

Reach GL08, GL09, GL10

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 GL08

Existing Conditions

Reach GL08 begins approximately 4000 feet downstream of Roderick Road and extends for 1600 feet. It ends approximately 1000 feet downstream of the confluence with Roderick Creek.

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) and LC (Low Gradient, Confined)

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

Characteristics:

- *Channel Conditions:* The lower 500 feet of the reach is confined. The average floodplain width measured during the 1996 flood in this 500 foot section is approximately 120 feet. It is moderately confined in the upper portion of the reach. The average floodplain width measured during the 1996 flood in upper section is approximately 400 feet. The bankfull width is approximately 100 feet. The channel location has changed significantly between 1994 and 2002. The left bank is actively eroding in the middle of the reach. Numerous large trees have fallen into the creek due to the bank erosion. This contribution of a significant amount of LWD has caused formation of a large, deep pool. The length of the reach has been reduced by approximately 300 feet between 1994 and 2002, due to erosion and migration of the channel. There is a potential threat that the left bank will continue to erode and cut off a meander. This would reduce the channel length approximately 350 feet and increase the slope of the channel. Approximately 50 percent of the outside banks are actively eroding along the reach. 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 area along the left bank is in good condition with a width of 300 – 600 feet. The left bank is actively eroding and there has been good LWD recruitment. The riparian area along the right bank is in poor condition. About 50 percent of the bank is devoid of any shrubs or trees. The recruitment potential for the reach is moderate, with there being a much higher potential along the left bank than the right bank. There is poor shading along a majority of the reach.
- *Water Quality:* Summer temperatures are in the 70's – See the DEQ TMDL report (DEQ, 2001). During the field visit, the Roderick Creek inflow had a milky appearance to it.
- *Water Quantity:* No water supply diversion pipes were observed when this reach was surveyed. There are no permitted diversions along the reach. Roderick Creek flows into the reach near the middle of the reach. The Roderick Creek drainage basin area is 860 acres (1.7 percent of the total Gales Creek watershed area). Roderick Creek drains an agricultural area that is predominately farmed with nursery crops and private forest lands that are currently being actively logged. A gravel quarry exists in the upper portion of the watershed. The quarry operators have placed the creek in an approximately 100 foot long culvert near the entrance to the quarry.

- *Habitat Access:* No natural or structural passage barriers were observed along this reach.
- *Habitat Elements:* The reach contains primarily riffle/pool habitat types with some glides. Gravel bars (point bars) have formed along the inside banks. There is healthy and active growth of alders and willows on the point bars. There is a moderate degree of sediment in the glides and pools and a low degree of sediment embedment in the riffles. Cross-sectional data was gathered at a riffle that is about 100 feet upstream of the confluence with Roderick Creek. A Wolman pebble count was completed at this location. Substrate material samples were collected at 1-foot intervals along the cross-section that extended from the top of left bank to the top of right bank. Figure 4-7 shows the particle size class distribution of bed material at the tail out of the large pool adjacent to the erosion along the left bank. This distribution is similar to that found in a Rosgen type C4 stream channel.

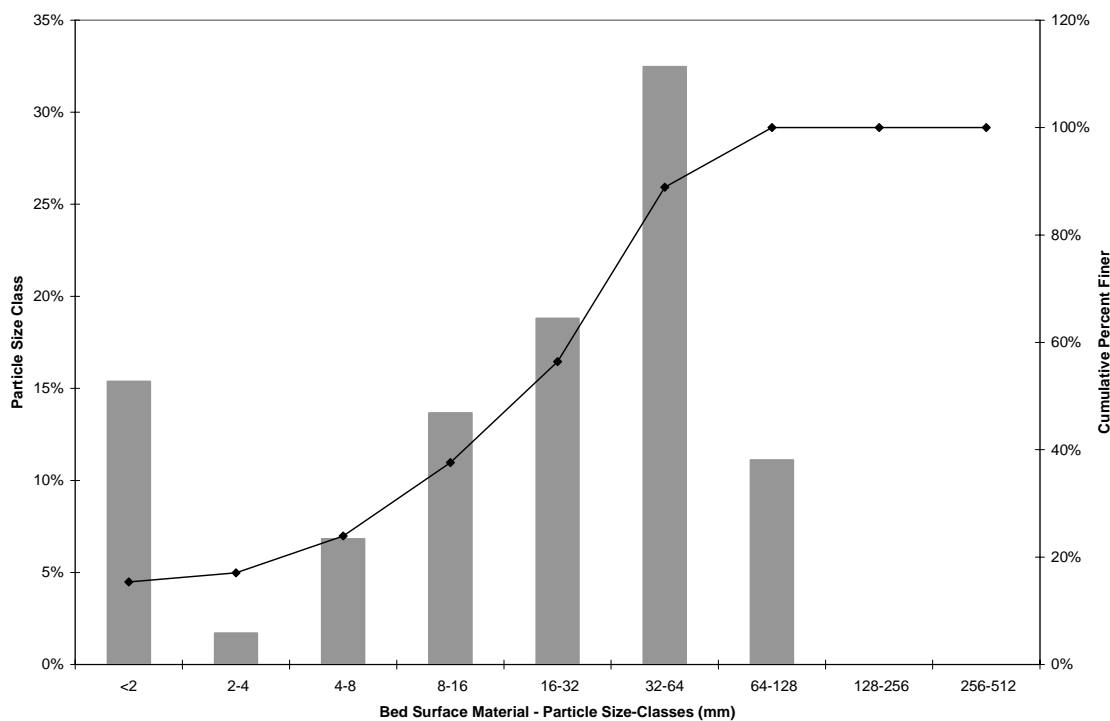


Figure 4-7: Particle Size Class Distribution at the Tail Out of Green Gables Pool

The Oregon Stream Habitat Survey sheet was filled out for a cross-section taken in the middle portion of the reach, at the tail out of the Green Gables pool. The results are presented in Table 4-7.

Degree of Impairment Score = 2.5

Limiting Factors

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

Table 4-7: Oregon Stream Habitat Data Sheet – Pool Tail Out

Category	Score	Description
Channel Condition	0.7	Reduced linkage of wetland, floodplains and riparian areas
Percent Pool Habitat	0.8	20 – 39% pools
Shelter Rating	0.8	3 or more pieces of LWD/50 ft
Off-channel Habitat	0.3	Some backwaters and high energy side channels
Percent Embeddedness	0.9	5-10% gravels surrounded by fines in the pool tail out
Percent Shade/Canopy	0.4	11-20% shade over active channel
Percent Stable Bank	0.3	50-55% stable bank
Riparian Width/Condition	0.5	Riparian area at least one channel width, somewhat degraded, few age classes and diversity
Macroinvertebrates	0.8	Several types of macroinvertebrates present intolerant to pollution.

Target Functions

- Riparian Zone – Intensive riparian vegetation planting and maintenance to restore stream shading and large wood recruitment 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 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 landowner to secure a conservation easement for the large area along the left bank.
2. Work with the landowners along the right bank to restore the riparian zone.
3. Work with landowner to increase sinuosity of channel along left bank, upstream of meander bend that is located just upstream of the confluence of Roderick Creek and Gales Creek. This work would be

completed to help reduce the energy being imparted on the outside bend, along the left bank, on the upstream side of the meander bend.



Photo GL08-1

Looking downstream (south) at left bank of Gales Creek (meander bend that is just upstream of the confluence of Roderick Creek and Gales Creek). An extensive gravel bar with some vegetation is shown at center. Active erosion along the outside bank is visible in this photo.

Increasing the sinuosity can be beneficial by reducing flow velocities and forcing the channel to change directions, thus losing energy. Specific activities will be determined during the project design phase.

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.

Reach GL09

Existing Conditions

Reach GL09 begins approximately 1000 feet downstream of the confluence with Roderick Creek and extends southeast for approximately 1700 feet.

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)

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

Characteristics:

- *Channel Conditions:* The channel is moderately confined. The average floodplain width during the 1996 flood was approximately 300 feet. Review of the 2002 FSA slides and 1994 aerial photo reveals that the sinuosity has decreased through the loss of one meander in the upper half of the reach. This has resulted in a loss of stream length of approximately 150 feet. The gradient of the stream within the reach is approximately 0.2 percent. The valley slope is approximately 0.4 percent.
- *Riparian Conditions:* There are moderate to poor riparian conditions along this reach. This is partly caused by illegal vehicular access. Driving over the gravel bars does not allow for shrubs to grow on the upper portion of the bar. Much of the riparian vegetation adjacent to the creek is non-native grasses (reed canarygrass) and Japanese knotweed. This does not provide adequate shading. The riparian width varies from 60 feet to 600 feet. Wider riparian areas are often fragmented and do not have a significant number of trees close to the edge of the creek. The recruitment potential for LWD is low due to the fact that many of the larger trees are 50 – 100 feet from the edge of the creek. Alder is the most populous tree along the reach. There is some Oregon ash, a few cottonwood but no conifer trees.
- *Water Quality:* Summer temperatures are in the 70's – See the DEQ TMDL report (DEQ, 2001).
- *Water Quantity:* No water supply diversion pipes were observed when this reach was surveyed. There are no permitted diversions along the reach.
- *Habitat Access:* No natural or structural passage barriers were observed along this reach.
- *Habitat Elements:* No formal habitat survey was completed. The channel contains predominately riffle/glide habitat with few pools. The reach has a high degree of sediment in the glides and pools and a moderate degree of sediment embeddedness in the riffles. When walking in the glide areas, the substrate felt soft, indicating the lack of gravels/cobbles substrate in the glides. This reach has a much higher degree of sediment substrate than the upstream reaches. The LWD volume is low. Illegal access to this reach by individuals driving 4-wheel drive vehicles in the creek has severely degraded the functions of this reach. There are multiple gravel bars where vehicle

traffic has stunted vegetation growth. In locations where vegetation has grown back, it is typically non-native species such as reed canarygrass and Japanese knotweed. It appears that vehicles driving in the creek have contributed to channel widening, which has led to shallow summer flow depths and potential thermal loading increases.

Degree of Impairment Score = 2.3

Limiting Factors

- Riparian Conditions
- Habitat Elements
- 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.
- 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 landowner to secure a conservation easement for the large riparian area along the left bank.
2. Work with the landowners along the right bank to enhance and restore the riparian zone. This involves the removal of non-native species (mainly Himalayan blackberry) and planting of native shrubs and trees.
3. Work with the landowners to stop people from illegally driving in the stream. The main access point is located near the downstream end of the reach along the right bank. Either install a gate with lock if the landowner desires access to the edge of the creek, or place large boulders at the access point to prevent people from illegally accessing this area. Driving in the creek channel has adversely impacted the creek by causing the channel to widen, which has led to shallow summer flow depths. After stopping the illegal access, develop a project to increase the in-stream complexity of the channel through the placement of LWD. This work should initially concentrate near the middle of the reach where the illegal access occurred. 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.



Photo GL09-1
Looking north across Gales Creek. Tracks from recent illegal vehicular traffic in the creek channel are visible at the center of photo.

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.

Reach GL10

Existing Conditions

Reach GL 10 begins about 2700 feet downstream of the confluence with Roderick Creek and extends 1100 feet to Stringtown Road.

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) and LC (Low Gradient, Confined)

Adjacent Land Use: Agriculture (Annual and Perennial Crops) and Rural Residential

Characteristics:

- *Channel Conditions:* The channel is confined for 500 feet upstream of the Stringtown Bridge. The average floodplain width that was mapped for the 1996 flood in this 500 foot section is approximately 100 feet. It is moderately confined to unconfined in the upper portion of the reach. The average mapped floodplain width during the 1996 flood in upper section is approximately 400 feet. A minimum of 10 percent of the banks appear to be eroding. It is difficult to estimate the quantity of eroding banks with the heavy Himalayan blackberry cover. Noted riprap along the toe of the slopes in much of the reach. Himalayan blackberries covered the slopes, but it is assumed that the riprap extended up the banks. The channel location has not changed significantly between 1994 and 2002. The gradient of the stream within the reach is approximately 0.2 percent. The valley slope is approximately 0.4 percent.
- *Riparian Conditions:* Poor shading is provided by riparian vegetation. The riparian width varies from 0 feet to 300 feet. Wider riparian areas are often fragmented and don't have a significant number of trees close to the edge of the creek. The recruitment potential for LWD is low due to the fact that many of the larger trees are 50 – 100 feet from the edge of the creek. The Himalayan blackberries are thick along 80 – 90 percent of the banks. This tends to reduce the potential for growth of native shrubs or trees adjacent to the creek. Alder is the most populous tree along the reach. There is some Oregon ash, a few cottonwood and no evergreen trees.
- *Water Quality:* Summer temperatures are in the 70's. Figure 4-1 displays the diurnal temperature variability at Stringtown Road. This data was collected during the DEQ, TMDL investigation.
- *Water Quantity:* No water supply diversion pipes were observed during the filed visit along this reach. However, there are the following permitted diversions along the reach. It is not known if these diversions are screened. The 7 cfs municipal water right is significant. Table 4-8 presents the following permitted diversions along the reach.

Table 4-8: Reach GL10

Permit Number	Use	Rate	Notes
25909	IR	.12cfs	2 diversion points
17549	MU	7.0 cfs	Check w/ City of Forest Grove to see if this diversion point is still used.
13583	IR	.21 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. There is an active beaver dam about 900 feet up from the Stringtown Bridge. The reach contains predominately riffle/glide habitat within a U shaped channel. It has a high degree of sediment in the glides and pools and a moderate degree of sediment embeddedness in the riffles. When walking in the glide areas, the substrate felt soft, indicating the lack of gravels/cobbles substrate in the glides. There is a greater amount of sediment substrate than in the upstream reaches. This could be partially caused by the effectiveness of the beaver dam to trap sediment. The LWD volume is low.

Degree of Impairment Score = 2.0

Limiting Factors

- Riparian Conditions
- Habitat Elements
- Water Quality

Target Functions

- Riparian Zone – Intensive riparian vegetation planting and maintenance to restore stream shading and large wood recruitment in areas that have little or no existing riparian vegetation.
- 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 the landowners along the right bank to enhance and restore the riparian zone. This involves the removal of non-native species (mainly Himalayan blackberry) and planting of native vegetation.



Photo GL10-1

Looking downstream (south) at the right bank of Gales Creek. The stream bank is covered with non-native species such as Himalayan blackberry and reed canarygrass. Riparian enhancement would provide increased shading.

2. Increase the in-stream complexity of the channel through the placement of LWD. This work should initially concentrate near the upstream portions of the reach where there is a much wider floodplain. 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.
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.