that includes, but need not be limited to, the water, sewer and transportation facilities which are to support the land uses designated in the appropriate acknowledged comprehensive plan within an urban growth boundary containing a population greater than 2,500.
- e)i) **Service Providers.** City departments, other public agencies, and special districts providing public utilities, infrastructure, facilities, and services within the planning area.
- f)j) **Urban Area.** See Planning Area.
- e)k) **Utilities.** Fundamental services necessary to support community health, well-being, and economic function, including but not limited to electricity, natural gas, water, sewer, telecommunications, and waste management services.

Commented [LK7]: Added definition per PC discussion

Commented [LK8]: Added definition per PC discussion