Touchet River – Reach 1	**Columbia County**
Reach Description: Touchet River runs from NW ¼ of T9N_R39E_S11 to the Columbia/Walla Walla county line.	
Shoreline Jurisdiction: 850 acres, 11.7 miles	




Source: USDA

Subreaches (SR); see Map E-1 and E-2

SR 1a: Begins downstream of the confluence with the South Fork Touchet River to the Dayton city limits and continues again downstream of the city in an area of the county between the main city limits and an additional city limit pocket area to the west around the wastewater treatment facility; 28 acres, 0.03 mile

SR 1b: Begins at the west city limits/wastewater treatment facility and ends at the SW ¼ of T10N_38E_S35; 118 acres, 2.1 miles

SR 1c: Begins at the SW ¼ of T10N_38E_S35 and ends at the SE ¼ of T9N_R38E_S06; 240 acres, 4.0 miles

Touchet River – Reach 1	**Columbia County**
SR 1d: Begins at the SE ¼ of T9N_R38E_S06 and ends at the Columbia/Walla Walla county line; 56 acres, 1.0 mile	

CHARACTERISTICS

Ownership:

The majority of Reach 1 is under private ownership.

SR 1a: 100% private ownership for the portion of the subreach upstream of the City of Dayton; the small section downstream of the city between city limits is 50% owned by Touchet Valley Golf Course (in the small section on the south bank) and 50% private.

SR 1b: Ownership is 100% private.

SR 1c: Ownership is 5% Washington State and 95% private.

SR 1d: Ownership is 100% private.

Land Use/Current Shoreline Master Program (SMP):

Current land-use designation:

- Land uses have not been designated. Existing uses in the reach are agriculture, with park and residential.

Current zoning designation:

- SR 1a: Zoning is Agricultural-Residential (AR-1) in a small section west of the City of Dayton and the last 500 feet south of the city limits and Agricultural (A-2) on the remaining.
- SR 1b: Zoning is Agricultural-Residential (AR-1).
- SR 1c: Lewis and Clark State Park is mostly zoned Recreational (R-1) on the south bank, a small area of LI-1 Light Industrial Zone on the south bank, and Agricultural (AR-1) on the remaining area (90%).
- SR 1d: Zoning is Agricultural Zone (AR-1).

Current SMP environment designation:

- The current designation is Rural.

Existing Land Cover/Development:

Reach 1 of the Touchet River is developed with a mixture of private residences, agriculture, and light industrial. The reach is easily accessible by the following paved roads:

- SR 1a: Rose Gulch Road
- SR 1b: Ward Road and Highway 12
- SR 1c: Rose Gulch Road and Highway 12
- SR 1d: Gallaher Road and Highway 12

Additionally, the Touchet Valley Airport is on the north side of the river in SR 1d. Steep areas are undeveloped open space, but the remainder is agricultural use.

Touchet River – Reach 1	**Columbia County**

Geomorphic Character:

Description: The Touchet River flows within a wide alluvial valley bounded by valley walls that mostly consist of loess deposits and to a lesser extent deposits of the Grande Ronde and the Frenchman Springs Member of the Wanapum Basalt flows. The valley is low gradient and unconfined. The river mostly has a single-thread channel, but multiple flowpaths are present in wider, unconfined areas. The low lying channel areas consist mostly of alluvium.

Channel Migration Zone Characterization: Because the river flows within a wide valley mostly comprising alluvium throughout the channel and floodplain, the potential for channel migration exists. However, infrastructure is present throughout the valley, limiting the channel migration potential. This infrastructure includes the Highway 12 and Burlington Northern/Union Pacific railroad alignments. Numerous levees exist along both river banks through the Town of Dayton, limiting the channel migration potential along this river segment.

Hardened Banks: Approximately 20,500 linear feet of artificial hardened banks exist along the Touchet River.

Flooding and Geological Hazards:

Flooding: Federal Emergency Management Agency (FEMA) floodplains are mapped throughout this reach, and floodways are delineated in SR 1a and 1b. Floodplains are relatively wide in this reach with the exception of short lengths in SR 1a and 1b. Floodways are generally similar in width throughout the reach, taking up most of the floodplain width in narrow floodplain locations and less than half of the floodplain width in wider floodplain areas.

Geological Hazards: Severely erodible soils can be found in this reach. Most of Reach 1 has moderate to high liquefaction susceptibility. Landslide hazard areas exist in Reach 1 where slopes are steeper than 15% over underlying Columbia River Basalts, alluvial deposits, loess, and mass-wasting deposits. There is an existing rock/stone mine operation (Konen Rock Crushing) in the upstream section of SR 1c.

Existing Public Access:

SR 1a:

- There is access via the Touchet Valley Golf Course and along the levee area north of the golf course.
- Rose Gulch Road runs along the north shore of the Touchet River in this subreach.

SR 1b:

- Ward Road crosses the Touchet River and intersects with Highway 12.
- Train tracks run the length of this subreach on the south side of the Touchet River.
- Highway 12 runs the length of this subreach.

SR 1c:

- There is access via the Lewis and Clark Trail State Park, including camping, day-use amenities,

Touchet River – Reach 1	Columbia County

kitchen shelters, a recreational vehicle dump, and trails.

- Rose Gulch Road crosses the Touchet River via a bridge. There is an informal parking area next to the bridge and footpaths to the water's edge.
- Train tracks run the length of this subreach.
- Highway 12 runs the length of this subreach.
- Highway 12 and the railroad tracks cross the Touchet River on separate but parallel bridges.
- This subreach is mostly privately owned with agricultural fields and private residences bordering the Touchet River, which reduces the public access opportunities.
- The western end of this subreach contains several dirt two-tracks and informal parking areas along the north side of the Touchet River.

SR 1d:

- Highway 12 and train tracks run the length of this subreach.
- Touchet Valley Airport is on the north side of the Touchet River.
- Gallaher Road comes from the south and crosses the Touchet River.

Public Access Opportunities: Opportunities exist at the golf course, the state park, and the road crossings. Private property limits access in other areas.

ECOLOGICAL CONDITIONS

Water Quantity and Sediment:

Washington State Department of Ecology (Ecology; Gage No. 32B140) is located in SR 1a and has a few months of flow data from 2002. Ecology Gage No. 32B110 is located in SR 1d and has flow data from 2002 to 2009. Agricultural use throughout the reach may impact water quantity. SR 1b – 1d generally gain surface water flow from groundwater. The mean annual flow at Ecology Gage No. 32B110 is 188 cubic feet per second (cfs), and the maximum flow recorded is 1,640 cfs.

Sediment is likely to accumulate in the lower gradient valley located in SR 1b – 1d compared to SR 1a, which has a relatively steeper gradient that likely transports sediment.

Water Quality:

Total maximum daily loads (TMDLs) are actively implemented for pH in SR 1b – 1d and for temperature in SR 1c. Bacteria and temperature are waters of concern in SR 1b, and temperature is a water of concern for SR 1d. The water quality issues in this reach are likely caused by low flows and high temperatures in summer months, nutrient loading occurring naturally from elevated concentration in geology and soils, nutrient loading occurring anthropogenically from upstream agricultural use, and wastewater treatment plant loading from the City of Dayton. Nitrogen and phosphorus loading appear to be naturally high within the basin, and this loading has an impact on water quality issues. Lack of vegetation may also cause these water quality concerns; however, water quality modeling has found that maximum potential riparian shade is not adequate to reduce temperature concerns.

Touchet River – Reach 1	**Columbia County**

Habitat Characteristics and Priority Habitat Species (PHS) Presence:

This reach is not identified as habitat for PHS in the uplands, but the Touchet River supports several other species as identified in Table 28 in the Inventory, Analysis, and Characterization (IAC) Report. The Touchet River supports Endangered Species Act (ESA)-listed bull trout and Touchet River summer steelhead. The Touchet River in Columbia County also supports hatchery steelhead, redband trout, mountain whitefish, pacific lamprey, sculpin, and smallmouth bass. Spring Chinook have been sporadically observed entering the lower Touchet River (within Walla Walla County) since 1997 (Amonette 2009). However, no information was located reporting Chinook within this reach of the Touchet River. Bull trout of all life stages may use the Touchet River and its tributaries; bull trout may have migrated between the Touchet and Walla Walla systems prior to the arrival of European settlers (SRSRB 2011).

The abundance and productivity of ESA-listed salmonids in the Touchet River is limited by habitat factors such as sedimentation and lack of habitat diversity, flow, and water temperature. Secondary factors include lack of habitat quantity (pools) and predation (SRSRB 2011).

Soils in this reach are characterized as severely erodible. Riparian vegetation along the Grande Ronde River in this reach has limited tree cover; vegetation is dominated by grasses and a few small shrubs (SRSRB 2011). As a result of the combination of erodible soils and limited vegetative cover, damaged stream banks, low habitat diversity, and key habitats, although improved through restoration actions, will continue to contribute fine sediment (particularly though SR 1b – 1d) and elevate stream temperatures until floodplains and riparian cover matures.

Habitat within Lewis and Clark Trail State Park is managed for historical preservation and includes native vegetation restoration (WWBWC 2004).

SR 1a: As the subreach approaches the Dayton city limits, it joins with the South Fork Touchet River, and the channel widens. The river banks in SR 1a near the City of Dayton are armored as part of the levee. The remainder of SR 1a is located on the west end of the City of Dayton between two discontinuous areas of the city limits. This portion of SR 1a exhibits similar conditions due to presence of the levee, the golf course, and limited agricultural development.

SR 1b: The channel of SR 1b is constrained by the adjacent steep bluffs and agricultural development. This limits the growth of riparian vegetation although there is a small strip of vegetation on either bank. These limitations allow favorable growing conditions for invasive species and thus reduce overall habitat complexity. There is a limited amount of native shrub-steppe habitat within the shoreline boundary in SR 1b.

SR 1c: This subreach is generally similar in habitat characteristics to SR 1a and 1b due to the similar agricultural land use encroachments, although it is much less constrained than SR 1b. In some stretches, SR 1c forms braided channels that create wetland habitat complexes among the river channels. The river in SR 1c is accessible via a state park.

There appears to be a number of livestock or wildlife trails from the uplands to the river. SR 1c does appear to have more woody debris accumulations around gravel bars and closer to the shoreline. There is a gravel mining operation in the uplands near the start of SR 1c, and this operation is outside of the shoreline boundary. However, the presence of this operation impacts the development of the riparian habitat by…. There are two road and one railroad crossings within this subreach.

SR 1d: This subreach is generally similar in habitat characteristics to SR 1a – SR 1c due to the similar agricultural land use encroachments. There are two road crossings within this subreach. This subreach ends at the county line.

Touchet River – Reach 1 Columbia County
ECOLOGICAL FUNCTIONS ANALYSIS
riparian areas of Reach 1, which were determined to be generally impaired (SRSRB 2011). Aquatic habitat function in the Touchet River is affected by reduced surface water runoff and decreased groundwater discharge related to diversion of instream water flows. Riparian functions are degraded as a result of levees, dikes, road construction, overgrazing, forest and logging practices, and removal of floodplain vegetation. These actions have contributed to bank erosion and the development of a wider channel, resulting in reduced water quality, higher water temperatures, and low summer flows (SRSRB 2011). The Touchet River in this reach has benefited from salmon habitat restoration actions performed in the drainage area, including federal and state programs to improve grazing practices, convert tilled lands to minimum till agriculture, sediment retention basins in problem areas, improved riparian habitat in tributaries, and removal of fish passage barriers on the Walla Walla and lower portions of the Touchet River. The result has been reduced fine sediment loads, reduced streambed embeddedness, and improvements in riparian habitat and water temperature; however, until floodplain and riparian cover matures and additional restoration actions are completed, the damaged stream banks, low habitat diversity, and disturbed habitat structures will continue to generate fine sediment and elevate stream temperatures. **Restoration Actions:** • Implement restoration projects that may include passive (e.g., Conservation Reserve Expanded Program riparian buffers or protected area conservation easements) or active (e.g., riparian plantings) efforts to reduce erosion and increase filtration. • Implement aquatic habitat protection plans, including list of prioritized projects from the Grande Ronde Implementation Area of the Water Resource Inventory Area 32 Watershed Plan (Asotin PUD 2007), e.g., riparian buffer replacement/enhancement. • Reduce riparian and water quality impacts from livestock through expanded use of best management practices (BMPs) (e.g., exclusionary fencing and rotational grazing) for livestock operations within shoreline jurisdiction, particularly in SR 1b and 1d. • Address fish barriers such as improperly screened diversions and inadequate culverts. **Protection Actions** • Protect remaining floodplain habitat from encroachment related to construction of single-family residential units and associated development.
SR 1a: **Level of Existing Function:** Impaired to Partially Functioning **Stressors:** • Armored road along shoreline (right bank south of City of Dayton, left bank west of City of Dayton) • Irrigated and fertilized turf associated with upland golf course • Upland residence with turf landscaping

Touchet River – Reach 1 Columbia County
• Recreation trails (two) to water Runoff from upland development can impact water quality, aquatic forage, and habitat functions. Upland development and trails may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species, as well as water quality, including temperature. Recreational use has minor impacts to water and may result in reduced or disturbed shoreline vegetation and compacting soils impacting riparian functions. **Potential Restoration Opportunities:** Implement the actions identified above. **Potential Protection Opportunities:** Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.
SR 1b: **Level of Existing Function:** Impaired **Stressors:** • Small segment of armored road along shoreline • Outfall transporting treated wastewater from plant • Grazing trails • Fertilized agricultural fields • Road and utility crossings • Armored railroad corridor (small segment) • Rural residential development with turf landscaping Runoff from upland development can impact water quality, aquatic forage, and habitat functions. Upland development and trails may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species. Livestock activity may cause reduced or disturbed shoreline vegetation, or allow establishment of invasive species, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors. Agricultural use primarily affects aquatic functions of forage and rearing through impacts to water quality and quantity through withdrawals. It may affect water quality due to nutrient inputs from agricultural runoff. **Potential Restoration Opportunities:** Implement the actions identified above. **Potential Protection Opportunities:** Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.
SR 1c: **Level of Existing Function: Partially** Functioning **Stressors:** • Gravel mining (but outside of jurisdiction buffer) • Agricultural fields • Highway 12 and railroad crossings

Touchet River – Reach 1	**Columbia County**

Runoff from upland development impacts water quality, aquatic forage, and habitat functions. Upland development and trails may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

SR 1d:

Level of Existing Function: Partially Functioning

Stressors:

- Agricultural fields
- Rural residential development
- Gallaher and Hogeye Hollow Road crossings

Runoff from upland development impacts water quality, aquatic forage, and habitat functions. Upland development and trails may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

South Fork Touchet River Columbia County

Reach Description: The South Fork Touchet River runs from SW ¼ of T7N_R39E_S06 to the T10N_R39E_S32, just south of the Dayton city limits.

Shoreline Jurisdiction: 855 acres, 16.2 miles

Source: USDA

Subreaches (SR); see Map E-3

SR 1a: Begins at the SW ¼ of T7N_R39E_S06 and ends at the SE ¼ of T8N_R39E_S05; 412 acres, 7.8 miles

SR 1b: Begins at the SE ¼ of T8N_R39E_S05 and ends at the SE ¼ of T9N_R39E_S16; 225 acres, 4.2 miles

SR 1c: Begins at the SE ¼ of T9N_R39E_S16 and ends at the center of T10N_R39E_S32, just south of the Dayton city limits; 218 acres, 4.2 miles

CHARACTERISTICS

Ownership:

SR 1a: Ownership is 60% public (Washington Department of Fish & Wildlife – Rainwater Wildlife Area) and 40% private.

SR 1b: Ownership is 3% public (Washington State Department of Natural Resources [DNR]) and 97% private.

SR 1c: Ownership is 15% DNR and 85% private.

Land Use/Current SMP:

Current land use designation:

- Land uses have not been designated. Existing uses in the reach are agriculture and wildlife area.

South Fork Touchet River	**Columbia County**

Current Zoning designation:

- Zoning is AR-1 Agricultural-Residential.

Current SMP environment designation:

- The current designation is Rural.

Existing Land Cover/Development:

The South Fork Touchet River is fairly developed with a mixture of private residences and farms. Ground that is too steep to farm is used as for grazing and open space, and much of it is forested. South Touchet Road runs the length of the reach, providing some shoreline visual access.

Geomorphic Character:

Description: In the lower reach, the South Fork Touchet River flows within a wide alluvial valley bounded by valley walls that consist of Grande Ronde Basalt with a minor amount of loess deposits exposed along its banks near the Touchet River. The valley is low gradient and unconfined. The South Fork Touchet River consists mostly of a single-thread channel, but multiple flow paths are present in wider, unconfined areas. The low lying channel areas consist mostly of alluvium. The overall valley width narrows and steepens in the upstream direction with valley margins comprising Grande Ronde Basalt.

Channel Migration Zone Characterization: The potential for channel migration exists along the South Fork Touchet River. The lower section of the river flows within a moderately wide valley comprising alluvium throughout the channel and floodplain, with only limited infrastructure present to hinder channel migration. The channel migration zone narrows upstream as the overall valley width narrows and channel is more confined in its bedrock valley.

Hardened Banks: No artificial hardened banks appear to exist along the South Fork Touchet River.

Flooding and Geological Hazards:

Flooding: FEMA floodplains are mapped throughout the reach, and floodways are delineated in SR 1c. Floodplains are relatively narrow in SR 1a and 1b and relatively wide in SR 1c. Delineated floodways in this reach take up the full floodplain width except for the most upstream portion of the delineated floodway area.

Geological Hazards: Sections of severely erodible soils can be found throughout this reach. Most of Reach 1 has moderate to high liquefaction susceptibility. Landslide hazard areas exist in this reach where slopes are steeper than 15% over underlying Columbia River Basalts, alluvial deposits, and loess.

South Fork Touchet River	Columbia County

Existing Public Access:

SR 1a: Rainwater Wildlife Area; visual access along South Touchet Road

SR 1b: Visual access along South Touchet Road

SR 1c: DNR

Identified Public Access Improvements: None identified.

Public Access Opportunities:

Opportunities are limited in most areas due to private property, except for along South Touchet Road.

ECOLOGICAL CONDITIONS

Water Quantity and Sediment:

An Ecology gage (Gage No. 32L070) was previously active from 2003 to 2009 in SR 1c. This reach is generally a losing reach, so surface water is lost due groundwater within the reach. The mean annual flow for Gage No. 32L070 for 2004 to 2008 is 39 cfs.

Sediment is likely to transport efficiently due to relatively steep gradients and vegetated cover in SR 1a. As gradients decrease in SR 1b and 1c, sediment may start to accumulate in these areas. This reach was found to be a response sediment regime. There is likely landslide potential in SR 1b that may cause sediment input during extreme events.

Water Quality:

This reach requires a TDML for dissolved oxygen in SR 1c and currently has a TMDL in place for temperature in SR 1a and 1c. This reach is also a water of concern for pH in SR 1c and for temperature in SR 1a and SR 1b. High temperatures are caused by a lack of riparian shade and a lack of cobble and gravels compared to other reaches. System potential shade is required in order to reduce stream temperatures, but the lack of cobble and gravels will likely not allow this reach to achieve temperatures found in other reaches within the Touchet River basin.

Habitat Characteristics and PHS Presence:

This reach may provide habitat for elk, mule deer, and white tailed deer, as identified on PHS maps, and other species identified in Table 28 of the IAC Report. The South Fork Touchet River supports ESA-listed bull trout and Touchet River summer steelhead. The Touchet River in Columbia County also supports hatchery steelhead, redband trout, mountain whitefish, pacific lamprey, sculpin, and smallmouth bass. Spring Chinook have been sporadically observed entering the lower Touchet River (within Walla Walla County) since 1997 (Amonette 2009). However, no information was located reporting Chinook within the South Fork Touchet River. Bull trout of all life stages may use the Touchet River and its tributaries; bull trout may have migrated between the Touchet River and Walla Walla systems prior to the arrival of European settlers (SRSRB 2011).

The abundance and productivity of ESA-listed salmonids in the Touchet River is limited by habitat factors

South Fork Touchet River	Columbia County

such as habitat diversity (lack of large woody debris [LWD]), sedimentation, and temperature. The major limiting factor for steelhead in the North Fork Touchet River is flow, and although not mentioned in the subbasin plan, the EDT analysis indicated that various combinations of these same factors, plus channel stability, are also primary limiting factors for steelhead in the South Fork Touchet River (SRSRB 2011).

Soils in this reach are characterized as severely erodible, and the South Fork Touchet River has significant bank erosion issues (Kuttel 2001). Riparian vegetation within the Touchet basin, including along the South Fork Touchet River in this reach has limited tree cover; riparian zones have been reduced by about 60% from historical conditions (WWBWC 2004). Damaged stream banks, low habitat diversity, and key habitats, although improved through restoration actions, will continue to contribute fine sediment (particularly though SR 1b and 1c) and elevate stream temperatures until floodplains and riparian cover matures.

SR 1a: South Fork Touchet River in SR 1a is a small creek that runs through a forested valley characterized by deciduous trees, shrubs, and riparian species. The upper slopes of the bluffs facing east have less contiguous forest and shrub cover due to lack of water. The open areas on these east-facing slopes support grassland communities. The west-facing slopes have more continuous forest cover. South Touchet Road, within SR 1a, is generally an informal access road that runs the entire length of the SR 1a, inside and outside of the 200-foot shoreline boundary. SR 1a has accumulated LWD and generally provides very high quality in-stream fish habitat.

Along the eastern side of the floodplain in the valley, approximately 4 miles downstream of the start of SR 1a, are a number of structures, which represent the only development within this subreach.

SR 1b: This subreach begins near an inhabited area that marks a transition to rural-density development within the floodplain, where riparian forest has been cleared for residential and agricultural purposes. Outside of the residential and developed land, the riparian and upland habitat conditions in SR 1b are similar to those described for SR 1a. The in-stream habitat conditions appear to be consistent with upstream reaches. There are two private crossings of the South Fork Touchet River and several locations where livestock may have access to the river.

SR 1c: This subreach flows through lower elevations, and the riparian habitat is much more constrained through agricultural lands in this subreach. There is a significant amount of land in agricultural use within the shoreline boundary of SR 1c. However, there is a relatively consistent band of riparian tree cover alongside both banks of the river SR 1c, providing an intact corridor, with some exceptions related to the three road crossings within SR 1c. The area around the juncture of the South Fork Touchet River with the North Fork Touchet River at the end of this subreach has been disturbed and is characterized by a number of downed trees. The grasslands appear to be dominated by invasive species

ECOLOGICAL FUNCTIONS ANALYSIS

Riparian areas of Reach 1 were determined to be partially functioning to impaired (SRSRB 2011).

Aquatic habitat function in the Touchet River is affected by reduced surface water runoff and decreased groundwater discharge related to diversion of instream water flows. Riparian functions are degraded as a result of levees, dikes, road construction, overgrazing, forest and logging practices, and removal of

South Fork Touchet River	Columbia County

floodplain vegetation. These actions have contributed to bank erosion and the development of a wider channel, resulting in reduced water quality, higher water temperatures, and low summer flows (SRSRB 2011).

The Touchet River in this reach has benefited from salmon habitat restoration actions performed in the drainage area, including federal and state programs to improve grazing practices, convert tilled lands to minimum till agriculture, sediment retention basins in problem areas, improved riparian habitat in tributaries, and removal of fish passage barriers on the Walla Walla and lower portions of the Touchet River. The result has been reduced fine sediment loads, reduced streambed embeddedness, and improvements in riparian habitat and water temperature; however, until floodplain and riparian cover matures and additional restoration actions are completed, the damaged stream banks, low habitat diversity, and disturbed habitat structures will continue to generate fine sediment and elevate stream temperatures. Within the South Fork Touchet River, channel and floodplain function is particularly impacted by channel confinement caused by formal and informal levees and channel training (SRSRB 2011).

Restoration Actions:

- Implement restoration projects that may include passive (e.g., Conservation Reserve Expanded Program riparian buffers or protected area conservation easements) or active (e.g., riparian plantings) efforts to reduce erosion and increase filtration.
- Implement aquatic habitat protection plans, particularly in SR 1a.
- Implement restoration projects that include efforts to increase stream habitat diversity and key habitat such as channel reconfiguration and LWD placement actions.
- Reduce riparian and water quality impacts from livestock through expanded use of BMPs (e.g., exclusionary fencing and rotational grazing) for livestock operations within shoreline jurisdiction, particularly SR 1c.

Protection Actions

- Protect remaining floodplain habitat from encroachment related to construction of single-family residential units and associated development

SR 1a:

Level of Existing Function: Partially Functioning

Stressors:

- Touchet Road within jurisdiction buffer and one crossing
- Residential and/or campsite development (but very limited)

Runoff from roads and associated development impacts water quality, aquatic forage, and habitat functions. Upland development and campsites or trails may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the

South Fork Touchet River Columbia County
Eastern Washington Stormwater Manual and protect intact riparian buffers.
SR 1b: **Level of Existing Function:** Partially Functioning **Stressors:** • Touchet Road though mostly outside of shoreline jurisdiction buffer • Rural residential development • Retaining pond possibly associated with septic drainage field Runoff from roads and upland development impacts water quality, aquatic forage, and habitat functions. Upland residential development and trails may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species. **Potential Restoration Opportunities:** Implement the actions identified above. **Potential Protection Opportunities:** Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.
SR 1c: **Level of Existing Function:** Impaired **Stressors:** • Touchet Road within jurisdiction buffer and three road crossings • Agricultural fields and development Runoff from roads and agricultural activities impacts water quality, aquatic forage, and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species. **Potential Restoration Opportunities:** Implement the actions identified above. **Potential Protection Opportunities:** Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

Wolf Fork Touchet River **Columbia County**

Reach Description: The Wolf Fork Touchet River runs from SW ¼ of T8N_R40E_S07 to the T9N_R39E_S11.

Shoreline Jurisdiction: 393 acres 7.7 miles

Source: USDA

Subreaches (SR); see Map E-4

SR 1a: Begins at the SW ¼ of T8N_R40E_S07 and ends at the NW ¼ of T9N_R39E_S25; 191 acres, 3.7 miles

SR 1b: Begins at the NW ¼ of T9N_R39E_S25 and ends at the NW ¼ of T9N_R39E_S14; 168 acres, 3.3 miles

SR 1c: Begins at the NW ¼ of T9N_R39E_S14 and ends at the center of T9N_R39E_S11; 34 Acres, 0.7 mile

CHARACTERISTICS

Ownership:

The majority of land within this reach is in private ownership.

SR 1a: Ownership is 30% DNR and 70% private.

SR 1b: Ownership is 100% private.

SR 1c: Ownership is 100% private.

Land Use/Current SMP:

Current land use designation:

- Land uses have not been designated. Existing use in the reach is agriculture.

Wolf Fork Touchet River	**Columbia County**

Current zoning designation:

- SR 1a: The current zoning is AR-2 Agricultural-Residential.
- SR 1b: The current zoning is AR-2 Agricultural-Residential.
- SR 1c: The current zoning is AR-1 Agricultural-Residential.

Current SMP environment designation:

- The current designation is Rural.

Existing Land Cover/Development:

The Wolf Fork Touchet River is fairly developed with a mixture of private residences and farms. Ground that is too steep to farm is used as grazing area and/or open space, and much of it is forested.

Geomorphic Character:

Description: The Wolf Fork Touchet River is in a narrow alluvial valley bounded by valley margins that consist mainly of Grande Ronde Basalt. Loess deposits are present near the confluence with the North Fork Touchet River. The river consists mostly of a single-thread channel. The low lying channel areas consist mostly of alluvium. The overall valley width narrows and steepens in the upstream direction with valley margins consisting of Grande Ronde Basalt.

Channel Migration Zone Characterization: The potential for channel migration exists along the Wolf Fork Touchet River. The river flows within a valley that consists of alluvium throughout the channel and floodplain with limited infrastructure, which limits channel migration. Overall, the channel migration zone narrows upstream as the valley width narrows, and the channel is confined in its bedrock valley.

Hardened Banks: No artificial hardened banks appear to exist along the Wolf Fork Touchet River.

Flooding and Geological Hazards:

Flooding: FEMA floodplains are mapped for the entire reach. Floodplain widths are relatively narrow in SR 1a and relatively wide in SR 1b and 1c.

Geological Hazards: Sections of severely erodible soils can be found throughout SR 1a and 1b. Most of Reach 1 has moderate to high liquefaction susceptibility. Landslide hazard areas exist in this reach where slopes are steeper than 15% over underlying Columbia River Basalts, alluvial deposits, and loess.

Existing Public Access:

SR 1a: DNR

SR 1b: No public access available

SR 1c: No public access available

Identified Public Access Improvements: None identified.

Public Access Opportunities: Opportunities are limited in most areas due to private property.

Wolf Fork Touchet River	**Columbia County**
ECOLOGICAL CONDITIONS	

Water Quantity and Sediment:

An Ecology gage (Gage No. 32K070) was active from 2003 to 2009. Robinson Fork Touchet River is a major tributary that enters this reach at SR 1b. Losses to groundwater have been noted in this reach. The mean annual flow for Gage No. 32K070 for 2004-2008 is 43 cfs.

Sediment is likely to transport relatively efficiently in SR 1a and may begin accumulation in SR 1b and 1c due to reducing gradient and widening floodplain areas. However, the entire reach was determined to be a response reach in the sediment regime. SR 1b and 1c are less vegetated than SR 1a and may have the potential for sediment input during extreme runoff events.

Water Quality:

This reach has a TMDL in place for temperature in SR 1a. This reach is relatively cooler than other basin reaches, likely due to its cobble substrate allowing for intergravel mixing and contact with springs and groundwater. Summer flow reduction, spring input reduction, or fine sediment increase may cause this reach to become more impaired for temperature.

Habitat Characteristics and PHS Presence:

The Wolf Fork Touchet River may provide habitat for elk, mule deer, and white tailed deer, as identified on PHS maps. This reach may also support other species as described in Table 28 of the IAC Report. The Wolf Fork Touchet River supports ESA-listed bull trout and Touchet River summer steelhead. The Touchet River in Columbia County also supports hatchery steelhead, redband trout, mountain whitefish, pacific lamprey, sculpin, and smallmouth bass, and these fish may be found in the Wolf Fork Touchet River subreach. Spring Chinook have been sporadically observed entering the lower Touchet River (within Walla Walla County) since 1997 (Amonette 2009). However, no information was located reporting Chinook within the Wolf Fork Touchet River. Bull trout of all life stages may use the Touchet River and its tributaries; bull trout may have migrated between the Touchet and Walla Walla systems prior to the arrival of European settlers (SRSRB 2011).

The abundance and productivity of ESA-listed salmonids in the Wolf Fork Touchet River is limited by habitat factors such as habitat diversity (lack of LWD), sedimentation, and temperature. The major limiting factor for steelhead in the North Fork Touchet River is flow, and although not mentioned in the subbasin plan, the EDT analysis indicated that various combinations of these same factors, plus channel stability, are also primary limiting factors for steelhead in the Wolf Fork Touchet River (SRSRB 2011).

Soils in this reach are characterized as severely erodible, particularly SR 1a and 1b, which creates significant bank erosion issues (Kuttel 2001). Riparian vegetation within the Touchet basin, including along the Wolf Fork Touchet River in this reach has limited tree cover; riparian zones have been reduced by about 60% from historical conditions (WWBWC 2004). Damaged stream banks, low habitat diversity, and key habitats, although improved through restoration actions, will continue to contribute fine sediment (particularly though SR 1b and 1c) and elevate stream temperatures until floodplains and riparian cover matures.

SR 1a: The Wolf Fork Touchet River in SR 1a is a small creek that runs through a forested valley

Wolf Fork Touchet River	**Columbia County**

characterized by deciduous trees, shrubs, and riparian species. The upper slopes of the east-facing bluffs have less contiguous forest and shrub cover due to lack of water. The open areas on these east-facing slopes support grassland communities. The west-facing slopes have more continuous forest cover. Wolf Fork Road within SR 1a is generally an informal access road that runs the entire length of SR 1a, inside and outside of the 200-foot shoreline boundary, crossing the creek several times. SR 1a has accumulated LWD and generally provides some areas of intact riparian cover and good in-stream fish habitat. There are residences and farms scattered near the creek throughout SR 1a. There are a few areas where the riparian vegetation has been disturbed by road crossings.

SR 1b: This subreach flows through lower elevation habitat, and because the area is less steep than SR 1a, there is more agricultural development along SR 1b. The channel is braided throughout portions of SR 1b with grassy vegetation appearing on the gravel bars between the channels.

SR 1c: The riparian area around the confluence with the North Fork Touchet River exhibits extensive forested area with wetlands among the braided channels. In-stream habitat in SR 1c is generally good quality, with a diversity of substrates, LWD, and varying velocities.

ECOLOGICAL FUNCTIONS ANALYSIS

Riparian areas of this reach were determined to range from functioning to not properly functioning (SRSRB 2011).

The Wolf Fork Touchet River habitat function is affected by channel stability, reduced habitat diversity, key habitat, and sediment load. Encroachment on the floodplain—particularly in SR 1b and SR 1c caused by the construction of single-family dwellings and the activities associated with the encroachment—negatively affects floodplain and riparian function. Reduced stream channel complexity, confinement and floodplain function caused by past channel straightening (SR 1b and 1c), incision, loss of historical riparian forests (SR 1a) and loss of LWD source (SR 1a) has reduced key habitats such as rearing and wintering habitat. Stream temperature in SR 1c (approaching the City of Dayton) may also be elevated due to reduced riparian cover, confinement, and poor floodplain and channel function.

The Wolf Fork Touchet River in this reach has benefited from some salmon habitat restoration actions performed in the drainage area, including federal and state programs to improve grazing practices, convert tilled lands to minimum till agriculture, sediment retention basins in problem areas, improved riparian habitat in tributaries, and removal of fish passage barriers on the Walla Walla and lower portions of the Touchet River. The results include reductions in fine sediment loads, reduced streambed embeddedness, and improvements in riparian habitat and water temperature; however, until floodplain and riparian cover matures and additional restoration actions are completed, the damaged stream banks, low habitat diversity, and disturbed habitat structures will continue to generate fine sediment and elevate stream temperatures (SRSRB 2011).

Restoration Actions:

- Implement restoration projects that may include passive (e.g., Conservation Reserve Expanded Program riparian buffers or protected area conservation easements) or active efforts (e.g., riparian plantings) to reduce erosion and increase filtration, particularly in SR 1b and 1c.

Wolf Fork Touchet River	**Columbia County**

- Implement aquatic habitat protection plans, particularly in SR 1a.
- Implement restoration projects that include efforts to increase stream habitat diversity and key habitat such as channel reconfiguration and LWD placement actions.
- Reduce riparian and water quality impacts from livestock through expanded use of BMPs (e.g., exclusionary fencing and rotational grazing) for livestock operations within shoreline jurisdiction, particularly in SR 1b and 1c.

Protection Actions

- Protect remaining floodplain habitat from encroachment related to construction of single-family residential units and associated development.

SR 1a:

Level of Existing Function: Partially Functioning

Stressors:

- Wolf Fork Road within jurisdiction buffer and three crossings
- Rural residential development (but fairly limited)

Runoff from roads and residential development impacts water quality, aquatic forage, and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

SR 1b:

Level of Existing Function: Partially Functioning to Impaired

Stressors:

- Wolf Fork Road and Robinson Fork Road within shoreline jurisdiction and two crossings
- Upland agricultural fields
- Rural residential development

Runoff from roads and agricultural activities impacts water quality, aquatic forage, and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

Wolf Fork Touchet River	**Columbia County**

SR 1c:

Level of Existing Function: Functioning

Stressors:

- Limited upland rural development (outside of shoreline buffer)

Runoff from development activities impacts water quality, aquatic forage, and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

North Fork Touchet River	**Columbia County**

Reach Description: The North Fork Touchet River runs from NE ¼ of T8N_R40E_S28 to T9N_R39E_S11.

Shoreline Jurisdiction: 587 acres 11.3 miles

Source: USDA

Subreaches (SR); see Map E-5 and E-6

SR 1a: Begins at the NE ¼ of T8N_R40E_S28 and ends at the NW ¼ of T8N_R40E_S16; 118 acres, 2.3 miles

SR 1b: Begins at the NW ¼ of T8N_R40E_S16 and ends at the NE ¼ of T9N_R40E_S30; 229 acres, 4.4 miles

SR 1c: Begins at the NE ¼ of T9N_R40E_S30 and ends at the center of T9N_R39E_S11; 240 acres, 4.6 miles

SR 1d: Begins at the center of T9N_R39E_S11 and ends at the confluence with the South Fork of the Touchet River: X acres, X miles

CHARACTERISTICS

Ownership:

The majority of the land in this reach is in private ownership.

SR 1a: Ownership is 50% DNR and 50% private.

SR 1b: Ownership is 100% private.

SR 1c: Ownership is 100% private.

SR 1d: Ownership is 100% private.

North Fork Touchet River	**Columbia County**

Land Use/Current SMP:

Current land use designation:

- Land uses have not been designated. Existing use in the reach is agriculture.

Current zoning designation:

- The zoning is AR-2 Agricultural-Residential.

Current SMP environment designation:

- The current designation is Rural.

Existing Land Cover/Development:

The North Fork Touchet River is fairly developed with a mixture of private residences and farms. Ground that is too steep to farm is grazed and/or in open space, and much of it is forested. North Touchet Road runs the length of the reach providing access.

Geomorphic Character:

Description: In the lower reach, the North Fork Touchet River flows within a wide alluvial valley bounded by valley walls mostly comprising loess deposits and Grande Ronde Basalt. The valley is low gradient and unconfined. The river consists mostly of a single-thread channel, but multiple flow paths are present in wider, unconfined areas. The low lying channel areas consist mostly of alluvium. The overall valley width narrows and steepens in the upstream direction, with valley margins comprising Grande Ronde Basalt.

Channel Migration Zone Characterization: The potential for channel migration exists along the North Fork Touchet River. The lower section of the river flows within a moderately wide valley comprising alluvium throughout the channel and floodplain with only limited infrastructure present to hinder channel migration. The channel migration zone narrows upstream as the overall valley width narrows and channel is confined in its bedrock valley.

Hardened Banks: Approximately 1,700 linear feet of artificial hardened banks exists along the main channel.

Flooding and Geological Hazards:

Flooding: FEMA floodplains are mapped for the entire reach. Floodways are delineated in a portion of SR 1d. Floodplain widths are relatively narrow in SR 1a and 1b and relatively wide in SR 1c and 1d. Where floodways are delineated, floodways are relatively wide but do not take up the entire floodplain.

Geological Hazards: Sections of severely erodible soils can be found throughout this reach. Most of Reach 1 has moderate to high liquefaction susceptibility. Landslide hazard areas exist in this reach where slopes are steeper than 15% over underlying Columbia River Basalts and alluvial deposits.

North Fork Touchet River	Columbia County

Existing Public Access:

SR 1a: Mostly DNR with the rest in private property.

Identified Public Access Improvements: None identified.

Public Access Opportunities: Opportunities are limited in most areas due to private property.

ECOLOGICAL CONDITIONS

Water Quantity and Sediment:

An Ecology gage (Gage No. 32E050) is active in SR 1d and has flow data since 2003. Ecology also has historical Gage No. 32E150 located in SR 1a that has a period of record from 2003 to 2009. Losses to groundwater have been found in upper areas of the reach (SR 1a – 1c). Major tributaries entering this reach include Wolf Fork Touchet River and Jim Creek in SR 1c and Lewis Creek in SR 1b. Agricultural activity in SR 1d may cause impacts to water quantity. The mean annual flow for Gage No. 32E150 for 2003-2009 is 47 cfs, and the peak flow recorded is 489 cfs.

Sediment is likely able to move efficiently in SR 1a and 1b due to relatively steep gradients and narrow floodplains, but may begin to accumulate in SR 1c and 1d in lower valley gradients and wider floodplains. Less vegetative cover in SR 1b – 1d may cause an increase in sediment input during extreme runoff events. Agriculture activity in SR 1d may also impact sediment input.

Water Quality:

This reach has a TMDL in place for temperature in SR 1a and 1c. It is also a water of concern for temperature in SR 1b and for dissolved oxygen in SR 1c. Agricultural activities in SR 1d may impact water quality.

Habitat Characteristics and PHS Presence:

The North Fork Touchet River may provide habitat for elk, mule deer, and white tailed deer, as identified on PHS maps. This reach of the river may support other species as described in Table 28 of the IAC Report. The North Fork Touchet River supports ESA-listed bull trout and Touchet River summer steelhead. The Touchet River in Columbia County also supports hatchery steelhead, redband trout, mountain whitefish, pacific lamprey, sculpin, and smallmouth bass, and these fish may be found in the North Fork Touchet River subreach. Spring Chinook have been sporadically observed entering the lower Touchet River (within Walla Walla County) since 1997 (Amonette 2009). However, no information was located reporting Chinook within the North Fork Touchet River. Bull trout of all life stages may use the Touchet River and its tributaries; bull trout may have migrated between the Touchet and Walla Walla systems prior to the arrival of European settlers (SRSRB 2011).

The abundance and productivity of ESA-listed salmonids in the North Fork Touchet River is limited by habitat factors such as habitat diversity (lack of LWD), sedimentation, and temperature. The major limiting factor for steelhead in the North Fork Touchet River is flow (SRSRB 2011).

Some soils in this reach are characterized as severely erodible, which contributes to bank erosion issues

North Fork Touchet River	Columbia County

(Kuttel 2001). Riparian vegetation within the Touchet basin, including along the North Fork Touchet River has limited tree cover; riparian zones have been reduced by about 60% from historical conditions (WWBWC 2004). Damaged stream banks, low habitat diversity, and key habitats, although improved through restoration actions, will continue to contribute fine sediment (particularly though SR 1b – SR 1d) and elevate stream temperatures until floodplains and riparian cover matures.

SR 1a: North Fork Touchet River in this subreach is a small creek that runs through a forested valley characterized by deciduous trees, shrubs, and riparian species. The upper slopes of the east-facing bluffs have less contiguous forest and shrub cover due to water availability. The open areas on these east-facing slopes support grassland communities. The west-facing slopes have more continuous forest cover. North Touchet Road within SR 1a is generally an informal access road that runs the entire length of SR 1a, inside and outside of the 200-foot shoreline boundary. The creek in SR 1a has accumulated LWD and generally provides some in-stream fish habitat complexity. There is a minor amount of development within SR 1a, consisting of scattered residential areas. Near the end of this subreach is a stretch of riparian habitat with dead stands of trees, leaving no riparian cover along the river.

SR 1b: The riparian zone in this subreach is mostly forested along both sides of the river, with residential parcels on the eastern side, between the creek and North Touchet Road. There are some private crossings of the river for parcels on the opposite side. This subreach includes a few ponds and one larger impoundment. Near the end of SR 1b, the creek is constrained by the slopes to the east and residential and agricultural development to the west.

SR 1c: The riparian vegetation becomes less continuous in this subreach due to natural transition from higher elevation forested systems to a wider floodplain within the valley approaching Wolf Fork Touchet River. There is significant agricultural development adjacent to SR 1c, which does constrain the riparian vegetation extent. There are additional constraints related to the adjacent North Touchet Road.

SR 1d: This subreach runs through predominantly agricultural areas. The agricultural land use generally restricts the development of riparian habitat aside from small strips along each bank of the river. There are some small areas where the developed lands do not encroach so closely, and in these areas, less disturbed wetland and riparian habitat conditions exist. Riparian vegetation includes deciduous trees, shrubs, and grasses. Agricultural crops include orchards, pasture, and grains.

ECOLOGICAL FUNCTIONS ANALYSIS

Riparian areas of North Fork Touchet River were determined to be generally impaired to partially functioning (SRSRB 2011).

The ability for the North Fork Touchet River habitat to achieve full function is affected by channel stability, reduced habitat diversity, key habitat features (such as pools), and sediment load. Encroachment on the floodplain—particularly in SR 1b and SR 1c caused by the construction of single-family dwelling and the activities associated with the encroachment—negatively affects floodplain and riparian function. Reduced stream channel complexity, confinement, and floodplain function caused by past channel straightening (SR 1b – 1d), incision, loss of historical riparian forests (SR 1a), and loss of LWD source (SR 1a) has reduced key habitats such as rearing and wintering habitat. Stream temperature in the North Fork Touchet River

North Fork Touchet River	**Columbia County**

approaching the City of Dayton may also be elevated due to reduced riparian cover, confinement, and poor floodplain and channel function.

The North Fork Touchet River in this reach has benefited from some salmon habitat restoration actions performed in the drainage area, including federal and state programs to improve grazing practices, convert tilled lands to minimum till agriculture, sediment retention basins in problem areas, improved riparian habitat in tributaries, and removal of fish passage barriers on the Walla Walla and lower portions of the Touchet River. The results include reductions in fine sediment loads, reduced streambed embeddedness, and improvements in riparian habitat and water temperature; however, until floodplain and riparian cover matures and additional restoration actions are completed, the damaged stream banks, low habitat diversity, and disturbed habitat structures will continue to generate fine sediment and elevate stream temperatures (SRSRB 2011).

Restoration Actions:

- Implement restoration projects that may include passive (e.g., Conservation Reserve Expanded Program riparian buffers or protected area conservation easements) or active efforts (e.g., riparian plantings) to reduce erosion and increase filtration, particularly in SR 1b – 1d.
- Implement aquatic habitat protection plans, particularly in SR 1a.
- Implement restoration projects that include efforts to increase stream habitat diversity and key habitat such as channel reconfiguration and LWD placement actions.
- Reduce riparian and water quality impacts from livestock through expanded use of BMPs (e.g., exclusionary fencing and rotational grazing) for livestock operations within shoreline jurisdiction, particularly in SR 1b – 1d.

Protection Actions:

- Protect remaining floodplain habitat from encroachment related to construction of single-family residential units and associated development

SR 1a:

Level of Existing Function: Partially Functioning

Stressors:

- North Touchet Road within jurisdiction buffer
- Residential and/or campsite development (but fairly limited)

Runoff from roads and agricultural activities impacts water quality, aquatic forage, and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

North Fork Touchet River	Columbia County

SR 1b:

Level of Existing Function: Partially Functioning

Stressors:

- North Touchet Road within jurisdiction buffer and four crossings
- Rural residential development

Runoff from roads and agricultural activities impacts water quality and in turn impacts aquatic forage and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

SR 1c:

Level of Existing Function: Partially Functioning to Impaired

Stressors:

- North Touchet and Wolf Fork Road within jurisdiction buffer and one crossing
- Rural residential development
- Agricultural fields

Runoff from roads, residential development, and agricultural activities impacts water quality, aquatic forage, and habitat functions. Upland residential development and agricultural use may impact continuity of riparian habitats and riparian functions such as migratory corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.

SR 1d:

Level of Existing Function: Partially Functioning to Impaired

Stressors:

- Armored road along shoreline (right bank south of City of Dayton, left bank west of City of Dayton)
- Irrigated and fertilized turf associated with upland golf course
- Upland residence with turf landscaping
- Recreation trails (two) to water

Runoff from roads, residential development, recreational development, and upstream agricultural activities impacts water quality, aquatic forage, and habitat functions. Upland residential development and recreational use may impact continuity of riparian habitats and riparian functions such as migratory

North Fork Touchet River	Columbia County

corridors for aquatic and terrestrial species.

Potential Restoration Opportunities: Implement the actions identified above.

Potential Protection Opportunities: Implement or retrofit stormwater controls consistent with the Eastern Washington Stormwater Manual and protect intact riparian buffers.