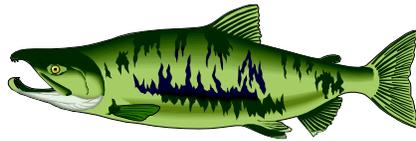


FLORAS CREEK WATERSHED

ACTION PLAN



Prepared for

The Floras Creek Watershed Council

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ABSTRACT

The *Floras Creek Watershed Action Plan* was prepared for the Floras Creek Watershed Council whose members are dedicated to sustaining the health of their watershed. This document utilizes detailed information about the Floras Creek watershed from the *Floras Creek Watershed Assessment* which followed guidelines described in the *Governor's Watershed Enhancement Board's 1999 Draft Oregon Watershed Assessment Manual*. Funding was provided by the Oregon Watershed Enhancement Board, Oregon Department of Environmental Quality, United States Bureau of Land Management, Oregon Department of Agriculture, Curry County Soil and Water Conservation District and Oregon State University Extension Service.

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FLORAS CREEK WATERSHED ASSESSMENT SUMMARY

The following is an abbreviated summary of a much larger, in-depth watershed assessment available from the South Coast Watershed Office.

Introduction

Floras Creek, a tributary of the New River watershed, drains approximately 51,652 acres or 81 square miles of land. Floras Creek is located primarily in Curry County with a small portion of the East Fork extending into Coos County. It is also the most northern watershed in Curry County and crosses Highway 101 just south of the community of Langlois. Elevations in the watershed range from sea level to approximately 2,786 feet on Edson Butte. Major tributaries include the North Fork, East Fork, South Fork, West Fork, Willow Creek, and Floras Lake. The upper portion of the watershed is characterized by steeply sloped forested areas with narrow valleys and tributary streams that have moderately steep to very steep gradients. Grazing, rural residential development and other agricultural uses are dominant in the lower portion of the watershed. Streams throughout the lower watershed have been diked, ditched, and drained. Flow regimes have been considerably altered in order to confine or reduce the impact of winter flooding and/or to increase areas available for pasture and cranberry production (ODFW 1995). Over 90% of the watershed is in private ownership.

Note: Due in part to the very complex nature of the New River watershed as well as limitations of time and scope of this project, only Floras Creek and its tributaries were assessed. In some cases however, information pertaining to New River was readily available and is therefore presented in this document.

History

Most Curry County watersheds have received varying impacts from Euro-American populations during the past 150 years (1850 – 2000). The general landscape pattern for Curry streams and rivers is: timber in the uplands (on public & private industrial timberlands) flowing down onto broader floodplains in the lowlands, where agriculture and some rural residential use predominates. The period of extensive logging in Floras area was the 1950's and 60's. At the height of this timber harvest, there were 18 active sawmills in the Langlois area.

Many of the lower portions of Floras and its tributaries were ditched, straightened and channelized to keep standing water off pasturelands. Langlois was once known as "Dairyville" because of the abundance of dairy cows and milk and cheese products. (At one time there were 400 dairies in Curry County, with most concentrated in the north county). Cranberries were introduced in the area as a domestic crop in 1915, and have continued to be part of the local economy since then. The lowlands of the Floras Creek area historically were a series of spruce and swamp woodlands, with multiple braided channels, and large conifers along the banks of wetlands, seeps, and tributaries.

Watershed Issues

Concerns identified by the Floras Watershed Council include ESA listing, Clean Water Act listings, and issues relative to various land use practices. Land uses include timber

harvest and large wood clearing, land conversion to pasture and cranberry operations, road networks, mining, rural development, and sport fishing.

Ecoregions

Coastal Lowlands comprise 19% of the watershed. Low gradient streams, marshes, bogs, sloughs and beaver dams are expected. Fire is uncommon, though when it occurs, it is typically stand replacing. High winds and wind-thrown timber are common.

Southern Coastal Mountains comprise 82% of the watershed. Streams are typically steep and forested. Beaver dams are less common, especially in the larger streams, and fire is more common than in the Coastal Lowland communities.

Channel Habitat Types

Less than three percent of the Floras watershed stream channels are classified as having high potential for response to in-stream restoration efforts (i.e. wood, boulders). Thirty-two percent of the watershed is categorized as low gradient confined channel, which has a low potential for restoration. The levels of confinement, or confining features, are not specified on these channels. Approximately 55 percent of the stream lengths in the Floras watershed are moderate to steep gradient with high confinement – good candidates for shade improvements.

Fish and Fish Habitat Assessment

No stream channel or fish habitat surveys have been conducted in the Floras watershed. A natural barrier to chinook and coho exists on the Middle Mainstem Floras, near Johnson and Clear Creeks.

Winter steelhead and cutthroat trout populations are watershed wide. Coho are distributed in Floras Lake and tributaries, Willow Creek, Lower Floras Mainstem, and a small portion of the Middle Floras Mainstem. Chinook distribution is limited to Willow Creek, the Lower Floras Mainstem, and a short reach within the Middle Floras Mainstem (below the natural barrier).

Unnatural barriers to fish migration are mostly in the lower watershed with two in the upper watershed. Three adult barriers and one with restricted passage for adults are identified, as well as three certain and two uncertain juvenile barriers. Three barriers are identified as scheduled for repair in 2001 or 2002.

Water Quality Assessment

Floras water quality, measured at the 101 Highway Bridge, is impaired for total nitrate, and moderately impaired for total phosphates, fecal coliform bacteria, and turbidity. Floras water quality is the poorest of all South Coast watersheds.

Water temperatures (7-day maximums) are above the 64° standard for all of the sample stations, located throughout the watershed, and are the hottest of all the South Coast watersheds.

Riparian (Shade) Assessment

Average potential increases in shade are highest on 4th order streams along the mainstem Floras, Willow Creek, and the North Fork Floras. Potential increases in shade are low in the first order Willow and South Fork tributaries, fourth order East Fork, and 6th order North Fork Floras.

Perennial stream reaches arranged with highest potential increases to lowest are Mainstem Floras, North Fork Floras, Willow, East Fork Floras, South Fork Floras and West Fork Floras.

Wetland Characterization and Functional Assessment

All wetlands characterized are in the lower third of the watershed. Floras has two very large wetlands (total 1520 acres), which account for 65 percent of the total wetland area assessed. Both have a high degree of alteration and are buffered by agricultural land. A total of 116 wetlands were assessed, with 2,346 combined acres. Twenty-one wetlands were assessed as functioning, 29 identified with restoration potential, and 13 with low restoration potential.

Hydrologic Condition Assessment

This assessment is based on runoff estimates for various landuses and soil cover conditions. Peak flow enhancement is an increase in the strongest, and potentially most destructive, part of the flood curve.

Risk of peak flow enhancement rated low (good) for forest and rural roads. Risk due to agriculture (vegetation condition and soil type) rated low in East Fork and North Fork Floras, and moderate in Floras Lake, Lower Floras Mainstem, Middle Mainstem and Willow Creek subwatersheds. Hydrologic effects of ditching, wetland draining and floodplain alteration are not addressed in this assessment.

Water Use

For the months of May through October, out-of-stream water use is over-allocated on Floras Creek, South Fork Floras, North Fork Floras, and the tributary west of Boulder Creek. Willow Creek is over-allocated for out-of-stream use for the entire year. Floras Creek is rated as a priority for restoration of in-stream flows by Water Resources and ODFW. Consumptive use of water is high in Floras Lake tributaries, Willow Creek and Floras Creek.

Sediment

The assessment of sediment processes on the density of roads built on slopes greater than 50 percent and the density of stream/road crossings. Lower density rankings are assumed to have less potential for contributing sediment than high. These rankings are relative to all South Coast subwatersheds.

For density of roads on slopes greater than 50 percent, seven of the eight subwatersheds ranked low (good) when compared to all South Coast subwatersheds. The West Fork ranked moderate. For density of stream crossings, Floras Lake and West Fork Floras ranked low, Middle mainstem ranked moderate, and all other subwatersheds ranked low/moderate.

FLORAS CREEK SYNTHESIS

The Floras Creek watershed is mostly within the Southern Oregon Coastal Mountain ecoregion, with the most downstream quarter nearly all Coastal Lowlands. The watershed has been intensively managed for 150 years and is more than 90 percent privately owned. Dairy farming was extensive in the early 1900's and carries on today, though at a reduced level. Most of the watershed has been logged, with some areas in a second or third rotation. Spruce swamps were cleared for agriculture, and many of the wetlands/floodplains in the watershed have been drained, ditched and channelized. Industrial level cranberry harvest was introduced in 1915 and now represents more than half of water rights in the watershed. The Floras Watershed Assessment does not formally address conditions in the New River Watershed, though certain features are mentioned.

Present and potential sediment sources in the system are identified as the Otter Point formation (landslides) and the high number of stream crossings, especially in the middle Floras Mainstem. Some serpentine soils are present and probably contribute to the sediment load via earthflows and gullies.

Risk of peak flow enhancement due to roads, forestry (rain-on-snow events), and urban development is low. The four sub-watersheds lowest in the system show a moderate risk of peak flow enhancement (increased stream power) due to agricultural use and potential runoff. Channel typing in the watershed shows a drastic change in stream function from floodplain controlled, unconfined, sediment collecting reaches, to low gradient confined, sediment transport reaches. Beaver complexes were once probably very common and stable in Floras Creek and New River, especially in the tributaries.

Salmon use in the middle and upper portions of the watershed is limited by a natural barrier. Steelhead and cutthroat are well distributed throughout the watershed. Coho habitat is identified in the Lower Floras, Willow Creek, and Floras Lake subwatersheds, with the best available habitat in Bethel, Butte, and Morton Creeks (near New Lake). Chinook use the lower mainstem of Floras and portions of Willow Creek.

Riparian vegetation in Floras watershed is greatly reduced from its potential. Nearly all sub-watersheds have high potential increases in shade, but Willow Creek, the Mainstem Floras, and the North Fork sub-watershed have the greatest potential. Most sub-watersheds have some high reproduction to mature conifer trees located near the stream channels, showing potential for large wood inputs and providing high quality shade.

Water withdrawals in the Floras Creek watershed are a concern for fish habitat and water quality, both in terms of amount taken and timing. Water users are mostly "self-regulating" and the level of un-permitted or non-compliance use is unknown. Eighty percent of all water rights in the Floras watershed are junior to the in-stream right.

Water quality in Floras Creek and its tributaries, both based on water temperatures and chemistry, is rated the lowest of all South Coast streams. Stream temperatures are very high, nearing 80 degrees in the lower mainstem. Water quality is rated as impaired for nitrate levels, and moderately impaired for phosphates, fecal coliform bacteria and turbidity. Heating reaches are identified between White Elephant Bridge and Mormon Camp on mainstem Floras, between McCleod road and the mouth on the North Fork, and between Mormon Camp and the pump-house site, also on the mainstem Floras.

The Lower Floras Creek/New River complex has the most acres of wetlands of any of the South Coast watersheds. More than 2,300 acres are identified within 67 different wetlands. Nearly two-thirds are highly altered and a third are altered very little.

Limiting factors to fish production appear to be water quality (both temperature and chemistry), altered channels and hydrologic function, greatly reduced stream shade, water use, and sediment transport.

SUBWATERSHED SUMMARIES

East Fork Floras

The East Fork Floras is all contained within the Southern Oregon Coastal Mountain and has a mix of agricultural (19%) and forest land use (81%). Stream channel typing revealed 15 miles of hillslope confined reaches, 1.1 mile of low gradient/moderate confinement (LM), and 6.3 miles of low gradient confined channels. The 1 mile of LM channel is a highly responsive/sensitive type, and represents half of the total percentage found in the entire Floras watershed. One uncertain barrier to juveniles exists on the lowest tributary. This stream supports steelhead in the lower mile and a half, but no coho or chinook.

Water temperatures range from the mid to high 60's F. This subwatershed has very high potential for shade increases, and has some mature timber adjacent to the stream. Two wetlands were assessed, both with rural residential buffers. Eight points of diversion for water use are recorded.

An assessment of hydrology rated the East Fork as low risk of peak flow enhancement (increased stream power) due to forest roads, agricultural use, and rural roads. When assessed for sediment, the East Fork ranked low (good) for density of roads on steep slopes and low to moderate for density of stream crossings.

North Fork Floras

All of the North Fork is within the Southern Oregon Coastal Mountains. The upper headwaters contain an area with very steep slopes, as well as some BLM and State ownership. Twelve miles of channel are confined by hillslopes, 1.5 miles of low gradient/moderate confinement (LM), and 7.6 miles of low gradient confined channels. One barrier to adult passage is reported on the first upstream tributary. Steelhead use the

lower 5 miles of the North Fork mainstem, as well as the significant west tributary. Coho and chinook are absent.

Water temperatures are very warm, ranging from high 60's to low 70's. The North Fork and its tributaries have very high potential increases in shade. One small wetland is identified. Land use is mostly forestry in the eastern third and a mix of forestry and agriculture in the western two-thirds. Sixteen points of water diversion are reported on the North Fork.

The subwatershed rated low risk for peak flow enhancement (increased stream power) due to forest roads, rural roads and agricultural use. Sediment analysis ranked the North Fork low density for roads on steep slopes and low to moderate density for stream crossings.

South Fork Floras

The South Fork is entirely in the Southern Oregon Coastal Mountains ecoregion, and is used exclusively for forestry. Channels are hillslope confined on 17 miles of stream, low gradient confined on 1.8 miles, and low gradient moderately confined on 0.6 mile of stream.

No artificial barriers to fish passage are reported. Coho and chinook are absent, but steelhead are present in the mainstem and upper tributary. Water temperatures are in the high 60's. Second to fifth order stream reaches have high percentages of potential shade increases. No wetlands were identified, and only one point of diversion is reported.

The South Fork rated low for peak flow enhancement (increased stream power) due to forest roads, and was not assessed for rural roads and agricultural use (not applicable). Sediment analysis ranked the South Fork low density for roads on steep slopes and low to moderate density for stream crossings.

West Fork Floras

The West Fork Floras is in the Southern Oregon Coastal Mountains ecoregion and is exclusively forestry use. Steep slopes are common in the upper third of the watershed. Steelhead use the mainstem West Fork, but chinook and coho do not. No barriers are reported.

Water temperatures are cool, though second and third order reaches do have high potential shade increase values. Five miles of mature/high reproduction timber exist in the riparian area. No diversions for water use are recorded.

The West Fork Floras is rated low risk for peak flow enhancement (increased stream power), and was not assessed for rural roads or agricultural use. Sediment analysis ranked the West Fork as moderate density for roads on steep slopes and low density for stream crossings.

Middle Floras Mainstem

The Middle Floras subwatershed is entirely within the Southern Oregon Coastal Mountains ecoregion with mostly forestry use and some agricultural use. Some mature/high reproduction timber is present in the riparian area. A large barrier to coho and chinook passage exists in the lower mile of the mainstem in this subwatershed. Steelhead do pass and use the mainstem for spawning.

Temperatures are high, and get higher at the down stream end. Riparian shade is limited, with high values for potential increases. One diversion for water use on a side tributary is recorded. One two-acre wetland is identified, though a field check is needed.

The Middle Floras Mainstem is rated low risk for peak flow enhancement (increased stream power) due to forest roads and rural roads, and moderate risk due to agricultural/rural use. Re-evaluation with the new roads layer is recommended. The Middle Floras Mainstem ranked low density for roads on steep slopes and moderate density for stream crossings.

Lower Floras Mainstem

The Lower Floras Mainstem is composed of Coastal Lowlands in the western half and Southern Coastal Oregon Mountains in the eastern half. Land use is mixed between forestry (44%) and range/rural (56%). Of the thirteen miles of channel assessed, 7.4 are low gradient confined, and 6 miles are confined by hillslopes. Some mature timber within the riparian area is reported in the upper end of the subwatershed.

Coho, chinook and steelhead use the mainstem channel, and coho use a small side tributary as well. Two barriers to adults, one certain juvenile barrier and one uncertain juvenile barrier are identified.

Water quality is moderately impaired for phosphates, fecal coliform bacteria and turbidity, and impaired for levels of nitrates. Temperatures are the highest in the watershed ranging in the mid 70's. Values for potential increases in shade are very high. The majority of the mainstem has less than 20 percent existing shade. Twenty-two wetlands are identified, most with a high degree of alteration. Thirty-one points of diversion are identified.

The Lower Floras Mainstem is rated low risk for peak flow enhancement (increased stream power) due to forest and rural roads (re-evaluate with new roads layer) and moderate risk due to agricultural use. Sediment analysis ranked the Lower Mainstem area as low density for roads on steep slopes and low to moderate density for stream crossings.

Willow Creek

One-third of the Willow Creek watershed is within the Coastal Lowlands ecoregion and the upper two-thirds, including some steep gradient country in the headwaters, is contained in the Southern Oregon Coastal Mountains ecoregion. Agricultural use is dominant in the lower third, with forestry in the upper two-thirds.

Of the 12.3 miles assessed for channel type, 8 miles is confined by hillslopes and over 4 miles is low gradient confined. No artificial barriers to fish migration are identified. Willow Creek is important habitat for coho, and is used by steelhead and chinook as well.

Willow Creek is on the 303(d) list for temperature. Maximum temperatures are in the high 60's and low to mid 70's. Cool minimum temperatures identify Willow as having high potential as a thermal refuge. Willow Creek has very high potential increases in shade, especially in the 4th order reaches. Upper reaches and tributaries have high percentages of existing shade.

Three wetlands are identified; one is part of the 660 acre wetlands shared with the Lower Floras and Floras Lake subwatersheds, and the other two moderately sized at 7 and 8 acres. The lower half of the subwatershed is mostly made up of low infiltration soil types.

A hydrologic assessment rated Willow Creek low risk for peak flow enhancement (increased stream power) due to rural and forest roads, and moderate risk for agricultural/range use. Eight points of water diversion are reported. Water is over-allocated for the entire year.

The Willow Creek subwatershed ranked low density (good) for roads on steep slopes when compared to South Coast subwatersheds. Density of stream crossings ranked low to moderate.

Floras Lake

The Floras Lake subwatershed is nearly all within the Coastal Lowlands ecoregion, with only a very small, upper portion within the Southern Oregon Coastal Mountains. Two-thirds of the watershed has forestry use, 29 percent is agricultural/range/residential, and 5 percent of the area is covered in water.

Of the 12.2 miles of stream assessed for channel types, 6 miles are confined by hillslopes, and nearly 6 miles are identified as low gradient confined channel. One artificial barrier to juvenile migration is identified, and three others are scheduled for improvement. The mainstem channel and tributaries to Floras Lake are considered very important spawning and rearing habitat for coho. Steelhead use some parts of the subwatershed, though chinook do not.

Boulder Creek has temperatures in the high 60's and low 70's, and temperatures at the Floras Lake outlet are high, also. Floras Lake is listed as water quality limited due to algae/aquatic weeds. No shade data is available.

Thirty-eight wetlands are assessed, including two very large wetlands, and many are identified with restoration potential. Areas of low infiltration are adjacent to all larger tributaries to Floras Lake. Sixty-two points of diversion are identified in Floras Lake

tributaries, with the three most western tributaries over-allocated for consumptive use, and the two most western tributaries over-allocated for out-of-stream use as well.

Assessment of hydrology rated the Floras Lake area as a moderate risk of peak flow enhancement (increased stream power) due to agricultural use, low for forest roads, and low for rural roads. Sediment assessment ranked the Floras Lake area as the lowest density of roads (good) on steep slopes on the entire South Coast, and the lowest density for stream crossing.

ACTION ITEMS

This list is a product of a synthesis process by natural resource specialists with extensive experience on the South Coast, who reviewed and discussed the watershed assessment for Floras Creek. Input from watershed councils is also incorporated. Actions are focused on addressing limiting factors and are listed in order of relative importance, based on the impressions of the resource specialists. For a more complete list of restoration, protection, outreach and assessment activities, refer to the Curry Action Plan. All action items are voluntary, with complete respect for private property rights.

- 1. Assess the hydrologic functions of Floras watershed, including roads, ditches, floodplains, wetlands, and altered channels.**
Determine trend and identify areas critical for restoration.
- 2. Focus restoration activities on Willow Creek, as a model for improving the Floras watershed.**
Add large wood where necessary for natural sediment storage or important for fish habitat.

Restore hydrologic functioning including wetland and floodplain connections.
Improve vegetative cover and composition for shade and large wood values.
- 3. Complete a more detailed analysis of New River.**
- 4. Riparian silviculture for Willow, Middle Mainstem, South Fork, East Fork and North Fork Floras, and the Lower Mainstem.**
Plant riparian vegetation for shade and large wood values, where appropriate and with proper protection.

Encourage natural conifer regeneration where possible.

Convert alder dominated stands to conifer, where appropriate.
- 5. Wetland restoration and reconnection.**
Field check all wetlands listed in the Wetland Assessment and assess for functionality.

Where possible, protect intact wetlands.

Where possible, restore function, connection to a water body and potential vegetation in less than intact wetlands.
- 6. Road surveys for Willow, North Fork, West Fork, East Fork and Upper Mainstem.**
Assess roads and crossings in the above subwatersheds for suitability, design, and probability and consequences of failure. Focus on earthflow areas and road drainage.

- 7. Broaden spectrum and do more frequent water quality monitoring.**
Institute broad spectrum and more frequent water quality measurements, in addition to temperature, to identify limiting factors and provide feedback on restoration efforts. Include monitoring for nutrient inputs such as forestry fertilizer, septic tanks, etc.
- 8. Protect mature riparian forests on the South Fork Floras for shade and large wood values.**
- 9. Constructed wetlands.**
Consider constructed wetlands for treating runoff.
Work with landowners on feasibility and benefits of constructed wetlands.
- 10. Controlling livestock.**
Identify areas with uncontrolled livestock use.
Work with landowners to restrict animal access, where possible.
Encourage off-stream watering.
- 11. Expand education/outreach efforts for all watershed issues, especially large landowners.**
- 12. Acquire water rights through purchase, lease, and forfeiture, where possible.**
- 13. Develop grazing management plans, especially in the upper watershed, that directly address fish habitat concerns.**
- 14. Conservation easements.**
Acquire conservation easements where possible, on critical and/or intact habitat.
- 15. Stream surveys.**
Assess in-stream and riparian conditions, especially in mainstem and large tributary reaches.