CRESWELL ESEE ANALYSIS REPORT FOR GOAL 5 WETLANDS AND POLICY RECOMMENDATIONS

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1. Introduction and Background

The Oregon Statewide Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces (OAR 660-015) was established to protect the natural resources of the state. This is partly achieved by local governments inventorying natural resources that fall within their boundaries and adopting programs to protect them. These inventoried resources include aquatic systems such as riparian corridors and wetlands, and are to be protected by local governments in one of three ways.

For wetlands, cities have three protection programs to choose from for this state-mandated Goal 5 resource conservation; the Standard Approach, the Safe Harbor option, and the Wetland Conservation Plan (WCP). The Standard Approach allows local governments to conduct Economic, Social, Environmental, and Energy (ESEE) analyses of their inventoried, significant Goal 5 resources and assign specific resources different levels of local protection (in addition to state and federal jurisdictional protections). This protection program option is intended to allow local governments to strike a balance between resource protection and conflicting uses. As stated in OAR 660-023-0040;

"Local governments shall develop a program to achieve Goal 5 for all significant resource sites based on an analysis of the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use. This rule describes four steps to be followed in conducting an ESEE analysis…

(a) Identify conflicting uses;
(b) Determine the impact area;
(c) Analyze the ESEE consequences; and
(d) Develop a program to achieve Goal 5."

The Safe Harbor option, in contrast, is a default option for location governments if they choose not to create individualistic policies under the Standard Approach. The Safe Harbor program requires governments to adopt a policy to protect all locally significant wetlands, identified by zoning ordinances, that includes standards that restrict placement of structures, grading, excavation, fill placement, and vegetation removal.

The third option, creation of a WCP, does not require a general significant Goal 5 inventory, and instead utilizes a more focused survey of resources that are typically the specific interest of developers. As stated in the Oregon Department of State Lands (DSL) Wetland Planning Guidebook (2004);

"*It is a voluntary program developed by a city or county, and includes detailed plans for filling select wetlands and for providing mitigation. The WCP differs from the other options in that the WCP designates specific wetlands or portions of wetlands that may be developed and, once approved by DSL, both local and state permitting will proceed according to the plan*."

The City of Creswell has been managing its Goal 5 wetland resources under its own protection policy, which does not meet the criteria of a Safe Harbor program. In order to be in compliance with OAR 660-023, the city is now pursuing development of a Standard Approach to its resource protection to achieve

a compromise between protection of important aquatic resources and meeting the needs of its housing demand.

2. LWI Summary

The Creswell Local Wetland Inventory (LWI) was conducted by Environmental Science Associates and approved by the Oregon Department of State Lands (DSL) in 2011, with revisions made in 2013. The LWI identified 58 wetlands within the Creswell Urban Growth Boundary (UGB), with some being hydrologically connected and categorized under the same naming system. Of these wetlands, 25 are located either partially or completely within residentially zoned lots, for a total of 16.1 jurisdictional wetland acres spanning Creswell's residential zones (see Table 1). While the LWI identifies probable wetlands, the assessment methodology used to determine significant is not applied to these sites, and thus they are not included in the Creswell ESEE analysis. It is also important for city planners and interested parties to note that the LWI likely did not capture all wetlands within the Creswell UGB. Thus, any unidentified wetlands are not included in the Creswell ESEE analysis or subsequent protection recommendations.

Any additional wetlands not included in the LWI that may be identified and delineated in the future will still fall under the regulation of DSL and/or the U.S. Army Corps of Engineers (USACE), and development within wetland boundaries would require authorization via state and federal permitting processes. It should also be noted that all Locally Significant Wetlands discussed within the ESEE Report are also regulated by state and federal agencies, and thus are subject to permitting and removal-fill violation enforcements.

Table 1: OFWAM Functional Assessment Results for LSW in Creswell's Residential Zones.

Wetland Code	***Size***	***Wildlife Habitat***	***Fish Habitat***	***Water Quality***	***Hydrologic Control***	***Locally Significant?***
2a*	4.84	Limited	N/A	Intact	Impacted	Yes
2b	1.9	Limited	N/A	Intact	Impacted	Yes
2c	0.31	Limited	N/A	Intact	Impacted	Yes
11	2.09	Limited	N/A	Intact	Intact	Yes
15	0.29	Limited	N/A	Intact	Impacted	Yes
21	0.59	Limited	N/A	Intact	Intact	Yes
23	1.05	Limited	N/A	Intact	Impacted	Yes
WD1999-0209-3	0.88	Limited	N/A	Intact	Intact	Yes
WD2000-0178-1&2	0.82	Limited	N/A	Intact	Intact	Yes
WD2000-0178-3	0.12	Limited	N/A	Impacted	Intact	Yes
WD2000-0310-1-8	1.96	Limited	N/A	Intact	Impacted	Yes
WD2000-0318-1-3	0.39	Limited	N/A	Impacted	Impacted	No
WD2000-0318-4	0.33	Limited	N/A	Intact	Intact	Yes
WD2006-0331-1-2	0.53	Limited	N/A	Intact	Impacted	Yes

*Approximately 4.84-acres of Wetland 2a falls within residentially zoned lots inside the UGB; the remaining 19.45-acres of Wetland 2a falls within Industrial zoned lots/outside of the UGB, for a total of 24.29-acres. Recommendations within this report apply only to the 4.84-acre portion of Wetland 2a that is located on residentially zoned lots.

3. Overview of Creswell Goal 5 ESEE Methods

3.1 Creswell ESEE Study Area

The Creswell ESEE study area encompasses all residentially zoned land within the city's UGB, which is approximately 1,099 acres (see Figure 1), with the exclusion of the Resort Commercial area east-adjacent to the Emerald Valley Golf Club. The Resort Commercial area is excluded because there are no Locally Significant Wetlands (LSWs) that have constrained any vacant or partially vacant lots. The residentially zoned lots within Creswell's UGB are interspersed with lots zoned for commercial, industrial, and open space, and are generally bordered by the Creswell Butte to the south, by Camas Swale and the agricultural lands to the west, and by the Willamette River and its floodplain to the east. The lands within the study area are relatively flat topographically, with elevations ranging from approximately 560-feet above mean sea level (AMSL) in the southwest corner of the city, to 525-feet AMSL in the eastern region of the city along the Willamette River.

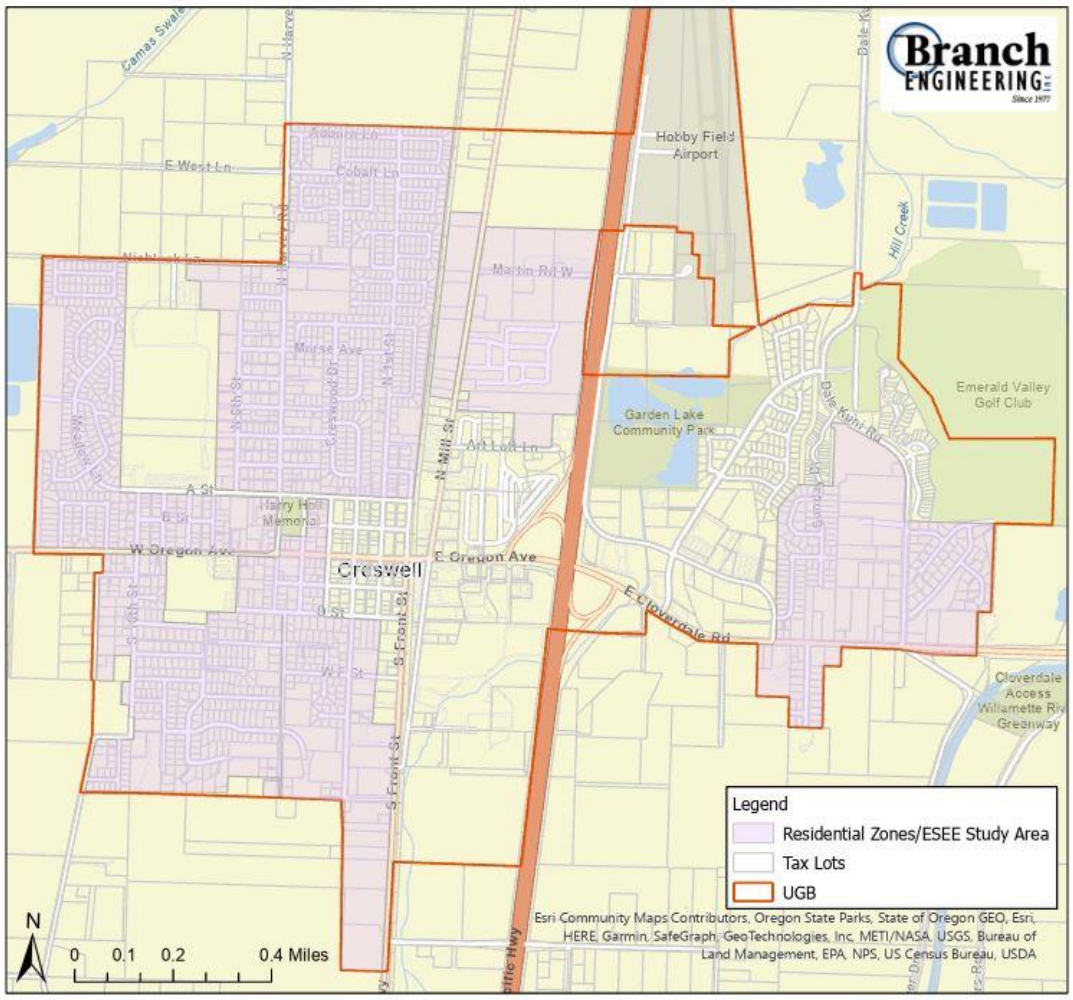


Figure 1: Creswell ESEE Study Area of all residentially zoned lots inside the Creswell UGB.

3.2 Summary of Creswell's Residentially Zoned Wetlands

This section considers the functions and values associated with "relatively high quality" and "relatively low quality" wetlands within the Creswell ESEE study area. See Figure 2 for location of referenced wetlands within Creswell (Section 3.2.2). For consideration of the value of LSWs by the Creswell ESEE, information contained within the LWI was utilized, as this data is considered to be the best available information.

3.2.1 Relatively High Quality Wetlands

The relatively high quality wetlands identified in the table below provide more benefits to the Creswell community than the relatively low quality wetlands, including intact ecological functions, more ecological benefits, and aesthetic value. These wetlands are considered relatively high value because they have *some or all* of the following characteristics:

1. Have both water quality *and* hydrologic control functions intact;
2. Are classified as either Palustrine Forested (PFO)[1] or Palustrine Scrub-Shrub (PSS)[2], and/or;
3. Have hydrologic connection via surface flow to other LSWs at least once a year.

Table 2 summarizes the size and ecological function of each wetland in this category.

Table 2: Summary of Creswell's Residentially Zoned Relatively High Quality Wetlands.

LWI Wetland Code	Cowardin Classification‡	Wildlife Habitat°	Wetland Size (acres)	Water Quality°	Hydrologic Control°
2a-c*	PEM/PUB	Limited	4.84**	Intact	Impacted
15	PEM	Limited	0.29	Intact	Impacted
21	PFO	Limited	0.59	Intact	Intact
WD1999-0209-3	PFO	Limited	0.88	Intact	Intact
WD2000-0178-1&2*	PFO	Limited	0.83	Intact	Intact
WD2000-0178-3	PSS	Limited	0.12	Impacted	Intact
WD2000-0318-4	PFO	Limited	0.33	Intact	Intact

*Indicates more than one wetland grouped together under the same primary code.
‡Palustrine emergent (PEM), Palustrine scrub-shrub (PSS), Palustrine forested (PFO), Palustrine unconsolidated bottom (PUB).
°Information based on Oregon Freshwater Wetland Assessment Methodology (OFWAM) results reported in the 2011 Creswell LWI. Note that all LSWs in Creswell were rated for having limited wildlife habitat.
** Approximately 4.84-acres of Wetland 2a falls within residentially zoned lots inside the UGB; the remaining 19.45-acres of Wetland 2a falls within Industrial zoned lots/outside of the UGB, for total of 24.29-acres.

3.2.2 Relatively Low Quality Wetlands

Creswell developed within the historic floodplain of the Willamette River, and thus has a high concentration of hydric soils and scattered wetlands throughout the UGB. Within the Creswell ESEE study area, a variety of low to high density residential development has occurred, mostly prior to the

[1] PFO wetlands are characterized by a vegetation community dominated by mature (>3" DBH) trees.
[2] PSS wetlands are characterized by a vegetation community dominated by shrubs (<3" DBH).

1990's. This development, as well as the surrounding development of Interstate-5, other highways and arterial routes, and industrial and commercial activities, has led to the fragmentation and degradation of many of the wetlands identified as significant by the Creswell LWI.

The relatively low quality wetlands in Creswell meet *some or all* of the following criteria:

1. Have only one ecological function considered intact;
2. Are smaller than 0.05-acres, and/or;
3. Have generally been manipulated by prolonged land use associated with mowing and vegetation clearing.

Most of these wetlands are surrounded by development on all four sides or have been impacted by road development and/or the installation of culverts. None of the relatively low quality wetlands within Creswell were found to have educational value when the LWI was conducted. Table 3 summarizes the size and ecological function of each wetland in this category.

Table 3: Summary of Creswell's Residentially Zoned Relatively Low Quality Wetlands.

LWI Wetland Code	Cowardin Classification†	Wildlife Habitat°	Wetland Size (acres)	Water Quality°	Hydrologic Control°
11	PEM[3]	Limited	2.09	Intact	Intact
23	PEM	Limited	1.05	Intact	Impacted
WD2000-0310-1*	PEM	Limited	0.04	Intact	Impacted
WD2000-0310-2*	PEM	Limited	0.01	Intact	Impacted
WD2000-0310-3*	PEM	Limited	0.004	Intact	Impacted
WD2000-0310-4*	PEM	Limited	0.04	Intact	Impacted
WD2000-0310-5*	PEM	Limited	1.77	Intact	Impacted
WD2000-0310-6*	PEM	Limited	0.03	Intact	Impacted
WD2000-0310-7*	PEM	Limited	0.03	Intact	Impacted
WD2000-0310-8*	PEM	Limited	0.04	Intact	Impacted
WD2000-0318-1-3*	PEM	Limited	0.39	Impacted	Impacted
WD2006-0331-1-2*	PEM	Limited	0.54	Intact	Impacted

*Indicates more than one wetland grouped together under the same primary code.
†Palustrine emergent (PEM), Palustrine scrub-shrub (PSS), Palustrine forested (PFO), Palustrine unconsolidated bottom (PUB).
°Information based on Oregon Freshwater Wetland Assessment Methodology (OFWAM) results reported in the 2011 Creswell LWI.

Wetland 11, while it has both water quality and hydrologic control listed as "intact" by the Creswell LWI, is considered a relatively low quality wetland due to its lack of hydrologic connection to other wetlands (see the Creswell LWI OFWAM Assessment Results) and due to a history of vegetation clearing. According to aerial imagery dating back to 1994, the southern portion of Wetland 11 (located on Tax Lot 6400, Map 19-03-11-00) was dominated by shrubs and some mature trees until sometime between 2003 and 2005, when the area was cleared and grass was planted, which occurred in violation of Creswell's wetland policy, Development Code Chapter 2.10, Riparian Protection and Wetlands Overlay (discussed in more detail in Section 3.6).

[3] PEM wetlands are characterized by a vegetation community dominated by emergent herbaceous species.

Both Tax Lot 6400 that encompasses the southern portion of Wetland 11, along with the Tax Lot 6301 (Map 19-03-11-00) that encompasses the northern portion of the wetland, have been maintained as an open residentially-zoned grass lawns that are regularly mowed. The northern portion of the wetland has been regularly mowed since at least 1994, and the southern portion has been regularly mowed since at least 2005. Thus, this wetland is considered to be a relatively low quality residentially-zoned wetland.

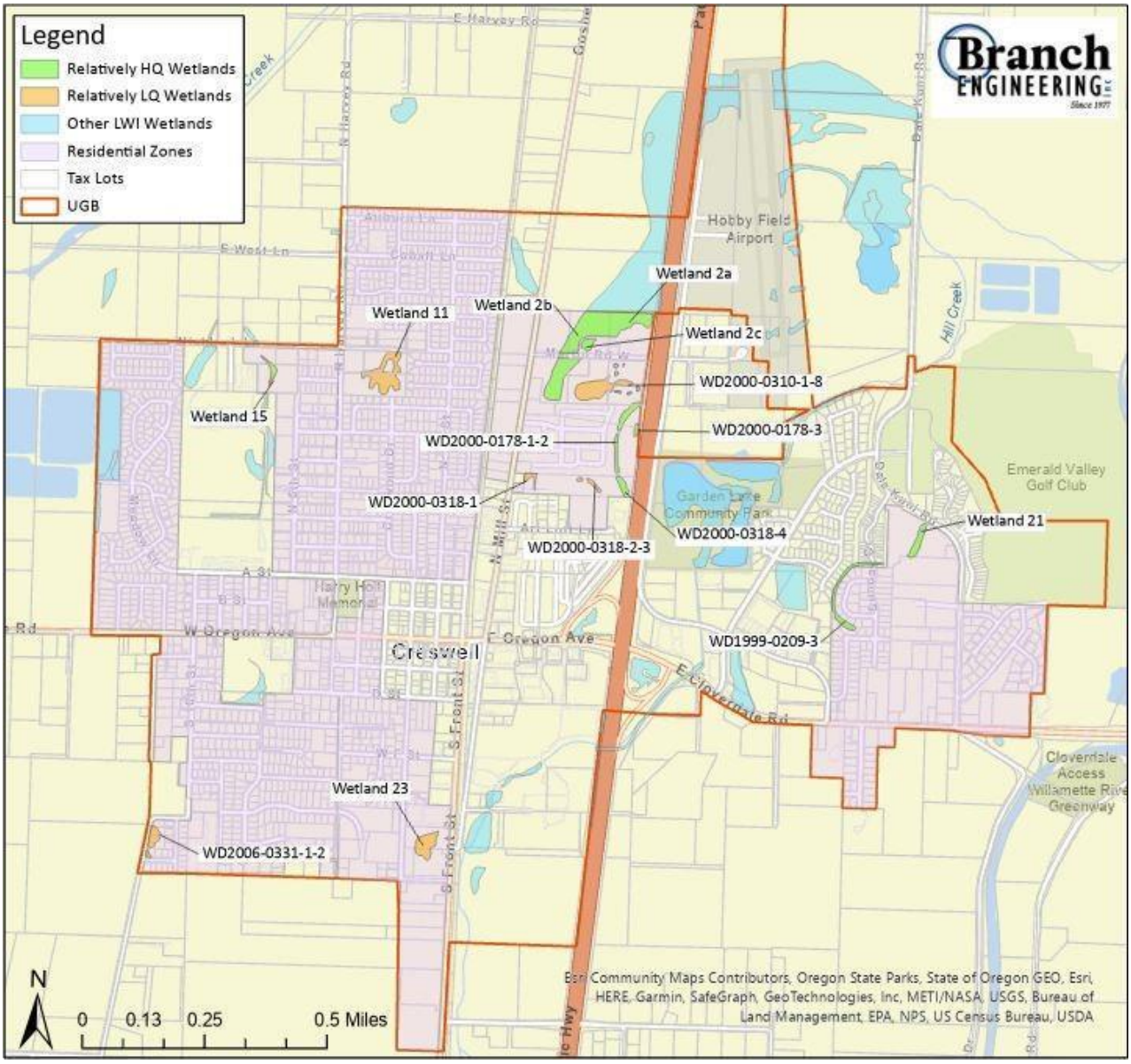


Figure 2: Relatively High Quality and Relatively Low Quality LSWs inside Creswell Residential Zones.

3.3 Impact Area Determination

Development does not necessarily have to occur inside an aquatic resource to impact it. Negative impacts can occur to wetlands if disruption of hydrology, soils, or vegetation takes place near a significant resource. Development that occurs close enough to a LSW to negatively impact it is considered to have occurred within the resources "impact area." OAR 660-023-0010 defines an impact area as "*a geographic area within which conflicting uses could adversely affect a significant Goal 5 resource*."

The impact areas displayed in Figure 3 below were defined using a combination of methods where appropriate, including taking into consideration natural topography and drainage, and the presence of roads and infrastructure that may influence or re-direct hydrology. No local protections or restrictions of conflicting uses within LSW impact areas are proposed by the city. However, whenever development is proposed within any LSW impact area, a Wetland Land Use Notice (WLUN) will be required to be sent to DSL by City Planners. The submission of a WLUN to DSL will result in the potential recommendation by DSL to developers to seek a wetland delineation by a qualified wetland professional.

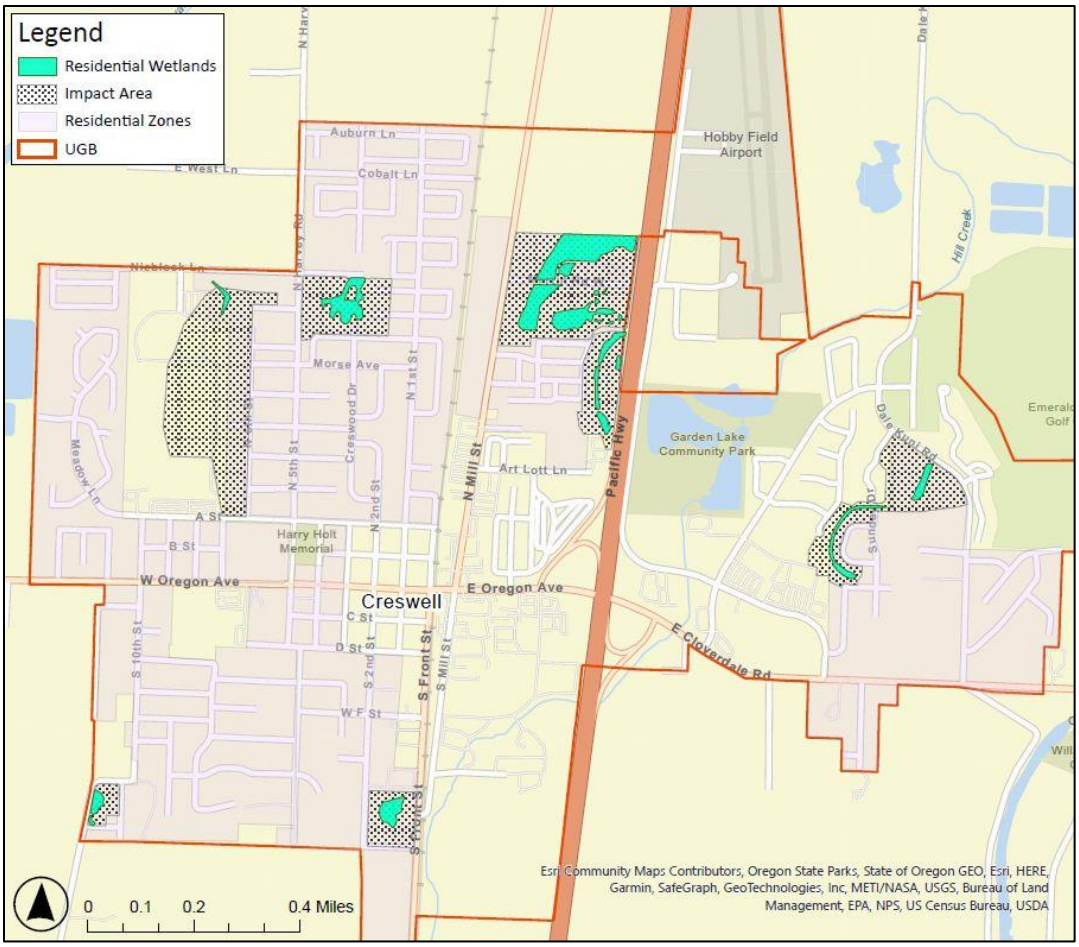


Figure 3: Impact areas for each LSW within Creswell's residentially zoned land.

3.4 Conflicting Uses

Statewide Planning Goal 5 requires cities to identify conflicting urban uses to analyze ESEE consequences; the only zoned and proposed future land use in the study area is residential. Thus, other conflicting zoning uses (such as commercial and/or industrial) will not be discussed. The City of Creswell does not currently have a development plan established for the future, however, has identified residential development with associated access roads, driveways, and utilities as a major anticipated need of the city.

3.4.1 Residential Land Use

The land within the study area is currently zoned for residential use, with the land bordering the study area being comprised of lots zoned for a mix of public facility/government, industrial, commercial, agricultural, grazing, and timber raising use. The Creswell Economic Opportunities Analysis, conducted in 2005 by EcoNorthwest, indicates that the city has been growing at a rapid rate since the 1970's relative to the growth of Lane County and the state of Oregon. Compared to population growth in Lane County and in Oregon (1.0% and 1.4%, respectively) each year between 1990 and 2017, Creswell's annual population increase was 3.0%.

According to the 2019 City of Creswell Housing Needs Analysis, also conducted by EcoNorthwest, the city will add an estimated 2,021 people to its population with in the UGB between 2019 and 2039. This equates to a nearly 2% annual population increase over a 20-year time period. In order to adequately house the growing population within its UGB, it is estimated that Creswell will need to add 849 new dwellings in the next 18-years (assuming an average household size of 2.54 persons, which was the average household size at the time the housing analysis was conducted).

The Housing Needs Analysis indicates that the City of Creswell does not have enough vacant, unconstrained land to provide adequate housing for its growing population inside the UGB. Of the 114 acres of vacant lots within the UGB, only 26 acres are currently zoned as residential. Over half of these vacant, residential acres are impacted by natural constraints, which include Goal 5 natural resources and natural hazard areas (floodways, 100 year floodplain, and slopes greater than 25%). Wetlands identified as LSWs by the LWI are located either partially or entirely within at least 20 residentially zoned lots inside the Creswell UGB. This is displayed in Figure 4 below, which was produced by EcoNorthwest and included in the 2019 Housing Needs Analysis.

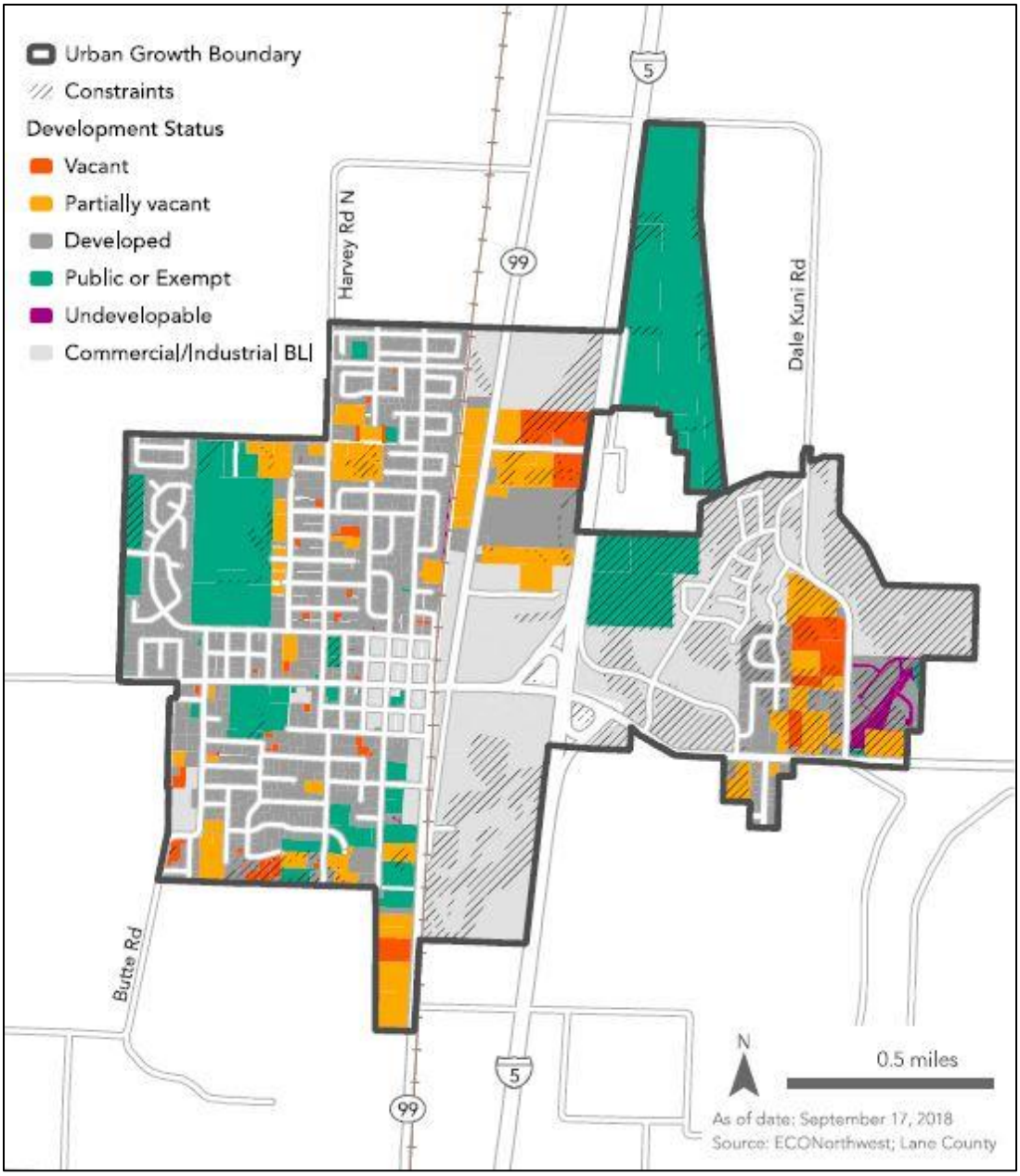


Figure 4: Exhibit 6 from the 2019 Creswell Housing Needs Analysis Showing Natural Constraints.

In addition to vacant lots, Figure 4 also presents partially vacant lots, which was defined in the Housing Needs Analysis as "residential lots or parcels of one-half acre or more…. subtracting one-quarter acre (10,890 square feet) for the existing dwelling and assuming that the remainder is buildable land." Within the UGB, 73-acres were identified as being partially vacant. However, in the case of residential-zoned privately owned parcels, it cannot realistically be assumed that all current owners of lots one-half acre or larger are willing to develop additional residential dwellings on their property. Thus, due to a low supply of vacant lots and the relatively uncertainties of "partially" vacant lots, Creswell has an inadequate amount of unconstrained lots available for residential development to meet the housing needs of its projected population growth.

Per the recommendations in the Housing Needs Analysis, the City of Creswell has made the following changes in the Development Code:

- Established a High-Density residential zoning allowing up to 24 units per acre,
- Reduced minimum lot sizes,
- Refined the multi-family housing standards in both residential and commercial zones; and
- Provided flexibility for setbacks and similar infill standards.

While no development plans have been drafted for lots containing wetlands within the study area, it is assumed that any medium to high density housing that may be constructed in the future will also require access routes, parking areas, utilities, and stormwater facilities.

3.5 Protection Level Options for LSW and Their Impact Areas

For the purposes of this ESEE analysis, "Allow," "Limit," and "Prohibit" are defined as the following:

> Allow Conflicting Uses: Allowing conflicting uses at a site that contains a LSW means that the City will not provide additional protection measures for that LSW. State and federal protections and permitting measures will still apply to development. The "Allow" recommendation supports development of lands that contain LSWs.
>
> Limit Conflicting Uses: In theory, limiting conflicting uses is a compromise between protection of Statewide Goal 5 resources and achieving Goal 10 priorities, which include providing adequate housing for Creswell's growing population within city limits. This recommendation involves allowing limited confliction uses, such as installation of utilities, planned streets, and filling and grading for the purposes of residential development, while taking steps to minimize negative impacts to valuable LSWs.
>
> Prohibit Conflicting Uses: The "Prohibit" recommendation would allow for exceptions currently instituted by Creswell's Development Code Chapter 2.10 (discussed below), but would prohibit residential development within the boundaries of LSWs. The decision to prohibit confliction uses would provide Goal 5 resource protection in addition to regulations already in place at state and federal levels, which include the requirement of delineation and permitting when fill and grading activity is proposed within wetland boundaries.

3.6 Residential Conflicting Uses and Activities Allowed by the RPW

The Creswell Development Code that addresses Goal 5 resource protection, Chapter 2.10, Riparian Protection and Wetlands (RPW) Overlay, is currently not in compliance with OAR 660-023 as it relates to wetland protection, as it is neither a Safe Harbor ordinance nor was an ESEE analysis conducted at the time of its writing and implementation.

The Creswell RPW applies to any wetlands mapped by the Statewide and National Wetland Inventories, and any waters or hydric soil units as mapped by the Natural Resource Conservation Service. An audit of this Development Code chapter was conducted in May 2022 and is included at the end of this report

(see Attachment 1). The RPW prohibits most residential conflicting uses allowed by Creswell's residential zoning district, including:

- Removal of vegetation from the RPW, with exceptions for:
    - Replacement of nonnative species with native species,
    - Removal of in-channel vegetation that may increase flooding,
    - Removal of vegetation/debris deposited by flooding, and
    - Removal of vegetation for water-related or water-dependent uses.

- Building, paving, and grading activities, with exceptions for:
    - Replacement of existing structures within the original building footprint,
    - Streets, roads, and paths included in the Creswell transportation system plan,
    - Approved water-related and water-dependent uses,
    - Maintenance/replacement of existing public facilities and emergencies, and
    - Approved in-channel erosion or flood control measures.

- Land partitions and property line adjustments that would create parcels that cannot be developed in conformance with the RPW overlay regulations.

The current RPW does not meet the criteria of a Safe Harbor method of Goal 5 resource conservation, as it does allow for some grading, excavation, and placement of fill. Thus, in order for Creswell to be in compliance with OAR 660-023, the city is considering the below ESEE Goal 5 protection programs to balance its Statewide Goal 5 and Goal 10 obligations:

A **full local protection** option for LSWs would not permit *any* of these activities, and would be the most effective at maintaining the function and values of wetlands.

A **limited local protection** option for LSWs would allow all of the exemptions currently allowed by the RPW when associated with a permitted or conditional use. In addition, the limited local protections option would also allow some activities that conflict with wetland conservation, including the development of new public facilities and land divisions (where designed to allow development of permitted structures/infrastructure outside of protected wetlands) when permitted. The limited protection option could also allow for up to 50% of a LSW to be developed on, provided that no other feasible development alternatives exist and the developer work closely with City Planners and obtain appropriate local approvals and state and federal permits. The City will strongly encourage residential development within lots containing LSWs to be medium- to high-density residential, to obtain as much benefit to the population as possible.

Some of these activities, including the construction of public facilities, utilities, transportation routes, and other developments, could negatively impact adjacent protected wetlands. All work within wetland boundaries would be subject to DSL and USACE permitting and approval.

The **no local protection** option would allow all of these activities to occur, pending permitting and approval by DSL and USACE.

4. ESEE Consequences Analysis for Relatively High Quality LSWs

4.1 Economic Consequences for Relatively High Quality LSWs

This section considers the ESEE consequences of allowing no conflicting land uses (full local protection), relying only DSL and USACE regulations (no local protection), and striking a balance between Goal 5 resource protection and Goal 10 Housing Needs by limiting conflicting land uses (limited protection) within *relatively high quality LSWs*, as required by Goal 5.

The Economic, Social, Environmental, and Energy (ESEE) consequences of these three options for relatively high quality LSWs are generally similar to consequences for relatively low quality wetlands, as discussed in Section 5. However, major differences in environmental consequences of allowing conflicting uses are noted for relatively high quality wetlands within Creswell's UGB, as these wetlands typically have both water quality and hydrologic control functions intact. In addition, all but one of the relatively high quality wetlands in the residentially zoned districts in Creswell are either forested (PFO) or scrub-shrub (PSS) wetlands, and thus provide additional environmental benefits not provided by the emergent (PEM) relatively low quality wetlands, such as increased flood reduction and slowing of flood waters, increased soil infiltration, increased carbon sequestration, and increased wildlife habitat (discussed further in Section 4.3).

4.1.1 Full Local Protection (No Residential Land Use Allowed)

The economic consequences of full protection for the relatively high quality wetlands in Creswell could be adverse, as this would prohibit removing and filling of these areas for efficient residential construction or necessary infrastructure expansion. As discussed in Section 3.4, Creswell's BLI in residentially zoned areas, excluding lands with natural resource constraints such as LSWs, will not provide enough residential opportunities for the city's growing population demands. The economy of the city will be adversely impacted by a lack of residential space in the future, which would be significantly attributed to full protection of relatively high quality wetlands in Creswell, as approximately half of the lots identified as buildable by the BLI are constrained by LSWs.

However, the relatively high quality wetlands located on residentially zoned lots in Creswell are considered to have at least one high-functioning water-related ecosystem service. Four of these high quality wetlands have both water quality and hydrologic control considered intact. To replace the hydrologic control and water quality improvements that these wetlands offer would likely be very expensive and take the form of engineered solutions that would also require future maintenance. Thus, fully protecting relatively high quality wetlands in Creswell could have beneficial economic consequences by avoiding the need to engineer stormwater, flood control, and water quality solutions within the UGB.

Additionally, all but one of the relatively high quality wetlands in Creswell's residential areas are classified as PFO (forested) or PSS (scrub-shrub) wetlands. These wetlands are characterized by mature trees and/or abundant shrub species, and many have open water and/or channels where hydrology is concentrated. While the presence of open water or active channels does not solely constitute "high quality" wetlands, mitigating the role that these wetlands are playing in concentrating and/or storing local hydrology would also require an engineered solution and be extremely costly.

4.1.2 Limited Local Protection

The limited local protection option offers the same protections for relatively high quality wetlands as it offers for relatively low quality wetlands (discussed in Section 5.1.2). Actions permitted by the limited protection option inside of relatively high quality wetlands would include vegetation and debris removal, some removal and filling for purposes related to planned public improvements and flood control, and potentially some removal and grading for purposes of residential development (with DSL and USACE approval). This protection program would maintain some conservation of relatively high quality wetlands while still allowing flexibility for utility installation, planned road extensions, and limited residential development. Thus, the limited local protection program could allow for economic benefits in the form of increased residential opportunities, but could also lead to negative economic consequences as mitigation of high functioning wetlands with intact hydrologic control and water quality abilities would need to occur.

4.1.3 No Local Protection (Reliance on State Regulation)

The economic consequences of providing no local protections to relatively high quality wetlands may be positive compared to either the full protection or the limited local protection options. Because residential development (i.e., the conflicting land use) is considered crucial to improving and growing the local economy, allowing removing and filling of wetlands (with DSL and USACE approval) would increase the amount of possible residential development and make construction of medium and high-density dwellings more feasible.

Developers would still be required to undergo the DSL/USACE regulatory process, which would incur costs associated with hiring wetland consultants, paying fees, and mitigating impacts to wetlands. Depending on the size of the relatively high quality wetland, this may be expensive. In addition, as discussed above in Section 4.1.1, these relatively high quality wetlands provide a variety of high functioning ecosystem benefits, including but not limited to, increased flood reduction and slowing of flood waters, increased soil infiltration and water storage, and increased carbon sequestration. Placing an economic value on ecosystem services has been historically difficult, however, it is possible that mitigating these environmental services via both engineered solutions and direct mitigation as required by USACE and DSL could result in a net economic loss (negative consequence).

4.2 Social Consequences for Relatively High Quality LSWs

Relatively high quality wetlands provide socially functional and aesthetic values to the community. Because all of the high quality wetlands are classified as either PFO or PSS, the tall vegetation and trees can provide scenic views and recreational opportunities such as bird watching. Many of these wetlands also have open water or drainage channels, which increase aesthetics of an area. The tall vegetation of these wetlands can also act as a buffer between residential areas and other highly trafficked/developed areas of the city, which is considered a social benefit to residents. The existence of the relatively high quality wetlands on Creswell's residential zoned lands aids in preserving a rural feel inside the city's UGB, even as the city's population grows. Wetlands can additionally offer social benefit by providing education opportunities for the public and school groups; however, the Creswell LWI did not recognize any educational usage of residentially zoned wetlands within the city UGB.

In contrast, negative social consequences can result from fully protecting relatively high quality wetlands at the cost of growing housing opportunities, thus increasing home prices and the need to expand the UGB and public infrastructure away from the city center. Developing residential opportunities away from the city center would result in longer distances between neighborhoods and schools, public services, main transportation routes, etc. In general, the social consequences of the three policy options for relatively high quality wetlands within the city are mixed.

4.2.1 Full Local Protection (No Residential Land Use Allowed)

Social consequences of fully protecting relatively high quality wetlands within Creswell may be positive, as described above. Protecting wetlands provides a natural aesthetic and pleasing view that, in some cases, may be highly valued by nearby residents compared to if wetlands were graded and replaced with impervious surfaces and structures. The Creswell Comprehensive Plan states that a city goal is to "maintain the quality of air, water, and land resources of a small community with individuality, scenic values, and rural atmosphere." Preserving open areas including wetlands is an important step in achieving this goal and would be a positive social consequence.

- Wetlands 2a and WD2000-0718-1-4 provide a visual and sound buffer between residents to the west and the I-5 southbound lane to the east. Removing this naturally vegetated area and replacing it with impervious surfaces would likely increase the highway noise perceived by existing residents, which has been found to have negative consequences on health and wellbeing.
- Wetland WD1999-0209-3 is a wetland strip located between two subdivisions. The open channel that runs through this wetland and its forested characteristic increases aesthetics and provides a more natural feel for an area that is otherwise densely developed with residential dwellings and streets. The wetland provides a visual barrier between these two subdivisions that would be highly visible to one-another if these mature trees were removed.
- Wetlands 2b and 2c are located between Highway 99 and I-5, and thus have high visibility from both roads. Protecting this open space between the two highly trafficked routes may have social benefit in two forms; providing a visual and noise buffer between two heavily used areas, and delegating residential development to areas further away from Highway 99 and I-5.

Negative social consequences could result from fully protecting relatively high quality wetlands as well, as this protection would be provided at the cost of increasing Creswell's inventory of residential dwellings, resulting in higher housing prices and/or requiring the city to expand its UGB. Expanding the UGB would increase urban sprawl and move infrastructure and housing away from the city center, which may be socially unfavored.

4.2.2 Limited Local Protection

The social consequences of a limited local protection program for relatively high value wetlands are mixed. Granting limited local protection to relatively high value wetlands could result in development of additional public facilities and residential dwellings, which may have a positive social consequence through increasing housing availability/lowering housing costs and reducing the need to extend urban sprawl outside of the UGB. However, a limited local protection option would like not nullify the need for an eventual UGB expansion to meet Creswell's growing population demand. The loss of some of these wetlands to development may reduce the open green space currently within city limits, which would not

aid in maintaining the "scenic values, and rural atmosphere" identified as a priority by Creswell's Comprehensive Plan, and thus have a potentially negative social consequence.

4.2.3 No Local Protection (Reliance on State Regulation)

Similar to consequences of full and limited protection program options, the social consequences of relying solely on state and federal regulation of relatively high quality wetlands would be mixed. Provided that DSL and USACE permit processes are followed and no alternatives for proposed development exist, the development of these wetlands would allow for increased residential opportunities in the city. This would have a beneficial social effect by increasing the inventory of available residential dwellings and buffering housing price escalation in the city.

However, as discussed in Section 5.2 and 5.2.1, relatively high quality wetlands provide a variety of social benefits. Developing in areas that currently provide open spaces, recreation opportunities, natural aesthetics, and sound/visual buffers against heavily trafficked/developed areas could have negative social consequences for residents of Creswell that enjoy a rural atmosphere. These aspects that the relatively high quality wetlands provide to the city would likely not be able to be replaced inside the UGB, and thus those elements would be permanently lost.

4.3 Environmental Consequences for Relatively High Quality LSWs

The relatively high quality wetlands on Creswell's residentially-zoned lots provide a wide variety of environmental benefits to the city. Most of these wetlands have both intact water quality and hydrologic control functions. Thus, these wetlands are able to purify drinking water by filtering stormwater inputs, protecting groundwater, and slowing down the transport of sediment to downstream aquatic habitats. In addition, all but one of the high quality LSWs are either PSS or PFO, and thus provide increased flood reduction and slowing of flood waters, increased soil infiltration, increased carbon sequestration, and increased wildlife habitat compared to PEM wetlands.

While all of Creswell's residentially-zoned LSWs (both relatively high and relatively low quality LSWs) were considered to have "impaired" wildlife habitat functions by the OFWAM assessment conducted during creation of the LWI, the relatively high quality wetlands reasonably provide more wildlife habitat than compared to the relatively low quality wetlands. The forested and shrubby nature of Creswell's residentially zoned high quality wetlands would specifically support more bird nesting and feeding habitat than the lower quality wetlands. Open water and channels would also provide feeding and watering habitats for birds and small mammals, and breeding/rearing habitat for invertebrates.

As mentioned in Section 3.2.1, all the relatively high quality wetlands within Creswell's residentially zoned lots meet *one or more* of the following criteria;

1. Have both water quality *and* hydrologic control functions intact;
2. Are classified as either Palustrine Forested (PFO)[4] or Palustrine Scrub-Shrub (PSS)[5], and/or;
3. Have hydrologic connection via surface flow to other LSWs at least once a year.

[4] PFO wetlands are characterized by a vegetation community dominated by mature (>3" DBH) trees.
[5] PSS wetlands are characterized by a vegetation community dominated by shrubs (<3" DBH).

Table 2 from Section 3.2.1, which summarizes all relatively high quality wetlands, is repeated below for ease of reference. As mentioned in Section 3.2.2, Wetland 11, while it has both water quality and hydrologic control listed as "intact" by the Creswell LWI, is considered a relatively low quality wetland due to a history of vegetation clearing.

LWI Wetland Code	*Cowardin Classification‡*	*Wildlife Habitat°*	*Wetland Size (acres)*	*Water Quality°*	*Hydrologic Control°*
2a-c*	PEM/PUB	Limited	4.84**	Intact	Impacted
15	PEM	Limited	0.29	Intact	Impacted
21	PFO	Limited	0.59	Intact	Intact
WD1999-0209-3	PFO	Limited	0.88	Intact	Intact
WD2000-0178-1&2*	PFO	Limited	0.83	Intact	Intact
WD2000-0178-3	PSS	Limited	0.12	Impacted	Intact
WD2000-0318-4	PFO	Limited	0.33	Intact	Intact

*Indicates more than one wetland grouped together under the same primary code.
‡Palustrine emergent (PEM), Palustrine scrub-shrub (PSS), Palustrine forested (PFO), Palustrine unconsolidated bottom (PUB).
°Information based on Oregon Freshwater Wetland Assessment Methodology (OFWAM) results reported in the 2011 Creswell LWI.
** Approximately 4.84-acres of Wetland 2a falls within residentially zoned lots inside the UGB; the remaining 19.45-acres of Wetland 2a falls within Industrial zoned lots/outside of the UGB, for total of 24.29-acres.

4.3.1 Full Local Protection (No Residential Land Use Allowed)

The environmental consequences of full protection for Creswell's residentially zoned relatively high quality wetlands would be the most positive, as the functions and values they provide would be preserved. The majority of these wetlands have both intact hydrologic control and water quality abilities. Creswell highly values these ecosystem services and wishes to conserve highly functioning wetlands to protect drinking water, improve downstream water quality, reduced erosion, and protect properties against flood damage.

Full local protection of these wetlands would prohibit conflicting land uses including utility installation, developing of public improvements, and/or filling and grading for residential construction. Most activity associated with residential development would negatively impact wetlands if allowed to take place inside their boundaries. Use of heavy equipment and trenching for utilities would damage plants, compact soils, and increase erosion, all of which could decrease the ability of wetlands to control hydrology and/or improve water quality as they had before being disturbed. Filling and grading any portion of these wetlands would likely negatively impact water retention time, stormwater filtration, pollution removal, and infiltration of flood waters, meaning decreased water quality to downstream habitats and groundwater sources, and decreased ability to protect nearby properties from flooding. Adding impervious surfaces inside even a small portion of any of these wetlands would increase the amount of stormwater input to the remaining wetland, thus changing hydrology and likely having impacts on these functions as well.

In addition, most of the relatively high quality wetlands are forested or dominated by shrubs. Because these vegetation types provide shade and can act as a heat sink during the summer, they can also have positive affects on air quality and water temperatures. Any vegetation removal within these wetlands would decrease the ability they have to cool down the surrounding environment, including temperatures within and around nearby residential dwellings. The forested/shrub wetlands also provide more wildlife habitat than compared to the habitat provided by relatively low quality wetlands, as discussed above in Section 4.3. Disturbance to these wetlands in the form of vegetation or debris removal, grading, trenching, or heavy equipment use would decrease the nesting, feeding, and/or rearing habitat they may provide to birds, small mammals, and invertebrates.

Below is a discussion of the environmental consequences of fully protecting the relatively high quality wetlands within Creswell from conflicting uses:

- Wetlands 2a-c: This wetland complex is the largest contiguous wetland (26.5-acres) partially in Creswell's residentially zoned areas. While Wetland 2a is separated from Wetland 2b by Martin Road, and separated from 2c by a gravel drive, these wetlands are hydrologically connected via groundwater and culverts. Wetlands 2b and 2c are classified as palustrine emergent (PEM), meaning characterized by herbaceous vegetation, while portions of Wetland 2a are open water (PUB). Wetlands 2a-c are considered to have impacted hydrologic control function. The impacted hydrologic control is likely primarily due to the roads built through the wetland complex, and the presence of I-5 along the east side of the majority of Wetland 2a, where the wetland likely once continued to the northeast-east to connect with the hydrology of the Willamette River floodplain. However, Wetlands 2a-c have intact water quality functioning. Therefore, full protection of this large wetland complex would preserve the largest wetland on Creswell's residentially zoned land and would have benefits for the quality of drinking water, downstream habitats, and erosion reduction.

- Wetland 15: This relatively small, 0.29-acre, PEM wetland was considered to have intact water quality functioning but impacted hydrologic control by the LWI OFWAM assessment. This is likely because a violation of the current Creswell wetlands policy has occurred on this privately-owned lot, involving the formation of an unofficial vehicle crossing through the middle of this crescent-shaped wetland to provide the landowner with convenient access to the west side of the lot. While this wetland has only one ecosystem function considered intact (as evaluated by OFWAM), it is considered a relatively high functioning wetland as it has the largest impact area relative to its size of all residentially-zoned LSWs, and appears to have hydrologic connectivity with other non-residentially zoned LSWs to the south and north. Thus, full protection of Wetland 15 would have beneficial environmental consequences as it would aid in maintaining hydrologic connectivity between other LSWs.

- Wetland 21: This wetland is 0.59-acres and is classified as a forested (PFO) wetland. Wetland 21 has both intact water quality and hydrologic control functions. Because this is a relatively high functioning wetland, and its forested nature likely provides some wildlife habitat, fully protecting this wetland would have positive environmental consequences.

- Wetland WD1999-0209-3: This forested wetland has both intact water quality and hydrologic control functions. Because this is a relatively high functioning wetland, and its forested nature likely provides some wildlife habitat, fully protecting this wetland would have positive environmental consequences.

- Wetlands WD2000-0178-1&2: This forested wetland complex is 0.83-acres and is hydrologically connected by surface water, at least during the wet season. It is considered a depressional outflow and has both intact water quality and hydrologic control functions. Because this is a relatively high functioning wetland, and its forested nature likely provides some wildlife habitat, fully protecting this wetland would have positive environmental consequences.

- Wetland WD2000-0178-3: This wetland is considered to be within the same complex as Wetlands WD2000-0178-1&2, however, is dominated by shrub species (and therefore classified as a PSS wetland). Shrubs can provide nesting and rearing habitat for bird species, and foraging habitat and shelter for small mammals. Wetland WD2000-0178-3 is considered to have impacted water quality function, likely because it is located directly adjacent to the I-5's southbound lane. However, this wetland was considered to have intact hydrologic control. Therefore, full protection of this wetland would have positive environmental consequences in the form of preserved flood control, sediment capture, and erosion reduction.

- Wetland WD2000-0318-4: This forested wetland is considered part of the same complex as Wetlands WD2000-0178-1&2, and is hydrologically connected to these wetlands by surface water, at least during the wet season. It is considered a depressional outflow and has both intact water quality and hydrologic control functions. Because this is a relatively high functioning wetland, and its forested nature likely provides some wildlife habitat, fully protecting this wetland would have positive environmental consequences.

4.3.2 Limited Local Protection

The environmental consequences of a limited local protection program would be negative for relatively high quality wetlands. The limited protection program would provide some protection for wetlands against conflicting uses in the form of limiting removal and grading activity and allowing residential development to be placed within only a portion of a LSWs footprint, thus in theory allowing at least half of a high quality wetland to persist. However, filling and grading soils and placing impervious surfaces within even a small portion of a wetland could negatively affect the remaining wetland system by creating changes to hydrology, soil permeability, and plant composition. Even if residential development is not proposed to be located within wetland boundaries, the limited local protection program also allows for development of public utilities and planned roads inside of LSWs. The installation of utilities or construction of public improvements within relatively high quality wetlands could also negatively impact the function of these wetlands, as this activity could lead to loss of vegetation, degradation of soils, and change in microtopography important for hydrologic control. This would result in a negative environmental impact to relatively high quality LSWs.

4.3.3 No Local Protection (Reliance on State Regulation)

The no local protection option would have significant adverse environmental consequences for relatively high quality wetlands located on Creswell's residentially zoned lots. Applying a no local protections program to these wetlands would allow for filling and grading of these areas, if the state agrees that no reasonable alternatives exist and grant permit approval for conflicting use activities. If these wetlands are filled and graded for construction of residential dwellings, or associated impervious surfaces, the functions and values of these relatively high quality wetlands will be lost from within the Creswell UGB. Even if the loss of these functions and values are mitigated for elsewhere, it is widely acknowledged that created wetlands outside the city do not replace the same ecosystem services where the original wetland was located. Thus, reliance on only state regulation for protection of relatively high quality wetlands would have negative environmental consequences for Creswell when compared to a full local protection program.

4.4 Energy Consequences for Relatively High Quality LSWs

Similar to consequences discussed in Section 4.4 for relatively low quality wetlands, energy consequences of the three possible protection programs for relatively high quality wetlands generally includes considering energy activities that are associated with residential development. These may include, but are not limited to, changes to transportation options within the city, the distance residents must travel to get around and through the city, temperature impacts, urban sprawl, and efficiency of controlling and storing stormwater runoff.

4.4.1 Full Local Protection (No Residential Land Use Allowed)

Full protection of relatively high quality wetlands would have mixed energy consequences in Creswell. Prohibiting removal and fill of these wetlands would limit residential opportunities within the city, and thus require the city to expand their UGB to provide space for residential development. This would necessitate the extension of existing road systems and utilities away from the city center and current residential areas, and potentially increase resident drive time to and from their homes. Thus, full protection could have negative energy consequences.

However, removing and filling of these wetlands to allow for conflicting uses would mean loss of the ecosystem services they provide that would then have to be compensated for on-site; specifically, hydrologic control. Replacing the hydrologic control of wetlands with engineered stormwater facilities would require much more energy than to preserve a wetland, and thus, fully protecting relatively high quality LSWs would have a positive energy consequence. In addition, the forested/shrubby nature of these wetlands could provide shade to nearby structures, and act as a local heat sink. This could have energy benefits by reducing the reliance of adjacent dwellings on mechanical cooling in the summer.

4.4.2 Limited Local Protection

The energy consequences of applying a limited local protections program to relatively high quality LSWs in Creswell would be mixed. The limited protection option would allow for utility installations and planned public improvement construction, including roads already on the Creswell transportation system plan. This could have positive energy consequences for the city, as keeping urbanization within the current UGB would minimize urban sprawl and reduce travel times for residents. However, the

installation of utilities and/or the construction of public improvements and roads within relatively high quality wetlands could have negative energy consequences, as this development would likely lead to reduced hydrologic function of these wetlands. As discussed above in Section 5.4.1, it would be energy intensive to engineer a stormwater/flood water control solution to replace the hydrologic functions of the relatively high quality wetlands in Creswell. Thus, a limited local protections program applied to relatively high quality LSWs could have negative energy consequences.

4.4.3 No Local Protection (Reliance on State Regulation)

Fully relying on state regulation for the protection of relatively high quality wetlands would have mixed energy consequences in Creswell. Similarly to the consequences for relatively low quality wetlands discussed in Section 4.4.3, there would be negative energy consequences associated with the loss of wetlands in the form of required engineered solutions for stormwater filtration and hydrologic control. Contrastingly, increasing residential dwellings and confining road construction to within existing city limits would cut down on transportation time and urban sprawl, which would have positive energy consequences

5. ESEE Consequences Analysis for Relatively Low Quality LSWs

This section considers the ESEE consequences of allowing no conflicting land uses (full local protection), relying only DSL and USACE regulations (no local protection), and allowing limited conflicting use (limited protection) within *relatively low quality LSWs* as required by OAR 660-023-0040.

5.1 Economic Consequences for Relatively Low Quality LSWs

Creswell's economy depends on the sustainable growth of the community and workforce. The ability of a city to provide its citizens with residential dwellings is essential. The residentially zoned, currently vacant buildable lands that may be realistically built on within the Creswell UGB are significantly constrained by Goal 5 resources, which restricts economic opportunities for the city, for developers, and for Creswell's future community. However, the economic value of ecosystem services provided to the community by wetlands should be taken into consideration.

5.1.1 Full Local Protection (No Residential Land Use Allowed)

The economic consequences of fully protecting relatively low quality wetlands could be adverse, as these areas would not be able to be filled or graded to allow for efficient residential construction or infrastructure expansion. Required infrastructure in residentially zoned lots within Creswell includes, but is not limited to, access streets, emergency routes, parking areas, and utilities. These public improvements are especially essential for medium and high density residential dwellings, which Creswell intends to prioritize in future development to meets its growing need for housing.

In contrast, full protection of relatively low quality wetlands would preserve the existing hydrologic control or water quality functions of these resources, which the city has identified as being highly valued. It is difficult to place an economic value on ecosystem services, but preserving these natural qualities of functioning wetland systems would likely be economically beneficial compared to replacing them with engineered solutions. However, as noted in Table 2, either one or both of these ecosystem services provided by the relatively low quality wetlands in Creswell were considered impacted at the time that the LWI was conducted. Thus, the economic benefits of preserving relatively low quality wetlands would be smaller compared to preserving higher quality wetlands (as discussed in Section 4.1.1).

In addition, most of the relatively low quality wetlands are located centrally in residentially zoned lots and/or span multiple lots, meaning full protection of these areas would either severely limit or completely exclude medium to high density residential development on vacant lots in Creswell.

For these reasons, there could be a significantly adverse economic impact resulting from a full protection ordinance of these low quality LSWs.

5.1.2 Limited Local Protection

The limited local protection option for relatively low quality wetlands would allow for some fill and grading of wetlands for utilization by previously planned public improvements, utility installation, and limited residential development, as permitted. This would be in addition to DSL and USACE regulations.

The limited protection program would allow flexibility for developers to more easily build medium- and high-density residential housing around and/or partly within LSWs, as many of the relatively low quality wetlands within Creswell's UGB are located in the middle of tax lots, span multiple lots, or are a complex shape. Because of the shape and position of many of these wetlands, developing medium- to high-density residential dwellings completely outside of the wetlands would be difficult in some instances, and logistically infeasible in others. Thus, the flexibility provided by a limited local protection program may result in a positive economic outcome for the City of Creswell, in the form of increased residential opportunities and partial conservation of environmental services that relatively low quality wetlands provide (like flood control and groundwater storage). However, any impacts to LSWs, even relatively low quality wetlands, would still require mitigation, which could be expensive, and thus incur negative economic impacts.

5.1.3 No Local Protection (Reliance on State Regulation)

The economic consequences of no local protections provided to relatively low quality wetlands within Creswell's UGB could be beneficial compared to results of providing full or limited protections to these wetlands. DSL allows for some alterations to wetlands to occur, following permitting and/or notification, including allowance of road, utility, and residential development when no other alternative placements exist. If Creswell were to pursue a no local protections option for any of its relatively low quality wetlands, these resources would continue to be regulated by DSL and/or USACE, and thus, any earthwork in these areas (e.g. removal and/or fill) would fall under their jurisdiction.

As mentioned in Section 3.4.1, Creswell has identified a deficit of residential housing opportunities and developable lands within the city's UGB, which negatively effects economic growth of the community. Thus, offering no local protections to residentially zoned wetlands would be economically beneficial by increasing the buildable lands within the UGB and subsequently allowing the flexibility required for medium to high density residential dwellings to be constructed.

5.2 Social Consequences for Relatively Low Quality LSWs

While identified as "relatively low quality" wetlands, these natural resources continue to provide functional and visual benefits to the surrounding community. The Creswell Comprehensive Plan states that a city goal is to "maintain the quality of air, water, and land resources of a small community with individuality, scenic values, and rural atmosphere." Preserving open areas including wetlands is an important step in achieving this goal while the city population continues to expand, as wetlands provide aesthetic benefit to community members who live nearby or pass these areas on a regular basis. Wetlands can also offer social benefit by providing education opportunities for the public and school groups; however, the Creswell LWI did not recognize any educational usage of residentially zoned wetlands within the city UGB.

Contrastingly, placing burdens on the BLI within the city and restricting residential housing opportunities have a negative social consequence. While it is difficult to quantify either the positive or negative social consequences of natural resource protection, both should be taken into account.

5.2.1 Full Local Protection (No Residential Land Use Allowed)

Fully protecting LSWs inside the Creswell UGB would allow for continued preservation of aesthetics provided by the wetland's natural open spaces. It is widely acknowledged that having open and natural spaces available can increase overall wellbeing of community residents, and serves to enhance a rural atmosphere of a town or city. Thus, there would be social benefit to fully protecting Creswell's relatively low quality wetlands. In particular, the aesthetics of open water (which some of these relatively low quality LSWs exhibit during the wet season) are often highly socially valued. Some residentially zoned lower quality wetlands within the UGB contain channels that concentrate seasonal surface water (Wetland 11 and Wetland WD2000-0310-5), and thus, these regions of these lower quality wetlands may warrant a high level of protection.

However, if the city were to continue in its deficit of buildable lands and residential opportunities, this would have a negative impact on the social environment of the city. Increased housing prices as a result of low supply typically has a negative impact on residents in the form of housing insecurity and higher costs of living. Therefore, there would be negative social consequences of protecting Creswell's relatively low quality wetlands.

5.2.2 Limited Local Protection

A limited local protection program would result in mixed social consequences for Creswell's relatively lower quality wetlands. A limited protections program would allow for infrastructure such as educational, low-impact informational signs or trails to be developed within relatively low quality LSWs, which would have social benefits. However, all of Creswell's relatively low quality wetlands are generally on private land and none were considered to provide significant educational or recreational opportunities by the OFWAM conducted as part of the LWI. Thus, educational and recreational benefits are not considered to be an obtainable service from Creswell's relatively low quality wetlands.

A limited protection program would also open up increased flexibility for utility and road construction and residential development on lots with relatively low quality wetlands. Under a limited protection program, a maximum of 50% of the footprint of these wetlands could be available for filling and grading (with appropriate state and federal permit approvals and mitigation). Development within any portion of a relatively low quality wetland would require working closely with the Creswell City Planning staff to determine what land within wetlands boundaries would be available for grading and filling.

This limited protection plan for relatively low quality wetlands could have a positive social outcome in the form of increased transportation options and an increase in housing inventory inside the city. However, negative social impacts could result from development near or inside relatively low quality wetland boundaries, as this would lead to a decreased footprint of these habitats and a decrease in the amount of open natural space within the Creswell UGB. This would be a negative social consequence of the limited local protection program, and thus, the social results of this option are considered mixed.

5.2.3 No Local Protection (Reliance on State Regulation)

Similar to the limited local protection program, the no local protection program for relatively low quality wetlands would be mixed. Because Creswell has identified a need for residential housing to meet the growing demands of its population, the no local protection option for relatively lower quality wetlands would provide social benefit by increasing the housing inventory within the Creswell UGB. Full reliance on state regulation for development in these wetlands would provide flexibility needed to meet

population housing requirements within the city, thus delaying the need for Creswell to expand its UGB away from the city center, which could incur negative social outcomes as housing would be developed away from city services and amenities.

However, no local protections of relatively low quality wetlands could potentially decrease the amount of open natural space within the UGB, which would be considered a negative social consequence. Thus, overall social consequences of a no local protection program for relatively low quality wetlands are mixed.

5.3 Environmental Consequences for Relatively Low Quality LSWs

Existing wetlands within the Creswell UGB provide environmental benefits, regardless of their perceived quality. Environmental benefits of wetlands include filtering of stormwater from nearby homes and impervious surfaces and capturing fine particles released from upland erosion, thereby increasing water quality in the area. Wetlands also slow flood water, protecting infrastructure, dwellings, and property. Even wetlands with no shrub or tree cover can provide breeding habitat for amphibians and invertebrates.

However, Creswell's relatively low quality wetlands were all found to provide no or limited fish and wildlife habitat, and were found to have either impacted hydrologic control or water quality abilities (WD2000-0318-1-3 had all ecosystem services considered limited or impacted). For residentially zoned LSWs in Creswell, this has generally occurred for two reasons: (1) development of roads or structures that have cut off hydrologic connectivity with other aquatic features, or (2) land use that has involved regular manipulation of vegetation and use of equipment inside of wetlands, thereby allowing non-native species to flourish, reducing native species biomass, and/or compacting soils.

5.3.1 Full Local Protection (No Residential Land Use Allowed)

Full local protection of all LSWs within Creswell would have the most positive environmental consequences, as the environmental benefits provided by relatively low quality wetlands would be preserved.

While hydrologic control is considered impacted for most of the relatively low quality wetlands, some hydrologic control function is still likely to exist, especially in those wetlands that exhibit channelization (like Wetland WD2000-0310-5). In addition, water quality improvement is an ecosystem service still considered intact for nearly all relatively low quality wetlands, and thus these wetlands are actively filtering pollution from runoff, reducing erosion, and increasing infiltration of surface water, which improves the water quality of nearby aquatic features (including lakes, streams, and rivers) that may support diverse wildlife or be sources of drinking water, even if they are not hydrologically connected via surface flow to low quality wetlands.

Allowing conflicting uses such development of residential dwellings within wetland boundaries, requiring filling and grading activity, would directly reduce the size of wetlands, increase stormwater runoff to remaining portions of wetlands that are only partially removed and/or filled, and negatively impact groundwater retention rates. Allowing other disturbances associated with residential conflicting uses (like utility installation, access road construction, etc. that does not require complete removal/fill) would likely also increase stormwater discharge to relatively low quality wetlands, decrease the size of

the wetlands, and/or reduce vegetation biomass, further reducing hydrologic control and water quality improvements.

In conclusion, applying full protection to Creswell's relatively low quality wetlands would have positive environmental consequences.

5.3.2 Limited Local Protection

The limited protection option may result in net negative environmental consequences. A limited protection program would allow for the installation and maintenance of public utilities and streets included in the Creswell transportation system plan. In addition, this program option could allow for a maximum of 50% of a relatively low quality wetland to be filled and graded (pending communication with the Creswell Planners and appropriate permitting through DSL and USACE), and thus, negative environmental consequences would result from decreasing a wetlands footprint. Even with the requirement that at least 50% of the original wetland area be conserved, the remaining wetland would like be negatively impacted by any grading or filling within its boundaries. Grading and filling within or near wetlands can lead to changes in hydrology, soil texture, and vegetation composition, which in turn can negatively affect wetlands hydrologic control and water quality functioning.

Therefore, a limited protection program, while not incurring as significant of a negative environmental consequence as the no local protections program (discussed below), could still have a negative environmental impact on wetland functions.

5.3.3 No Local Protection (Reliance on State Regulation)

The no local protections option would allow for filling and grading of relatively low quality wetlands, in accordance with state and federal removal-fill permitting and policy. Most permitted removal-fill work within wetlands requires mitigation of the same values and functions lost from the filling and grading of a specific wetland. This typically takes the form of purchasing off-site wetland mitigation bank credit to "make up" for the loss of wetland values and functions. However, creation and/or restoration of mitigation wetlands off-site does not fully compensate for losses of wetland functions at its original location. Thus, the no local protections options would produce the most negative environmental consequences of the three protection options.

5.4 Energy Consequences for Relatively Low Quality LSWs

Energy consequences of weighing local protection programs against conflicting residential uses generally includes potential changes to transportation options and vehicle usage. The creation of additional transportation routes within the UGB can lead to energy conservation in the form of less vehicle usage and smaller travel distances. Even relatively low quality wetlands, especially if they contain mature trees, can decrease temperatures of nearby lots and buildings by shading structures and acting as heat sinks. Relatively low quality wetlands also require far less energy to retain stormwater and control floods when compared to stormwater systems that are engineered and constructed.

5.4.1 Full Local Protection (No Residential Land Use Allowed)

The full local protection options for relatively low quality wetlands would have mixed consequences for energy use within the city. Replacing the hydrologic control of wetlands with engineered stormwater facilities would require much more energy than to preserve a wetland, and thus, fully protecting

relatively low quality LSWs would have a positive energy consequence. However, limiting residential growth within the current UGB could have negative energy consequences in the future, by reducing residential opportunities within the city and thereby requiring the city to expand its UGB and road systems away from the city center, leading to increased urban sprawl. None of the residentially-zoned relatively low quality wetlands in Creswell are considered PFO wetlands, and thus, shading of structures is not a service provided by these wetlands.

5.4.2 Limited Local Protection

The energy consequences of a limited local protections program would be similar to results of the full local protection option in that preserving hydrologic control of LSWs would be less energetically costly than replacing them with engineered stormwater facilities (a positive energy consequence).

In addition, a limited protection plan would allow for utilities and streets and roads included in the Creswell transportation system plan to be constructed within LSWs, which could allow for increased efficiency of vehicle use within the UGB to an extent. This program option would also allow for increased flexibility for residential development on lots with relatively low quality LSWs, which address Creswell's housing deficit and allows for dwellings to be constructed closer to the city center. This would negate the need for a UGB expansion and development of roads away from services and amenities, which is considered a positive energy consequence.

However, the filling and grading of any relatively low quality wetland for either utilities, road expansions, or residential development would require mitigation of the ecosystem services provided (mainly water quality and/or hydrologic control). This mitigation would like take the form of off-site mitigation credit purchase and an engineered stormwater solution would be required on-site. This would be a negative energy consequence.

5.4.3 No Local Protection (Reliance on State Regulation)

The energy consequences of a no local protections program for relatively low quality wetlands would be mixed. If Creswell allows relatively low quality wetlands to be removed and filled for conflicting uses, stormwater facilities would need to be constructed to adequately compensate for the loss of hydrologic control. This would be a negative energy consequence. However, allowing for residential development inside of the UGB, where only minor access roads would need to be constructed to service new structures, would have a positive energy consequence, as it would reduce the need for the city to expand the UGB and build major road expansions away from the city center. Compared to expanding the UGB to provide housing opportunities, this would decrease urban sprawl and conserve energy in the form of reduced road construction and reduced distance and time traveled by residents.

6. Creswell Statewide Goal 5 Protection Plan Proposal

6.1 Recommendations for Relatively High Quality LSWs

Based on the ESEE analysis and the beneficial environmental and social consequences of locally protecting relatively high quality wetlands in Creswell, it is recommended that **full local protections** be afforded to the seven wetlands listed in Table 3:

- Wetlands 2a-c
- Wetland 15
- Wetland 21
- Wetland WD1999-0209-3
- Wetlands WD2000-0178-1&2
- Wetland WD2000-0178-3
- Wetland WD2000-0318-4

6.2 Recommendations for Relatively Low Quality LSWs

Based on the ESEE analysis and adverse economic and social consequences of providing relatively low quality LSWs both local and state protection policies, it is recommended that **no local protections** be applied to the following residentially zoned wetlands:

- Wetland 23
- Wetlands WD2000-0318-1-3
- Wetlands WD2006-0331-1-2

Because Creswell highly values hydrologic control and water quality ecosystem services within the city's residentially zoned areas, it is recommended that the following relatively low quality wetlands receive a **limited protection program**:

- Wetland 11
- Wetlands WD2000-0310-1-8

- Wetland 11 – This wetland has been impacted by unauthorized vegetation removal which likely negatively impacts its hydrologic control and water quality abilities. However, because both of these ecosystem services were considered intact at the time of the LWI (conducted in 2011), it is recommended that Wetland 11 receive limited local protections. Figure 5 represents the maximum area (50% of the overall wetland footprint) and preferred location that the city would allow filling and grading to occur within. No filling or grading may occur within wetland boundaries without approval from state and federal regulatory agencies. A limited local protection program aims to maintain the majority of PEM wetland area draining to the channelized region within Wetland 11, while allowing for flexible utility, street, and residential development strategies in the southern half of the wetland, which is irregularly shaped and would make medium- to high-density development on the southern tax lot difficult.

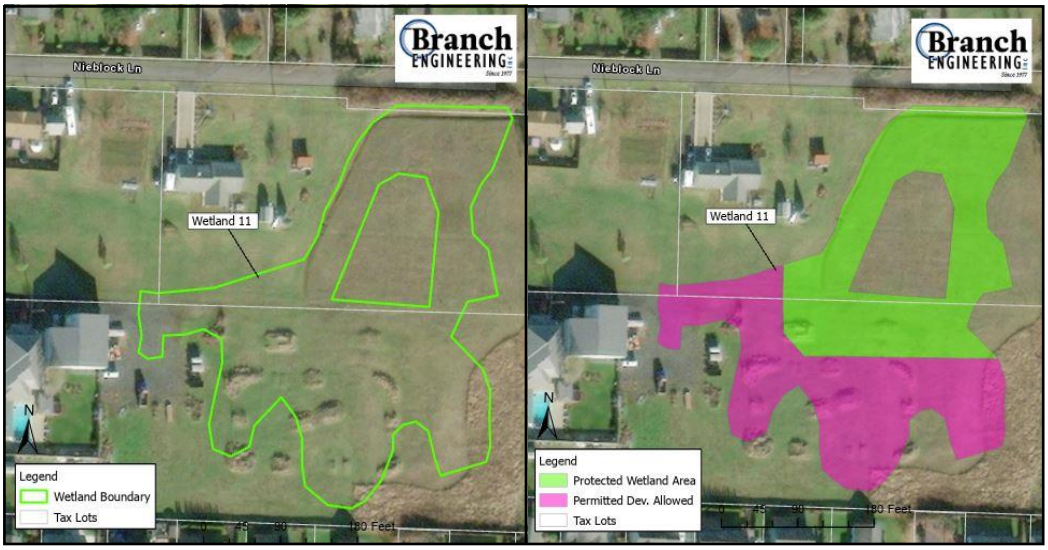


Figure 5: Recommended Limited Protection Plan with preferred areas of conservation and of potential development shown for Wetland 11.

- Wetlands WD2000-0310-1-8 – These wetlands are a collective complex that includes Wetland WD2000-0310-5 (1.77 acres) and seven smaller (<0.05 acres) wetlands (Wetlands WD2000-0310-1-4 & 6-8). It is proposed that the larger wetland that supports active channel hydrology receive full protection, and the smaller wetlands to the northeast and southeast receive no local protections. Figure 6 presents the recommended limited protection plan, which would allow for filling and grading (pending communication with a Creswell City Planner and approved state and federal permits) of the seven smaller wetlands, and continued protection of the larger wetland. Allowing for potential filling and grading of the smaller wetlands increases flexibility for medium- to high-density residential development, while conserving the ecosystem services provided by Wetland WD2000-0310-5.

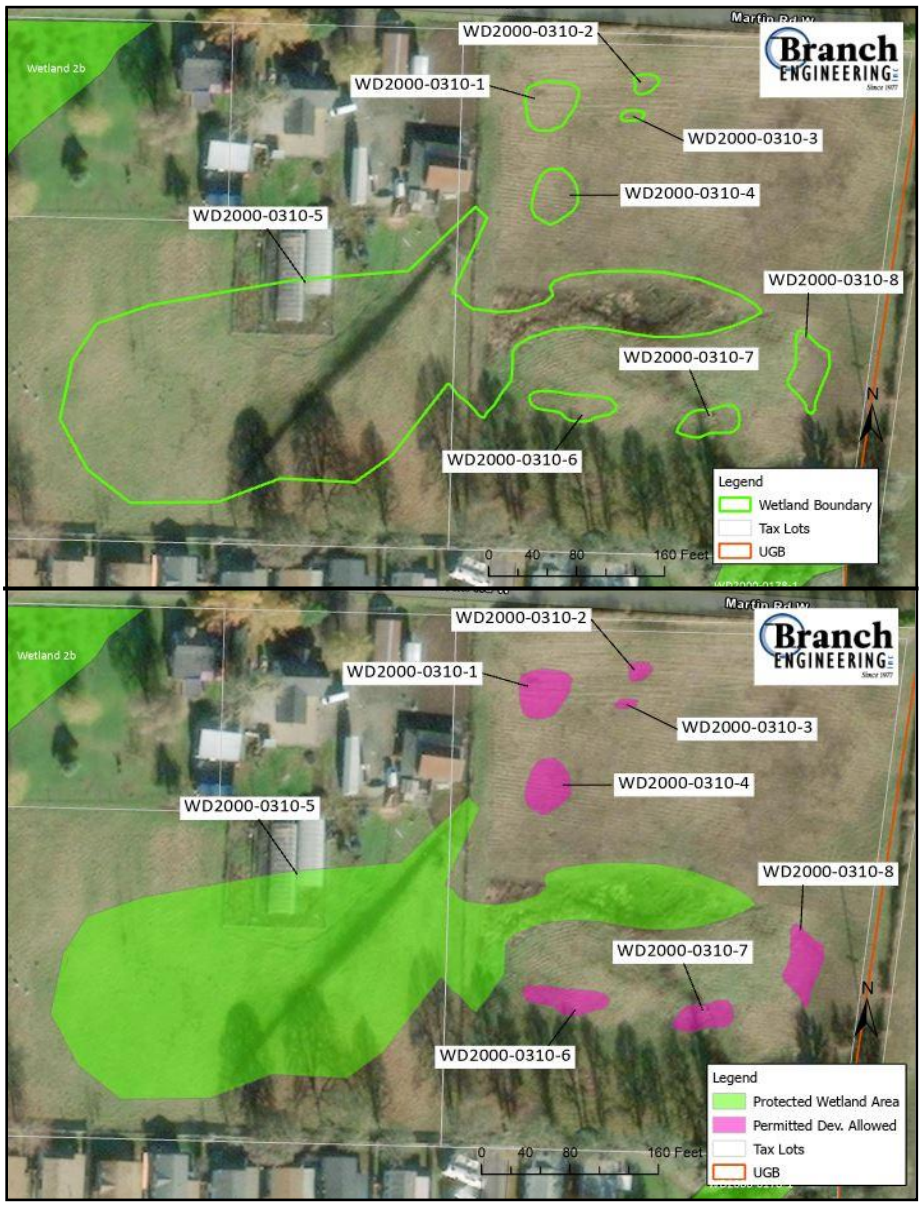


Figure 6: Recommended Limited Protection Plan with preferred areas of conservation and of potential development shown for for Wetlands WD2000-0310-1-8.

6.3 General Rational for Statewide Goal 5 Protection Policy Decisions

The following lists provide the *general* (not explicit) reasons why a specific planning policy is proposed for each LWI-identified wetland within Creswell's residentially zoned areas. See Figure 8 at the end of Section 6.3.3 for location of these wetlands and recommended protection levels:

6.3.1 General Rational for No Local Protections (Reliance on State Regulation)

- Wetland 23 spans two residentially zoned lots, which would significantly restrict conflicting uses allowed on the lots. Provides limited wildlife habitat, and has impacted hydrologic control.

- Wetlands WD2000-0318-1-3 have no functions (wildlife habitat, fish habitat, water quality, hydrologic control) considered intact.

- Wetlands WD2006-0331-1-2 span the majority of two residentially zoned lots, which would significantly restrict conflicting uses allowed on the lots. Provides limited wildlife habitat, and has impacted hydrologic control.

6.3.2 General Rational for Full Local Protection (No Residential Land Use Allowed)

- Wetland 2a-c is a large (26.5 acre) wetland complex that has intact water quality functioning and includes open water habitats.

- Wetland 15 is a PEM wetland that has intact water quality functioning and is hydrologically connected to other LSWs to both the north and south. Fully protecting this wetland, while it only has one ecosystem service considered intact, will protect the hydrology of surrounding aquatic resources.

- Wetland 21 is a PFO wetland that has both intact water quality and hydrologic control functions.

- Wetland WD1999-0209-3 is a PFO wetland that has both intact water quality and hydrologic control functions. Provides numerous social benefits. It is a thin wetland strip located between two subdivisions and thus, local protection of this wetland poses minimal constraint to development.

- Wetlands WD2000-0178-1&2 are hydrologically connected PFO wetlands that have both intact water quality and hydrologic control functions. Provide numerous social benefits.

- Wetland WD2000-0178-3 is a PSS wetland that has hydrologic control functioning intact. It is located immediately adjacent to I-5, and likely not ideal for utility installation, additional roadways, or residential development.

- Wetland WD2000-0318-4 is a PFO wetland that is hydrologically connected to Wetlands WD2000-0178-1&2. It has both intact water quality and hydrologic control functions. Provides numerous social benefits.

6.3.3 General Rational for a Limited Protection Program

It should be noted that in areas of proposed full local protections and no local protections (reliance on state regulation), where Impact Areas overlap, the full local protection Impact Area shall be given higher precedence and remain protected.

- Wetland 11 is a relatively low quality wetland that exhibits active channel hydrology in the northern-northwestern portion of the wetland. In order to preserve the aesthetics of this open channel habitat and the ecosystem services it provides, it is proposed that this northern half of the wetland receives full local protection. To balance Goal 5 resource conservation with conflicting uses, it is proposed that the southern half of this wetland receives no protections at the local level (see Figure 5). DSL regulations and permit requirements will still apply.

- Wetlands WD2000-0310-1-8 are part of a relatively low quality wetland complex. The majority of these wetlands (Wetlands WD2000-0310-1-4 and 6-8) are less than 0.05-acres in size and are scattered to the northeast and east of Wetland WD2000-0310-5. Wetland WD2000-0310-5 is 1.77 acres in size and supports active channel hydrology. To protect the natural aesthetic and the hydrologic control that this channel provides, it is proposed that Wetland WD2000-0310-5 receives full protection. Protecting the small, scattered wetlands to the east (Wetlands WD2000-0310-1-4 and 6-8) would likely make residential development logistically infeasible. Thus, to balance Goal 5 resource conservation with conflicting uses, it is proposed these smaller (less than 0.05-acre) wetlands receive no local protections. DSL regulations and permit requirements will still apply.

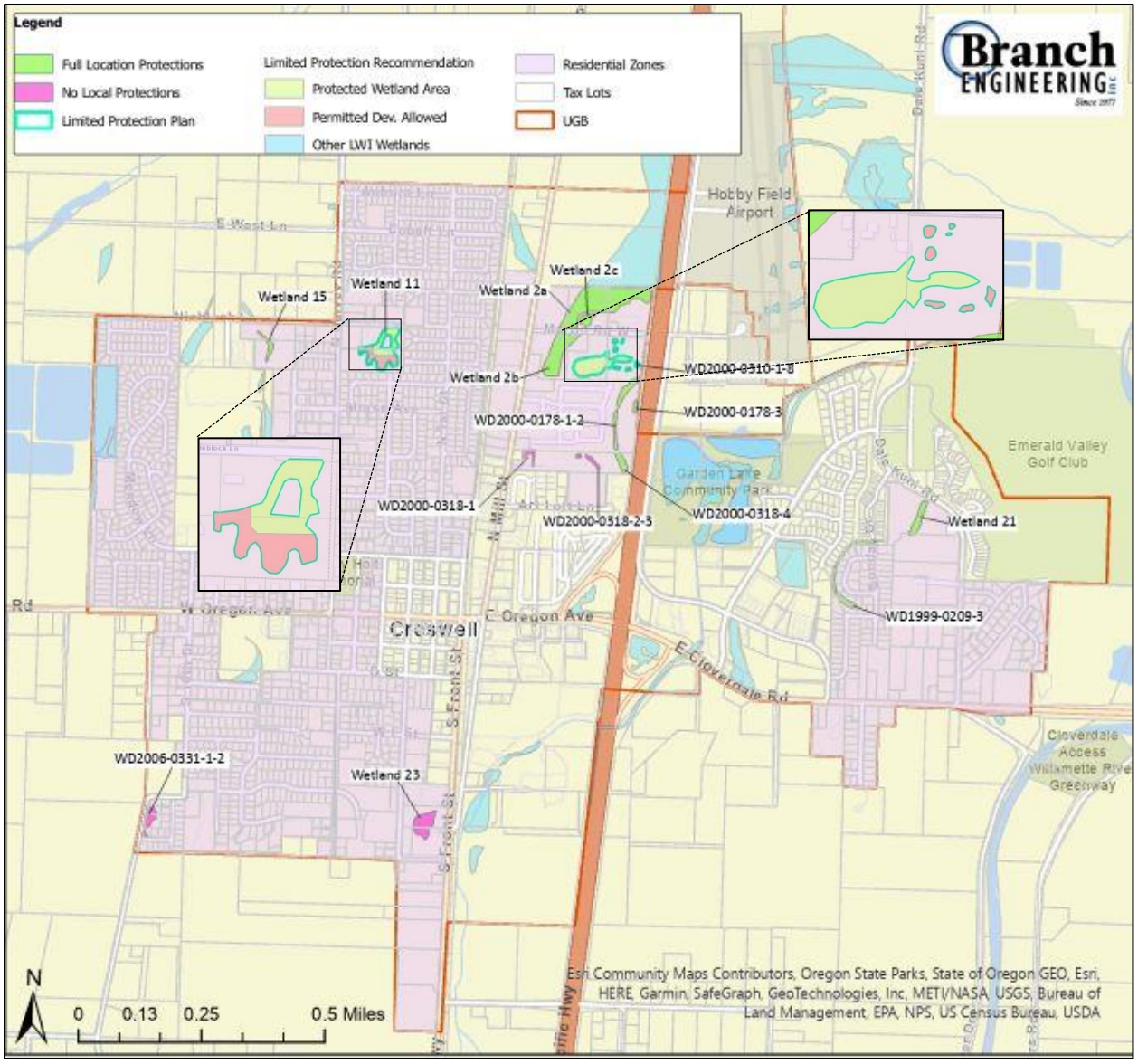


Figure 7: Recommended Levels of Local Protection for All Residentially Zoned LSWs in Creswell.

7. Creswell Wetland Policy Recommendations

The following policy recommendations are based on the Creswell ESEE analysis and the conclusions reached for both relatively high quality locally significant wetlands and relatively high quality locally significant wetlands. These recommendations are made to amend relevant sections of both the Comprehensive Plan (Section III) and Creswell Development Code Chapter 2.10, Riparian Protection and Wetlands (RPW) Overlay.

- Preserve the highest-value and highest functioning wetlands. High quality wetlands provide valuable services to Creswell like improving water quality, increasing water retention, sediment filtration, and groundwater infiltration, and providing fish habitat and wildlife habitat.

- Allow conflicting uses on relatively low-quality wetlands. No local protections are proposed for relatively low quality wetlands inside the Creswell UGB, but state and federal permitting will still be required.

- Consider requiring Medium- and/or High-Density Residential Development. Wetlands provide value to the Creswell community. Filling relatively low quality wetlands will reduce ecosystem services provided by those wetlands within the UGB. It is therefore recommended that the city consider requiring specific residential develop (i.e. medium- or high-density) on lots with locally significant, relatively low quality wetlands. This would meet the City's priority of increasing housing opportunities for its growing community and help balance requirements of Statewide Goal 5 and Goal 10.

- Use Local Wetlands Inventory as basis for Section CDC 2.10. The current code includes consideration of the Oregon State Wetland Inventory, the National Wetland Inventory, and Hydric Soils layer (the identifying source of hydric soils in the current CDC 2.10 is unclear). However, according to OAR 660-023-0040, local governments should develop a program for Goal 5 resource conservation of wetlands deemed locally significant by the Local Wetlands Inventory. Thus, because the basis of Goal 5 resource planning for cities is the LWI, the Oregon SWI, NWI, and hydric soils are not required to be considered and could be taken out of CDC 2.10 via a development code and LWI amendment.

- Include specification that, in addition to local protections (or lack thereof), regulatory agency requirements are still in effect. Regardless of ESEE results and/or local policy amendments pertaining to Goal 5 resources, DSL and USACE regulate all waters of the state. Thus, whenever development plans that fall within a LSWs Impact Area are submitted to the city, a Creswell City Planner will submit a WLUN to DSL. In turn, DSL may require a wetland delineation of the lot, and any planned temporary or permanent impacts to state or national waters will require permitting and mitigation. The city will comply with statutory requirement to notify DSL of development proposed in the vicinity of wetlands or predominately hydric soils identified on the State Wetlands inventory.

Based on the ESEE results and the above recommended policy changes, it may be most realistic for future buildable land analyses within Creswell's residentially zoned areas to assume all wetlands with no local protection will be built out to 50%. Even if a wetland does not have local protection, there are still state and federal protection levels that make residential parcels less likely to develop than parcels without wetlands.

In addition to recommended policy changes and suggested considerations for buildable land inventories, Creswell may consider identifying a location for a local wetland mitigation bank in the future (see Attachment 2, Preliminary Mitigation Bank Locations, for initial site considerations). Currently, when removal-fill permits are filed for lots inside the UGB, developers have the option of purchasing mitigation credits at one of two mitigation banks; the Amazon Prairie Mitigation Bank or the Coyote Prairie North Mitigation Bank. Both of these wetland mitigation banks are located in or near the City of Eugene.

The creation of a local Creswell wetland mitigation bank would allow developers seeking a removal-fill permit inside the city to purchase mitigation credits at this bank to offset impacts to waters of the state, therefore keeping environmental benefits of these wetlands closer to the city. Construction of a mitigation bank wetland near the city would provide benefits to Creswell including improved water quality, stormwater control, wildlife habitat, and recreational opportunities. Qualified wetland mitigation bank specialists should be contacted to plan bank development, and collaboration with DSL, USACE, DEQ, and other regulatory agencies will be required.

Attachment 1

Creswell Wetlands Code Audit

May 11, 2022

City of Creswell Planning Department
13 South 1st Street
PO Box 276
Creswell, OR

C/O Curtis Thomas
City Planner
Email: cthomas@creswell-or.us

Audit of Current Wetlands Policy

Key wetland-related policy and needed policy modifications are found in the following City of Creswell Articles: (1) Comprehensive Plan Section III, Plan Proposals, Programs, and Policies, (2) Development Code (DC) Chapter 2.1, Riparian Protection and Wetlands (RPW) Overlay, and (3) DC Chapter 5.1.400(H), Class B Variances for RPW Overlay. While other City plans and chapters of the Comprehensive Plan and Development Code were reviewed for rules governing activities associated with wetlands, the focus of the audit was on the substantive issues found in these three Articles as they contain the most extensive wetland policy within Creswell's current code. The following summaries are an overview of the main regulatory areas explored through this Code Audit.

Comprehensive Plan Section III, Plan Proposals, Programs, and Policies

The plans and policies within Section III of the Comprehensive Plan are "general in nature" and meant to provide guidance for development within the Creswell Urban Growth Boundary (UGB) while considering natural systems, community needs, and state agency requirements. The Comprehensive Plan was created to assist Creswell in achieving its goals and covers a broad range of topics related to development; however, it was written in 1972 and was based upon city growth data that is out of date. The population within the city has expanded from roughly 1,200 at the time of the Plan's publication to nearly 5,800 as of the 2020 US census. In addition, the 2005 Creswell Economic Opportunities Analysis identified the need for more buildable lands within the UGB to meet the demands of projected population increase and the housing goals of Statewide Goal 10. Thus, a more detailed, revised policy regarding wetlands is needed for the City to effectively utilize the remaining land within its Urban Growth Boundary (UGB).

Section C, Program Policies

- Subsection 10, Transportation Policies
    - This section describes policies for, among other transportation related subjects, the layout and design of transportation facilities. Item 5(g) requires street design to be "responsive to topographic changes" and "minimize impacts to natural features including wetlands…riparian areas…". It is unclear how street development should be planned in order to minimize negative impacts to aquatic features and wildlife habitats if they may encroach upon them. *See Corvallis Land Development Code (LDC) Section 4.0.60(k)(9) for examples.*

- Subsection 12, Urbanization Policies
    - This section broadly describes how the city will manage future land use to maximize efficient development and curtail inflated UGB acreage by excluding land which cannot be developed. Item (e) declares that all land within the UGB that displays environmental constraints or high value resources, such as wetlands, may be removed from the UGB. It will be important to preserve this policy item in the future, as it will benefit the City of Creswell to identify those wetlands that exhibit high value qualities and conserve them as functional ecosystems and open space.

Development Code Chapter 2.10, Riparian Protection and Wetlands (RPW) Overlay

DC Chapter 2.10 describes the Creswell RPW overlay and outlines the city's policies on use and development within and around these environments. While this Chapter contains six detailed pages and two visual references to the City's wetland and riparian policies, there are opportunities to expand on this information in order to create a clear and more objective path for developers on the remaining vacant lots within Creswell's UGB. The current problems identified within DC Chapter 2.10 can be classified into three categories: missing information, needed clarification, and barriers to development.

Missing Information

Uncertainties regarding the requirements and process of gaining approval for development of lots that contain wetlands exists due to missing information throughout Chapter 2.10. Adding such information will relieve some burden on developers/builders and increase the likelihood of interest in building. The missing information includes the following:

- 2.10.200(B) – The city's definition of development should also include removal (excavation) of native soil. Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (USACE) regulates any projects that will remove and/or fill 50 cubic yards (or more) of a waterway considered to be water of the United States. The definition of waters of the United States is defined by USACE here on their *What is the definition of "Waters of the United States" & "Navigable Waters of the United States"?* factsheet. This includes (but is not limited to) rivers, perennial and intermittent streams, wetlands, and ponds (both natural and, in some cases, man-made). *See Tualatin DC Section 71.062 for examples of excavation/filling procedures near wetlands.*
- 2.10.200(C)(4) – Reference to sections that specify the application process (such as Section 2.10.400) would be helpful for developers. In the future, description of the development options for lots that have been categorized by Economic, Social, Environmental, and Energy (ESEE) analysis as containing wetlands in which no development is allowed, partial development is allowed, or full development is allowed, should be added to this section. *See Corvallis LDC Section 4.13.80 for examples.*
- 2.10.300(A) – There are no details on what the enforcement of this policy entails, or what the penalties are for policy violation. In addition, reference to removal/fill permitting (through DSL and USACE) should be made if vegetation removal will remove or fill 50 cubic yards, which can happen when mature woody species (i.e., shrubs and/or trees) and their root wads are removed.
- 2.10.300(A)(2)(e) – Specifics about what erosion and sediment control programs to reference are missing. This section should include references to appropriate programs for developers, for example, any pertinent sections or standards of City of Creswell Drinking Water Protection

Program (Goal 1, Objective 1.4) and/or Lane County erosion and sediment control programs. *See Tualatin DC Section 71.063 for examples.*

Clarification Needed

The lack of detail in some code language could pose barriers to developers, and could be remedied to clarify application processes. The following development code within Chapter 2.10 needs clarification:

- 2.10.200(B) – The removal of trees and other vegetation does not require DSL and/or USACE approval and permits unless the removal involves the removal/fill of 50 cubic yards within a waterway or wetland.
- 2.10.200(C)(2) – Does not specifically state that this policy includes wetlands. This code specifies that the overlay buffer is provided "for a given stream, river, or channel" depending on the waterway's flow in cubic feet per second, which implies wetlands are not provided such a buffer. Will an equal overlay buffer be provided for high quality wetlands (as determined by ESEE analysis) if part of the wetland falls within the riparian area of streams, river, or channels? Typically, a safe harbor method would require the same buffer be provided to wetlands that fall within a stream or river's riparian area. Similarly with buffer areas for isolated wetlands outside of stream/river riparian areas if they are deemed high quality.
- 2.10.300(A)(1)(d) – Needs to clarify if there is an approval process for this activity, perhaps City authorization of some kind. This action should be minimized to avoid over-removal of vegetation. Also, this activity may require a removal/fill permit through DSL and/or USACE.
- 2.10.400(A)(1) – This section could be more direct for developers looking to develop on lots containing wetlands and include specifics that the City is looking for pertaining to mapping requirements, riparian corridor widths, and footprints of proposed development. *See Corvallis LDC Section 4.13.40 or Albany DC Chapter 6.300(B) for examples.*
- 2.10.400(A)(2) – Is the City looking for submission of application materials before concurrence with state and federal regulatory agencies, or after? Would the City also like to receive the concurrence letter from these agencies? Some of these groups (DSL, USACE) take up to four months or longer to respond to a developer's report and/or permit submission. Information pertaining to the regulatory agency process could also be included here for developer's benefit in the format of a flowchart or similar visual.
- 2.10.400(A)(3) – Should specify that applicants will need to hire consultants to perform waters of the state delineations and/or determinations on the lot(s) proposed for development, as this is how applicants would have a professional delineation map created. A list of wetland consultants (https://www.oregon.gov/dsl/WW/Documents/ConsultSum.pdf) that have submitted delineation reports to DSL are available on the agency website.
- 2.10.600 – Typically, riparian and wetland enhancement and/or restoration is permitted and monitored through DSL and/or USACE. If either on-site or off-site compensatory mitigation is required following impact to an original aquatic resource, information on permitting through those agencies should be included here. *See Albany DC Chapter 6.400 for examples.*

Barriers to Development

Providing clear and objective options to potential developers by addressing the concerns above can increase housing opportunities in the Creswell UGB. Removing unnecessary criteria from Chapter 2.10

will also reduce barriers that developers currently face as the buildable land in Creswell continues to dwindle.

- Code item 2.10.200(C)(3)(c) indicates that any soils listed as hydric by the NRCS shall be included in the RPW overlay zone. While this is environmentally conservative, it can result in the exclusion of numerous buildable lands. Hydric soils form primarily from prolonged inundation, which is a characteristic of wetlands. However, the presence of hydric soils alone does not constitute a wetland. In general, a wetland must have indicators of hydric soils, wetland vegetation, and hydrology; simply having hydric soils does not necessarily mean an area is a functioning wetland. In addition, development within the City of Creswell has likely influenced hydrology within the UGB (by the construction of roads, stormwater facilities that reroute runoff flows, etc.), and it is highly likely that some areas of once active hydric soils now do not experience prolonged inundation, and may in fact be considered relict (non-active) hydric soils today. Removing the hydric soils criterion from the RPW would subsequently eliminate an unnecessary barrier to development, however, it should be noted that the presence of hydric soils may constitute a need for a wetland delineation to be conducted on the lot(s) to identify the presence/non-presence of wetlands.

<u>Development Code Chapter 5.1.400(H), Class B Variances for the Riparian Protection and Wetlands (RPW) Overlay</u>

This section provides criteria that the City considers when reviewing requests for hardship variances that relate to the RPW Overlay. These variances are a necessity to provide developers with flexibility to continue building within the Creswell UGB; however, these criteria need clarification and missing information should be addressed.

- 5.1.400(H)(1) – How does the City propose that applicants identify fish and wildlife habitats and wildlife movement corridors? Statewide Goal 5 has suggested Safe Harbor specifications for this. *See OAR 660-023-0110(4) and Albany Ordinance 5764 for examples.*
- 5.1.400(H)(2) – What is the City's definition of "scenic qualities and viewpoints"? Are there specific locations the City has deemed important for these traits, while other unidentified locations do not fall under this definition?
- 5.1.400(H)(3) – Needs reference to the program the City follows for sediment and erosion control.
- 5.1.400(H)(4) – What is the City's definition of "significant trees"?
- 5.1.400(H)(5) – In the future, this should specify that "high quality wetlands as deemed by the City" will be protected and provided with buffers.

Summary of Wetlands Code Audit and Findings

The table below is a summary of the findings of this code audit, and broadly categorizes each policy item as missing information, needing clarification, and/or posing an obvious barrier to development.

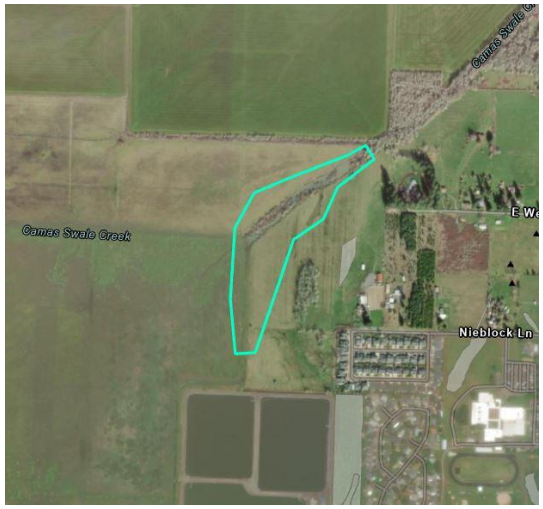
Summary of Creswell Code Audit (Wetlands)*		
Missing Information	*Needs Clarification*	*Barriers to Development*
DC 2.10.200(B)	Comprehensive Plan Section III, Section C, Subsection 10	DC 2.10.200(C)(3)(c)
DC 2.10.200(C)(4)	DC 2.10.200(B)	
DC 2.10.300(A)	DC 2.10.200(C)(2)	
DC 2.10.300(A)(2)(e)	DC 2.10.300(A)(1)(d)	
DC 5.1.400(H)(1)	DC 2.10.400(A)(1)	
DC 5.1.400(H)(3)	DC 2.10.400(A)(2)	
	DC 2.10.400(A)(3)	
	DC 2.10.600	
	DC 5.1.400(H)(2)	
	DC 5.1.400(H)(4)	
	DC 5.1.400(H)(5)	

*DC = Development Code.

Attachment 2

Preliminary Mitigation Bank Locations

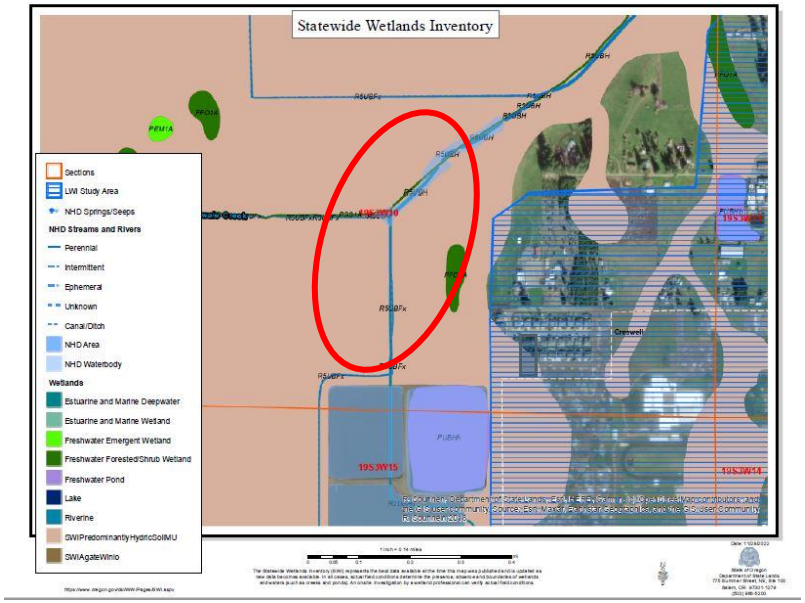
Creswell Potential Mitigation Bank Locations



1. Camas Swale/Wastewater Confluence

Things to consider:

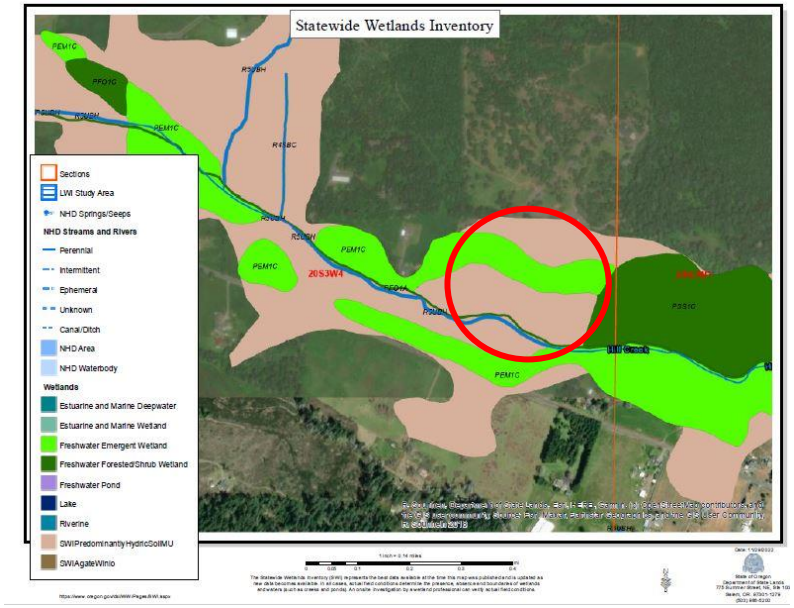
- Location – low/moderate conflict; high functional benefit.
  - Creswell's current wastewater problems:
    - TSS, thermal loading, ammonia
  - Zoned for Exclusive Farm Use
- Ecological considerations:
  - Maintenance and enhancement of wildlife/fish habitat and corridors – High
  - Hydrologic source – Reliable
  - Stormwater/flood control – High
  - Buffer space availability – Moderate/High
  - Existing wetland diversity – Moderate
  - Proximity to undisturbed environments – Low
  - Anthropogenic disturbances – Moderate
  - Presence of rare plants/animals – unknown (present downstream)
- Size – 25+ acres
- Soils – Hydric; Natroy silty clay (85)
- Native species abundance – unknown
- Notes:
  - Highly beneficial for water quality improvement
  - Close to city, could provide environmental/recreational opportunity



2. Upper Hill Creek

Things to consider:

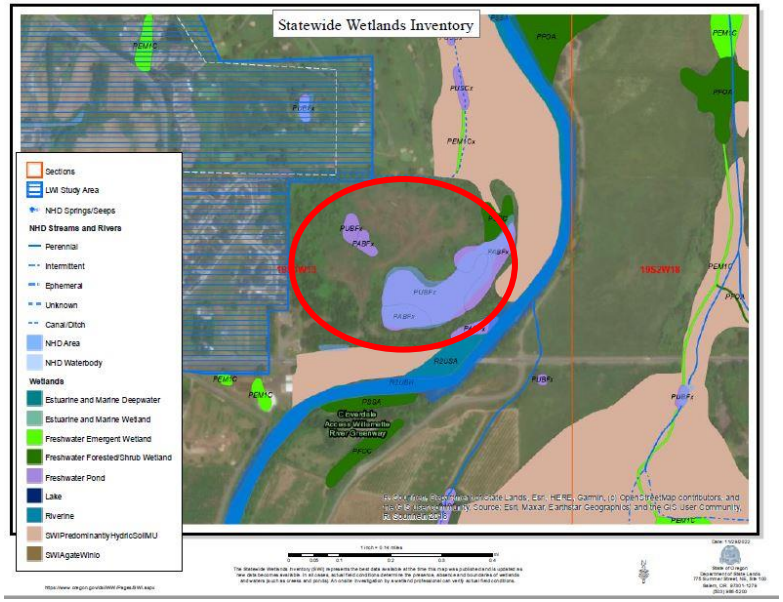
- Location – low (?) conflict; moderate functional benefit.
  - Zoned for Exclusive Farm Use.
- Ecological considerations:
  - Maintenance and enhancement of wildlife/fish habitat and corridors – High
  - Hydrologic source – Reliable
  - Stormwater/flood control – Low/Moderate
  - Buffer space availability – Moderate
  - Existing wetland diversity – Moderate/High
  - Proximity to undisturbed environments – Moderate
  - Anthropogenic disturbances – Low/Moderate
  - Presence of rare plants/animals – unknown (present downstream)
- Size – 25+ acres
- Soils – Hydric; Natroy silty clay loam and Waldo silty clay loam
- Native species abundance – unknown
- Notes:
  - Far upstream on Hill Creek; marginal water quality improvement.
  - Relatively far from city, less recreational opportunity.



3. CINDERELLA PARK

Things to consider:

- Location – low conflict; moderate functional benefit.
  - Zoned for Rural Public Facility
- Ecological considerations:
  - Maintenance and enhancement of wildlife/fish habitat and corridors – Moderate
  - Hydrologic source – Somewhat reliable
  - Stormwater/flood control – Moderate
  - Buffer space availability – Moderate/High
  - Existing wetland diversity – Low
  - Proximity to undisturbed environments – Low
  - Anthropogenic disturbances – Moderate
  - Presence of rare plants/animals – unknown (present in adjacent Willamette River)
- Size – 25+ acres
- Soils – Mostly non-hydric; mostly Water (W) and Pits (110)
- Native species abundance – unknown
- Notes:
  - Old landfill – logistical issues?
  - Large proportion of PUB



Attachment 3

Landowner Information Flyers

Interested in Building on Lands with Waters of the State?

"Waters of the State" include wetlands and waterways that are considered Goal 5 resources, and are under the jurisdiction of the Oregon Department of State Lands (DSL).

- Whenever land use applications are submitted to the city, Creswell planners are required to consult mapping resources and natural resource overlay zones to identify any potential waters of the state on the applicant lot(s).
- DSL is notified by city planners if wetlands or waterways are mapped within the applicant lot(s).
- DSL issues the applicant a Wetlands Land Use Notification, often indicating the need for a jurisdictional determination and/or delineation.
- Once a delineation is conducted by a qualified natural resource consultant, a full report and wetland mapping is submitted to DSL.
- DSL has a 120-day time window for initial review of the report, and an associated reviewal fee.

Check with your local city planner before you develop a building plan to see if your lot may have wetlands or waterways.

Interested in Building in Waters of the State?

If you are interested in developing inside wetland boundaries and plan to remove and/or fill over 50 cubic yards of earth, a removal-fill permit is required. In most cases, both DSL and the U.S. Army Corps of Engineers are involved in reviewing removal-fill permits.

After receiving DSL approval of a wetland delineation, a qualified consultant can be hired to write and submit a removal-fill permit to the jurisdictional agencies.

These permits often involve:

✓An Alternatives Analysis

✓A Department of Environmental Quality (DEQ) Water Quality Certification

✓And a Wetland Mitigation Plan to offset impacts.

Working closely with your consultant and city planners is the best way to secure an approved removal/fill permit.

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city of CRESWELL

The Jurisdictional and Permitting Process to Build in Waters of the State

**DSL has a report reviewal fee to be paid for by the applicant.*

***Make sure to check with the City Planner to comply with local setback regulations.*

****Removal-fill permitting will often require a DEQ Water Quality Certification, full site plans, and a wetland mitigation plan.*

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Do You Have a Locally Significant Wetland on Your Property?

All wetlands are valuable and provide the city with numerous benefits. To meet Oregon's Statewide Goal 5 requirements, Creswell recently underwent a process to re-classify Locally Significant Wetlands throughout the city…

Do you have a relatively high quality wetland on your property?

Do you have a relatively low quality wetland on your property?

As part of this process, the cities wetlands were placed into these two categories.

What does this mean for you?

Any relatively high quality wetlands were given *full local protections.*

Most relatively low quality wetlands were given *no local protections,* with the exception of three wetlands throughout the city.

These local protection policies are *in addition to* state and federal regulation of wetlands and waterways.

Talk to your City Planner for more information about wetlands on your land

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