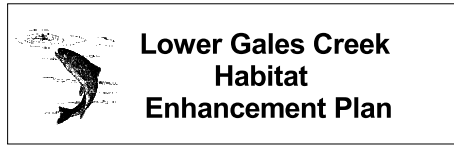


## Reach GL05, GL06, GL07

### 1998 Aerial Photo Map



#### Legend

- GL00 - Project Reach
- Reach Divider
- Stream Centerline 2002



300 0 300 600 Feet

Data Sources: Washington County (1998  
orthophoto base)  
Washington County (2002)  
Metro (RLIS Lite 2002)  
SWCD (2003)

March 2003







## Reach GL05

### Existing Conditions

*Reach GL05 begins approximately 2500 feet downstream of the confluence with Kelly Creek and extends 1000 feet in a southerly direction to the crossing of Roderick Road.*

Informal Field Survey completed on 12/9/02. Low flow conditions (approximate flow rate at Highway 47 stream gage = 25 cfs)

Channel Habitat Type: LC (Low Gradient, Confined)

Adjacent Land Use: Extensive Riparian Area to the west and a major road (Gales Creek Highway) to the east. Agricultural activities occur further up in the area that drains to Reach GL05.

### Characteristics:

- *Channel Conditions:* The channel is confined. However, it appears that water would back up an old meander bend during high flow conditions. The creek was historically connected to the old meander bend just upstream of where the creek bends to the west. This old meander can be seen on the USGS (United States Geological Survey) 1 to 24,000 Quadrangle map and is shown as the line coverage for Gales Creek in the ODFW GIS coverage. It appears that during high flow conditions, water would back up the old meander channel just upstream of the Roderick Rd. Bridge. This would provide refugia for fish during high flow periods. The channel location has not changed significantly between 1994 and 2002. The gradient of the stream within the reach is approximately 0.5 percent. The valley slope is approximately 0.5 percent.
- *Riparian Conditions:* There is dense riparian cover on both sides of the creek. The right bank riparian zone ranges from 500 – 700 feet wide and includes the old meander bend. The left bank riparian zone is about 100 feet wide and is sandwiched between the Gales Creek Hwy and Gales Creek. Trees are primarily alders, Oregon ash and cottonwood with a few conifers. Alders overhang the creek. Understory is a mix of native vegetation (primarily willow and dogwood) with non-native vegetation (primarily Japanese knotweed, Himalayan blackberry, and reed canarygrass). The riparian vegetation provides excellent shading.
- *Water Quality:* Summer temperatures at the Roderick Road Bridge are in the 70's – See the DEQ TMDL report (DEQ, 2001). Also, high diurnal temperature variability was measured at this location. However, since there is excellent shading along this reach it is likely that in-stream water temperatures would be reduced or moderated along this reach.
- *Water Quantity:* No water supply diversions were noted in this reach.
- *Habitat Access:* There were no structural passage barriers encountered within this reach. Bedrock substrate located along most of the reach may pose some passage problems for juvenile fish during low flow periods due to shallow depths of flow.

- *Habitat Elements:* No formal habitat survey was completed. There has been channel scour down to bedrock (cemented sandstone) throughout the reach. The stream channel has a U shape. The reach exhibits primarily riffle/glide habitat features. No significant pools were observed in the reach. LWD volume is extremely low. There is only one significant root wad that is in the high flow channel.

Degree of Impairment Score = 2.8

### Limiting Factors

- Habitat Elements

### Target Functions

- Floodplain Connection – Protect and enhance existing riparian areas through a conservation easement.
- In-stream Complexity – Place wood in the stream to provide in-channel habitat diversity, to trap gravels, to increase channel stability, and to increase hydraulic roughness so that passage is easier for juveniles.

### Recommended Actions

1. Work with the landowner to secure a conservation easement for the large riparian area along the right bank and the riparian area between the creek and Gales Creek Highway along the left bank.
2. Increase the in-stream complexity of the channel through the placement of LWD. This work should be completed all along the reach so that small pools and riffles form and provide habitat diversity. The wood will have to be well anchored due to the confined nature of the channel and the related high flow velocities. Specific location for structures and methods to anchor the wood will be determined during the project design phase.



**Photo GL05-1**

**Looking upstream (north) on Gales Creek above Roderick Road Bridge. The bed has been scoured down to cemented sandstone in most of the reach. Also, the channel lacks LWD. Intact riparian forest areas are shown on both banks in this photo taken in late autumn of 2002.**

3. Work with property owners near the creek to educate them about programs that promote stream stewardship and that are available to agricultural operations through state and federal grants.

## Reach GL06

### Existing Conditions

*Reach GL06 begins at the Roderick Road Bridge and extends approximately 900 feet to the southeast.*

Informal Field Survey completed on 10/28/02 and 10/29/02. Low flow conditions (approximate flow rate at Highway 47 stream gage = 16 cfs)

Channel Habitat Type: LC (Low Gradient, Confined)

Adjacent Land Use: Agriculture (Annual Crops) and Extensive Riparian Area

#### Characteristics:

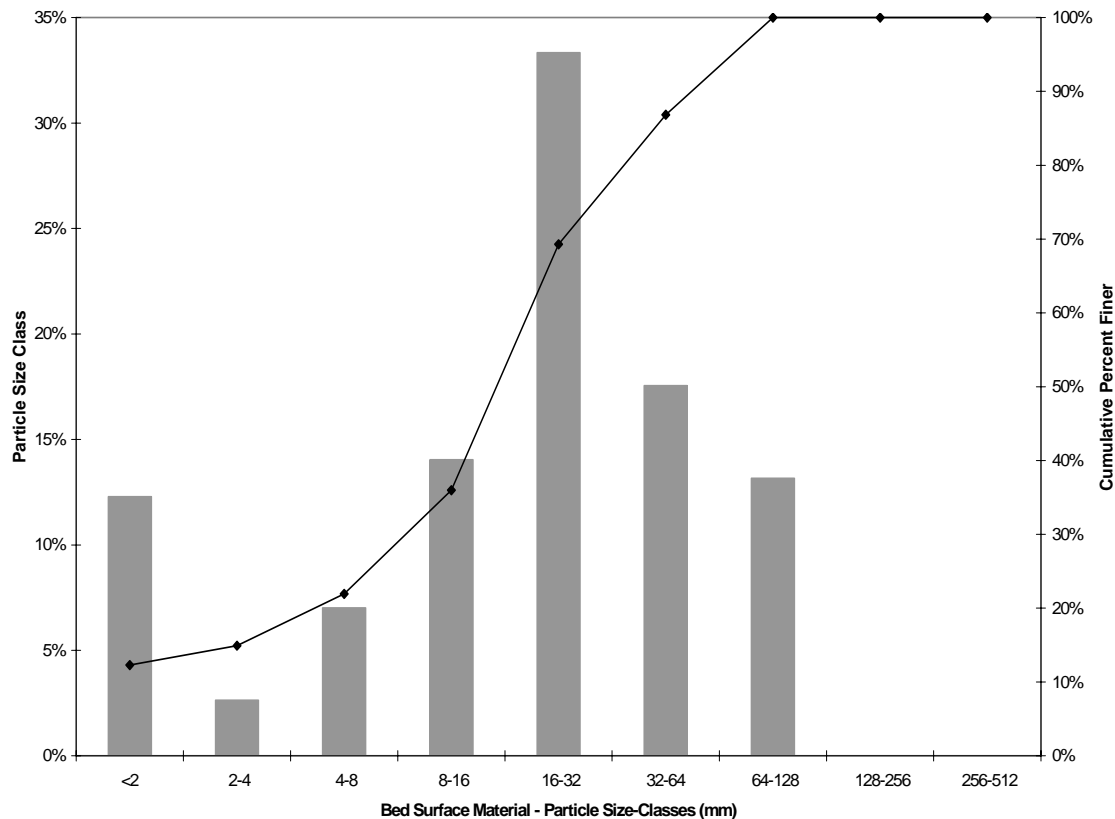
- *Channel Conditions:* The channel is confined. This is evident through a review of mapping of the 1996 flood limits that indicated that the creek did not access the floodplain during the flood. The channel location has not noticeably changed between 1994 and 2002. There is some minor bank erosion along the right bank at the downstream end of the reach. The gradient of the stream within the reach is approximately 0.3 percent. The valley slope is approximately 0.5 percent.
- *Riparian Conditions:* The riparian area is in good condition and is not fragmented. There is good shading, with many trees overhanging the channel. The width of the riparian area varies from 120 feet to greater than 400 feet.
- *Water Quality:* Summer temperatures at the Roderick Road Bridge are in the 70's – See the DEQ TMDL report (DEQ, 2001). Also, high diurnal temperature variability was measured at this location. Shallow summer flow depths related to primary glide habitat may contribute to the high summer water temperatures because of slow flow velocity, which allows increased solar heating. The reach runs north to south, so the mid day sun would heat water flowing through the reach.
- *Water Quantity:* One water supply diversion pipe was noted along this reach. This irrigation diversion was located just downstream of the Roderick Road Bridge. Table 4-4 presents information for this diversion.

Table 4-4: Reach GL06

| Permit Number | Use | Rate   | Notes                  |
|---------------|-----|--------|------------------------|
| 17384         | IR  | .94cfs | Diversion was screened |

- *Habitat Access:* No structural passage barriers observed along this reach.
- *Habitat Elements:* This reach contains riffle/glide habitat characteristics. Approximately 90 percent of the reach is a glide and the water is shallow (less than 1 foot deep). There are no side channels and a couple minor pools (less than 3 feet deep), along this reach. LWD volume is extremely low, but there is a good LWD recruitment potential because of the numerous trees

overhanging the creek. However, because of the channelized nature of the reach, LWD may get washed out during high flows. There are 2 riffles within the reach. Cross-sectional data was gathered at the upstream riffle, which is just downstream of the bridge. A Wolman pebble count was completed at this location. Substrate samples were collected at 1-foot intervals along a cross-section that extended from the top of left bank to the top of right bank. Figure 4-6 shows the particle size class distribution of substrate material found at this location. As shown in the figure, sand and silt particles (<2mm) make up approximately 13 percent of the particles.



**Figure 4-6:** Particle Size Class Distribution at the Tail Out of Roderick Road Pool

The Oregon Stream Habitat Survey sheet was filled out for the cross-section. The results are presented in Table 4-5 below.

Table 4-5: Oregon Stream Habitat Data Sheet – Roderick Road Pool Tail Out

| Category                 | Score | Description   |
|--------------------------|-------|---|
| Channel Condition        | 0.7   | Reduced linkage of wetland, floodplains and riparian areas                                  |
| Percent Pool Habitat     | 0.4   | 5 - 9 percent pools   |
| Shelter Rating           | 0.3   | Single LWD  |
| Off-channel Habitat      | 0.2   | Minimal backwater or side channel   |
| Percent Embeddedness     | 0.9   | 5 - 10% gravels surrounded by fines in the pool tail out                                    |
| Percent Shade/Canopy     | 0.7   | 31-40% shade over active channel  |
| Percent Stable Bank      | 0.7   | 71 – 75% stable bank  |
| Riparian Width/Condition | 0.5   | Riparian area at least two channel widths wide, diverse variety of age classes. Minimal use |
| Macroinvertebrates       | 0.8   | Several types of macroinvertebrates present intolerant to pollution.                        |

Water quality data has also been collected by the Student Watershed Research Project (SWRP) at the County property (Isaac Walton Park) between 1992 and 2002. All samples were collected in the months of October and May. This data shows fairly good water quality conditions. The students also found that there are several types of macroinvertebrates present that are intolerant to pollution. A summary of the data is included in Appendix G.

Degree of Impairment Score = 2.5

#### Limiting Factors

- Habitat Elements
- Channel Conditions

#### Target Functions

- Floodplain Connection – Protect and enhance existing riparian area along the left bank through a conservation easement and by planting additional native trees and shrubs. Reconnect with floodplain along the left bank.
- In-stream Complexity – Place wood in the stream to provide in-channel habitat diversity, deep pools, and locations with cooler water temperatures during the warm summer months.

## Recommended Actions

1. Work with Washington County to secure a conservation easement for the large riparian area along the left bank. Develop an agreement with the County to either terrace back the left bank to enhance the floodplain or create a backwater channel in order to provide refuge for fish during high flow conditions. The existing riparian vegetation will be protected as much as possible and any impacted banks will be revegetated with native trees that will provide shade for the creek.



**Photo GL06-1**

**Looking upstream (north) on Gales Creek from a location about 800 feet downstream of the Roderick Road Bridge. Stream channel lacks some large woody debris. Existing riparian areas with predominately deciduous trees are shown on both banks in this photo taken in autumn of 2002.**

2. Increase the in-stream complexity of the channel through the placement of LWD. The work would consist of creating areas with large wood and deep pools that fish can utilize for refuge from high water temperatures. This work should be coordinated with any work that is completed to enhance use of the floodplain along the left bank. Wood in the stream could be used to back water up onto the floodplain, or into a backwater channel. Specific activities will be determined during the project design phase.
3. Work with property owners near the creek to educate them about programs that promote stream stewardship and that are available to agricultural operations through state and federal grants.



## Reach GL07

### Existing Conditions

*Reach GL07 begins approximately 900 feet downstream of the Roderick Road Bridge and runs approximately 3100 feet in a southeasterly direction.*

Informal Field Survey completed on 10/28/02 and 10/29/02. Low flow conditions (approximate flow rate at Highway 47 stream gage = 16 cfs)

Channel Habitat Type: LM (Low Gradient, Moderately Confined) to LC (Low Gradient, Confined)

Adjacent Land Use: Agriculture (Crops and Container Nursery) and Rural Residential

### Characteristics:

- *Channel Conditions:* This reach is predominately confined. The average floodplain width during the 1996 flood was approximately 150 feet. The bankfull width is approximately 100 feet. There is extensive bank erosion along the upstream portion of the reach. It is mainly along the right bank, but some exists along the left bank near the upstream portion of the reach. The channel location has not changed significantly between 1994 and 2002. However, it is suspected that the bank erosion near the upstream portion of the reach, has led to the introduction of a significant amount of LWD, which in turn has led to the creation of a new meander bend. Approximately 25-35 percent of the outside banks are actively eroding. The average height of eroding banks is approximately 8 feet. The gradient of the stream within the reach is approximately 0.2 percent. The valley slope is approximately 0.4 percent.
- *Riparian Conditions:* The riparian conditions along the left bank are good. The riparian area is the width of the floodplain, is diverse and has a variety of age classes. The riparian area along the right bank is somewhat degraded, with fewer age classes and diversity. The width of the riparian area along the right bank ranges from 0 – 130 feet. There is a significant amount of Himalayan blackberry along the stream banks. This prevents shrubs and trees from growing close to the edge of the creek.
- *Water Quality:* Summer temperatures at the Roderick Road Bridge are in the 70's – See the DEQ TMDL report (DEQ, 2001).
- *Water Quantity:* No water supply diversion pipes were observed during the field visit along this reach. However, Table 4-6 presents the following diversions that are permitted by the Oregon Water Resources Department (OWRD) along the reach. There is one irrigation (IR) diversion and one diversion for municipal use (MU).

Table 4-6: Reach GL07

| Permit Number | Use | Rate    | Notes                              |
|---------------|-----|---------|------------------------------------|
| 21813         | IR  | .24cfs  | No field verification of screening |
| 36377         | MU  | .04 cfs | No field verification of screening |

- *Habitat Access:* No natural or structural passage barriers were observed along this reach.
- *Habitat Elements:* No formal habitat survey was completed. This reach is predominately riffle/glide habitat with some pools. There are two areas with significant LWD (8-12 large pieces). Nice, deep pools (greater than 5 feet deep) have formed at these locations. Both are downstream of eroding banks. There are minimal side channels or locations for fish to take refuge during high flows in this reach. This reach has a moderate degree of sediment embeddedness in the glides and pools and a low degree of sediment embeddedness in the riffles.

Degree of Impairment Score = 2.4

#### Limiting Factors

- Riparian Conditions
- Habitat Elements
- Channel Conditions
- Water Quality

#### Target Functions

- Riparian Zone – Intensive riparian vegetation planting and maintenance to restore stream shading and large wood recruitment potential in areas that have little or no existing riparian vegetation.
- Floodplain Connection - Reconnect wetlands to enhance their natural functions of flood storage and water filtration.
- In-stream Complexity – Place additional wood in the stream to provide in-channel habitat diversity, deep pools, and locations with cooler water temperatures during the warm summer months.

#### Recommended Actions

1. Determine the status of the Washington County easement for the significant riparian area along the left bank. Develop an agreement with the County to either terrace back the left bank to enhance the floodplain or create a backwater channel in order to provide refuge for fish during high flow conditions. This should occur across from Peacock Lane. This would allow the channel to more easily access the floodplain along the left bank and will take pressure off the eroding bank at this location. Existing riparian vegetation would be protected as much as possible and any impacted banks would be revegetated with native trees that provide shade for the creek.



**Photo GL07-1**

**Looking downstream (southeast) on Gales Creek at the right bank. Active bank erosion is visible. Bank terracing and riparian enhancement would provide additional shading for the stream.**

2. Work with the landowners along the right bank to restore the riparian zone.
3. Increase the in-stream complexity of the channel through the placement of LWD. This work should initially concentrate near Peacock Lane so as to back water into any floodplain enhancements along the left bank. The work would consist of creating areas with large wood and deep pools that fish can utilize for refuge from high water temperatures. Specific activities will be determined during the project design phase. There was an existing woody debris jam in this area. Check to see if it remained during the high flows of early February 2003.
4. Work with property owners near the creek to educate them about programs that promote stream stewardship and that are available to agricultural operations through state and federal grants.

