

RESULTS

Field observations are summarized and interpreted in the following subsections of this report. The rivers and streams that were included in the habitat inventory are listed and described from the most downstream to the most upstream. For each waterbody, there is an indication of the river miles that were walked and the date(s) on which the reconnaissance occurred. An overview of habitat conditions for the overall waterbody is followed by an overview of conditions at the reach level and site-specific observations, where available. LWD counts, pool counts, and photographs are included, where available. More detailed field notes (Cortez, 2002) can be obtained upon request from King County WLRD.

CHERRY CREEK (RIVER MILE [RM] 0.0-5.0), JULY 15—17, 2002

OVERVIEW

The headwaters of Cherry Creek (Map 2) are in an undeveloped Forest Production District. The creek then flows through a wooded reach of rural residential development, across a productive agricultural area, and into the Snoqualmie River at RM 6.7 of the Snoqualmie. Above the valley floor, Cherry Creek is very healthy and productive with coho salmon, trout, and freshwater mussels. However, fish habitat conditions are degraded in the lowest reach, i.e., Cherry Valley Floodplain.

RM 0.0—2.2, CHERRY VALLEY FLOODPLAIN REACH

Reach Overview:

LWD: data not available (N/A), pools N/A

This reach is a low gradient (0–0.5%) valley floodplain. Cherry Creek flows along the east edge of the valley. The stream is confined and entrenched in an agricultural ditch. The streambed morphology was riffle-glide, with very long and deep glides. The stream was very deep (up to 3 feet) throughout this reach, with high flow debris visible 5 feet above the July 17, 2002 water level. The substrate ranged from pebble/gravel as the stream entered the floodplain to sand and silt at the mouth. Both banks were armored in many locations throughout this reach.

The riparian vegetation included alder and cottonwood trees on the right bank (RB), alder, and big leaf maple trees on the left bank (LB), and reed canary grass and blackberry on both banks. There was no overhead canopy on either bank from RM 0.5 downstream to the mouth of the creek.

RM 2.2–3.0, LOW GRADIENT CHANNEL IN RURAL RESIDENTIAL DEVELOPMENT

Reach Overview:

LWD: 65 pieces, 7 pools

The streambed morphology of Cherry Creek was riffle/glide/pool through this reach with 0% gradient at RM 2.2, and gradient increases up to 30% at RM 3.0. The substrate was pebble/gravel with some patches of gravel/pebble and was embedded with fines. The wetted width in this reach was about 15 feet, with a 60 foot ordinary high water (OHW). Some coho were observed as well as a few rainbow trout fry. Benthic invertebrates were present but not abundant. Deer tracks were common. The riparian canopy was patchy and composed of alder, cottonwood, maple, and conifers. Native plants such as salmonberry dominated the riparian shrubs, but invasive species such as reed canary grass and blackberry became increasingly frequent in the lower half of this reach. There were homes scattered throughout this reach and approximately 10% of the streambanks were armored with riprap.

Site-Specific Observations:

A tributary on the RB at RM 2.5 had a large cobble delta at its confluence with Cherry Creek. Nearby on the RB, a side or remnant channel was located about 3 feet above the current channel behind a thin row of cottonwoods.

The water temperature at RM 2.8 was 17° Celsius (C) (62.6° Fahrenheit (F)) at 2:25 PM on July 17, 2002. At 9:00 AM that day, the water temperature was already 14°C (57.2°F) upstream. These temperatures exceed the optimal range of 10° to 13.9°C (50° to 57°F) for salmon rearing (Bjornn and Reiser, 1991).

A bridge at RM 2.9 constrained the creek through two riprapped supports on the banks. Upstream of the bridge, a large and long gravel bar had built up with about 50 pieces of LWD. The presence of this gravel bar indicated that high flows back up behind this bridge.

RM 3.0–4.4, HIGH GRADIENT CHANNEL IN RURAL RESIDENTIAL DEVELOPMENT

Reach Overview:

LWD: 313 pieces, 31 pools

Cherry Creek had a consistent gradient of 2–3% through this reach. Both banks were steep, ranging between 30% and as much as 100% in places on the LB. Only a few juvenile coho were observed in this reach. Several old redds were noted. Homes were scattered along the banks through this reach, some as close as 15 feet from the edge of the creek. On undeveloped properties, the riparian vegetation was dense and comprised of native species such as salmonberry, sword ferns, and vine maples. However, the vegetation on the home lots was mowed to the stream bank and often dominated by non-native, invasive species such as reed canary grass and blackberry. Some of the homeowners had hardened the banks in front of their property; approximately 5% of the banks were armored through this reach. The canopy was composed of alder, cottonwood, and about 40% conifers. Bedrock and glacial outwash were exposed on the banks throughout this reach, with the overlying substrate generally pebble, and gravel with embedded fines. Large boulders were found in the channel frequently.

Site-Specific Observations:

A side channel flowed along the RB at RM 3.1 for about 0.1 mile. Power lines crossed the creek at RM 3.3; all riparian vegetation underneath the power lines was mowed for 0.1 mile of creek. Just below the power lines, there was a logjam with at least 100 pieces that had forced the channel to split around a large gravel bar. There were a few small pools associated with this logjam and the streambed indicated that further habitat would be available during winter high flows.

Three large erosion features were observed along the steep LB between RM 3.4 and 3.8. A slide at RM 3.4 was 400 feet long and about 35 feet high with water seepage. Downstream of this slide were three old growth cedars in the creek. A slide at RM 3.5 went up the hillside for about 700 feet and appeared to be very old. Another slide at RM 3.8 was 150 feet tall and 300 feet long, and had created a logjam in the creek. A water withdrawal pump led from the creek to a home at RM 4.0.

RM 4.4–5.0, UNDEVELOPED TIMBER PROPERTY

Reach Overview:

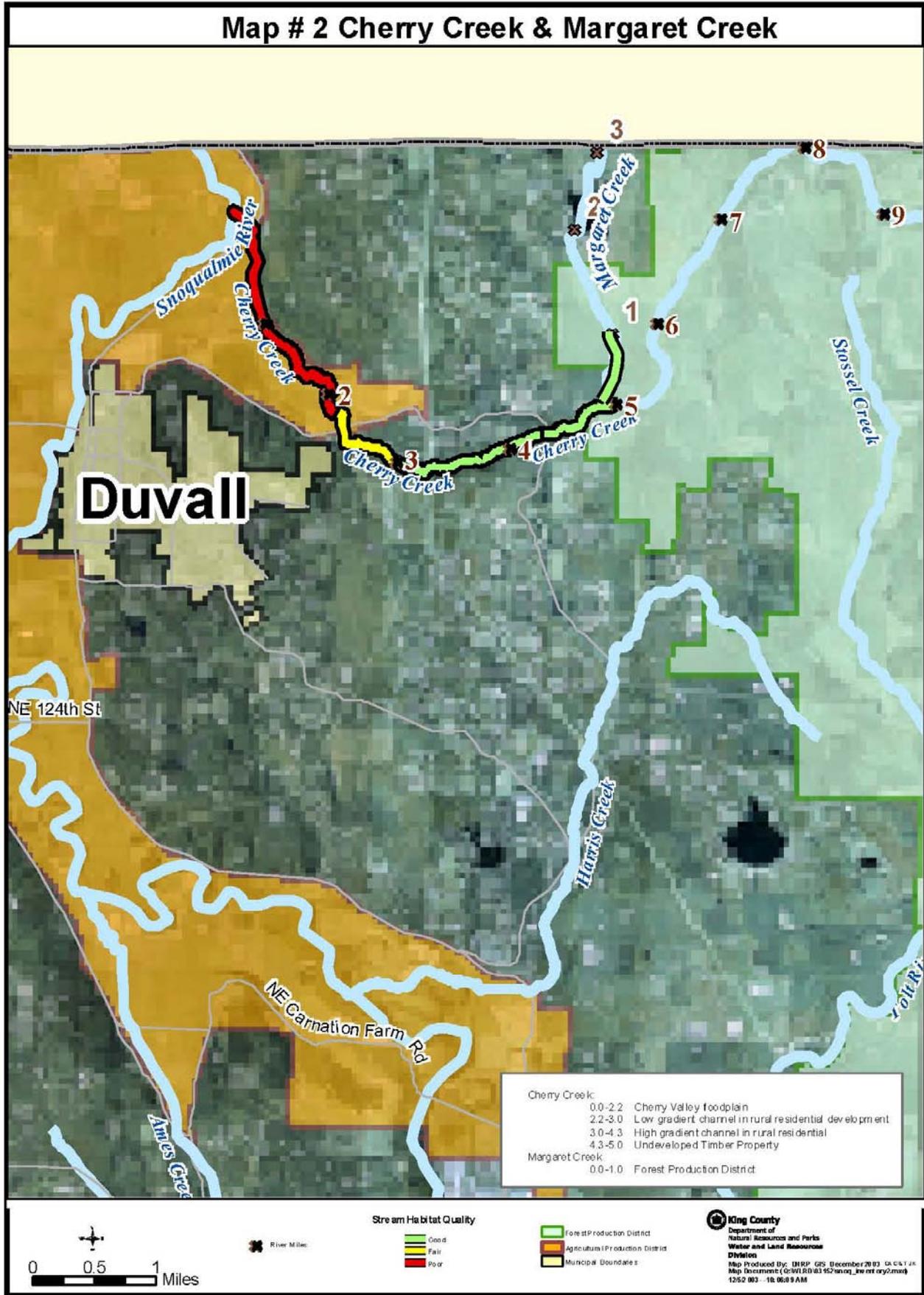
LWD: 149 pieces, 31 pools

Above RM 4.4, Cherry Creek was low gradient with wetland habitat. This reach was very productive with the highest density and largest coho fry observed in Cherry Creek, as well as abundant benthic invertebrates and freshwater mussels. The substrate was pebble and gravel with a wetted width of 10 feet and an OHW of 75 feet. The streambed morphology was riffle/glide/pool. Several piles of mussel shells on the LB indicated that wildlife come to the creek to feast. The canopy was offset by the wide wetland area, and was composed of alder, maple, and conifers. The shrubs were all native, mostly salmonberry and Pacific ninebark.

Site-Specific Observations:

NE Kelly Road crosses Cherry Creek on a bridge at RM 4.4. A 100-foot long boulder cascade runs down from under the bridge. Water temperature at the bridge was 14°C (57.2°F) on July 17, 2002.

There was a large cedar piling on both sides of the creek at RM 4.9, presumably left behind by an old logging operation. The reach between RM 4.9–5.0 had accumulated 114 pieces of LWD and some associated scour pools that were up to 6 feet deep.



MARGARET CREEK (RM 0.0–1.0), JULY 15, 2002

RM 0.0–1.0, FOREST PRODUCTION DISTRICT REACH

Margaret Creek flows out of Lake Margaret through Forest Production District land and enters Cherry Creek at Cherry RM 4.5. Margaret Creek is a coho-bearing stream from its mouth to RM 0.7 (Snohomish River Basin Work Group, 1998).

OVERVIEW:

Reach Overview:

LWD: N/A, pools N.A

The gradient of Margaret Creek ranged from 6.5% upstream to 4 % as the creek neared its confluence with Cherry Creek. The wetted width ranged from 8 to 15 feet and the OHW ranged from 12 to 18 feet in an upstream to downstream direction as well. Water seeped from the hillside on the RB.

The channel morphology was mostly riffle/glide with very few pools. The substrate was mostly boulder (some rocks were five feet long and three feet wide) and gravel, suggesting good spawning habitat for coho salmon. Some clay hardpan was observed on the RB.

The riparian canopy shaded the stream and was composed mainly of Pacific Northwest trees and shrubs: alder, big leaf maple, large cottonwood (four to five feet in diameter), salmonberry, and devils club. Some reed canary grass was found as well. There was some LWD in Margaret Creek, including a logjam that appeared to have caused the formation of a gravel bar on the LB near the confluence with Cherry Creek.

LWD provides rearing and refuge habitat for juvenile salmonids (WFPB, 1997). Many coho fry were visible in Margaret Creek, along with two of their food sources – mayflies and caddisflies. Freshwater mussel shells were ubiquitous at the mouth of the creek.

AMES LAKE CREEK (RM 0.0–3.9), JULY 30, 2002

OVERVIEW:

Ames Lake Creek (Map 3) flows out of Ames Lake, which is surrounded by residential suburban development. Downstream of Ames Lake, the creek flows through rural residential development to the Snoqualmie River floodplain, where the water in the creek is used to irrigate farmlands. Excessive sedimentation of the floodplain ditches has been a problem for farmers in recent years. Clearing, straightening and dredging in the lower agricultural reaches of Ames Lake Creek have degraded fish habitat by reducing habitat complexity. The lack of native riparian vegetation also contributes to degraded habitat conditions.

RM 0.0–2.0, SNOQUALMIE RIVER FLOODPLAIN, AGRICULTURAL PRODUCTION DISTRICT

Reach Overview:

LWD: 0 pieces, 0 pools (data incomplete as this reach was not wholly accessible)

From its mouth to RM 2.0, Ames Lake Creek flows through agricultural ditches with a wetted width of 6 to 8 feet. The substrate was primarily silts and sands, with some small patches of gravel. The riparian vegetation was exclusively reed canary grass and blackberry, with no trees. Although a few coho fry were observed in this reach, overall habitat conditions for salmonids were poor. The stream was exposed and had little to no cover or refuge habitat. Landowners expressed that there is a need for habitat restoration, and that the culverts needed to be cleared to improve drainage. The culverts were blocked and appeared to be hindering fish passage.

Site-Specific Observations:

Five beaver dams were found where Ames Lake Creek entered the Snoqualmie River floodplain. The field technicians were not able to get close enough to evaluate the habitat formed by this beaver activity.

RM 2.0–3.6, RURAL RESIDENTIAL DEVELOPMENT

Reach Overview:

LWD: 146 pieces, 9 pools (pool data incomplete due to subsurface flow)

The Ames Lake Creek subbasin was developed with homes from RM 2.0 upstream to Ames Lake. Streambed morphology was not described because the flow was subsurface for much of this reach. The substrate was consistently gravel and pebble through this reach. Coho fry were generally observed wherever adequate water existed, but benthic invertebrates were scarce.

Site-Specific Observations:

From RM 2.0 to 2.1, there was a sparse canopy of young alder and maples and a high density of shrubs, mostly blackberry, salmonberry, and Pacific ninebark. Immediately upstream, from RM 2.1 to 2.4, there was no canopy. The streambed morphology was riffle-glide, with three pools between RM 2.0 and 2.4. One of these pools was at the base of a slightly perched culvert at RM 2.3. Occasional red ribbons in the shrubs noted the locations of coho redds from fall, 2001.

At RM 2.6, there was an alder canopy, but it was set back 20 feet from the stream. The creek meandered slightly and there were about a dozen ribbons noting the locations of old coho redds. The substrate was gravel and pebble. The riparian vegetation was salmonberry with abundant devils club. Eight pieces of LWD were found in this 0.1 mile.

The streambed morphology was riffle/glide at RM 2.7, with no pools and a wetted width of 3 to 6 feet, and an OHW of 10 feet. A tributary on the LB had a wetted width of 2.5 feet. There was another tributary on the RB at RM 2.8. Between these two tributaries, Ames Lake Creek had a bar made of gravel and cobbles that was one foot higher than the streambed, indicating some high water events during the wet season.

At RM 2.9, the gradient dropped and the stream displayed some wetland characteristics. The low gradient wetland habitat occurred through RM 3.1, with dense vegetation on both banks composed of salmonberry, vine maple and devils club. At RM 3.2, the shrubs were entirely devils club and nettle. The canopy of alders was only 10 feet from the edge of the stream and was as dense as the shrubs, providing good recruitment potential for instream LWD.

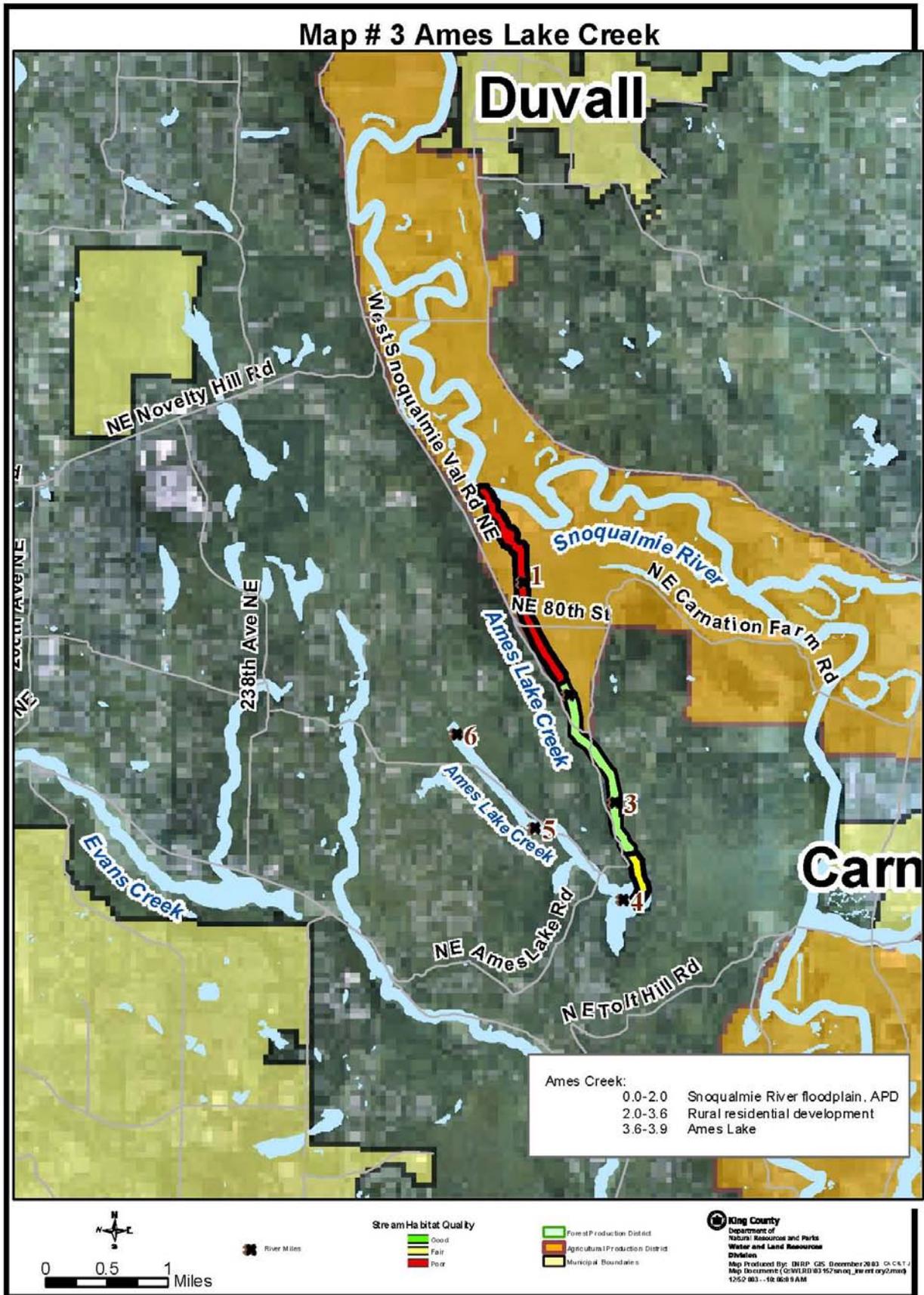
The flow was subsurface from RM 3.2 to Ames Lake with the streambed morphology appearing to be riffle/glide. The gradient was 2–3% with a pebble and gravel substrate. The creek flowed through culverts at RM 3.3 and 3.4 at 47th Place and an old logging road.

RM 3.6–3.9, AMES LAKE

Reach Overview:

LWD: 0 pieces, 0 pools

Ames Lake was heavily developed with homes on the entire shoreline. There was very little natural shoreline remaining; many lawns and gardens bordered the lake. Although there were still some tall conifers around the lake, their density was too low to provide adequate shading for fish in the lake.



HARRIS CREEK (RM 0.0–6.6), AUGUST 1, AND AUGUST 5–7, 2002

OVERVIEW

The headwaters of Harris Creek (Map 4) and most of its watershed are surrounded by rural residential development. Wildlife and signs of wildlife were observed, e.g., deer, cougar, beaver, and ducks. There are many wetlands associated with the headwaters; habitat problems occur where road crossings are frequent and invasive plants are persistent. At its mouth, Harris Creek flows through a wildlife preserve and into the Snoqualmie River at RM 20.7.

RM 0.0–1.7, SNOQUALMIE RIVER FLOODPLAIN

Reach Overview:

LWD: N/A, pools: N/A

From RM 0–1.1, Harris Creek flows through an abandoned channel cut by the Snoqualmie River. This channel was wide and filled with aquatic macrophytes; large cottonwoods formed a discontinuous line along the edges of the channel. This reach was very low gradient with fine substrate, and was connected to two distinct oxbow ponds.

Site-Specific Observations:

The Snoqualmie Valley Trail crosses Harris Creek at RM 1.1. Above the trail, there were three beaver ponds on the RB. The ponds were over 4.9 feet deep. The LB of the creek was planted at RM 1.3 with conifers and native shrubs. The substrate was sands and silts and the creek was up to 4 feet deep. Above the beaver ponds, between RM 1.4–1.7, Harris Creek flows along agricultural property on the RB.

RM 1.7–2.8, UNDEVELOPED FORESTED AREA

Reach Overview:

LWD: 252 pieces, 28 pools

The riparian trees at RM 1.7 were cottonwood, alder, and vine maple and were set back approximately 50 feet from the creek. Shrubs were vine maple, salmonberry, and Pacific ninebark. Harris Creek began to widen here as it entered the Snoqualmie River floodplain; the OHW was greater than 40 feet wide.

There was a big gravel bar just upstream of the SR 203 Bridge over Harris Creek, indicating that the bridge may back up the creek at higher flows (Photo HA1). Coho fry were abundant in this area.

Site-Specific Observations:

The water temperature at RM 2.0 was 12°C (53.6 °F) on August 7, 2002. Cougar tracks were observed on the LB at RM 2.0. Crawfish, a 6-inch trout, and coho fry were also present in the creek. At RM 2.1, the

gradient increased to 3.5%. The substrate was gravel and pebble and the stream split around gravel bars through this reach. Some large huckleberries were found at RM 2.1 near an old-growth cedar stump.

At RM 2.2, the substrate increased in size to gravel and boulder (Photo HA2), with the gradient up to 9%. The dominant riparian shrub was salmonberry. The canopy was still about 40 feet back from the stream, and was composed of alder, maple, and conifers. There was a logjam at RM 2.3 that was 40 feet wide with approximately 60 pieces of wood. Some small caddisflies were present. Many boulders were present at RM 2.3. The wetted width of the channel was 15 to 20 feet and the OHW was 40 feet at this location. Complex habitat with adequate shading and LWD were found at RM 2.5–2.6 (Photos HA3–4).

An old, failed bridge at RM 2.6 had backed up a sizeable logjam (Photo HA5). Another logjam was only a few feet upstream of it. Between RM 2.6 and 2.8, the stream was pristine-looking with a healthy riparian canopy. Caddisflies and mayflies were present. These species of macroinvertebrates are associated with good water quality.

RM 2.8–3.6, RURAL RESIDENTIAL

Reach Overview:

LWD: 63 pieces, 13 pools

The riparian vegetation in this reach was all native plants, but was sparse on the LB. Predominant shrub species were Pacific ninebark, salmonberry, and skunk cabbage; the latter is indicative of wetland conditions.

The substrate was gravel and pebble, mixed with silts from the wetland. The gradient was 1–2% and the channel morphology was pool/riffle, with some large and deep pools filled with coho salmon. Coho were observed throughout this reach, especially just downstream of the wetland.

Site-Specific Observations:

The first house on Harris Creek appeared on the RB at RM 2.9. Exposed clay hardpan was observed on the LB at this location. Freshwater mussels were found at RM 3.0 (Photo HA6), with gravel and pebble substrate. Caddisflies and mayflies were not observed at this location.

RM 3.6–4.6, WETLAND

Reach Overview:

LWD: 12 pieces, 0 pools

This reach was too swampy and deep to walk, so the field technicians conducted the reconnaissance from nearby roads. The riparian plants were mostly reed canary grass with native wetland shrubs; scattered alders lined the wetland. The wetted width was approximately 7 feet, and the OHW was 50 feet. A resident at RM 3.7 said that the OHW was very high in the winter.

Site-Specific Observations:

A LB tributary at RM 4.3 was dry. NE Kelly Road crosses Harris Creek at the downstream end of the wetland over two large, grated culverts (Photo HA7).

RM 4.6–6.6, RURAL RESIDENTIAL WITH SMALL WETLANDS

Reach Overview:

LWD: 52 pieces, 13 pools

There were not many homes along Harris Creek through this reach, but there were frequent road crossings. NE Stossel Creek Way crosses Harris Creek via culverts at RMs 5.6, 5.9, 6.0, 6.1, and 6.6. The stream also flowed through culverts and under bridges at several small streets and driveways (Photos HA8–11).

The stream gradient fluctuated between 0–1% and the substrate was gravel and pebble with isolated reaches of silts and sands. The riparian canopy in this reach was broken up by the homes along the RB, but the LB had a consistent canopy of alder, cottonwood, and a few conifers. The riparian shrubs were Pacific Northwest natives, mostly salmonberry, cascara, vine maple, and Pacific ninebark (Photo HA12). Small caddisflies were observed and coho fry were abundant. The substrate was pebble and gravel and was considered to be typical coho spawning habitat. In this reach, all of the tributaries to Harris Creek were dry.

Site-Specific Observations:

The streambed morphology was riffle/glide between RM 4.6 and 5.1. At RM 5.2, Harris Creek flowed through a culvert that had a fish ladder built into the downstream end (Photo HA13). Above the culvert, between RM 5.2–5.6, the stream was low gradient and the canopy was offset from the stream, indicating that Harris Creek flowed through a broad wetland here. Reed canary grass covered both banks, and alder trees lined the valley. The substrate was silts, and the streambed morphology varied from riffle/glide to low gradient glide with deep, murky water. Another culvert at the NE Stossel Creek Road crossing at RM 5.6 had a fish ladder built into the downstream end.

From RM 5.8 – 6.2, the gradient increased to 2.5%. The canopy closed in on this reach and was comprised of alder and maple, but was thin on the LB where it was broken up by homes. The riparian shrubs were dense and all native, including salmonberry, Pacific ninebark, and vine maple. There were frequent road crossings through this reach.

Between RM 6.3 and 6.6, Harris Creek did not flow far from NE Stossel Creek Road, and crossed under it several times. The riparian vegetation in this reach was almost entirely reed canary grass, with some patches of salmonberry. There was no canopy noted in this reach, but there may be a canopy that is set back from the creek. A large wetland was connected to the creek on the RB from at least RM 6.3 – RM 6.5. The channel through this reach was entrenched and the flow was subsurface at times, with a wetted width of 1.5 feet and an OHW of only 6 feet.

An old pickup truck and two washing machines were also found in the creek at RM 6.5. A logging road ran alongside the creek at RM 6.5 and the shrubs there were covered in dirt, suggesting that the logging activity was contributing fine sediments to the creek at this location.

The gradient was approximately 0.5% and the substrate was pebble and gravel with fines. It may be possible for spawning to occur here. Coho fry were observed here, but not in dense numbers. The water temperature at RM 6.6 was 13°C (55.4°F) on August 5, 2002.

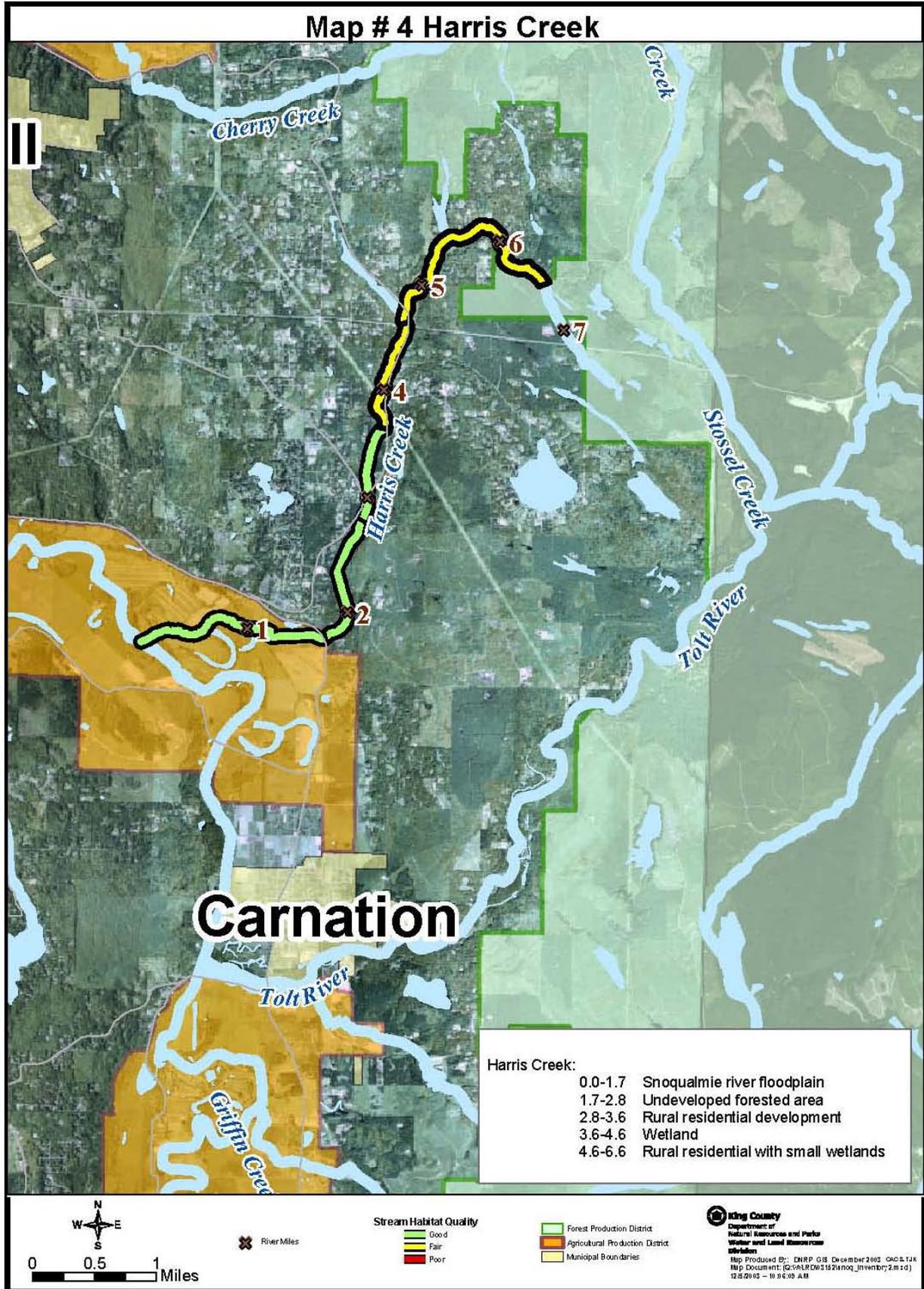




Photo HA1. Harris Creek. Gravel bar upstream of SR 203 Bridge



Photo HA2. Harris Creek. RM 2.2



Photo HA3. Harris Creek. RM 2.5



Photo HA4. Harris Creek. RM 2.6



Photo HA5. Harris Creek. LWD jam at RM 2.6



Photo HA6. Freshwater mussel



Photo HA7. NE Kelly Road crossing at RM 4.6

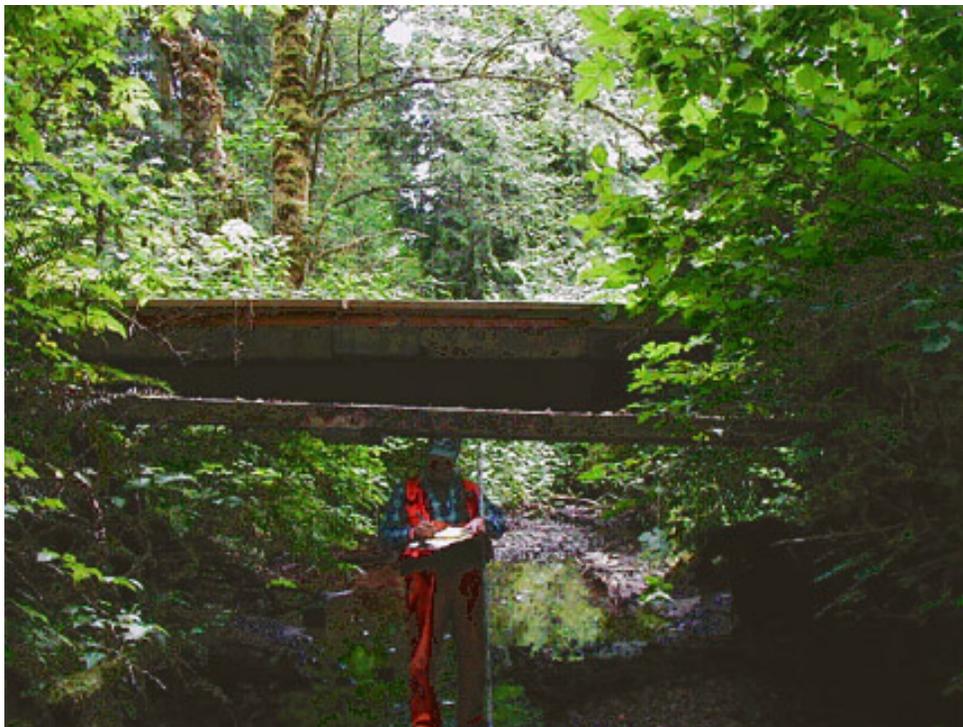


Photo HA8. Driveway over Harris Creek at RM 5.7.



Photo HA9. RM 6.0.



Photo HA10. RM 6.1.



Photo HA11. RM 6.3.



Photo HA12. Riparian vegetation, RM 5.1.



Photo HA13. Fish ladder at RM 5.2.

TOLT RIVER (RM 0.0–5.9, 7.5–7.9), SEPTEMBER 4, 2002

OVERVIEW:

The Tolt River (Map 5) is the largest tributary to the Snoqualmie River, entering the mainstem Snoqualmie at Snoqualmie RM 24.1 (Photo Tolt1). The North and South Forks of the Tolt River are similar in size and meet at Tolt RM 8.2. Seattle Public Utilities operates a water supply dam on the South Fork Tolt River, which alters the hydrology downstream. Aside from RM 0.0–2.0, the Tolt River drains forested lands and has mostly healthy riparian and healthy instream habitat.

RM 0.0–2.0, TOLT RIVER DELTA

Reach Overview:

LWD: 12 pieces, 0 pools

In this lowest reach, the Tolt River was confined between containment levees that protect the City of Carnation; consequently, gravel movement to the Snoqualmie River is disrupted. The substrate in the Tolt River is unsorted gravels embedded with fines. Tall gravel bars have built up within the levees, often confining the river to narrow and fast channels. The channel morphology is mainly riffle/glide with very little available habitat for juvenile fish (Photo Tolt2).

There were tall, mature, mostly deciduous trees lining the Tolt River on both banks throughout this reach, but the trees were all behind the levees and therefore cannot be recruited as LWD to the river. Juvenile fish were not observed in this reach. Adult salmon redds were noted in the gravel in places; chinook, coho, chum and pink salmon are known to spawn in this reach (WDFW and Western Washington Treaty Indian Tribes, 1994).

Site-Specific Observations:

The Snoqualmie Valley Trail crosses the Tolt River on an old railroad bridge at RM 1.6. The opening under the bridge was inadequate for Tolt River flows, so a gravel bar had backed up for 0.2 mile upstream of the bridge, with a sharp drop-off under the bridge. At high flows, water under this bridge will likely reach velocities that are too swift for fish.

RM 2.0–5.9, RURAL RESIDENTIAL DEVELOPMENT

Reach Overview:

LWD 120 pieces, 12 pools

There was consistent but infrequent and well-spaced residential land development on the LB of the Tolt River in this reach. Where houses were present, there was bank hardening and an absence of trees and shrubs (Photo Tolt3).

On the LB, where there are no homes, and throughout the RB the riparian vegetation was generally healthy with mature trees and dense shrubs. The trees were cottonwoods and conifers. The native shrubs were salmonberry, vine maple, ninebark, and cascara. Invasive plants, particularly budlea and blackberries, occurred infrequently except on developed properties where they were dense.

The channel substrate was cobble and gravel with localized reaches of cobble and boulder. Fines embedded the gravels throughout the reach. LWD was prevalent, and there were a few logjams with some excellent salmon habitat (Photo Tolt4).

Pink and chinook salmon were spawning throughout this reach when it was walked on October 2, 2001 (Solomon and Boles, 2002). At that time, both species were observed spawning in the same pool tailout at RM 3.3. Caddisflies, mayflies and stoneflies were abundant. When this reach was walked in 2001, deer and a great blue heron were observed as well.

Site-Specific Observations:

A King County facility to protect the Tolt River Road at RM 2.8 is constructed of large riprap with some placed LWD. There was a vertical bulkhead on the RB at RM 5.8.

RM 3.3 offered some very complex habitat where the Tolt River split to multiple channels as it flowed around a tight bend. Several woody debris complexes occurred around this bend, with pools, off-channel habitat and high gradient riffles providing a variety of habitat types. A similar complex of habitats occurred at RM 4.5 where an LWD jam forced the river to split into two channels. A boulder with a cedar growing on it at RM 4.0 had scoured out a long, deep pool (Photo Tolt5). An LWD jam at RM 5.8 created a large, deep pool with abundant cover. Instream habitat was generally excellent, with over-wintering habitat, off-channel habitat, and deep pools occurring regularly.

Channel avulsions were evident at RM 2.8, 3.7 and 5.7. These locations had remnant channels that were dry in the summer of 2002 but likely contained water at higher flows.

RM 7.5–7.9, UNDEVELOPED FORESTED AREA

Reach Overview:

LWD: 37 pieces, 19 pools

The riparian trees were mature and dense in this reach, but the river was so wide that the trees did not form a complete canopy (Photo Tolt6). The trees were cottonwood, big leaf maple, and conifers. The shrubs were dense and primarily native species, although budlea continued to occur throughout this reach.

The river had a 100 foot wetted width and a 125-foot OHW. The flow was deep and swift with back eddies, making the stream walk a challenge.

Juvenile coho were observed in this reach, using the slower water along the edges of the channel. Adult chinook spawners were actively building redds when this reach was walked in September 2002.

Site-Specific Observations:

The channel morphology was 2 to 5% gradient riffle at RM 7.5, and then increased to 10% gradient with a step-pool morphology (Photo Tolt7). At RM 7.6, the banks steepened, confining the river in a canyon

for the remainder of the reach. At RM 7.9, the combination of rocky banks and swift, deep water made it impossible to continue walking upstream (Photo Tolt8).

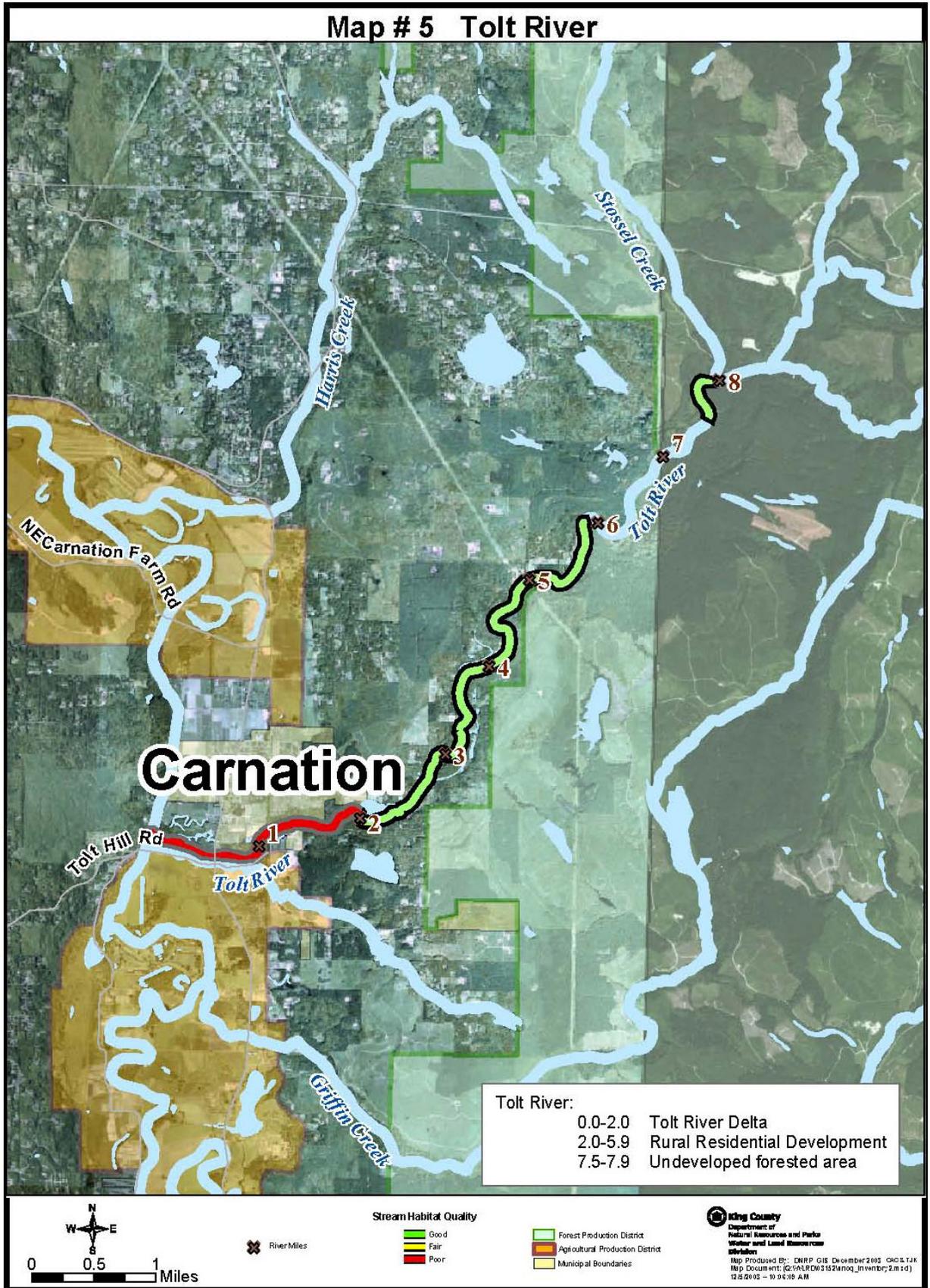




Photo Tolt1. Confluence of Tolt River (foreground) and Snoqualmie River (back left)



Photo Tolt2. Narrow channel between containment levees, RM 0.2



Photo Tolt3. Residential property with cleared riparian vegetation.



Photo Tolt4. LWD scoured pool at RM 3.2.



Photo Tolt5. Pool scoured by boulder at RM 4.0



Photo Tolt6. Riparian vegetation, RM 6.9



Photo Tol7. High gradient channel at RM 7.5.



Photo Tol8. Step-pool channel with boulder substrate, RM 7.7.