Supporting Documentation for Scott River EDT Model Application

Appendices

Appendix A

Habitat Survival Factors

Appendix Table A. Habitat Survival Factors.

Factor	Definition
Channel stability	The effect of stream channel stability (within reach) on the relative survival or performance of the focus species; the extent of channel stability is with respect to its streambed, banks, and its channel shape and location.
Chemicals	The effect of toxic substances or toxic conditions on the relative survival or performance of the focus species. Substances include chemicals and heavy metals. Toxic conditions include low pH.
Competition (with hatchery fish)	The effect of competition with hatchery produced animals on the relative survival or performance of the focus species; competition might be for food or space within the stream reach.
Competition (with other species)	The effect of competition with other species on the relative survival or performance of the focus species; competition might be for food or space.
Flow	The effect of the amount of stream flow, or the pattern and extent of flow fluctuations, within the stream reach on the relative survival or performance of the focus species. Effects of flow reductions or dewatering due to water withdrawals are to be included as part of this attribute.
Food	The effect of the amount, diversity, and availability of food that can support the focus species on the its relative survival or performance.
Habitat diversity	The effect of the extent of habitat complexity within a stream reach on the relative survival or performance of the focus species.
Harassment	The effect of harassment, poaching, or non-directed harvest (i.e., as can occur through hook and release) on the relative survival or performance of the focus species.
Key habitat	The relative quantity of the primary habitat type(s) utilized by the focus species during a life stage; quantity is expressed as percent of wetted surface area of the stream channel.
Obstructions	The effect of physical structures impeding movement of the focus species on its relative survival or performance within a stream reach; structures include dams and waterfalls.
Oxygen	The effect of the concentration of dissolved oxygen within the stream reach on the relative survival or performance of the focus species.
Pathogens	The effect of pathogens within the stream reach on the relative survival or performance of the focus species. The life stage when infection occurs is when this effect is accounted for.
Predation	The effect of the relative abundance of predator species on the relative survival or performance of the focus species.
Sediment load	The effect of the amount of the amount of fine sediment present in, or passing through, the stream reach on the relative survival or performance of the focus species.
Temperature	The effect of water temperature with the stream reach on the relative survival or performance of the focus species.
Withdrawals (or entrainment)	The effect of entrainment (or injury by screens) at water withdrawal structures within the stream reach on the relative survival or performance of the focus species. This effect does not include dewatering due to water withdrawals, which is covered by the flow attribute.

Appendix B

Level 2 Environmental Attribute Definitions

Appendix Table B. Level 2 Environmental Attribute Definitions.

Code	Attribute	Definition
AccPasGWChan	Passive Accessibility (groundwater channels)	A measure of "passive accessibility" of groundwater channels to juvenile fish. It is expressed in terms of the fraction of days during a month when juvenile fish could be moved (or swept) passively into the habitat.
AccPasPond	Passive Accessibility (Ponds)	A measure of "passive accessibility" of floodplain ponds to juvenile fish. It is expressed in terms of the fraction of days during a month when juvenile fish could be moved (or swept) passively into the habitat.
AccPasWet	Passive Accessibility (wetlands)	A measure of "passive accessibility" of seasonally flooded wetlands to juvenile fish. It is expressed in terms of the fraction of days during a month when juvenile fish could be moved (or swept) passively into the habitat.
AccVolPond	Volitional accessibility (floodplain ponds)	A measure of the degree to which juvenile fish can swim up the outlet channel into a floodplain pond. It is expressed in terms of the fraction of days during a month when juvenile fish can swim into the pond.
Alka	Alkalinity	Alkalinity, or acid neutralizing capacity (ANC), measured as milliequivalents per liter or mg/l of either HCO3 or CaCO3.
BdScour	Bed scour	Average depth of bed scour in salmonid spawning areas (i.e., in pool-tailouts and small cobble-gravel riffles) during the annual peak flow event over approximately a 10-year period. The range of annual scour depth over the period could vary substantially. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et a. (1991): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 5 inch diameter), large cobble (5 to 11.9 inch diameter), boulder (>11.9 inch diameter).
BenComRch	Benthos diversity and production	Measure of the diversity and production of the benthic macroinvertebrate community. Three types of measures are given (choose one): a simple EPT count, Benthic Index of Biological Integrity (B-IBI)—a multimetric approach (Karr and Chu 1999), or a multivariate approach using the BORIS (Benthic evaluation of ORegon RIverS) model (Canale 1999). B-IBI rating definitions from Morley (2000) as modified from Karr et al. (1986). BORIS score definitions based on ODEQ protocols, after Barbour et al. (1994).
ChLngth	Channel length	Length of the primary channel contained with the stream reach -- Note: this attribute will not be given by a categories but rather will be a point estimate. Length of channel is given for the main channel only--multiple channels do not add length.
ComplexSideChan	Side channel complexity	A measure of the complexity of side channels expressed in terms of the length of stream margin ("edge") per square foot of wetted area. The attribute is expressed explicitly in terms of the increase in edge per square foot across all in-channel habitat features that exists because of side channels.
Confine	Confinement - natural	The extent that the valley floodplain of the reach is confined by natural features. It is determined as the ratio between the width of the valley floodplain and the bankful channel width. Note: this attribute addresses the natural (pristine) state of valley confinement only.
ConfineHydro	Confinement - Hydromodifications	The extent that man-made structures within or adjacent to the stream channel constrict flow (as at bridges) or restrict flow access to the stream's floodplain (due to streamside roads, revetments, diking or levees) or the extent that the channel has been ditched or channelized, or has undergone significant streambed degradation due to channel incision/entrenchment (associated with the process called "headcutting"). Flow access to the floodplain can be partially or wholly cutoff due to channel incision. Note: Setback levees are to be treated differently than narrow-channel or riverfront levees--consider the extent of the setback and its effect on flow and bed dynamics and micro-habitat features along the stream margin in reach to arrive at rating conclusion. Reference condition for this attribute is the natural, undeveloped state.
ConnectSideChan	Side channel connectivity	Average percentage of days in month when side channels are completely connected to the primary channel (i.e., proportion of month during which channels carry surface water from divergence to return points). "Connection" implies a depth of at least 4 inches.
DepthGWChan	Mean depth (groundwater channels)	The mean depth in feet of groundwater channels in the vicinity of the reach under consideration.
DepthPond	Mean depth (floodplain ponds)	The mean depth in feet of floodplain ponds in the vicinity of the reach under consideration.
DepthWet	Mean depth (wetlands)	The mean depth in feet of seasonally flooded wetlands in the vicinity of the reach under consideration.
DisOxy	Dissolved oxygen	Average dissolved oxygen within the water column for the specified time interval.

Code	Attribute	Definition
DisOxyGWChan	Dissolved oxygen (groundwater channels)	Monthly mean dissolved oxygen content within the water column for all groundwater channels in the vicinity of the reach under consideration.
DisOxyPond	Dissolved oxygen (floodplain ponds)	Monthly mean dissolved oxygen content within the water column for all floodplain ponds in the vicinity of the reach under consideration.
DisOxyWet	Dissolved oxygen (wetlands)	Monthly mean dissolved oxygen content within the water column for all seasonally flooded wetlands in the vicinity of the reach under consideration.
Emb	Embeddedness	The extent that larger cobbles or gravel are surrounded by or covered by fine sediment, such as sands, silts, and clays. Embeddedness is determined by examining the extent (as an average %) that cobble and gravel particles on the substrate surface are buried by fine sediments. This attribute only applies to riffle and tailout habitat units and only where cobble or gravel substrates occur.
FlwDielVar	Flow - Intra daily (diel) variation	Average diel variation in flow level during a season or month. This attribute is informative for rivers with hydroelectric projects or in heavily urbanized drainages where storm runoff causes rapid changes in flow.
FlwHigh	Flow - change in interannual variability in high flows	The extent of relative change in average peak annual discharge compared to an undisturbed watershed of comparable size, geology, orientation, topography, and geography (or as would have existed in the pristine state). Evidence of change in peak flow can be empirical where sufficiently long data series exists, can be based on indicator metrics (such as TQmean, see Konrad [2000]), or inferred from patterns corresponding to watershed development. Relative change in peak annual discharge here is based on changes in the peak annual flow expected on average once every two years (Q2yr).
FlwIntraAnn	Flow - intra-annual flow pattern	The average extent of intra-annual flow variation during the wet season -- a measure of a stream's "flashiness" during storm runoff. Flashiness is correlated with % total impervious area and road density, but is attenuated as drainage area increases. Evidence for change can be empirically derived using flow data (e.g., using the metric TQmean, see Konrad [2000]), or inferred from patterns corresponding to watershed development.
FlwLow	Flow - changes in interannual variability in low flows	The extent of relative change in average daily flow during the normal low flow period compared to an undisturbed watershed of comparable size, geology, and flow regime (or as would have existed in the pristine state). Evidence of change in low flow can be empirically-based where sufficiently long data series exists, or known through flow regulation practices, or inferred from patterns corresponding to watershed development. Note: low flows are not systematically reduced in relation to watershed development, even in urban streams (Konrad 2000). Factors affecting low flow are often not obvious in many watersheds, except in clear cases of flow diversion and regulation.
FlwRegDecrease	Regulated flow decrease	The month-specific combination of a negative deviation of relative mean monthly flow and the relative variability of mean daily flows for the same month. Deviations of mean flows and flow variabilities are expressed relative to unregulated flows that could be expected under the same set of land use conditions. The metric used to describe the attribute is derived from a Z-score of regulated and unregulated mean monthly flows and a ratio of the Coefficient of Variation (CV) of regulated to unregulated mean daily flows.
FlwRegIncrease	Regulated flow increase	The month-specific combination of a positive deviation of relative mean monthly flow and the relative variability of mean daily flows for the same month. Deviations of mean flows and flow variabilities are expressed relative to unregulated flows that could be expected under the same set of land use conditions. The metric used to describe the attribute is derived from a Z-score of regulated and unregulated mean monthly flows and a ratio of the Coefficient of Variation (CV) of regulated to unregulated mean daily flows.
FnSedi	Fine sediment	Percentage of fine sediment within salmonid spawning substrates, located in pool-tailouts, glides, and small cobble-gravel riffles. Definition of "fine sediment" here depends on the particle size of primary concern in the watershed of interest. In areas where sand size particles are not of major interest, as they are in the Idaho Batholith, the effect of fine sediment on egg to fry survival is primarily associated with particles <1mm (e.g., as measured by particles <0.85 mm). Sand size particles (e.g., <6 mm) can be the principal concern when excessive accumulations occur in the upper stratum of the stream bed (Kondolf 2000). See guidelines on possible benefits accrued due to gravel cleaning by spawning salmonids.
FshComRch	Fish community richness	Measure of the richness of the fish community (no. of fish taxa, i.e., species).
FshComRchGWChan	Fish community richness (groundwater channels)	Measure of the richness of the fish community (no. of fish taxa, i.e., species) within all groundwater channels in the vicinity of the reach under consideration.

Code	Attribute	Definition
FshComRchPond	Fish community richness (floodplain ponds)	Measure of the richness of the fish community (no. of fish taxa, i.e., species) within all floodplain ponds in the vicinity of the reach under consideration.
FshComRchWet	Fish community richness (wetlands)	Measure of the richness of the fish community (no. of fish taxa, i.e., species) within all seasonally flooded wetlands in the vicinity of the reach under consideration.
FshPath	Fish pathogens	The presence of pathogenic organisms (relative abundance and species present) having potential for affecting survival of stream fishes.
FSpIntro	Fish species introductions	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species).
FSpIntroGWChan	Fish species introductions (groundwater channels)	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species) within all groundwater channels in the vicinity of the reach under consideration.
FSpIntroPond	Fish species introductions (floodplain ponds)	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species) within all floodplain ponds in the vicinity of the reach under consideration.
FSpIntroWet	Fish species introductions (wetlands)	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species) within all seasonally flooded wetlands in the vicinity of the reach under consideration.
Grad	Gradient	Average gradient of the main channel of the reach over its entire length. Note: Categorical levels are shown here but values are required to be input as point estimates for each reach.
Harass	Harassment	The relative extent of poaching and/or harassment of fish within the stream reach.
HatFOutp	Hatchery fish outplants	The magnitude of hatchery fish outplants made into the drainage over the past 10 years. Note: Enter specific hatchery release numbers if the data input tool allows. "Drainage" here is defined loosely as being approximately the size that encompasses the spawning distribution of recognized populations in the watershed.
HbBckPls	Habitat type - backwater pools	Percentage of the wetted channel surface area comprising backwater pools.
HbBraid	Habitat type - braid	Proportion of all in-channel wetted area (main channel, side channels and braids) consisting of braids, which are considered to be channels flowing between unstable, unvegetated gravel bars that are submerged at bankfull flow.
HbBvrPnds	Habitat type - beaver ponds	Percentage of the wetted channel surface area comprising beaver ponds. Note: these are pools located in the main or side channels, not part of off-channel habitat.
HbGlide	Habitat type - Glides	Percentage of the wetted channel surface area comprising glides. Note: There is a general lack of consensus regarding the definition of glides (Hawkins et al. 1993), despite a commonly held view that it remains important to recognize a habitat type that is intermediate between pool and riffle. The definition applied here is from the ODFW habitat survey manual (Moore et al. 1997): an area with generally uniform depth and flow with no surface turbulence, generally in reaches of <1% gradient. Glides may have some small scour areas but are distinguished from pools by their overall homogeneity and lack of structure. They are generally deeper than riffles with few major flow obstructions and low habitat complexity.
HbGWChan	Habitat type - wetted area of groundwater channels	The area in acres of groundwater channels. Groundwater channels connect to the main channel or a side channel only at one end at flows less than bankfull. They are usually relict river channels fed by groundwater, though surface flow from higher terraces can also contribute. They can function as overflow channels at some flood stages, and include several subtypes (Ward et al. 1999), including: (1) channels carrying main channel seepage, (2) channels fed by the floodplain aquifer and (3) channels fed by groundwater supplied from adjacent terraces.
HbLrgCbl	Habitat type - large cobble/boulder riffles	Percentage of the wetted channel surface area comprising large cobble/boulder riffles. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et a. (1991): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 5 inch diameter), large cobble (5 to 11.9 inch diameter), boulder (>11.9 inch diameter).
HbOfChFctr	Habitat type - off-channel habitat factor	A multiplier used to estimate the amount of off-channel habitat based on the wetted surface area of the all combined in-channel habitat (e.g., 2.0 = off-channel habitat is 2X in-channel wetted area).
HbPls	Habitat type - primary pools	Percentage of the wetted channel surface area comprising pools, excluding beaver ponds.
HbPlTails	Habitat type - pool tailouts	Percentage of the wetted channel surface area comprising pool tailouts.

Code	Attribute	Definition
HbPond	Habitat type - wetted area of floodplain ponds	The area in acres of floodplain ponds. Floodplain ponds are water-filled depressions, partially or entirely filled with water year-round and that are connected to the main river for all or some period of the year by an outlet channel. To be classified as a floodplain pond, the outlet channel must have a mean depth > 4 inches for a portion of a year (e.g., at least one month, though not necessarily all consecutive days) in most (>50%) years. They are either natural features on the floodplain, representing cut-off oxbows or pools in relict river channels, but they may also be man-made (e.g., floodplain gravel pits). They might be supplied by groundwater or surface water from streams or springs. Ponds that do not meet the criteria for connectivity to the river are either excluded from the analysis or may be included with flooded wetlands. Flooded wetlands often contain ponded areas, either intermittently or perennially filled with water.
HbSideChan	Habitat type – side channel	The mean monthly proportion of the wetted area of all in-channel habitat (main channel, side channels and braids) consisting of side channels. A side channel is an active stream channel separated from the main channel by a vegetated or otherwise stable island (Knighton (1998). The islands tend to be large relative to the size of the channels. Side channels are frequently small watered remnants of the historic river channel within the floodplain. Some side channels carry surface water continuously, from the point of divergence to the point of return, at a given flow, while others become intermittent (are dry at some point(s) between divergence and return) at the same flow (Ward et al. 1999). The frequency of continuous connection to a surface water source can be important in the ecology of various species (Tockner et al. 2000) and is described by Side Channel Connectivity (ConnectSideChan).
HbSmlCbl	Habitat type - small cobble/gravel riffles	Percentage of the wetted channel surface area comprising small cobble/gravel riffles. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et a. (1991): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 5 inch diameter), large cobble (5 to 11.9 inch diameter), boulder (>11.9 inch diameter).
HbWet	Habitat type - wetted area of seasonally flooded wetlands	The area in acres of seasonally flooded wetland. Seasonally flooded wetlands frequently occur on the floodplains of large rivers. Geomorphically, they are often remnants of ancient ponds and river channels which filled with sediment and debris over centuries (Saucier 1994, cited in Henning 2004). Seasonally flooded wetlands are typically flooded during annual high water periods either by broad overbank flows or by backwatering through narrow swales. These wetlands may contain seasonal or perennial ponds that do not meet the criteria for connectivity to the river prescribed for floodplain ponds (see definition for HbPond).
HydroMonth	Hydrograph month	Identifies the position of the month with respect to the magnitude of mean daily flow for the month relative to the high and low flow months of the yearly hydrograph (under unregulated flow). A rating of zero means that the average flow in that month is at or near the average month low flow for the annual hydrograph. Similarly, a rating of four means that the average flow for the month is at or near the average month high flow for the annual hydrograph.
HydroRegimeNatural	Hydrologic regime - natural	The natural flow regime within the reach of interest. Flow regime typically refers to the seasonal pattern of flow over a year; here it is inferred by identification of flow sources. This applies to an unregulated river or to the pre-regulation state of a regulated river.
HydroRegimeReg	Hydrologic regime - regulated	The change in the natural hydrograph caused by the operation of flow regulation facilities (e.g., hydroelectric, flood storage, domestic water supply, recreation, or irrigation supply) in a watershed. Definition does not take into account daily flow fluctuations (See Flow-Intra-daily variation attribute).
HypExGWChan	Hyporheic exchange (groundwater channels)	A measure of the proportion of the volume of groundwater channels contributed by groundwater. In the absence of explicit hydrological information, hyporheic influence will be assumed to be minimal at the upstream end of unconfined valley segments and maximal at the downstream end.
Icing	Icing	Average extent (magnitude and frequency) of icing events over a 10-year period. Icing events can have severe effects on the biota and the physical structure of the stream in the short-term. It is recognized that icing events can under some conditions have long-term beneficial effects to habitat structure.
MetSedSls	Metals/Pollutants - in sediments/soils	The extent of heavy metals and miscellaneous toxic pollutants within the stream sediments and/or soils adjacent to the stream channel.
MetWatCol	Metals - in water column	The extent of dissolved heavy metals within the water column.
MscToxWat	Miscellaneous toxic pollutants - water column	The extent of miscellaneous toxic pollutants (other than heavy metals) within the water column.

Code	Attribute	Definition
NutEnrch	Nutrient enrichment	The extent of nutrient enrichment (most often by either nitrogen or phosphorous or both) from anthropogenic activities. Nitrogen and phosphorous are the primary macro-nutrients that enrich streams and cause build ups of algae. These conditions, in addition to leading to other adverse conditions, such as low DO can be indicative of conditions that are unhealthy for salmonids. Note: care needs to be applied when considering periphyton composition since relatively large mats of green filamentous algae can occur in Pacific Northwest streams with no nutrient enrichment when exposed to sunlight.
Obstr	Obstructions to fish migration	Obstructions to fish passage by physical barriers (not dewatered channels or hinderances to migration caused by pollutants or lack of oxygen).
ObstrVegGWChan	Obstructing littoral vegetation (groundwater channels)	Incidence and density of patches of impenetrable littoral exotic vegetation (canary reed grass, purple loosestrife, etc.) in shallow, near-shore areas that limit accessibility of groundwater channels in the vicinity of the reach under consideration.
ObstrVegPond	Obstructing littoral vegetation (floodplain ponds)	Incidence and density of patches of impenetrable littoral exotic vegetation (canary reed grass, purple loosestrife, etc.) in shallow, near-shore areas that limit accessibility of floodplain ponds in the vicinity of the reach under consideration.
ObstrVegWet	Obstructing littoral vegetation (wetlands)	Incidence and density of patches of impenetrable littoral exotic vegetation (canary reed grass, purple loosestrife, etc.) in shallow, near-shore areas that limit accessibility of seasonally flooded wetlands in the vicinity of the reach under consideration.
PredRisk	Predation risk	Level of predation risk on fish species due to presence of top level carnivores or unusual concentrations of other fish eating species. This is a classification of per-capita predation risk, in terms of the likelihood, magnitude and frequency of exposure to potential predators (assuming other habitat factors are constant). NOTE: This attribute is being updated to distinguish risk posed to small bodied fish (<10 in) from that to large bodied fish (>10 in).
ProxPond	Proximity to main channel or side channel (floodplain ponds)	Mean monthly distance in feet from pond to the main river, where length is measured along the outlet channel from the edge of the pond to the edge of the river.
RipFunc	Riparian function	A measure of riparian function that has been altered within the reach.
SalmCarcass	Salmon Carcasses	Relative abundance of anadromous salmonid carcasses within watershed that can serve as nutrient sources for juvenile salmonid production and other organisms. Relative abundance is expressed here as the density of salmon carcasses within subdrainages (or areas) of the watershed, such as the lower mainstem vs the upper mainstem, or in mainstem areas vs major tributary drainages.
TmpMonMn	Temperature - daily minimum (by month)	Minimum water temperatures within the stream reach during a month.
TmpMonMnGWChan	Temperature – daily minimum (by month) (groundwater channels)	Minimum daily water temperatures within all groundwater channels during a month.
TmpMonMnPond	Temperature – daily minimum (by month) (floodplain ponds)	Minimum daily water temperatures within all floodplain ponds during a month.
TmpMonMnWet	Temperature – daily minimum (by month) (wetlands)	Minimum daily water temperatures within all seasonally flooded wetlands during a month.
TmpMonMx	Temperature - daily maximum (by month)	Maximum water temperatures within the stream reach during a month.
TmpMonMxGWChan	Temperature – daily maximum (by month) (groundwater channels)	Maximum daily water temperatures within all groundwater channels during a month.
TmpMonMxPond	Temperature – daily maximum (by month) (floodplain ponds)	Maximum daily water temperatures within all floodplain ponds during a month.
TmpMonMxWet	Temperature - daily maximum (by month) (wetlands)	Maximum daily water temperatures within all seasonally flooded wetlands during a month.
TmpSptVar	Temperature - spatial variation	The extent of water temperature variation (cool or warm water depending upon season) within the reach as influenced by inputs of groundwater or tributary streams, or the presence of thermally stratified deep pools.

Code	Attribute	Definition
Turb	Turbidity	The severity of suspended sediment (SS) episodes within the stream reach. (Note: this attribute, which was originally called turbidity and still retains that name for continuity, is more correctly thought of as SS, which affects turbidity.) SS is sometimes characterized using turbidity but is more accurately described through suspended solids, hence the latter is to be used in rating this attribute. Turbidity is an optical property of water where suspended, including very fine particles such as clays and colloids, and some dissolved materials cause light to be scattered; it is expressed typically in nephelometric turbidity units (NTU). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.
TurbGWChan	Turbidity (groundwater channels)	The severity of suspended sediment (SS) episodes within groundwater channels in the vicinity of the reach under consideration. Note: although this attribute was originally called turbidity and still retains that name for continuity, it is more correctly thought of as suspended sediment (SS). SS is sometimes characterized in terms of turbidity, but it is more accurately expressed in terms of suspended solids. “Turbidity” is an optical property of water that consists of the scattering of light because of suspended particles, including very fine particles such as clays and colloids. Turbidity in the optical sense is expressed in terms of nephelometric turbidity units (NTUs). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.
TurbPond	Turbidity (floodplain ponds)	The severity of suspended sediment (SS) episodes within the floodplain ponds in the vicinity of the reach under consideration. Note: although this attribute was originally called turbidity and still retains that name for continuity, it is more correctly thought of as suspended sediment (SS). SS is sometimes characterized in terms of turbidity, but it is more accurately expressed in terms of suspended solids. “Turbidity” is an optical property of water that consists of the scattering of light because of suspended particles, including very fine particles such as clays and colloids. Turbidity in the optical sense is expressed in terms of nephelometric turbidity units (NTUs). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.

Code	Attribute	Definition
TurbWet	Turbidity (wetlands)	The severity of suspended sediment (SS) episodes within seasonally flooded wetlands in the vicinity of the reach under consideration. Note: although this attribute was originally called turbidity and still retains that name for continuity, it is more correctly thought of as suspended sediment (SS). SS is sometimes characterized in terms of turbidity, but it is more accurately expressed in terms of suspended solids. “Turbidity” is an optical property of water that consists of the scattering of light because of suspended particles, including very fine particles such as clays and colloids. Turbidity in the optical sense is expressed in terms of nephelometric turbidity units (NTUs). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.
VelocitySideChan	Side channel velocity type	The average velocity type of side channels within the reach, where "velocity type" refers to the proportion of side channel wetted area with a velocity low enough to retain salmonid fry (<50 mm) indefinitely. Estimated maximum sustainable water velocity for fry and small parr is assumed to be 0.4 fps.
WdDeb	Wood	The amount of wood (large woody debris or LWD) within the reach. Dimensions of what constitutes LWD are defined here as pieces >0.1 m diameter and >2 m in length. Numbers and volumes of LWD corresponding to index levels are based on Peterson et al. (1992), May et al. (1997), Hyatt and Naiman (2001), and Collins et al. (2002). Note: channel widths here refer to average wetted width during the high flow month (< bank full), consistent with the metric used to define high flow channel width. Ranges for index values are based on LWD pieces/CW and presence of jams (on larger channels). Reference to "large" pieces in index values uses the standard TFW definition as those > 50 cm diameter at midpoint.
Wdrwl	Water withdrawals	The number and relative size of water withdrawals in the stream reach.
WidthMn	Channel month Minimum width (ft)	Average width of the wetted channel. If the stream is braided or contains multiple channels, then the width would represent the sum of the wetted widths along a transect that extends across all channels. Note: Categories are not to be used for calculation of wetted surface area; categories here are used to designate relative stream size.
WidthMx	Channel month Maximum width (ft)	Average width of the wetted channel during peak flow month (average monthly conditions). If the stream is braided or contains multiple channels, then the width would represent the sum of the wetted widths along a transect that extends across all channels. Note: Categories are not to be used for calculation of wetted surface area; categories here are used to designate relative stream size.

Appendix C

Definitions of Level 2 Environmental Attribute Index Values

Appendix Table C. Level 2 Environmental Attributes and associated rating definitions.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
AccPasGW Chan	Passive Accessibility (groundwater channels)	A measure of "passive accessibility" of groundwater channels to juvenile fish. It is expressed in terms of the fraction of days during a month when juvenile fish could be moved (or swept) passively into the habitat.	6-30 (30 day month) or 20-100% of month	4-6 (30 day month) or 13-20% of month	2-4 days (30 day month) or 7-13% of month	0.5-2 days (30 day month) or 2-7% of month	0-0.5 day (30 day month) or 0-2% of month
AccPasPon d	Passive Accessibility (Ponds)	A measure of "passive accessibility" of floodplain ponds to juvenile fish. It is expressed in terms of the fraction of days during a month when juvenile fish could be moved (or swept) passively into the habitat.	6-30 (30 day month) or 20-100% of month	4-6 (30 day month) or 13-20% of month	2-4 days (30 day month) or 7-13% of month	0.5-2 days (30 day month) or 2-7% of month	0-0.5 day (30 day month) or 0-2% of month
AccPasWet	Passive Accessibility (wetlands)	A measure of "passive accessibility" of seasonally flooded wetlands to juvenile fish. It is expressed in terms of the fraction of days during a month when juvenile fish could be moved (or swept) passively into the habitat.	6-30 (30 day month) or 20-100% of month	4-6 (30 day month) or 13-20% of month	2-4 days (30 day month) or 7-13% of month	0.5-2 days (30 day month) or 2-7% of month	0-0.5 day (30 day month) or 0-2% of month
AccVolPond	Volitional accessibility (floodplain ponds)	A measure of the degree to which juvenile fish can swim up the outlet channel into a floodplain pond. It is expressed in terms of the fraction of days during a month when juvenile fish can swim into the pond.	25-30 days (30 day month) or 83-100% of month (mean depth in outlet >4 inches on passable days)	10-25 days (30 day month) or 33-83% of month (mean depth in outlet >4 inches on passable days)	3-10 days (30 day month) or 10-33% of month (mean water depth in outlet >4 inches on passable days)	0.5-3 days (30 day month) or 2-10% of month (mean water depth in outlet >4 inches on passable days)	0-0.5 day (30 day month) or 0-2% of month (mean water depth in outlet >4 inches on passable days)
Alka	Alkalinity	Alkalinity, or acid neutralizing capacity (ANC), measured as milliequivalents per liter or mg/l of either HCO_3 or $CaCO_3$.	Very low (average value typically would be 0-5 mg/l)	Moderately low (average value typically would be 5-10 mg/l)	Moderately high (average value typically would be 10-40 mg/l)	High (average value typically would be 40-100 mg/l)	Very high (average value typically would be 100-300 mg/l)
BdScour	Bed scour	Average depth of bed scour in salmonid spawning areas (i.e., in pool-tailouts and small cobble-gravel riffles) during the annual peak flow event over approximately a 10-year period. The range of annual scour depth over the period could vary substantially. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et a. (1991): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 5 inch diameter), large cobble (5 to 11.9 inch diameter), boulder (>11.9 inch diameter).	Average depth of scour >0 cm and <2 cm	Average depth of scour >2 cm and <10 cm	Average depth of scour >10 cm and <18 cm	Average depth of scour >18 cm and <24 cm	Average depth of scour >24 cm and <40 cm

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
BenComRch	Benthos diversity and production	Measure of the diversity and production of the benthic macroinvertebrate community. Three types of measures are given (choose one): a simple EPT count, Benthic Index of Biological Integrity (B-IBI)—a multimetric approach (Karr and Chu 1999), or a multivariate approach using the BORIS (Benthic evaluation of ORegon RIverS) model (Canale 1999). B-IBI rating definitions from Morley (2000) as modified from Karr et al. (1986). BORIS score definitions based on ODEQ protocols, after Barbour et al. (1994).	(1) Simple EPT index -- Macroinvertebrates abundant; multiple species of families Emphemeroptera, Plecoptera, and Trichoptera are present. OR (2) B-IBI (10 metrics) -- >=45. Comparable to least disturbed reference condition; overall high taxa diversity, particularly of mayflies, stoneflies, caddisflies, long-lived clinger, and intolerant taxa. Relative abundance of predators high. OR (3) BORIS score -- Minimal impairment in benthic community — <1 standard deviation from the reference mean AND considered "ideal or good watershed and stream condition for reference condition."	(1) Simple EPT index -- Intermediate OR (2) B-IBI (10 metrics) -- >=37 and <45. Slightly divergent from least disturbed condition; absence of some long-lived and intolerant taxa; slight decline in richness of mayflies, stoneflies, and caddisflies; proportion of tolerant taxa increases. OR (3) BORIS score -- Minimal impairment in benthic community — <1 standard deviation from the reference mean AND considered "marginal watershed and stream condition for reference condition."	(1) Simple EPT index -- Macroinvertebrates common or abundant but 1-2 families among Emphemeroptera, Plecoptera, and Trichoptera are not present. OR (2) B-IBI (10 metrics) -- >=27 and <37. Total taxa reduced—particularly intolerant, long-lived, stonefly, and clinger taxa. Relative abundance of predator declines; proportion of tolerant taxa continues to increase. OR (3) BORIS score -- Moderate impairment in benthic community — >1 and <2 standard deviations from the reference mean.	(1) Simple EPT index -- Intermediate. OR (2) B-IBI (10 metrics) -- >=17 and <27. Overall taxa diversity depressed; proportion of predators greatly reduced as is long-lived taxa richness; few stoneflies or intolerant taxa present; dominance by three most abundant taxa often very high. OR (3) BORIS score -- Severe impairment in benthic community — >2 and <2.5 standard deviations from the reference mean.	(1) Simple EPT index -- Macroinvertebrates are present only at extremely low densities and/or biomass. OR (2) B-IBI (10 metrics) -- <17. Overall taxa diversity very low and dominated by a few highly tolerant taxa; mayfly, stonefly, caddisfly, clinger, long-lived and intolerant taxa largely absent. Relative abundance of predators very low. OR (3) BORIS score -- Extremely severe impairment in benthic community—>2.5 standard deviations from the reference mean.
ChLngth	Channel length	Length of the primary channel contained with the stream reach -- Note: this attribute will not be given by a categories but rather will be a point estimate. Length of channel is given for the main channel only--multiple channels do not add length.	Length of the primary channel contained with the stream reach -- Note: this attribute will not be given by a categories but rather will be a point estimate. Length of channel is given for the main channel only--multiple channels do not add length				
ComplexSideChan	Side channel complexity	A measure of the complexity of side channels expressed in terms of the length of stream margin ("edge") per square foot of wetted area. The attribute is expressed explicitly in terms of the increase in edge per square foot across all in-channel habitat features that exists because of side channels.	Increase in edge/area of > 200% due to presence of side channels; rating of zero is assigned when increase exceeds 300%.	Increase in edge/area of 100-200% due to presence of side channels.	Increase in edge/area of 20-100% due to presence of side channels.	Increase in edge/area of 5-20% due to presence of side channels.	Increase in edge/area of 0-5% due to presence of side channels.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
Confine	Confinement - natural	The extent that the valley floodplain of the reach is confined by natural features. It is determined as the ratio between the width of the valley floodplain and the bankful channel width. Note: this attribute addresses the natural (pristine) state of valley confinement only.	Reach mostly unconfined by natural features -- Average valley width > 4 channel widths.	Reach comprised approximately equally of unconfined and moderately confined sections.	Reach mostly moderately confined by natural features -- Average valley width 2 - 4 channel widths.	Reach comprised approximately equally of moderately confined and confined sections.	Reach mostly confined by natural features -- Average valley width < 2 channel widths.
ConfineHydro	Confinement - Hydromodifications	The extent that man-made structures within or adjacent to the stream channel constrict flow (as at bridges) or restrict flow access to the stream's floodplain (due to streamside roads, revetments, diking or levees) or the extent that the channel has been ditched or channelized, or has undergone significant streambed degradation due to channel incision/entrenchment (associated with the process called "headcutting"). Flow access to the floodplain can be partially or wholly cutoff due to channel incision. Note: Setback levees are to be treated differently than narrow-channel or riverfront levees--consider the extent of the setback and its effect on flow and bed dynamics and micro-habitat features along the stream margin in reach to arrive at rating conclusion. Reference condition for this attribute is the natural, undeveloped state.	The stream channel within the reach is essentially fully connected to its floodplain. Very minor structures may exist in the reach that do not result in flow constriction or restriction. Note: this describes both a natural condition within a naturally unconfined channel as well as the natural condition within a canyon.	Some portion of the stream channel, though less than 10% (of the sum of lengths of both banks), is disconnected from its floodplain along one or both banks due to man-made structures or ditching.	More than 10% and less than 40% of the entire length of the stream channel (sum of lengths of both banks) within the reach is disconnected from its floodplain along one or both banks due to man-made structures or ditching.	More than 40% and less than 80% of the entire length of the stream channel (sum of lengths of both banks) within the reach is disconnected from its floodplain along one or both banks due to man-made structures or ditching.	Greater than 80% of the entire length of the stream channel (sum of lengths of both banks) within the reach is disconnected from its floodplain along one or both banks due to man-made structures or ditching.
ConnectSideChan	Side channel connectivity	Average percentage of days in month when side channels are completely connected to the primary channel (i.e., proportion of month during which channels carry surface water from divergence to return points). "Connection" implies a depth of at least 4 inches.	29-30 (30 day month) or 97-100% of month has full connection.	27-29 days (30 day month) or 90-97% of month has full connection.	20-27 days (30 day month) or 67-90% of month has full connection.	10-20 days (30 day month) or 33-67% of month has full connection.	0-10 days (30 day month) or 0-33% of month has full connection.
DepthGWChan	Mean depth (groundwater channels)	The mean depth in feet of groundwater channels in the vicinity of the reach under consideration.	Mean depth 5-10 ft	Mean depth 3-5 ft	Mean depth 2-3 ft	Mean depth 1-2 ft	Mean depth 0-1 ft
DepthPond	Mean depth (floodplain ponds)	The mean depth in feet of floodplain ponds in the vicinity of the reach under consideration.	Mean depth 5-10 ft	Mean depth 3-5 ft	Mean depth 2-3 ft	Mean depth 1-2 ft	Mean depth 0-1 ft

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
DepthWet	Mean depth (wetlands)	The mean depth in feet of seasonally flooded wetlands in the vicinity of the reach under consideration.	Mean depth 5-10 ft	Mean depth 3-5 ft	Mean depth 2-3 ft	Mean depth 1-2 ft	Mean depth 0-1 ft
DisOxy	Dissolved oxygen	Average dissolved oxygen within the water column for the specified time interval.	> 8 mg/L (allows for all biological functions for salmonids without impairment at temperatures ranging from 0-25 C)	> 6 mg/L and < 8 mg/L (causes initial stress symptoms for some salmonids at temperatures ranging from 0-25 C)	> 4 and < 6 mg/L (stress increased, biological function impaired)	> 3 and < 4 mg/L (growth, food conversion efficiency, swimming performance adversely affected)	< 3 mg/L
DisOxyGW Chan	Dissolved oxygen (groundwater channels)	Monthly mean dissolved oxygen content within the water column for all groundwater channels in the vicinity of the reach under consideration.	> 8 mg/L (allows for all biological functions for salmonids without impairment at temperatures ranging from 0-25 C)	> 6 mg/L and < 8 mg/L (causes initial stress symptoms for some salmonids at temperatures ranging from 0-25 C)	> 4 and < 6 mg/L (stress increased, biological function impaired)	> 3 and < 4 mg/L (growth, food conversion efficiency, swimming performance adversely affected)	< 3 mg/L
DisOxyPon d	Dissolved oxygen (floodplain ponds)	Monthly mean dissolved oxygen content within the water column for all floodplain ponds in the vicinity of the reach under consideration.	> 8 mg/L (allows for all biological functions for salmonids without impairment at temperatures ranging from 0-25 C)	> 6 mg/L and < 8 mg/L (causes initial stress symptoms for some salmonids at temperatures ranging from 0-25 C)	> 4 and < 6 mg/L (stress increased, biological function impaired)	> 3 and < 4 mg/L (growth, food conversion efficiency, swimming performance adversely affected)	< 3 mg/L
DisOxyWet	Dissolved oxygen (wetlands)	Monthly mean dissolved oxygen content within the water column for all seasonally flooded wetlands in the vicinity of the reach under consideration.	> 8 mg/L (allows for all biological functions for salmonids without impairment at temperatures ranging from 0-25 C)	> 6 mg/L and < 8 mg/L (causes initial stress symptoms for some salmonids at temperatures ranging from 0-25 C)	> 4 and < 6 mg/L (stress increased, biological function impaired)	> 3 and < 4 mg/L (growth, food conversion efficiency, swimming performance adversely affected)	< 3 mg/L
Emb	Embeddedness	The extent that larger cobbles or gravel are surrounded by or covered by fine sediment, such as sands, silts, and clays. Embeddedness is determined by examining the extent (as an average %) that cobble and gravel particles on the substrate surface are buried by fine sediments. This attribute only applies to riffle and tailout habitat units and only where cobble or gravel substrates occur.	< 10% of surface covered by fine sediment	> 10 and < 25 % covered by fine sediment	> 25 and < 50 % covered by fine sediment	> 50 and < 90 % covered by fine sediment	> 90% covered by fine sediment

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
FlwDielVar	Flow - Intra daily (diel) variation	Average diel variation in flow level during a season or month. This attribute is informative for rivers with hydroelectric projects or in heavily urbanized drainages where storm runoff causes rapid changes in flow.	Essentially no variation in discharge during an average 24-hr period during season or month. This characterizes conditions not influenced by flow ramping or accelerated storm runoff. This rating also would apply to small suburban-urbanized drainages with impervious surfaces of <10% in high rainfall climates (e.g., Puget Lowlands) and with little or no flow detention systems in place.	Slight to low variation in flow stage during an average 24-hr period during season or month. This pattern typical of routine (everyday) slight to low ramping condition associated with flow regulation, averaging <2 inches change in stage per hour. This condition has both slight to low rates of change in flow and high frequency with which it occurs. This rating also would apply to small suburban-urbanized drainages with impervious surfaces of ~10-25% in high rainfall climates (e.g., Puget Lowlands) and with little or no flow detention systems in place.	Low to moderate variation in flow stage during an average 24-hr period during season or month. This pattern typical of routine (everyday) low to moderate ramping condition associated with flow regulation, averaging >2 inches and <6 inches change in stage per hour. This condition has both moderate to high rates of change in flow and high frequency with which it occurs. This rating also would apply to small suburban-urbanized drainages with impervious surfaces of ~25-40% in high rainfall climates (e.g., Puget Lowlands) and with little or no flow detention systems in place.	Moderate to high variation in flow stage during an average 24-hr period during season or month. This pattern typical of routine (everyday) moderate to high ramping condition associated with flow regulation, averaging between 6 inches to 12 inches change in stage per hour. This condition has both moderate to high rates of change in flow and high frequency with which it occurs. This rating also would apply to small suburban to urbanized drainages with impervious surfaces of ~40-50% in high rainfall climates (e.g., Puget Lowlands) and with little or no flow detention systems in place.	Extreme variation in flow stage during an average 24-hr period during season or month. This pattern typical of routine (everyday) extreme ramping condition associated with flow regulation, averaging between 12 inches to 24 inches change in stage per hour. This condition is both extreme in the rate of change in flow and the frequency with which it occurs. This rating would apply to small, heavily urbanized drainages with impervious surfaces of 50-80% in high rainfall climates (e.g., Puget Lowlands) and with little or no flow detention systems in place.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
FlwHigh	Flow - change in interannual variability in high flows	The extent of relative change in average peak annual discharge compared to an undisturbed watershed of comparable size, geology, orientation, topography, and geography (or as would have existed in the pristine state). Evidence of change in peak flow can be empirical where sufficiently long data series exists, can be based on indicator metrics (such as TQmean, see Konrad [2000]), or inferred from patterns corresponding to watershed development. Relative change in peak annual discharge here is based on changes in the peak annual flow expected on average once every two years (Q2yr).	Peak annual flows expected to be strongly reduced relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >40% and <100% decrease in Q2yr based on a long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state) or as known by regulated flow levels. This condition is associated with flow regulation or water diversion projects.	Peak annual flows expected to be moderately reduced relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >20% and <40% decrease in Q2yr based on a long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state) or as known by regulated flow levels. This condition is associated with flow regulation or water diversion projects.	Peak annual flows expected to be comparable to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR <20% change in Q2yr based on a long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state); OR <5% reduction in average TQmean compared to the undeveloped watershed state.	Peak annual flows expected to be moderately increased relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >20% and <40% increase in Q2yr based on a long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state); OR >5% and <15% reduction in average TQmean compared to the undeveloped watershed state. This condition exemplified in some forested watersheds with high road density that experience significant rain on snow events, as the North Fork Stillaguamish River (Pess et al. in review). Note: many managed forested watersheds in the Pacific Northwest exhibit slight, if any, increases in peak annual flows since logging commenced (see Ziemer and Lisle 1998).	Peak annual flows expected to be strongly increased relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >40% and <110%+ increase in Q2yr based on a long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state); OR >15% and <45% reduction in average TQmean compared to the undeveloped watershed state. This condition exemplified in watersheds with significant urbanization (e.g., >20%).

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
FlwIntraAnn	Flow - intra-annual flow pattern	The average extent of intra-annual flow variation during the wet season -- a measure of a stream's "flashiness" during storm runoff. Flashiness is correlated with % total impervious area and road density, but is attenuated as drainage area increases. Evidence for change can be empirically derived using flow data (e.g., using the metric TQmean, see Konrad [2000]), or inferred from patterns corresponding to watershed development.	Storm runoff response (rates of change in flow) expected to be slowed greatly relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >15% increase in average TQmean compared to the undeveloped watershed state or as known by regulated flow levels. This condition is associated with flow regulation.	Storm runoff response (rates of change in flow) expected to be moderately slower relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >5% and <15% increase in average TQmean compared to the undeveloped watershed state or as known by regulated flow levels. This condition is associated with flow regulation.	Storm runoff response (rates of change in flow) comparable to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR <5% reduction in average TQmean compared to the undeveloped watershed state.	Storm runoff response (rates of change in flow) expected to be moderately increased relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >5% and <15% reduction in average TQmean compared to the undeveloped watershed state. This condition exemplified in some managed forested watersheds with high road density, likely most evident in small drainages.	Storm runoff response (rates of change in flow) expected to be strongly increased relative to an undisturbed watershed of similar size, geology, orientation, topography, and geography (or the pristine state for the watershed of interest); OR >15% and <45% reduction in average TQmean compared to the undeveloped watershed state. This condition exemplified in watersheds with significant urbanization.
FlwLow	Flow - changes in interannual variability in low flows	The extent of relative change in average daily flow during the normal low flow period compared to an undisturbed watershed of comparable size, geology, and flow regime (or as would have existed in the pristine state). Evidence of change in low flow can be empirically-based where sufficiently long data series exists, or known through flow regulation practices, or inferred from patterns corresponding to watershed development. Note: low flows are not systematically reduced in relation to watershed development, even in urban streams (Konrad 2000). Factors affecting low flow are often not obvious in many watersheds, except in clear cases of flow diversion and regulation.	Average daily low flows expected to be strongly increased compared to an undisturbed watershed of similar size, geology, and flow regime (or the pristine state for the watershed of interest); OR >75% increase in the 45 or 60-day consecutive lowest average daily flow on a sufficiently long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state) or as known through flow regulation.	Average daily low flows expected to be moderately increased compared to an undisturbed watershed of similar size, geology, and flow regime (or the pristine state for the watershed of interest); OR >20% and <75% increase in the 45 or 60-day consecutive lowest average daily flow on a sufficiently long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state) or as known through flow regulation.	Average daily low flows expected to be comparable to an undisturbed watershed of similar size, geology, and flow regime (or the pristine state for the watershed of interest); OR <20% change in the 45 or 60-day consecutive lowest average daily flow on a sufficiently long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state).	Average daily low flows expected to be moderately reduced compared to an undisturbed watershed of similar size, geology, and flow regime (or the pristine state for the watershed of interest); OR >20% and <50% reduction in the 45 or 60-day consecutive lowest average daily flow on a sufficiently long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state) or as known through flow regulation.	Average daily low flows expected to be severely reduced compared to an undisturbed watershed of similar size, geology, and flow regime (or the pristine state for the watershed of interest); OR >50% and <=100% reduction in the 45 or 60-day consecutive lowest average daily flow on a sufficiently long time series (~40 yrs or longer with at least 20 yrs pertaining to a watershed development state) or as known through flow regulation.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
FlwRegDecrease	Regulated flow decrease	The month-specific combination of a negative deviation of relative mean monthly flow and the relative variability of mean daily flows for the same month. Deviations of mean flows and flow variabilities are expressed relative to unregulated flows that could be expected under the same set of land use conditions. The metric used to describe the attribute is derived from a Z-score of regulated and unregulated mean monthly flows and a ratio of the Coefficient of Variation (CV) of regulated to unregulated mean daily flows.	Little or no decrease in the monthly flow magnitude compared to the unregulated magnitude and little or no change in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to -0.3 associated with CV ratios of approximately 0.1-1.5. See accompanying matrix table. No direct effects of such flows occur to the biota.	Small to moderate decrease in the monthly flow magnitude compared to the unregulated magnitude and/or small changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to -1.3 associated with CV ratios of approximately 0.1-1.7. See accompanying matrix table. Small direct effects to the biota can occur due to such flow changes compared to unregulated flows.	Relatively moderate to large decrease in the monthly flow magnitude compared to the unregulated magnitude and/or small to large changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to –2.3 associated with CV ratios of approximately 0.1-2.4. See accompanying matrix table. Direct effects to the biota are generally expected to be noticeable under such flows and may range from a low to large increase in effect compared to those associated with unregulated flows.	Large decrease in the monthly flow magnitude compared to the unregulated magnitude and/or small to extreme changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to -4.0 associated with CV ratios of approximately 0.1-3.0. See accompanying matrix table. Direct effects to the biota can be high under such flows and may range from a low to very large increase in effect compared to those associated with unregulated flows.	Extreme decrease in the monthly flow magnitude compared to the unregulated magnitude and/or small to extreme changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately –0.5 to -6.0 associated with CV ratios of approximately 0.1-3.0. See accompanying matrix table. Direct effects to the biota can be extreme under such flows and may range from a low to extreme increase in effect compared to those associated with unregulated flows.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
FlwRegIncrease	Regulated flow increase	The month-specific combination of a positive deviation of relative mean monthly flow and the relative variability of mean daily flows for the same month. Deviations of mean flows and flow variabilities are expressed relative to unregulated flows that could be expected under the same set of land use conditions. The metric used to describe the attribute is derived from a Z-score of regulated and unregulated mean monthly flows and a ratio of the Coefficient of Variation (CV) of regulated to unregulated mean daily flows.	Little or no increase in the monthly flow magnitude compared to the unregulated magnitude and little or no change in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to 1.0 associated with CV ratios of approximately 0.1-1.5. See accompanying matrix table. No direct effects of such flows occur to the biota.	Small increase in the monthly flow magnitude compared to the unregulated magnitude and/or small changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to 1.0 associated with CV ratios of approximately 0.1-1.7. See accompanying matrix table. Little direct effect to biota is expected of such flow changes compared to unregulated flows.	Moderate increase in the monthly flow magnitude compared to the unregulated magnitude and/or small to large changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to 5.3 associated with CV ratios of approximately 0.1-2.4. See accompanying matrix table. Direct effects to the biota are generally expected to be noticeable under such flows and may range from a low to moderate increase in effect compared to those associated with unregulated flows.	Large increase in the monthly flow magnitude compared to the unregulated magnitude and/or small to extreme changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to 10.5 associated with CV ratios of approximately 0.1-3.0. See accompanying matrix table. Direct effects to the biota can be high under such flows and may range from a low to large increase in effect compared to those associated with unregulated flows.	Extreme increase in the monthly flow magnitude compared to the unregulated magnitude and/or small to extreme changes in relative variability of mean daily flows for the same month, corresponding to Z-score values of approximately 0.0 to 13.0 associated with CV ratios of approximately 0.1-3.0. See accompanying matrix table. Direct effects to the biota can be extreme under such flows and may range from a low to extreme increase in effect compared to those associated with unregulated flows.
FnSedi	Fine sediment	Percentage of fine sediment within salmonid spawning substrates, located in pool-tailouts, glides, and small cobble-gravel riffles. Definition of "fine sediment" here depends on the particle size of primary concern in the watershed of interest. In areas where sand size particles are not of major interest, as they are in the Idaho Batholith, the effect of fine sediment on egg to fry survival is primarily associated with particles <1mm (e.g., as measured by particles <0.85 mm). Sand size particles (e.g., <6 mm) can be the principal concern when excessive accumulations occur in the upper stratum of the stream bed (Kondolf 2000). See guidelines on possible benefits accrued due to gravel cleaning by spawning salmonids.	Particle sizes <0.85 mm: < 6% OR Particle sizes <6.3 mm: <10%	Particle sizes <0.85 mm: > 6% and < 11% OR Particle sizes <6.3 mm: >10% and <25%	Particle sizes <0.85 mm: > 11% and < 18% OR Particle sizes <6.3 mm: >25% and <40%	Particle sizes <0.85 mm: > 18% and < 30% OR Particle sizes <6.3 mm: >40% and <60%	Particle sizes <0.85 mm: > 30% fines OR Particle sizes <6.3 mm: >60%

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
FshComRch	Fish community richness	Measure of the richness of the fish community (no. of fish taxa, i.e., species).	2 or fewer fish taxa	3-7 fish taxa	8-17 fish taxa	18-25 fish taxa	> 25 fish taxa
FshComRchGWChan	Fish community richness (groundwater channels)	Measure of the richness of the fish community (no. of fish taxa, i.e., species) within all groundwater channels in the vicinity of the reach under consideration.	2 or fewer fish taxa	3-7 fish taxa	8-17 fish taxa	18-25 fish taxa	> 25 fish taxa
FshComRchPond	Fish community richness (floodplain ponds)	Measure of the richness of the fish community (no. of fish taxa, i.e., species) within all floodplain ponds in the vicinity of the reach under consideration.	2 or fewer fish taxa	3-7 fish taxa	8-17 fish taxa	18-25 fish taxa	> 25 fish taxa
FshComRchWet	Fish community richness (wetlands)	Measure of the richness of the fish community (no. of fish taxa, i.e., species) within all seasonally flooded wetlands in the vicinity of the reach under consideration.	2 or fewer fish taxa	3-7 fish taxa	8-17 fish taxa	18-25 fish taxa	> 25 fish taxa
FshPath	Fish pathogens	The presence of pathogenic organisms (relative abundance and species present) having potential for affecting survival of stream fishes.	No historic or recent fish stocking in drainage and no known incidences of whirling disease, C. shasta, IHN, or IPN	Historic fish stocking, but no fish stocking records within the past decade, or sockeye population currently existing in drainage, or known incidents of viruses among kokanee populations within the watershed.	On-going periodic, frequent, or annual fish stocking in drainage or known viral incidents within sockeye, chinook, or steelhead populations in the watershed.	Operating hatchery within the reach or in the reach immediately downstream or upstream	Known presence of whirling disease or C. shasta within the watershed.
FSpIntro	Fish species introductions	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species).	No non-native species reported or known to be in the sub-drainage of interest.	1-2 non-native species reported or known to be in the sub-drainage of interest.	3-7 non-native species reported or known to be in the sub-drainage of interest.	8-14 non-native species reported or known to be in the sub-drainage of interest.	15 or more non-native species reported or known to be in the sub-drainage of interest.
FSpIntroGWChan	Fish species introductions (groundwater channels)	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species) within all groundwater channels in the vicinity of the reach under consideration.	No non-native species reported or known to be in the sub-drainage of interest.	1-2 non-native species reported or known to be in the sub-drainage of interest.	3-7 non-native species reported or known to be in the sub-drainage of interest.	8-14 non-native species reported or known to be in the sub-drainage of interest.	15 or more non-native species reported or known to be in the sub-drainage of interest.
FSpIntroPond	Fish species introductions (floodplain ponds)	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species) within all floodplain ponds in the vicinity of the reach under consideration.	No non-native species reported or known to be in the sub-drainage of interest.	1-2 non-native species reported or known to be in the sub-drainage of interest.	3-7 non-native species reported or known to be in the sub-drainage of interest.	8-14 non-native species reported or known to be in the sub-drainage of interest.	15 or more non-native species reported or known to be in the sub-drainage of interest.
FSpIntroWet	Fish species introductions (wetlands)	Extent of introductions of exotic fish species (no. of fish taxa, i.e., species) within all seasonally flooded wetlands in the vicinity of the reach under consideration.	No non-native species reported or known to be in the sub-drainage of interest.	1-2 non-native species reported or known to be in the sub-drainage of interest.	3-7 non-native species reported or known to be in the sub-drainage of interest.	8-14 non-native species reported or known to be in the sub-drainage of interest.	15 or more non-native species reported or known to be in the sub-drainage of interest.

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Grad	Gradient	Average gradient of the main channel of the reach over its entire length. Note: Categorical levels are shown here but values are required to be input as point estimates for each reach.	Gradient is entered as point value; %.				
Harass	Harassment	The relative extent of poaching and/or harassment of fish within the stream reach.	Reach is distant from human population centers, no road access or no local concentration of human activity.	Reach is distant from human population centers, but with partial road access or little local concentration of human activity.	Reach is near human population center, but has limited public access (through roads or boat launching sites).	Extensive road and/or boat access to the reach with localized concentrations of human activity.	Reach is near human population center or has extensive recreational activities, and has extensive road access and/or opportunities for boat access.
HatFOutp	Hatchery fish outplants	The magnitude of hatchery fish outplants made into the drainage over the past 10 years. Note: Enter specific hatchery release numbers if the data input tool allows. "Drainage" here is defined loosely as being approximately the size that encompasses the spawning distribution of recognized populations in the watershed.	No stocking records in the past decade.	No more than two instances of fish releases in the past decade in the drainage.	Fish releases made into the drainage every 1-3 years at isolated locations within the drainage.	Fish releases made at multiple sites in the drainage, but only in 1-3 years during the past decade. When the species released is the same as focus species, chance for some superimposition can occur here.	Fish releases made every 1-3 years and at multiple sites in the drainage. When the species released is the same as focus species, superimposition can occur here.
HbBckPls	Habitat type - backwater pools	Percentage of the wetted channel surface area comprising backwater pools.	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				
HbBraid	Habitat type - braid	Proportion of all in-channel wetted area (main channel, side channels and braids) consisting of braids, which are considered to be channels flowing between unstable, unvegetated gravel bars that are submerged at bankfull flow.	Absolute area estimates as percent of total in-channel wetted area are entered instead of index ratings.				
HbBvrPnds	Habitat type - beaver ponds	Percentage of the wetted channel surface area comprising beaver ponds. Note: these are pools located in the main or side channels, not part of off-channel habitat.	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				

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HbGlide	Habitat type - Glides	Percentage of the wetted channel surface area comprising glides. Note: There is a general lack of consensus regarding the definition of glides (Hawkins et al. 1993), despite a commonly held view that it remains important to recognize a habitat type that is intermediate between pool and riffle. The definition applied here is from the ODFW habitat survey manual (Moore et al. 1997): an area with generally uniform depth and flow with no surface turbulence, generally in reaches of <1% gradient. Glides may have some small scour areas but are distinguished from pools by their overall homogeneity and lack of structure. They are generally deeper than riffles with few major flow obstructions and low habitat complexity.	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				
HbGWChan	Habitat type - wetted area of groundwater channels	The area in acres of groundwater channels. Groundwater channels connect to the main channel or a side channel only at one end at flows less than bankfull. They are usually relict river channels fed by groundwater, though surface flow from higher terraces can also contribute. They can function as overflow channels at some flood stages, and include several subtypes (Ward et al. 1999), including: (1) channels carrying main channel seepage, (2) channels fed by the floodplain aquifer and (3) channels fed by groundwater supplied from adjacent terraces.	Absolute area estimates in acres are entered instead of index ratings.				
HbLrgCbl	Habitat type - large cobble/boulder riffles	Percentage of the wetted channel surface area comprising large cobble/boulder riffles. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et a. (1991): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 5 inch diameter), large cobble (5 to 11.9 inch diameter), boulder (>11.9 inch diameter).	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				

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HbOfChFctr	Habitat type - off-channel habitat factor	A multiplier used to estimate the amount of off-channel habitat based on the wetted surface area of the all combined in-channel habitat (e.g., 2.0 = off-channel habitat is 2X in-channel wetted area).	Off-channel factor is entered as a multiplier relative to the wetted in-channel area.				
HbPls	Habitat type - primary pools	Percentage of the wetted channel surface area comprising pools, excluding beaver ponds	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				
HbPlTails	Habitat type - pool tailouts	Percentage of the wetted channel surface area comprising pool tailouts.	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				
HbPond	Habitat type - wetted area of floodplain ponds	The area in acres of floodplain ponds. Floodplain ponds are water-filled depressions, partially or entirely filled with water year-round and that are connected to the main river for all or some period of the year by an outlet channel. To be classified as a floodplain pond, the outlet channel must have a mean depth > 4 inches for a portion of a year (e.g., at least one month, though not necessarily all consecutive days) in most (>50%) years. They are either natural features on the floodplain, representing cut-off oxbows or pools in relict river channels, but they may also be man-made (e.g., floodplain gravel pits). They might be supplied by groundwater or surface water from streams or springs. Ponds that do not meet the criteria for connectivity to the river are either excluded from the analysis or may be included with flooded wetlands. Flooded wetlands often contain ponded areas, either intermittently or perennially filled with water.	Absolute area estimates in acres are entered instead of index ratings.				

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
HbSideChan	Habitat type – side channel	The mean monthly proportion of the wetted area of all in-channel habitat (main channel, side channels and braids) consisting of side channels. A side channel is an active stream channel separated from the main channel by a vegetated or otherwise stable island (Knighton (1998). The islands tend to be large relative to the size of the channels. Side channels are frequently small watered remnants of the historic river channel within the floodplain. Some side channels carry surface water continuously, from the point of divergence to the point of return, at a given flow, while others become intermittent (are dry at some point(s) between divergence and return) at the same flow (Ward et al. 1999). The frequency of continuous connection to a surface water source can be important in the ecology of various species (Tockner et al. 2000) and is described by Side Channel Connectivity (ConnectSideChan).	Absolute area estimates as percent of total in-channel wetted area are entered instead of index ratings.				
HbSmlCbl	Habitat type - small cobble/gravel riffles	Percentage of the wetted channel surface area comprising small cobble/gravel riffles. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et a. (1991): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 5 inch diameter), large cobble (5 to 11.9 inch diameter), boulder (>11.9 inch diameter).	Habitat types are entered as percent of wetted area of channel (main channel, side channel and braids)				

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HbWet	Habitat type - wetted area of seasonally flooded wetlands	The area in acres of seasonally flooded wetland. Seasonally flooded wetlands frequently occur on the floodplains of large rivers. Geomorphically, they are often remnants of ancient ponds and river channels which filled with sediment and debris over centuries (Saucier 1994, cited in Henning 2004). Seasonally flooded wetlands are typically flooded during annual high water periods either by broad overbank flows or by backwatering through narrow swales. These wetlands may contain seasonal or perennial ponds that do not meet the criteria for connectivity to the river prescribed for floodplain ponds (see definition for HbPond).	Absolute area estimates in acres are entered instead of index ratings.				
HydroMonth	Hydrograph month	Identifies the position of the month with respect to the magnitude of mean daily flow for the month relative to the high and low flow months of the yearly hydrograph (under unregulated flow). A rating of zero means that the average flow in that month is at or near the average month low flow for the annual hydrograph. Similarly, a rating of four means that the average flow for the month is at or near the average month high flow for the annual hydrograph.	Unregulated mean daily flow in month is less than 120% of the minimum mean daily flow for all months in the calendar year.	Unregulated mean daily flow in month is greater than 120% and less than 250% of the minimum mean daily flow for all months in calendar year.	Unregulated mean daily flow in month is not defined by any of the other specified ranges.	Unregulated mean daily flow in month is greater than or equal to 70% and less than 85% of the maximum mean daily flow for all months in the calendar year.	Unregulated mean daily flow in month is greater than or equal to 85% of the maximum mean daily flow for all months in the calendar year.
HydroRegimeNatural	Hydrologic regime - natural	The natural flow regime within the reach of interest. Flow regime typically refers to the seasonal pattern of flow over a year; here it is inferred by identification of flow sources. This applies to an unregulated river or to the pre-regulation state of a regulated river.	Groundwater-source-dominated; strongly buffered peak flows (as in a springbrook or in river like the Metolius in central Oregon)	Spring snowmelt dominated, non-glacial; temporally consistent and moderate peak and low flows	Rain-on-snow transitional; consistent spring peak and low flows with inconsistent and flashy winter or early spring rain-on-snow peaks	Rainfall-dominated; flashy winter and early spring peaks, consistently low summer flows and variable spring and fall flows.	Glacial runoff system; high, turbid low flows, generally buffered peak flows except with occasional outburst floods and infrequent rain-on-snow events

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HydroRegimeReg	Hydrologic regime - regulated	The change in the natural hydrograph caused by the operation of flow regulation facilities (e.g., hydroelectric, flood storage, domestic water supply, recreation, or irrigation supply) in a watershed. Definition does not take into account daily flow fluctuations (See Flow-Intra-daily variation attribute).	No artificial flow regulation occurs upstream to affect hydrograph.	Project operations have not changed median flows between months or season as the project is operated as a run-of-river facility, or project storage is < 15 days of the annual mean daily flow of the river.	Project operations have not changed median flows between months or season as the project is operated as a run-of-river facility, or project storage is > 15 and < 30-days of the annual mean daily flow of the river.	Project operations have resulted in a measurable shift in median flows between months or seasons. The project provides limited flood control during periods of high run-off (winter or spring). The project's reservoir is operated each year to store more than 30 but less than 60-days of the annual mean daily flow of the river.	Project operations have resulted in a major shift in median flows between months or seasons. The project is operated to provide significant flood control during high run-off periods (winter or spring). The project's reservoir is operated each year to store more than 60-days of the annual mean daily flow of the river.
HypExGWChan	Hyporheic exchange (groundwater channels)	A measure of the proportion of the volume of groundwater channels contributed by groundwater. In the absence of explicit hydrological information, hyporheic influence will be assumed to be minimal at the upstream end of unconfined valley segments and maximal at the downstream end.	Hyporheic groundwater is the major source of flow within the channel or pond. Thermal and water clarity characteristics of hyporheic exchange are strongly evident. Habitat is likely located within the lower end of an unconfined reach of the main river.	Although substantial hyporheic exchange is occurring, hyporheic water is diluted by surface flows. Thermal and water clarity characteristics indicate strong influence of hyporheic input but dilution from other sources is evident. Habitat may be located in the lower portion of an unconfined reach of the main river or may receive ground water contributions from an adjacent terrace.	Hyporheic exchange exists but is not a dominant source of water. Thermal and water clarity characteristics indicate modest hyporheic influence. Habitat may be located in the middle of an unconfined reach of the main river or may receive some ground water from an adjacent terrace.	Weak evidence that groundwater is contributing to the channel or pond. Thermal and water clarity characteristics reflect minimal groundwater influence. Habitat may be located within the upper third of an unconfined reach or within a large floodplain of a meandering, single-thread river channel. Groundwater may enter from an adjacent terrace.	No evidence of groundwater influence on the channel or pond. Thermal and water clarity characteristics distinctly different from hyporheic inflow. Habitat may be located at the top end of an unconfined reach or within a large floodplain of a meandering, single-thread river channel.
Icing	Icing	Average extent (magnitude and frequency) of icing events over a 10-year period. Icing events can have severe effects on the biota and the physical structure of the stream in the short-term. It is recognized that icing events can under some conditions have long-term beneficial effects to habitat structure.	Anchor ice and icing events do not occur.	Some anchor ice may occur infrequently, having little or no impact to physical structure of stream, in-stream structure, and stream banks/bed.	Likelihood for some anchor ice and/or icing events is moderate to high each year and effects on stream, in-stream structure, and stream banks/beds is considered low to moderate.	Likelihood for anchor ice and/or icing events is high each year, having effects on stream, in-stream structure, and stream banks/beds that differ widely within the reach--from low to high across the reach.	Likelihood of severe anchor ice or overbank ice jams is high each year, having major and extensive effects on stream, in-stream structure, and stream banks across the reach.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
MetSedSls	Metals/Pollutants - in sediments/soils	The extent of heavy metals and miscellaneous toxic pollutants within the stream sediments and/or soils adjacent to the stream channel.	Metals/pollutants at natural (background) levels with no or negligible effects on benthic dwelling organisms or riparian vegetation (under continual exposure).	Deposition of metals/pollutants in low concentrations such that some stress symptoms occur to benthic dwelling organisms or riparian vegetation root/shoot growth is impaired (under continual exposure).	Stress symptoms increased or biological functions moderately impaired to benthic dwelling organisms; or few areas within the riparian zone present where no vegetation exists (slickens); ecotonal to these areas occupied only by tolerant species; horizons containing metals/pollutant concentrations influencing root growth and composition are common within the riparian corridor.	Growth, food conversion, reproduction, or mobility of benthic organisms severely affected; or large areas of the riparian zone devoid of vegetation; ecotonal areas occupied only by metals/pollutant-tolerant species; few areas in the riparian zones which are unaffected.	Metals/pollutant concentrations in sediments/soils are lethal to large numbers of the benthic species and/or riparian zone is practically devoid of vegetation.
MetWatCol	Metals - in water column	The extent of dissolved heavy metals within the water column.	No toxicity expected due to dissolved heavy metals to salmonids under prolonged exposure (1 month exposure assumed).	May exert some low level chronic toxicity to salmonids (1 month exposure assumed).	Consistently chronic toxicity expected to salmonids(1 month exposure assumed).	Usually acutely toxic to salmonids (1 month exposure assumed).	Always acutely toxic to salmonids (1 month exposure assumed).
MscToxWat	Miscellaneous toxic pollutants - water column	The extent of miscellaneous toxic pollutants (other than heavy metals) within the water column.	No substances present that may periodically be at or near chronic toxicity levels to salmonids.	One substance present that may only periodically rise to near chronic toxicity levels (may exert some chronic toxicity) to salmonids.	More than one substance present that may periodically rise to near chronic toxicity levels or one substance present > chronic threshold and < acute threshold (consistently chronic toxicity) to salmonids.	One or more substances present > acute toxicity threshold but < 3X acute toxicity threshold (usually acutely toxic) to salmonids.	One or more substances present with > 3X acute toxicity (always acutely toxic) to salmonids.

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NutEnrch	Nutrient enrichment	The extent of nutrient enrichment (most often by either nitrogen or phosphorous or both) from anthropogenic activities. Nitrogen and phosphorous are the primary macro-nutrients that enrich streams and cause build ups of algae. These conditions, in addition to leading to other adverse conditions, such as low DO can be indicative of conditions that are unhealthy for salmonids. Note: care needs to be applied when considering periphyton composition since relatively large mats of green filamentous algae can occur in Pacific Northwest streams with no nutrient enrichment when exposed to sunlight.	Unenriched streams (corresponding to benthic chlorophyll a values 0.5-3 mg/m2). Nutrient levels typical of oligotrophic conditions (small supply of nutrients, low production of organic matter, low rates of decomposition, and high DO). No enrichment is occurring nor is suspected. Green filamentous algae may be present at certain times of year, particularly in unshaded areas.	Very small amount of enrichment suspected to be occurring through land use activities (corresponding to benthic chlorophyll a values 3-20 mg/m2). Green filamentous algae present in summer months in unshaded reaches.	Nutrient levels typical of oligotrophic conditions (small supply of nutrients, low production of organic matter, low rates of decomposition, and high DO). Some enrichment known to be occurring (corresponding to benthic chlorophyll a values 20-60 mg/m2), often associated with failing skeptics tanks or runoff from areas of heavy fertilizer usage. Dense mats of green or brown filamentous algae present in summer months.	Eutrophic (abundant nutrients associated with high level of primary production, frequently resulting in oxygen depletion). Very obvious enrichment of reach is occurring from point sources or numerous non-point sources (corresponding to benthic chlorophyll a values 60-600 mg/m2). Large, dense mats of green or brown filamentous algae will be present during summer months.	Super enrichment of reach is strongly evident. Known, major point sources of organic waste inputs, such as runoff from large feedlot operation, wash water from farm products processing, or significant sewage facilities with inadequate treatment (corresponding to benthic chlorophyll a values 600-1200 mg/m2). In most severe cases, filamentous bacteria abundant, associated with low D.O. and hydrogen sulfide. In less severe cases, large dense mats of green or brown filamentous algae generally cover the substrate.
Obstr	Obstructions to fish migration	Obstructions to fish passage by physical barriers (not dewatered channels or hinderances to migration caused by pollutants or lack of oxygen).	Barriers to fish migration (juveniles and adults) are entered explicitly by barrier, species and life stage.				
ObstrVegGWChan	Obstructing littoral vegetation (groundwater channels)	Incidence and density of patches of impenetrable littoral exotic vegetation (canary reed grass, purple loosestrife, etc.) in shallow, near-shore areas that limit accessibility of groundwater channels in the vicinity of the reach under consideration.	Obstructing littoral vegetation not present	Less than 50% of suitable habitats colonized by obstructing littoral vegetation and scouring by flood events common.	More than 50% of suitable habitats colonized by obstructing littoral vegetation, but scouring by flood events is common.	Essentially all appropriate habitats colonized by obstructing littoral vegetation, but scouring by flood events is common.	Obstructing littoral vegetation colonizes all appropriate habitats, and scouring by flood events is rare.

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ObstrVegPond	Obstructing littoral vegetation (floodplain ponds)	Incidence and density of patches of impenetrable littoral exotic vegetation (canary reed grass, purple loosestrife, etc.) in shallow, near-shore areas that limit accessibility of floodplain ponds in the vicinity of the reach under consideration.	Obstructing littoral vegetation not present	Less than 50% of suitable habitats colonized by obstructing littoral vegetation and scouring by flood events common.	More than 50% of suitable habitats colonized by obstructing littoral vegetation, but scouring by flood events is common.	Essentially all appropriate habitats colonized by obstructing littoral vegetation, but scouring by flood events is common.	Obstructing littoral vegetation colonizes all appropriate habitats, and scouring by flood events is rare.
ObstrVegWet	Obstructing littoral vegetation (wetlands)	Incidence and density of patches of impenetrable littoral exotic vegetation (canary reed grass, purple loosestrife, etc.) in shallow, near-shore areas that limit accessibility of seasonally flooded wetlands in the vicinity of the reach under consideration.	Obstructing littoral vegetation not present	Less than 50% of suitable habitats colonized by obstructing littoral vegetation and scouring by flood events common.	More than 50% of suitable habitats colonized by obstructing littoral vegetation, but scouring by flood events is common.	Essentially all appropriate habitats colonized by obstructing littoral vegetation, but scouring by flood events is common.	Obstructing littoral vegetation colonizes all appropriate habitats, and scouring by flood events is rare.
PredRisk	Predation risk	Level of predation risk on fish species due to presence of top level carnivores or unusual concentrations of other fish eating species. This is a classification of per-capita predation risk, in terms of the likelihood, magnitude and frequency of exposure to potential predators (assuming other habitat factors are constant). NOTE: This attribute is being updated to distinguish risk posed to small bodied fish (<10 in) from that to large bodied fish (>10 in).	Many or most native predators are depressed or rare, none are greatly increased over natural levels, and there is expected a significant numerical survival advantage to fish as a result compared to historical predator abundance.	Some native predators are moderately depressed, none are greatly increased over natural levels, and there is expected some small to moderate numerical survival advantage to fish as a result compared to historical predator abundance.	Diversity and per-capita abundance of predators exists so that predation risk is at near-natural level and distribution.	Moderate increase in population density or moderately concentrated population of predator species exists due to artifacts of human alteration of the environment (e.g., top-down food web effects, habitat manipulations) compared to historical condition.	Excessive population density or concentrated population of predator species exists due to artifacts of human alteration of the environment (e.g., top-down food web effects, habitat manipulations) compared to historic condition.
ProxPond	Proximity to main channel or side channel (floodplain ponds)	Mean monthly distance in feet from pond to the main river, where length is measured along the outlet channel from the edge of the pond to the edge of the river.	Pond is located within 200 ft of the main channel or a side channel.	Pond is between 200 and 500 ft from the main channel or a side channel.	Pond is between 500 and 1,200 ft from the main channel or a side channel.	Pond is between 1,200 and 3,600 ft from the main channel or a side channel.	Pond is more than 3,600 ft from the main channel or a side channel.
RipFunc	Riparian function	A measure of riparian function that has been altered within the reach.	Strong linkages with no anthropogenic influences.	>75-90% of functional attributes present (overbank flows, vegetated streambanks, groundwater interactions typically present).	50-75% functional attribute rating-significant loss of riparian functioning-minor channel incision, diminished riparian vegetation structure and inputs etc.	25-50% similarity to natural conditions in functional attributes-many linkages between the stream and its floodplain are severed.	< 25% functional attribute rating: complete severing of floodplain-stream linkages

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SalmCarcass	Salmon Carcasses	Relative abundance of anadromous salmonid carcasses within watershed that can serve as nutrient sources for juvenile salmonid production and other organisms. Relative abundance is expressed here as the density of salmon carcasses within subdrainages (or areas) of the watershed, such as the lower mainstem vs the upper mainstem, or in mainstem areas vs major tributary drainages.	Super abundant -- average number of carcasses per mile of main channel habitat (within an appropriately designated area) >800.	Very abundant -- average number of carcasses per mile of main channel habitat (within an appropriately designated area) >400 and < 800.	Moderately abundant -- average number of carcasses per mile of main channel habitat (within an appropriately designated area) >200 and < 400.	Not abundant -- average number of carcasses per mile of main channel habitat (within an appropriately designated area) >25 and <200.	Very few or none -- average number of carcasses per mile of main channel habitat (within an appropriately designated area) <25.
TmpMonMn	Temperature - daily minimum (by month)	Minimum water temperatures within the stream reach during a month.	Coldest day >4 C	< 7 d with <4 C and minimum >1 C	1 to 7 d < 1 C	8 to 15 days < 1 C	> 15 winter days < 1 C
TmpMonMnGWChan	Temperature – daily minimum (by month) (groundwater channels)	Minimum daily water temperatures within all groundwater channels during a month.	Coldest day >4 C	< 7 d with <4 C and minimum >1 C	1 to 7 d < 1 C	8 to 15 days < 1 C	> 15 winter days < 1 C
TmpMonMnPond	Temperature – daily minimum (by month) (floodplain ponds)	Minimum daily water temperatures within all floodplain ponds during a month.	Coldest day >4 C	< 7 d with <4 C and minimum >1 C	1 to 7 d < 1 C	8 to 15 days < 1 C	> 15 winter days < 1 C
TmpMonMnWet	Temperature – daily minimum (by month) (wetlands)	Minimum daily water temperatures within all seasonally flooded wetlands during a month.	Coldest day >4 C	< 7 d with <4 C and minimum >1 C	1 to 7 d < 1 C	8 to 15 days < 1 C	> 15 winter days < 1 C
TmpMonMx	Temperature - daily maximum (by month)	Maximum water temperatures within the stream reach during a month.	Warmest day < 10 C	Warmest day>10 C and <16 C	> 1 d with warmest day 22-25 C or 1-12 d with >16 C	> 1 d with warmest day 25-27.5 C or > 4 d (non-consecutive) with warmest day 22-25 C or >12 d with >16 C	> 1 d with warmest day 27.5 C or 3 d (consecutive) >25 C or >24 d with >22 C
TmpMonMxGWChan	Temperature – daily maximum (by month) (groundwater channels)	Maximum daily water temperatures within all groundwater channels during a month.	Warmest day < 10 C	Warmest day>10 C and <16 C	> 1 d with warmest day 22-25 C or 1-12 d with >16 C	> 1 d with warmest day 25-27.5 C or > 4 d (non-consecutive) with warmest day 22-25 C or >12 d with >16 C	> 1 d with warmest day 27.5 C or 3 d (consecutive) >25 C or >24 d with >21 C
TmpMonMxPond	Temperature – daily maximum (by month) (floodplain ponds)	Maximum daily water temperatures within all floodplain ponds during a month.	Warmest day < 10 C	Warmest day>10 C and <16 C	> 1 d with warmest day 22-25 C or 1-12 d with >16 C	> 1 d with warmest day 25-27.5 C or > 4 d (non-consecutive) with warmest day 22-25 C or >12 d with >16 C	> 1 d with warmest day 27.5 C or 3 d (consecutive) >25 C or >24 d with >21 C
TmpMonMxWet	Temperature - daily maximum (by month) (wetlands)	Maximum daily water temperatures within all seasonally flooded wetlands during a month.	Warmest day < 10 C	Warmest day>10 C and <16 C	> 1 d with warmest day 22-25 C or 1-12 d with >16 C	> 1 d with warmest day 25-27.5 C or > 4 d (non-consecutive) with warmest day 22-25 C or >12 d with >16 C	> 1 d with warmest day 27.5 C or 3 d (consecutive) >25 C or >24 d with >21 C

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
TmpSptVar	Temperature - spatial variation	The extent of water temperature variation (cool or warm water depending upon season) within the reach as influenced by inputs of groundwater or tributary streams, or the presence of thermally stratified deep pools.	Super abundant sites of groundwater discharge into surface waters (primary source of stream flow), tributaries entering reach, or deep pools that provide abundant temperature variation in reach.	Abundant sites of groundwater discharge into surface waters, tributaries entering reach, or deep pools that provide abundant temperature variation in reach.	Occasional sites of groundwater discharge into surface waters, tributaries entering reach or deep pools that provide intermittent temperature variation in reach.	Infrequent sites of groundwater discharge into surface waters, tributaries entering reach or deep pools that provide infrequent temperature variation in reach.	No evidence of temperature variation in reach.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
Turb	Turbidity	The severity of suspended sediment (SS) episodes within the stream reach. (Note: this attribute, which was originally called turbidity and still retains that name for continuity, is more correctly thought of as SS, which affects turbidity.) SS is sometimes characterized using turbidity but is more accurately described through suspended solids, hence the latter is to be used in rating this attribute. Turbidity is an optical property of water where suspended, including very fine particles such as clays and colloids, and some dissolved materials cause light to be scattered; it is expressed typically in nephelometric turbidity units (NTU). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: $SEV = a + b(\ln X) + c(\ln Y)$, where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.	SEV Index <= 4.5 Clear with infrequent (short duration--several days per year) concentrations of low concentrations (< 50 mg/l) of suspended sediment. No adverse effects on biota of these low doses.	SEV Index >4.5 and <= 7.5 Occasional episodes (days) of low to moderate concentrations (<500 mg/L), though very short duration episodes (hours) may occur with of higher concentrations (500 to 1000). These concentrations are always sublethal to juvenile and adult salmonids-though some behavioral modification may occur.	SEV Index >7.5 and <= 10.5 Occasional episodes of moderate to relatively high concentrations (>500 and <1000 mg/L), though shorter duration episodes (<1 week) may occur with higher concentrations (1000-5000 mg/L). The higher concentrations stated can be expected to result in major behavioral modification, severe stress, severely reduced forage success and direct mortality.	SEV Index >10.5 and <= 12.5 On-going or occasional episodes (periodic events annually lasting weeks at a time) of high concentrations of suspended sediment (>5000 and <10000 mg/L), or shorter duration episodes lasting hours or days of higher concentrations. These conditions result in direct, high mortality rates.	SEV Index >12.5 Extended periods (month) of very high concentrations (>10000 mg/L). These represent the most extreme severe conditions encountered and result in very high mortality of fish species.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
TurbGWChan	Turbidity (groundwater channels)	The severity of suspended sediment (SS) episodes within groundwater channels in the vicinity of the reach under consideration. Note: although this attribute was originally called turbidity and still retains that name for continuity, it is more correctly thought of as suspended sediment (SS). SS is sometimes characterized in terms of turbidity, but it is more accurately expressed in terms of suspended solids. “Turbidity” is an optical property of water that consists of the scattering of light because of suspended particles, including very fine particles such as clays and colloids. Turbidity in the optical sense is expressed in terms of nephelometric turbidity units (NTUs). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.	SEV Index <= 4.5 Clear with infrequent (short duration--several days per year) concentrations of low concentrations (< 50 mg/l) of suspended sediment. No adverse effects on biota of these low doses.	SEV Index >4.5 and <= 7.5 Occasional episodes (days) of low to moderate concentrations (<500 mg/L), though very short duration episodes (hours) may occur with of higher concentrations (500 to 1000). These concentrations are always sublethal to juvenile and adult salmonids-though some behavioral modification may occur.	SEV Index >7.5 and <= 10.5 Occasional episodes of moderate to relatively high concentrations (>500 and <1000 mg/L), though shorter duration episodes (<1 week) may occur with higher concentrations (1000-5000 mg/L). The higher concentrations stated can be expected to result in major behavioral modification, severe stress, severely reduced forage success and direct mortality.	SEV Index >10.5 and <= 12.5 On-going or occasional episodes (periodic events annually lasting weeks at a time) of high concentrations of suspended sediment (>5000 and <10000 mg/L), or shorter duration episodes lasting hours or days of higher concentrations. These conditions result in direct, high mortality rates.	SEV Index >12.5 Extended periods (month) of very high concentrations (>10000 mg/L). These represent the most extreme severe conditions encountered and result in very high mortality of fish species.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
TurbPond	Turbidity (floodplain ponds)	The severity of suspended sediment (SS) episodes within the floodplain ponds in the vicinity of the reach under consideration. Note: although this attribute was originally called turbidity and still retains that name for continuity, it is more correctly thought of as suspended sediment (SS). SS is sometimes characterized in terms of turbidity, but it is more accurately expressed in terms of suspended solids. "Turbidity" is an optical property of water that consists of the scattering of light because of suspended particles, including very fine particles such as clays and colloids. Turbidity in the optical sense is expressed in terms of nephelometric turbidity units (NTUs). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.	SEV Index <= 4.5 Clear with infrequent (short duration--several days per year) concentrations of low concentrations (< 50 mg/l) of suspended sediment. No adverse effects on biota of these low doses.	SEV Index >4.5 and <= 7.5 Occasional episodes (days) of low to moderate concentrations (<500 mg/L), though very short duration episodes (hours) may occur with of higher concentrations (500 to 1000). These concentrations are always sublethal to juvenile and adult salmonids-though some behavioral modification may occur.	SEV Index >7.5 and <= 10.5 Occasional episodes of moderate to relatively high concentrations (>500 and <1000 mg/L), though shorter duration episodes (<1 week) may occur with higher concentrations (1000-5000 mg/L). The higher concentrations stated can be expected to result in major behavioral modification, severe stress, severely reduced forage success and direct mortality.	SEV Index >10.5 and <= 12.5 On-going or occasional episodes (periodic events annually lasting weeks at a time) of high concentrations of suspended sediment (>5000 and <10000 mg/L), or shorter duration episodes lasting hours or days of higher concentrations. These conditions result in direct, high mortality rates.	SEV Index >12.5 Extended periods (month) of very high concentrations (>10000 mg/L). These represent the most extreme severe conditions encountered and result in very high mortality of fish species.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
TurbWet	Turbidity (wetlands)	The severity of suspended sediment (SS) episodes within seasonally flooded wetlands in the vicinity of the reach under consideration. Note: although this attribute was originally called turbidity and still retains that name for continuity, it is more correctly thought of as suspended sediment (SS). SS is sometimes characterized in terms of turbidity, but it is more accurately expressed in terms of suspended solids. "Turbidity" is an optical property of water that consists of the scattering of light because of suspended particles, including very fine particles such as clays and colloids. Turbidity in the optical sense is expressed in terms of nephelometric turbidity units (NTUs). Suspended solids represents the actual measure of mineral and organic particles transported in the water column, either expressed as total suspended solids (TSS) or suspended sediment concentration (SSC)—both as mg/l. Technically, turbidity is not SS but the two are usually well correlated. If only NTUs are available, an approximation of SS can be obtained through relationships that correlate the two. The metric applied here is the Scale of Severity (SEV) Index taken from Newcombe and Jensen (1996), derived from: SEV = a + b(lnX) + c(lnY) , where, X = duration in hours, Y = mg/l, a = 1.0642 , b = 0.6068, and c = 0.7384. Duration is the number of hours out of month (with highest SS typically) when that concentration or higher normally occurs. Concentration would be represented by grab samples reported by USGS. See rating guidelines.	SEV Index <= 4.5 Clear with infrequent (short duration--several days per year) concentrations of low concentrations (< 50 mg/l) of suspended sediment. No adverse effects on biota of these low doses.	SEV Index >4.5 and <= 7.5 Occasional episodes (days) of low to moderate concentrations (<500 mg/L), though very short duration episodes (hours) may occur with of higher concentrations (500 to 1000). These concentrations are always sublethal to juvenile and adult salmonids-though some behavioral modification may occur.	SEV Index >7.5 and <= 10.5 Occasional episodes of moderate to relatively high concentrations (>500 and <1000 mg/L), though shorter duration episodes (<1 week) may occur with higher concentrations (1000-5000 mg/L). The higher concentrations stated can be expected to result in major behavioral modification, severe stress, severely reduced forage success and direct mortality.	SEV Index >10.5 and <= 12.5 On-going or occasional episodes (periodic events annually lasting weeks at a time) of high concentrations of suspended sediment (>5000 and <10000 mg/L), or shorter duration episodes lasting hours or days of higher concentrations. These conditions result in direct, high mortality rates.	SEV Index >12.5 Extended periods (month) of very high concentrations (>10000 mg/L). These represent the most extreme severe conditions encountered and result in very high mortality of fish species.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
VelocitySideChan	Side channel velocity type	The average velocity type of side channels within the reach, where "velocity type" refers to the proportion of side channel wetted area with a velocity low enough to retain salmonid fry (<50 mm) indefinitely. Estimated maximum sustainable water velocity for fry and small parr is assumed to be 0.4 fps.	Water velocity through side channels is very slow, suitable for holding newly emergent salmonid fry without displacement by velocity OR 90-100% of the wetted area is estimated to have water velocities that do not exceed 0.4 fps.	Water velocity through side channels tends to be slow, though a small percentage of areas (relatively few in number) contain moderately fast flows. Small juveniles would be able to hold within the lower velocity areas but might have difficulty holding in faster areas. OR 75-90% of the wetted area has water velocities that do not exceed 0.4 fps.	Water velocity through side channels is diverse, ranging from areas of very low velocity to areas of relatively high velocities. Small juveniles are able to hold within the lower velocity areas but not in the faster areas. OR 40-75% of the wetted area has water velocities that do not exceed 0.4 fps.	Water velocity through side channels tends to be high, though some areas (relatively few in number) contain very slow flows. Small juveniles are able to hold only within the slowest areas. OR 10-40% of the wetted area has water velocities that do not exceed 0.4 fps.	Water velocity through side channels is very high, representing a very high-energy condition, typically associated with very high gradient and/or high discharges within confined channels or channels with low width to depth ratios. Salmonid fry and small parr are unable to hold position within the channel without significant velocity cover. OR <10% of the wetted area has water velocities that do not exceed 0.4 fps.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
WdDeb	Wood	The amount of wood (large woody debris or LWD) within the reach. Dimensions of what constitutes LWD are defined here as pieces >0.1 m diameter and >2 m in length. Numbers and volumes of LWD corresponding to index levels are based on Peterson et al. (1992), May et al. (1997), Hyatt and Naiman (2001), and Collins et al. (2002). Note: channel widths here refer to average wetted width during the high flow month (< bank full), consistent with the metric used to define high flow channel width. Ranges for index values are based on LWD pieces/CW and presence of jams (on larger channels). Reference to "large" pieces in index values uses the standard TFW definition as those > 50 cm diameter at midpoint.	A complex mixture of single large pieces and accumulations consisting of all sizes, decay classes, and species origins; cross-channel jams are present where appropriate vegetation and channel conditions facilitate their existence; large wood pieces are a dominant influence on channel diversity (e.g., pools, gravel bars, and mid-channel islands) where channel gradient and flow allow such influences. Density of LWD (pieces per channel width CW) consistent with the following: channel width <25 ft -- 3-10 pieces/CW, 25-50 ft -- 3-10 pieces/CW, 50-150 ft -- 7-30 pieces/CW , 150-400 ft -- 20-50 pieces/CW in conjunction with large jams in areas where accumulations might occur, >400 ft -- 15-37 pieces/CW in conjunction with large jams in areas where accumulations might occur.	Complex array of large wood pieces but fewer cross channel bars and fewer pieces of sound large wood due to less recruitment than index level 1; influences of large wood and jams are a prevalent influence on channel morphology where channel gradient and flow allow such influences. Density of LWD (pieces per channel width CW) consistent with the following: channel width <25 ft -- 2-3 pieces/CW, 25-50 ft -- 2-4 pieces/CW, 50-150 ft -- 3-7 pieces/CW , 150-400 ft -- 10-20 pieces/CW (excluding large jams) in conjunction with large jams in areas where accumulations might occur, >400 ft -- 8-15 pieces/CW (excluding large jams) in conjunction with large jams in areas where accumulations might occur.	Few pieces of large wood and their lengths are reduced and decay classes older due to less recruitment than in index level 1; small debris jams poorly anchored in place; large wood habitat and channel features of large wood origin are uncommon where channel gradient and flow allow such influences. Density of LWD (pieces per channel width CW) consistent with the following: channel width <25 ft -- 1-2 pieces/CW, 25-50 ft -- 1-2 pieces/CW, 50-150 ft -- 1-3 pieces/CW , 150-400 ft -- 10-20 pieces/CW without large jams in areas where accumulations might occur, >400 ft -- 8-15 pieces/CW without large jams in areas where accumulations might occur.	Large pieces of wood rare and the natural function of wood pieces limited due to diminished quantities, sizes, decay classes and the capacity of the riparian streambank vegetation to retain pieces where channel gradient and flow allow such influences. Density of LWD (pieces per channel width CW) consistent with the following: channel width <25 ft -- 0.33-1 pieces/CW, 25-50 ft -- 0.33-1 pieces/CW, 50-150 ft -- 0.33-1 pieces/CW , 150-400 ft -- 3-10 pieces/CW without large jams in areas where accumulations might occur, >400 ft -- 2-8 pieces/CW without large jams in areas where accumulations might occur.	Pieces of LWD rare. Density of LWD (pieces per channel width CW) consistent with the following: channel width <25 ft -- <0.33 pieces/CW, 25-50 ft -- <0.33 pieces/CW, 50-150 ft -- <0.33 pieces/CW , 150-400 ft -- <3 pieces/CW with accumulations where they might occur, >400 ft -- <2 pieces/CW with no accumulations where they might occur.

Code	Attribute	Definition	Index Value 0	Index Value 1	Index Value 2	Index Value 3	Index Value 4
Wdrwl	Water withdrawals	The number and relative size of water withdrawals in the stream reach.	No withdrawals.	Very minor water withdrawals with or without screening (entrainment probability considered very low).	Several of significant water withdrawals along reach though all sites known or believed to be screened with effective screening devices. (Note: one site that withdraws a substantial portion of flow with screening falls into this category.)	Several sites of significant water withdrawals along reach without screening or screening believed to be ineffective. (Note: one site that withdraws a substantial portion of flow without screening falls into this category.)	Frequent sites of significant water withdrawals along reach without screening or screening believed to be ineffective.
WidthMn	Channel month Minimum width (ft)	Average width of the wetted channel. If the stream is braided or contains multiple channels, then the width would represent the sum of the wetted widths along a transect that extends across all channels. Note: Categories are not to be used for calculation of wetted surface area; categories here are used to designate relative stream size.	Width values are entered as point values in ft.				
WidthMx	Channel month Maximum width (ft)	Average width of the wetted channel during peak flow month (average monthly conditions). If the stream is braided or contains multiple channels, then the width would represent the sum of the wetted widths along a transect that extends across all channels. Note: Categories are not to be used for calculation of wetted surface area; categories here are used to designate relative stream size.	Width values are entered as point values in ft.				

Appendix D

Scott Subbasin Stream Reach Delineation

Appendix D – Scott Subbasin Stream Reach Delineation

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
301	Scott R	Scott-1	Scott R: Scott R confluence with Klamath R to Muck-a-Muck Cr	1,571	0.010	0.635	SR canyon MS lower
302	Muck-a-Muck Cr	Muck-1	Muck-a-Muck Cr: Muck-a-Muck Cr confluence with Scott R to RB draw (END)	2,279	0.176	0.763	SR canyon tribs
303	Scott R	Scott-2	Scott R: Muck-a-Muck Cr to China Doctor Cr	1,627	0.006	1.697	SR canyon MS lower
304	Scott R	Scott-3	Scott R: China Doctor Cr to Mill Cr (lower Scott R)	1,660	0.005	1.273	SR canyon MS lower
305	Mill Cr (lower Scott)	Mill (lower Scott)-1	Mill Cr (lower Scott): Mouth to Hossick Gulch	1,798	0.031	0.848	SR canyon tribs
306	Mill Cr (lower Scott)	Mill (lower Scott)-2	Mill Cr (lower Scott): Hossick Gulch to New Barn Gulch	1,916	0.037	0.602	SR canyon tribs
307	Mill Cr (lower Scott)	Mill (lower Scott)-3	Mill Cr (lower Scott): New Barn Gulch to South Fork	2,119	0.037	1.030	SR canyon tribs
308	SF Mill Cr (lower Scott)	SF Mill (lower Scott)-1	SF Mill Cr (lower Scott): Confluence with main Mill Cr to Singleton Cr.	2,201	0.073	0.213	SR canyon tribs
309	Singleton Cr (lower Mill Cr)	Singleton (lower Mill)-1	Singleton Cr (lower Scott): Confluence with SF Mill Cr to 2nd RB draw (trib) (END).	2,464	0.076	0.656	SR canyon tribs
310	SF Mill Cr (lower Mill Cr)	SF Mill (lower Mill)-2	SF Mill Cr (lower Scott): Confluence with Singleton Cr to 2nd LB draw (trib) (END)	2,605	0.089	0.856	SR canyon tribs
311	Mill Cr (lower Scott)	Mill (lower Scott)-4	Mill Cr (lower Scott): South Fork to Coats Cr	2,707	0.051	2.167	SR canyon tribs
312	Mill Cr (lower Scott)	Mill (lower Scott)-5	Mill Cr (lower Scott): Coats Cr to Picnic Cr	3,035	0.067	0.921	SR canyon tribs
313	Mill Cr (lower Scott)	Mill (lower Scott)-6	Mill Cr (lower Scott): Picnic Cr to Gumboot Cr (END)	3,337	0.088	0.651	SR canyon tribs
314	Scott R	Scott-4	Scott R: Mill Cr (lower Scott R) to Pat Ford Cr	1,706	0.006	1.372	SR canyon MS lower
315	Pat Ford Cr	Pat Ford-1	Pat Ford Cr: Confluence with Scott R to 1st RB draw (END)	1,794	0.140	0.119	SR canyon tribs
316	Scott R	Scott-5	Scott R: Pat Ford Cr to Schuler Gulch (on RB)	1,854	0.009	3.063	SR canyon MS lower
317	Scott R	Scott-6	Scott R: Schuler Gulch (on RB) to Tompkins Cr	2,018	0.009	3.585	SR canyon MS lower
318	Tompkins Cr	Tompkins-1	Tompkins Cr: Confluence with Scott R to 1st RB unnamed trib	2,150	0.066	0.378	SR canyon tribs
319	Tompkins Cr	Tompkins-2	Tompkins Cr: 1st RB unnamed trib to intake for ditch	2,333	0.062	0.555	SR canyon tribs
320	Tompkins Cr	Tompkins-3	Tompkins Cr: Intake for ditch to unnamed RB spring-fed trib approx 600 ft upstream of USFS road crossing (END)	2,884	0.060	1.750	SR canyon tribs
321	Scott R	Scott-7	Scott R: Tompkins Cr to Middle Cr	2,109	0.014	1.225	SR canyon MS lower
322	Middle Cr	Middle-1	Middle Cr: Confluence with Scott R to 1st LB unnamed trip (draw) (END)	2,191	0.096	0.162	SR canyon tribs
323	Scott R	Scott-8	Scott R: Middle Cr to Kelsey Cr	2,235	0.012	1.925	SR canyon MS upper

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
324	Kelsey Cr	Kelsey-1	Kelsey Cr: Confluence with Scott R to falls approx 0.6 miles up; includes spawning channel in current condition (END).	2,424	0.054	0.658	SR canyon tribs
325	Scott R	Scott-9	Scott R: Kelsey Cr to Canyon Cr	2,343	0.017	1.204	SR canyon MS upper
326	Canyon Cr (lower Scott)	Canyon (lower Scott)-1	Canyon Cr: Confluence with Scott R to 1st RB unnamed trib (slightly less than 1 mile)	2,543	0.038	0.990	SR canyon tribs
327	Canyon Cr (lower Scott)	Canyon (lower Scott)-2	Canyon Cr: 1st RB unnamed trib (slightly less than 1 mile up) to Second Valley Cr	2,799	0.064	0.756	SR canyon tribs
328	Second Valley Cr	Second Valley-1	Second Valley Cr: Confluence with Canyon Cr to 1st RB trib (immediately below USFS road crossing)(gradient steepens above) (END)	3,106	0.233	0.250	SR canyon tribs
329	Canyon Cr (lower Scott)	Canyon (lower Scott)-3	Canyon Cr: Second Valley Cr to Deep Lake Cr (immediately above USFS road crossing)(gradient steepens substantially just above for substantial distance) (assume END)	2,987	0.057	0.625	SR canyon tribs
330	Scott R	Scott-10	Scott R: Canyon Cr to Boulder Cr	2,390	0.031	0.291	SR canyon MS upper
331	Boulder Cr (lower Scott)	Boulder (lower Scott)-1	Boulder Cr: Confluence with Scott R to service road that parallels the Scott R in this vicinity	2,523	0.161	0.156	SR canyon tribs
332	Boulder Cr (lower Scott)	Boulder (lower Scott)-2	Boulder Cr: Service road that parallels the Scott R near the river to forest road crossing upstream (gradient steepens substantially upstream of road) (END)	2,974	0.137	0.623	SR canyon tribs
333	Scott R	Scott-11	Scott R: Boulder Cr to Peregrine Cr (just downstream from Indian Scotty Campground)	2,434	0.012	0.712	SR canyon MS upper
334	Peregrine Cr	Peregrine-1	Peregrine Cr: Confluence with Scott R to service road that parallels the Scott R in this vicinity	2,527	0.155	0.114	SR canyon tribs
335	Peregrine Cr	Peregrine-2	Peregrine Cr: Service road that parallels the Scott R near the river to upstream of forest road crossing upstream where gradient steepens (END)	2,809	0.202	0.264	SR canyon tribs
336	Scott R	Scott-12	Scott R: Peregrine Cr (just downstream from Indian Scotty Campground) to Isinglass Cr	2,537	0.008	2.401	SR canyon MS upper
337	Scott R	Scott-13	Scott R: Isinglass Cr to Snow Cr	2,555	0.015	0.222	SR canyon MS upper
338	Scott R	Scott-14	Scott R: Snow Cr to USGS gauging station on mainstem Scott R	2,634	0.008	1.887	SR canyon MS upper
339	Scott R	Scott-15	Scott R:USGS gauging station on mainstem Scott R (below Scott Valley) to Marilyn Cr	2,634	0.000	1.161	SR canyon MS upper
340	Marilyn Cr	Marilyn-1	Marilyn Cr: Confluence with Scott R to forks (END)	2,634	0.000	0.441	SR canyon tribs
341	Scott R	Scott-16	Scott R: Marilyn Cr to Meamber Gulch	2,634	0.000	0.052	SR valley to Kidder Cr
342	Meamber Gulch	Meamber Gulch-1	Meamber Gulch: Confluence with Scott R to Scott River Rd crossing	2,648	0.032	0.080	East tribs to Ft Jones
343	Meamber Gulch	Meamber Gulch-2 (culvert)	Meamber Gulch: Culvert at Scott River Rd crossing	2,648	0.000	0.000	East tribs to Ft Jones
344	Meamber Gulch	Meamber Gulch-3	Meamber Gulch: Culvert at Scott River Rd crossing to forks (END)	2,717	0.035	0.376	East tribs to Ft Jones
345	Scott R	Scott-17	Scott R: Meamber Gulch to Meamber Cr	2,633	0.000	0.095	SR valley to Kidder Cr
346	Meamber Creek	Meamber-1	Meamber Cr: Confluence with Scott R to Scott River Rd crossing	2,633	0.001	0.090	East tribs to Ft Jones

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
347	Meamber Creek	Meamber-2 (culvert)	Meamber Cr: Culvert at Scott River Rd crossing	2,633	0.000	0.000	East tribs to Ft Jones
348	Meamber Creek	Meamber-3	Meamber Cr: Culvert at Scott River Rd crossing to forks (upstream of Meamber Cr Rd) (END)	2,784	0.063	0.449	East tribs to Ft Jones
349	Scott R	Scott-18	Scott R: Meamber Cr to Sniktaw Cr	2,633	0.000	1.449	SR valley to Kidder Cr
350	Sniktaw Creek	Sniktaw-1	Sniktaw Cr: Confluence with Scott R to 1st unnamed RB trib up from mouth	2,633	0.000	0.042	Sniktaw Cr
351	Sniktaw Creek	Unnamed 1st RB trib (Sniktaw)-1	Sniktaw Cr: Confluence with main Sniktah Cr to approx half way up channel (assumed to be end of fish use) (END)	2,633	0.000	0.410	Sniktaw Cr
352	Sniktaw Creek	Sniktaw-2	Sniktaw Cr: 1st unnamed RB trib up from mouth to 2nd unnamed RB trib	2,633	0.000	0.248	Sniktaw Cr
353	Sniktaw Creek	Unnamed 2nd RB trib (Sniktaw)-1	Sniktaw Cr: Confluence with main Sniktah Cr to end of channel (assumed to not join and upstream ditch) (END)	2,633	0.000	0.327	Sniktaw Cr
354	Sniktaw Creek	Sniktaw-3	Sniktaw Cr: 2nd unnamed RB trib to 3rd unnamed RB trib (labeled as ditch on maps)	2,633	0.000	0.216	Sniktaw Cr
355	Sniktaw Creek	Unnamed 3rd RB trib (Sniktaw)-1	Sniktaw Cr: Confluence with main Sniktah Cr to approx half way up channel (labeled as ditch on maps)(END)	2,633	0.000	0.096	Sniktaw Cr
356	Sniktaw Creek	Sniktaw-4	Sniktaw Cr: 3rd unnamed RB trib (labeled as ditch on maps) to start of diversion upstream of Golden Hoof Ln	2,739	0.028	0.705	Sniktaw Cr
357	Sniktaw Creek	Sniktaw-5	Sniktaw Cr: Start of diversion upstream of Golden Hoof Ln to Alder Cr	2,799	0.025	0.448	Sniktaw Cr
358	Sniktaw Creek	Alder (Sniktaw)-1	Alder Cr: Confluence with Sniktaw Cr to lower Big Meadows Rd crossing	2,861	0.056	0.212	Sniktaw Cr
359	Sniktaw Creek	Alder (Sniktaw)-2 (crossing)	Alder Cr: Lower Big Meadows Rd crossing (type unknown); status unknown	2,861	0.000	0.000	Sniktaw Cr
360	Sniktaw Creek	Alder (Sniktaw)-3	Alder Cr: Lower Big Meadows Rd crossing to upper Big Meadows Rd (name?) crossing	3,077	0.063	0.646	Sniktaw Cr
361	Sniktaw Creek	Alder (Sniktaw)-4 (crossing)	Alder Cr: Upper Big Meadows Rd (name?) crossing (type unknown)	3,077	0.000	0.000	Sniktaw Cr
362	Sniktaw Creek	Alder (Sniktaw)-5	Alder Cr: Upper Big Meadows Rd (name?) crossing to forks (assumed END)	3,444	0.107	0.649	Sniktaw Cr
363	Sniktaw Creek	Sniktaw-6	Sniktaw Cr: Confluence with Alder Cr to Big Meadows Rd crossing	2,815	0.019	0.165	Sniktaw Cr
364	Sniktaw Creek	Sniktaw-7 (culvert)	Sniktaw Cr: Big Meadows Rd crossing (culvert). In 2002 it was determined this crossing failed to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Excessive slope and perched outlet are crossing features that create migration barrier.	2,815	0.000	0.000	Sniktaw Cr
365	Sniktaw Creek	Sniktaw-8	Sniktaw Cr: Big Meadows Rd crossing (culvert) to 2nd unnamed LB trib upstream of Big Meadows Rd crossing. This point is just upstream from the terminus of a ditch that originates to the east.	2,861	0.020	0.443	Sniktaw Cr
366	Sniktaw Creek	Sniktaw-9	Sniktaw Cr: 2nd unnamed LB trib upstream of Big Meadows Rd crossing to the edge of the valley where agriculture occurs.	2,946	0.033	0.495	Sniktaw Cr
367	Sniktaw Creek	Sniktaw-10	Sniktaw Cr: Edge of the valley where agriculture occurs to the Shackleford Cr Rd crossing.	3,159	0.070	0.577	Sniktaw Cr

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
368	Sniktaw Creek	Sniktaw-11	Sniktaw Cr: Shackleford Cr Rd crossing to Forest Rte 43N23 crossing (END).	3,392	0.096	0.458	Sniktaw Cr
369	Scott R	Scott-19	Scott R: Sniktaw Cr to Shackleford Cr	2,634	0.000	0.478	SR valley to Kidder Cr
370	Shackleford Cr	Shackleford-1	Shackleford Cr: Confluence with Scott R to lower Quartz Valley Rd bridge and 1st diversion point	2,694	0.015	0.748	Shackleford Cr
371	Shackleford Cr	Shackleford-2 (diversion)	Shackleford Cr: 1st diversion from creek mouth, site name B Tozier in PAD. Screened diversion, assessed by CDFW 12-4-2002. Year treated listed as 2007. Fish screen installed, irrigation system improved, pushup dam permanently removed, rock weir installed (not below culvert). Description updated 12-17-2013 in PAD.	2,694	0.000	0.000	Shackleford Cr
372	Shackleford Cr	Shackleford-3	Shackleford Cr: 1st diversion upstream of mouth (Tozier site) to 2nd diversion upstream.	2,710	0.005	0.598	Shackleford Cr
373	Shackleford Cr	Shackleford-4 (diversion)	Shackleford Cr: 2nd diversion from creek mouth. No information listed in PAD. Maps show this diversion feeds a ditch on the right side (east) of Shackelford Cr.	2,710	0.000	0.000	Shackleford Cr
374	Shackleford Cr	Shackleford-5	Shackleford Cr: 2nd diversion upstream of mouth to 3rd diversion from mouth (to Freitas Ditch).	2,772	0.011	1.057	Shackleford Cr
375	Shackleford Cr	Shackleford-6 (diversion)	Shackleford Cr: 3rd diversion upstream of creek mouth (to Freitas Ditch SC-17). Assessed by SRCD in 2009. Diversion listed in PAD as a partial barrier (temporal).	2,772	0.000	0.000	Shackleford Cr
376	Shackleford Cr	Shackleford-7	Shackleford Cr: 3rd diversion from mouth (to Freitas Ditch) to Mill Cr	2,779	0.004	0.351	Shackleford Cr
377	Shackleford Cr	Mill (Shackleford)-1	Mill Cr: Confluence with Shackleford Cr to 1st diversion on RB of creek	2,812	0.011	0.544	Mill-Emigrant Cr
378	Shackleford Cr	Mill (Shackleford)-2 (diversion)	Mill Cr: 1st diversion upstream of Mill Cr mouth. No information listed in PAD. Maps show this diversion feeds a ditch on the right side (east) of Mill Cr.	2,812	0.000	0.000	Mill-Emigrant Cr
379	Shackleford Cr	Mill (Shackleford)-3	Mill Cr: 1st diversion upstream of Mill Cr mouth to 2nd diversion upstream of mouth.	2,844	0.013	0.463	Mill-Emigrant Cr
380	Shackleford Cr	Mill (Shackleford)-4 (diversion)	Mill Cr: 2nd diversion upstream of Mill Cr mouth. No information listed in PAD. Maps show this diversion feeds a ditch on the right side (east) of Mill Cr. Aerial photos show the diversion comes from ponded areas of the stream, near (or associated with) beaver ponds in Mill Cr. Diversion is located downstream of Quartz Valley Rd crossing.	2,844	0.000	0.000	Mill-Emigrant Cr
381	Shackleford Cr	Mill (Shackleford)-5	Mill Cr: 2nd diversion upstream of Mill Cr mouth to Dell's diversion (assumed 3rd diversion), a short distance downstream of Emigrant Cr.	2,884	0.009	0.847	Mill-Emigrant Cr

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
382	Shackleford Cr	Mill (Shackleford)-6 (diversion)	Mill Cr: Dell's diversion. The PAD database indicates that a potential barrier exists at the site (Lestelle - some uncertainty about precise location - using location here given by PAD). Assessed by the SRCD in 2009 and scheduled for treatment which did not occur. A barrier removal project was designed, but not conducted due to access issues to the point of diversion according to PAD. The PAD (2014) states that passage status is unknown.	2,884	0.000	0.000	Mill-Emigrant Cr
383	Shackleford Cr	Mill (Shackleford)-7	Mill Cr: Dell's diversion to Emigrant Cr.	2,890	0.011	0.108	Mill-Emigrant Cr
384	Shackleford Cr	Emigrant (Mill)-1	Emigrant Cr: Confluence with Mill Cr to Mill Cr Rd crossing.	2,940	0.008	1.139	Mill-Emigrant Cr
385	Shackleford Cr	Emigrant (Mill)-2	Emigrant Cr: Mill Cr Rd crossing to where the Shackleford Ditch crosses (assumed END due to creek size).	3,022	0.027	0.565	Mill-Emigrant Cr
386	Shackleford Cr	Mill (Shackleford)-8	Mill Cr: Emigrant Cr to vicinity of where riparian vegetation thins out and largely disappears (appears to be due to drying of channel).	2,917	0.016	0.310	Mill-Emigrant Cr
387	Shackleford Cr	Mill (Shackleford)-9	Mill Cr: Vicinity of where riparian vegetation thins out and largely disappears (appears to be due to drying of channel) to diversion that diverts water to left bank (this may be a part of the Big Ditch complex).	2,999	0.019	0.799	Mill-Emigrant Cr
388	Shackleford Cr	Mill (Shackleford)-10 (diversion)	Mill Cr: Diversion that diverts water to left bank of Mill Creek. The PAD database does not show a structure at this site but one symbol in the data base may be off and possibly corresponds to this site. Other documentation suggests that this diversion and the one upstream of it are called the Big Ditch diversion. Assuming this to be the case, PAD indicates that SRCD assessed the site in 2009. Action was proposed to remediate. Current status (2014) indicates it remains a partial barrier (temporal effects).	2,999	0.000	0.000	Mill-Emigrant Cr
389	Shackleford Cr	Mill (Shackleford)-11	Mill Cr: Diversion that diverts water to left bank of Mill Creek to Big Ditch diversion that diverts to the right bank of Mill Cr.	3,192	0.037	0.983	Mill-Emigrant Cr
390	Shackleford Cr	Mill (Shackleford)-12 (diversion)	Mill Cr: Big Ditch diversion that diverts water to right bank of Mill Creek. The SRCD assessed the site in 2009 and proposed remediation. PAD states that the project was not completed due to difficult nature of the site. PAD states the barrier status is unknown.	3,192	0.000	0.000	Mill-Emigrant Cr
391	Shackleford Cr	Mill (Shackleford)-13	Mill Cr: Big Ditch diversion that diverts to the right bank of Mill Cr to the vicinity of where CDFW estimated coho distribution to end based on a proposal for barrier remediation made in 2009. (END)	3,311	0.030	0.744	Mill-Emigrant Cr
392	Shackleford Cr	Shackleford-8	Shackleford Cr: Mill Cr to Quartz Valley Rd bridge crossing	2,841	0.014	0.843	Shackleford Cr

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
393	Shackleford Cr	Shackleford-9	Shackleford Cr: Mill Cr to Quartz Valley Rd bridge crossing to diversion that diverts water on the LB to the upper Sniktaw Creek valley (ditch shown on GIS layer).	2,972	0.087	1.018	Shackleford Cr
394	Shackleford Cr	Shackleford-10 (diversion)	Shackleford Cr: Diversion that diverts water on the LB to the upper Sniktaw Creek valley (ditch shown on GIS layer) (diversion is downstream of the USFS Shackleford Cr road)	2,972	0.000	0.000	Shackleford Cr
395	Shackleford Cr	Shackleford-11	Shackleford Cr: Diversion that diverts water on the LB to the upper Sniktaw Creek valley to the USFS Shackleford Cr road crossing and diversion structure located in that immediate vicinity	3,022	0.030	0.312	Shackleford Cr
396	Shackleford Cr	Shackleford-12 (diversion)	Shackleford Cr: Diversion in the immediate vicinity of the USFS Shackleford Cr road crossing. PAD indicates this feeds the upper Burton Ditch. Assessed by the RCD in 2009. PAD states that treatment occurred in 2008 moved the point of diversion to a natural pool feature, fish screen installed (diversion #18-SC, maximum diversion volume 0.90 cfs).	3,022	0.000	0.000	Shackleford Cr
397	Shackleford Cr	Shackleford-13	Shackleford Cr: Diversion in the immediate vicinity of the USFS Shackleford Cr road crossing to natural barrier. (END)	3,081	0.029	0.390	Shackleford Cr
398	Scott R	Scott-20	Scott R: Shackleford Cr to Patterson Cr (north Scott Valley)	2,634	0.000	0.480	SR valley to Kidder Cr
399	Patterson Cr (N Scott)	Patterson (N Scott)-1	Patterson Cr (N Scott): Confluence with Scott R to Scott R Rd	2,690	0.033	0.320	East tribs to Ft Jones
400	Patterson Cr (N Scott)	Patterson (N Scott)-2	Patterson Cr (N Scott): Scott R Rd to diversion that diverts to the LB of the stream	2,746	0.030	0.358	East tribs to Ft Jones
401	Patterson Cr (N Scott)	Patterson (N Scott)-3 (diversion)	Patterson Cr (N Scott): Diversion that diverts to the LB of the stream. No information in PAD about the structure.	2,746	0.000	0.000	East tribs to Ft Jones
402	Patterson Cr (N Scott)	Patterson (N Scott)-4	Patterson Cr (N Scott): Diversion that diverts to the LB of the stream to forks. (assumed END)	2,930	0.033	1.061	East tribs to Ft Jones
403	Scott R	Scott-21	Scott R: Patterson Cr (north Scott Valley) to Tyler Gulch	2,634	0.000	1.938	SR valley to Kidder Cr
404	Tyler Gulch	Tyler Gulch-1	Tyler Gulch: Confluence with Scott R to Scott R Rd	2,726	0.021	0.848	East tribs to Ft Jones
405	Tyler Gulch	Tyler Gulch-2	Tyler Gulch: Scott R Rd crossing to forks downstream of Tyler Pl road. (assumed END)	2,890	0.037	0.834	East tribs to Ft Jones
406	Scott R	Scott-22	Scott R: Tyler Gulch to Rattlesnake Cr	2,677	0.006	1.426	SR valley to Kidder Cr
407	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-1	Rattlesnake Cr: Confluence with Scott R to Scott R Rd	2,730	0.011	0.887	East tribs to Ft Jones
408	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-2	Rattlesnake Cr: Scott R Rd to intersection with SVID ditch	2,733	0.002	0.298	East tribs to Ft Jones
409	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-3	Rattlesnake Cr: SVID ditch to pond structure approx half way up the Rattlesnake valley	2,815	0.012	1.293	East tribs to Ft Jones
410	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-4 (pond dike)	Rattlesnake Cr: Pond structure dike approx half way up the Rattlesnake valley	2,815	0.000	0.000	East tribs to Ft Jones
411	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-5	Rattlesnake Cr: Pond structure approx half way up the Rattlesnake valley to Moores Gulch	2,979	0.030	1.051	East tribs to Ft Jones

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
412	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-6	Rattlesnake Cr: Moores Gulch to Rattlesnake Cr Rd crossing (culvert)	3,087	0.055	0.371	East tribs to Ft Jones
413	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-7 (culvert)	Rattlesnake Cr: Rattlesnake Cr Rd crossing (culvert). Assessed by Ross Taylor in 2002. Determined that the culvert is a total barrier to fish passage, failing to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Excessive slope and perched outlet are the features that prevent fish migration. Recommended a properly-sized bridge or open bottom arch-culvert set on concrete footings. Taken from PAD.	3,087	0.000	0.000	East tribs to Ft Jones
414	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-8	Rattlesnake Cr: Rattlesnake Cr Rd crossing to West Fork. (assumed END)	3,195	0.041	0.494	East tribs to Ft Jones
415	Scott R	Scott-23	Scott R: Rattlesnake Cr to Oro Fino Cr	2,684	0.002	0.665	SR valley to Kidder Cr
416	Oro Fino Cr	Oro Fino-1	Oro Fino Cr: Confluence with Scott R to Union Rd crossing	2,703	0.007	0.552	Oro Fino Cr
417	Oro Fino Cr	Oro Fino-2	Oro Fino Cr: Union Rd crossing to Lighthill Rd crossing.	2,753	0.005	2.030	Oro Fino Cr
418	Oro Fino Cr	Oro Fino-3	Oro Fino Cr: Lighthill Rd crossing to Quartz Valley Rd crossing. (END)	2,841	0.007	2.420	Oro Fino Cr
419	Scott R	Scott-24	Scott R: Oro Fino Cr to Indian Cr	2,697	0.002	1.131	SR valley to Kidder Cr
420	Indian Cr (Scott V)	Indian (Scott V)-1	Indian Cr: Confluence with Scott R to Scott R Rd	2,720	0.004	0.983	East tribs to Ft Jones
421	Indian Cr (Scott V)	Indian (Scott V)-2	Indian Cr: Scott R Rd to intersection with SVID ditch	2,726	0.006	0.215	East tribs to Ft Jones
422	Indian Cr (Scott V)	Indian (Scott V)-3	Indian Cr: SVID ditch to Boardman Gulch Rd crossing	2,864	0.011	2.327	East tribs to Ft Jones
423	Indian Cr (Scott V)	Indian (Scott V)-4	Indian Cr: Boardman Gulch Rd crossing to New York Gulch	3,035	0.017	1.891	East tribs to Ft Jones
424	Indian Cr (Scott V)	Indian (Scott V)-5	Indian Cr: New York Gulch to Walla Walla Cr	3,232	0.032	1.175	East tribs to Ft Jones
425	Indian Cr (Scott V)	Indian (Scott V)-6	Indian Cr: Walla Walla Cr to West Branch. (assumed END)	3,527	0.041	1.360	East tribs to Ft Jones
426	Scott R	Scott-25	Scott R: Indian Cr to Moffett Cr	2,710	0.002	1.310	SR valley to Kidder Cr
427	Moffett Cr	Moffett-1	Moffett Cr: Confluence with Scott R to Scott R Rd bridge crossing.	2,723	0.005	0.534	Moffett Cr lower
428	Moffett Cr	Moffett-2	Moffett Cr: Scott R Rd bridge crossing 1st RB unnamed trib upstream of Douglas Rd crossing.	2,746	0.003	1.382	Moffett Cr lower
429	Moffett Cr	Moffett-3	Moffett Cr: 1st RB unnamed trib upstream of Douglas Rd crossing to McAdam Cr.	2,769	0.007	0.662	Moffett Cr lower
430	Moffett Cr	McAdam (Moffett)-1	McAdam Cr: Confluence with Scott R to 1st LB unnamed trib	2,802	0.009	0.668	Moffett Cr lower
431	Moffett Cr	McAdam (Moffett)-2	McAdam Cr: 1st LB unnamed trib to McAdam Creek Rd crossing.	2,887	0.011	1.537	Moffett Cr lower
432	Moffett Cr	McAdam (Moffett)-3	McAdam Cr: McAdam Creek Rd crossing to Clear Cr.	2,966	0.009	1.585	Moffett Cr lower
433	Moffett Cr	Clear (McAdam)-1	Clear Cr: Confluence with McAdam Cr to forks (assumed END).	3,278	0.051	1.162	Moffett Cr lower

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
434	Moffett Cr	McAdam (Moffett)-4	McAdam Cr: Clear Cr to Deadwood Cr (assumed END).	3,245	0.017	3.046	Moffett Cr lower
435	Moffett Cr	Moffett-4	Moffett Cr: McAdam Cr to diversion that feeds Pereia Ditch (downstream of State Rte 3 highway)	2,913	0.006	4.830	Moffett Cr lower
436	Moffett Cr	Moffett-5 (diversion)	Moffett Cr: Diversion that feeds Pereia Ditch (downstream of State Rte 3 highway). PAD does not show this site exactly in its layer but a site a short distance downstream is called Moffet Creek Screen #2. PAD states it is not a barrier. Assessed by the SCRD. PAD states there are year round flows at the diversion point. Species present are steelhead and the site is accessible to coho during wet falls when Moffet Creek connects to the Scott River. The fish screen is designed to screen up to 7cfs while 4.5 cfs has been the lar (text ends).	2,913	0.000	0.000	Moffett Cr lower
437	Moffett Cr	Moffett-6	Moffett Cr: Diversion that feeds Pereia Ditch (downstream of State Rte 3 highway) to Soap Cr.	2,930	0.014	0.228	Moffett Cr lower
438	Moffett Cr	Soap (Moffett)-1	Soap Cr: Confluence with Moffett Cr to State Rte 3 highway crossing (culvert).	2,966	0.034	0.203	Moffett Cr upper
439	Moffett Cr	Soap (Moffett)-2 (culvert)	Soap Cr: Culvert crossing on State Rte 3 highway. PAD states that barrier status is unknown, based on assessment y CalTrans in 2009. Notes state that there is a jump to the culvert and that it is an anadromous stream. Habitat quality is considered to be high. A weir is needed at the site.	2,966	0.000	0.000	Moffett Cr upper
440	Moffett Cr	Soap (Moffett)-3	Soap Cr: Culvert crossing on State Rte 3 highway to Copper Cr (assumed END).	3,278	0.032	1.833	Moffett Cr upper
441	Moffett Cr	Moffett-7	Moffett Cr: Soap Cr to 1st diversion upstream that diverts to the LB.	2,930	0.001	0.078	Moffett Cr upper
442	Moffett Cr	Moffett-8 (diversion)	Moffett Cr: Diversion that feeds LB ditch upstream of State Rte 3 highway crossing near Soap Cr. PAD does not show this site exactly in its layer but a site a short distance upstream a site is called Moffet Creek Screen #1. PAD states it is not a barrier. Assessed by the SCRD. PAD states there are year round flows at the diversion point. Species present are steelhead and the site is accessible to coho during wet falls when Moffet Creek connects to the Scott River. Fish screen is designed to screen up to 7cfs while 5.5 cfs has been the lar (text ends).	2,930	0.000	0.000	Moffett Cr upper
443	Moffett Cr	Moffett-9	Moffett Cr: Diversion that feeds LB ditch upstream of State Rte 3 highway crossing near Soap Cr to start of canyon reach.	2,969	0.026	0.288	Moffett Cr upper
444	Moffett Cr	Moffett-10	Moffett Cr: Start of canyon reach upstream of State Rte 3 to Log Gulch (just above end of canyon reach).	3,107	0.015	1.762	Moffett Cr upper
445	Moffett Cr	Moffett-11	Moffett Cr: Log Gulch to Cottonwood Cr.	3,300	0.009	4.067	Moffett Cr upper
446	Moffett Cr	Cottonwood (Moffett)-1	Cottonwood Cr: Confluence with Moffett Cr to 1st major RB trib (assumed END).	3,688	0.030	2.441	Moffett Cr upper
447	Moffett Cr	Moffett-12	Moffett Cr: Cottonwood Cr to Duzel Cr.	3,353	0.014	0.700	Moffett Cr upper
448	Moffett Cr	Duzel (Moffett)-1	Duzel Cr: Confluence with Moffett Cr to Duzel Cr Rd crossing (box culvert).	3,353	0.000	0.128	Moffett Cr upper

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
449	Moffett Cr	Duzel (Moffett)-2 (culvert)	Duzel Cr: Duzel Cr Rd crossing (box culvert). PAD states that it is a total barrier to upstream fish migration. Assessment made by Ross Taylor in 2002. PAD states although FishXing estimated that fish passage criteria are met on 0% of the expected migration flows for adult anadromous salmonids, 0% for resident/two-year old juveniles, and 0% for oneyear old and young-of-year juveniles. The box culvert (text ends). Recommendation called for installing offset baffles to increase depth and reduce water velocities within box culvert.	3,353	0.000	0.000	Moffett Cr upper
450	Moffett Cr	Duzel (Moffett)-3	Duzel Cr: Duzel Cr Rd crossing (box culvert) to Clapboard Gulch	3,504	0.014	2.054	Moffett Cr upper
451	Moffett Cr	Duzel (Moffett)-4	Duzel Cr: Clapboard Gulch to Long Gulch (assumed END).	3,556	0.014	0.724	Moffett Cr upper
452	Moffett Cr	Moffett-13	Moffett Cr: Duzel Cr to Mill Gulch	3,419	0.007	1.804	Moffett Cr upper
453	Moffett Cr	Moffett-14	Moffett Cr: Mill Gulch to East Gulch	3,547	0.013	1.882	Moffett Cr upper
454	Moffett Cr	Moffett-15	Moffett Cr: East Gulch to Spring Branch	3,720	0.017	1.898	Moffett Cr upper
455	Moffett Cr	Moffett-16	Moffett Cr: Spring Branch to 1st unnamed RB trib upstream (limit based on IP results in NMFS 2014) (END).	3,763	0.025	0.329	Moffett Cr upper
456	Scott R	Scott-26	Scott R: Moffett Cr to Kidder Cr.	2,713	0.001	0.740	SR valley to Kidder Cr
457	Kidder Cr	Kidder-1	Kidder Cr: Confluence with Scott R to State Rte 3 bridge	2,714	0.000	0.650	Kidder lower-Big Slough
458	Kidder Cr	Kidder-2	Kidder Cr: State Rte 3 bridge to Patterson Cr.	2,720	0.000	2.838	Kidder lower-Big Slough
459	Kidder Cr	Big Slough (Kidder)-1	Big Slough: Confluence with Kidder Cr to channel narrowing below entrance of Patterson Cr (near Eller Lane crossing)	2,733	0.001	2.694	Kidder lower-Big Slough
460	Kidder Cr	Big Slough (Kidder)-2 (dam)	Big Slough: Diversion near the center of Section 34 west of Island Road. Appears to coincide with location of either one of the flashboard dams identified as diversion 405 or the structure associated with diversion 409 in the 1980 adjudication document. The PAD states there was a fish screen and fishway (roughed channel) installed in 2008. The PAD implies that there is no longer an issue based on SRCD assessment made in 2009.	2,733	0.000	0.000	Kidder lower-Big Slough
461	Kidder Cr	Big Slough (Kidder)-3	Big Slough: Diversion near the center of Section 34 west of Island Road to channel narrowing below entrance of Patterson Cr (near Eller Lane crossing)	2,736	0.000	1.277	Kidder lower-Big Slough
462	Kidder Cr	Big Slough (Kidder)-4	Big Slough: Channel narrowing below entrance of Patterson Cr (near Eller Lane crossing) to Patterson Cr confluence (near Eller Lane crossing) (is screening structure there but there may not be?)	2,737	0.001	0.588	Kidder lower-Big Slough

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
463	Kidder Cr	Patterson (Kidder)-1	Patterson Cr: Confluence with Big Slough near Eller Lane crossing to 1st LB irrigation tailwater return ditch. (Note: this not visible in aerial images; uncertain about the site).	2,739	0.001	0.451	Patterson Cr
464	Kidder Cr	Patterson (Kidder)-2	Patterson Cr: 1st LB irrigation tailwater return ditch to diversion structure upstream (PAD references site name as Storm Drainage - Pipe Ditch and states that it is screened, mentions no issues). Assessed by CDFW in 2009.	2,743	0.002	0.335	Patterson Cr
465	Kidder Cr	Patterson (Kidder)-3 (diversion screen)	Patterson Cr: Diversion screen near Eller Lane, PAD references site name as Storm Drainage - Pipe Ditch and states that it is screened, mentions no issues. Assessed by CDFW in 2009. (Note: this appears to be diversion 401 in 1980 adjudication document).	2,743	0.000	0.000	Patterson Cr
466	Kidder Cr	Patterson (Kidder)-4	Patterson Cr: Diversion screen near Eller Lane (Storm Drainage - Pipe Ditch) to diversion to Eller Lane Ditch	2,756	0.009	0.263	Patterson Cr
467	Kidder Cr	Patterson (Kidder)-5 (diversion)	Patterson Cr: Eller Lane Ditch diversion, presumed to be screened though PAD does not state it. PAD states that some form of storm damage repair occurred in 2007. CDFW assessed the site in 2009 but remediated fish response unconfirmed. (Note: this appears to be diversion 400 in 1980 adjudication document).	2,756	0.000	0.000	Patterson Cr
468	Kidder Cr	Patterson (Kidder)-6	Patterson Cr: Eller Lane Ditch diversion to Dairy Ditch diversion.	2,772	0.007	0.441	Patterson Cr
469	Kidder Cr	Patterson (Kidder)-7 (diversion)	Patterson Cr: Dairy Ditch diversion. PAD states that the structure is not a barrier. Assessed by the SRCD. Notes state that it is a 13 cfs diversion, cone-style fish screen built in spring 2003, habitat very good, high number of juveniles onserved during low flow periods. (Note: this appears to be diversion 396 in 1980 adjudication document).	2,772	0.000	0.000	Patterson Cr
470	Kidder Cr	Patterson (Kidder)-8	Patterson Cr: Dairy Ditch diversion to near the edge of dense riparian vegetation upstream (just upstream from a stream crossing near a dwelling); this site approximately coincides with where the stream routinely goes dry during the summer.	2,799	0.008	0.642	Patterson Cr
471	Kidder Cr	Patterson (Kidder)-9	Patterson Cr: Site near the edge of dense riparian vegetation upstream (just upstream from a stream crossing near a dwelling) to North State Hwy 3 crossing (bridge).	2,835	0.011	0.638	Patterson Cr
472	Kidder Cr	Patterson (Kidder)-10	Patterson Cr: North State Hwy 3 crossing (bridge) to Lower Young Ditch diversion (shown as the first ditch above hwy crossing in the 1:24000 hydro layer).	2,906	0.019	0.727	Patterson Cr

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
473	Kidder Cr	Patterson (Kidder)-11 (diversion)	Patterson Cr: Lower Young Ditch diversion (shown as the first ditch above hwy crossing in the 1:24000 hydro layer). The hydro layer apparently shows the site of the diversion downstream of the hwy, which is incorrect. The 1980 adjudication map shows two diversions associated with the Young family (diversions 393 amd 394). which Lestelle is assuming have been combined into one diversion based on PAD info and the hydro layer. PAD states it is a screened structure with no apparent issues. Refers to the ditch as the Lower Young Ditch.	2,906	0.000	0.000	Patterson Cr
474	Kidder Cr	Patterson (Kidder)-12	Patterson Cr: Lower Young Ditch diversion to diversion 390 in 1980 adjudication.	2,972	0.018	0.718	Patterson Cr
475	Kidder Cr	Patterson (Kidder)-13 (diversion)	Patterson Cr: Diversion 390 in 1980 adjudication. PAD refers to the structure as a floodgate and states that it is a screened diversion. No issues mentioned in PAD for the site. Note: the 1:24000 hydrolayer shows the diversion being upstream of where it actually is according to mapping information. This is the upper most diversion in Patterson Cr, as documented in Yokel (2009).	2,972	0.000	0.000	Patterson Cr
476	Kidder Cr	Patterson (Kidder)-14	Patterson Cr: Diversion 390 in 1980 adjudication to assumed end of historic coho distribution based on Intrinsic Potential analysis by NOAA as given in the finalized SONCC recovery plan (NMFS 2014). (END)	3,146	0.025	1.326	Patterson Cr
477	Kidder Cr	Big Slough (Kidder)-5	Big Slough: Patterson Cr confluence to Crystal Creek (appears to be turned into a ditch) (Note: the channel upstream of Patterson Cr appears to act as a ditch but the USGS map continues to label it as Big Slough).	2,739	0.000	1.316	Kidder lower-Big Slough
478	Kidder Cr	Crystal (Kidder)-1	Crystal Cr: Confluence with Big Slough (operating as a ditch) to current condition ditch connecting Crystal Cr and Johnson Cr. Intrinsic Potential analysis in NMFS (2014) suggests historic distribution extended into lower Crystal Cr; presumably distribution was not higher by IP based on flow limitations, though overwintering habitat should have been very good. (END)	2,772	0.006	1.074	Crystal-Johnson Cr
479	Kidder Cr	Big Slough (Kidder)-6	Big Slough: Crystal Creek (appears to be turned into a ditch) to Johnson Cr.	2,742	0.002	0.256	Kidder lower-Big Slough
480	Kidder Cr	Johnson (Kidder)-1	Johnson Cr: Confluence with Big Slough (operating as a ditch) to current condition ditch connecting Crystal Cr and Johnson Cr. Intrinsic Potential analysis in NMFS (2014) suggests historic coho distribution extended into lower Crystal Cr; presumably distribution was not higher by IP based on flow limitations, though overwintering habitat should have been very good. IP does not appear to show coho distribution into lower Johnson Cr but watershed conditions appear to be essentially identical between lower Crystal C and lower Johnson Cr. (assumed END)	2,764	0.004	1.071	Crystal-Johnson Cr
481	Kidder Cr	Big Slough (Kidder)-7	Big Slough: Johnson Cr to end of Big Slough (based on 1:24000 hydro layer) (END).	2,750	0.001	1.420	Kidder lower-Big

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
							Slough
482	Kidder Cr	Kidder-3	Kidder Cr: Patterson Cr to 2nd (southern most) crossing on State Rte 3 hwy (bridge).	2,802	0.006	2.577	Kidder Cr upper
483	Kidder Cr	Kidder-4	Kidder Cr: State Rte 3 hwy (bridge) to approximate location of diversion numbered 451 (as listed in the 1980 adjudication). This is based on information in the adjudication and associated maps. A diversion is not listed in CDFW PAD, nor is there a ditch shown in the 1:24000 hydro layer. It is assumed here that some form of diversion still exists.	2,858	0.013	0.837	Kidder Cr upper
484	Kidder Cr	Kidder-5 (diversion)	Kidder Cr: Diversion numbered 451 (as listed in the 1980 adjudication). This is based on information in the adjudication and associated maps. A diversion is not listed in CDFW PAD, nor is there a ditch shown in the 1:24000 hydro layer. It is assumed here that some form of diversion still exists.	2,858	0.000	0.000	Kidder Cr upper
485	Kidder Cr	Kidder-6	Kidder Cr: Diversion numbered 451 (as listed in the 1980 adjudication) to Friden Ditch diversion (number 448/449 in 1980 adjudication).	2,920	0.014	0.861	Kidder Cr upper
486	Kidder Cr	Kidder-7 (diversion)	Kidder Cr: Friden Ditch diversion (number 448/449 in 1980 adjudication). A diversion is not listed in CDFW PAD so the status of the diversion is uncertain; the ditch is shown in the 1:24000 hydro layer.	2,920	0.000	0.000	Kidder Cr upper
487	Kidder Cr	Kidder-8	Kidder Cr: Friden Ditch diversion (number 448/449 in 1980 adjudication) to the Wright and Fletcher Ditch diversion (no. 446 in adjudication).	3,038	0.021	1.073	Kidder Cr upper
488	Kidder Cr	Kidder-9 (diversion)	Kidder Cr: Wright and Fletcher Ditch diversion (no. 446 in adjudication), sometimes called Altoona Ditch, Greenview Ditch, Kidder Cr Ditch, or Glendenning Ditch. A diversion is not listed in CDFW PAD so the status of the diversion is uncertain; the ditch is shown in the 1:24000 hydro layer.	3,038	0.000	0.000	Kidder Cr upper
489	Kidder Cr	Kidder-10	Kidder Cr: Wright and Fletcher Ditch diversion (no. 446 in adjudication) to Barker Ditch (no. 445 in adjudication).	3,074	0.016	0.438	Kidder Cr upper
490	Kidder Cr	Kidder-11 (diversion)	Kidder Cr: Barker Ditch (no. 445 in adjudication). A diversion is not listed in CDFW PAD so the status of the diversion is uncertain; the ditch is shown in the 1:24000 hydro layer. Part of the ditch is contained in a pipe according to the adjudication.	3,074	0.000	0.000	Kidder Cr upper
491	Kidder Cr	Kidder-12	Kidder Cr: Barker Ditch (no. 445 in adjudication) to assumed end of historic coho distribution based on Intrinsic Potential analysis by NOAA as given in the finalized SONCC recovery plan (NMFS 2014). (END)	3,192	0.015	1.448	Kidder Cr upper
492	Scott R	Scott-27	Scott R: Kidder Cr lower bridge on State Rte 3 hwy.	2,714	0.000	0.397	SR valley to Etna Cr
493	Scott R	Scott-28	Scott R: State Rte 3 hwy to mouth of East Slough	2,714	0.000	0.873	SR valley to Etna Cr
494	East Slough	East Slough-1	East Slough: Confluence with Scott R to Island Rd crossing.	2,717	0.000	1.286	East Slough

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
495	East Slough	East Slough-2	East Slough: Island Rd crossing to crossing by spur road off Eastside Rd just downstream from Sharps Gulch.	2,733	0.001	2.101	East Slough
496	East Slough	East Slough-3	East Slough:Spur road off Eastside Rd just downstream from Sharps Gulch to end of channel (END).	2,739	0.003	0.456	East Slough
497	Scott R	Scott-29	Scott R: East Slough to Island Rd bridge.	2,715	0.000	1.251	SR valley to Etna Cr
498	Scott R	Scott-30	Scott R: Island Rd bridge to a point approximately adjacent to the end of a spur road off Eastside Rd just downstream from Sharps Gulch.	2,736	0.002	2.101	SR valley to Etna Cr
499	Scott R	Scott-31	Scott R: A point approximately adjacent to the end of a spur road off Eastside Rd just downstream from Sharps Gulch to Eller Lane bridge crossing.	2,743	0.001	1.974	SR valley to Etna Cr
500	Scott R	Scott-32	Scott R: Eller Lane bridge crossing to bridge crossing on the Paul Sweezey property (downstream of Etna).	2,745	0.000	2.428	SR valley to Etna Cr
501	Scott R	Scott-33	Scott R: Bridge crossing on the Paul Sweezey property (downstream of Etna) to Etna Cr.	2,759	0.003	1.056	SR valley to Etna Cr
502	Etna Cr	Etna-1	Etna Cr: Confluence with Scott R to vicinity of site of diversion numbered 272 in adjudication. Etna Cr transitions from a braided channel to more of a single-threaded channel in this vicinity. No diversion is identified as being here in the PAD database. Status is uncertain (Lestelle).	2,775	0.004	0.855	Etna Cr
503	Etna Cr	Etna-2	Etna Cr: Vicinity of site of diversion numbered 272 in adjudication to diversion number 266 in adjudication. According to adjudication maps this is also the vicinity of diversion 267, though the 1:24000 hydro layer only identifies the ditch that goes of the stream's LB. The PAD does not identify a diversion structure at this site.	2,848	0.010	1.392	Etna Cr
504	Etna Cr	Etna-3 (diversion)	Etna Cr: Diversion number 266 in adjudication. According to adjudication maps this is also the vicinity of diversion 267, though the 1:24000 hydro layer only identifies the ditch that goes of the stream's LB. The PAD does not identify a diversion structure at this site, needs confirmation (Lestelle).	2,848	0.000	0.000	Etna Cr
505	Etna Cr	Etna-4	Etna Cr: Diversion number 266 in adjudication to State Rte 3 highway bridge crossing (no passage barrier at the site according to PAD.	2,849	0.004	0.023	Etna Cr
506	Etna Cr	Etna-5	Etna Cr: State Rte 3 highway bridge crossing to diversion number 263 or 264 (both may be together though it is unclear. The RB ditch is shown in the 1:24000 hydro layer. No diversion structure is shown in the PAD database. It is noted that another diversion (no. 265) is also shown in the vicinity on the adjudication map, though it is a LB ditch.	2,895	0.020	0.447	Etna Cr

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
507	Etna Cr	Etna-6 (diversion)	Etna Cr: Diversion number 266 in adjudication. According to adjudication maps this is also the vicinity of diversion 267, though the 1:24000 hydro layer only identifies the ditch that goes of the stream's LB. The PAD does not identify a diversion structure at this site, needs confirmation (Lestelle).	2,895	0.000	0.000	Etna Cr
508	Etna Cr	Etna-7	Etna Cr: Diversion number 266 in adjudication to diversion number 260, which diverts to the LB or north side of Etna Cr. The PAD database identifies the location in GIS as being downstream of where the site actually is. The PAD refers to this ditch as the Depew Ditch and states that it is a partial barrier. Assessed by the SRCD in 2009.	2,978	0.021	0.762	Etna Cr
509	Etna Cr	Etna-8 (diversion)	Etna Cr: Diversion number 260 in adjudication, which diverts to the LB or north side of Etna Cr. The PAD database identifies the location in GIS as being downstream of where the site actually is. The PAD refers to this ditch as the Depew Ditch and states that it is a partial barrier. Assessed by the SRCD in 2009.	2,978	0.000	0.000	Etna Cr
510	Etna Cr	Etna-9	Etna Cr: Diversion number 260 in adjudication, which diverts to the LB or north side of Etna Cr to diversion number 259 (Etna Mill Ditch).	3,057	0.017	0.896	Etna Cr
511	Etna Cr	Etna-10 (diversion)	Etna Cr: Diversion number 259 (Etna Mill Ditch). The PAD does not identify a diversion structure at this site, needs confirmation (Lestelle), but a ditch is identified at the site in the 1:24000 hydro layer.	3,057	0.000	0.000	Etna Cr
512	Etna Cr	Etna-11	Etna Cr: Diversion number 259 (Etna Mill Ditch) to Whisky Cr.	3,073	0.019	0.163	Etna Cr
513	Etna Cr	Etna-12	Etna Cr: Whisky Cr to City of Etna diversion. The CDFW coho distribution map shows that coho distribution ends in the vicinity of this diversion (presumably this is estimated current limit of distribution as NMFS 2014 indicates that intrinsic potential exists upstream of this point).	3,212	0.027	0.987	Etna Cr
514	Etna Cr	Etna-13 (diversion)	Etna Cr: City of Etna diversion (no. 250 in adjudication). The PAD does not identify a diversion structure at this site. The adjudication map indicates that water is diverted through a pipeline, which is not shown in the 1:24000 hydro layer.	3,212	0.000	0.000	Etna Cr
515	Etna Cr	Etna-14	Etna Cr: City of Etna diversion (no. 250 in adjudication) to Alder Cr.	3,315	0.044	0.442	Etna Cr
516	Etna Cr	Etna-15	Etna Cr: Alder Cr to end of intrinsic potential as reported in NMFS (2014). (Assumed END)	3,446	0.039	0.633	Etna Cr
517	Scott R	Scott-34	Scott R: Etna Cr to Horn Lane bridge crossing.	2,776	0.002	1.610	SR valley to tailings
518	Scott R	Scott-35	Scott R: Horn Lane bridge crossing to Young's Dam.	2,785	0.001	2.016	SR valley to tailings

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
519	Scott R	Scott-36 (dam)	Scott R: Young's Dam. Diversion for Scott Valley Irrigation District Ditch. PAD notes state that improved fish passage for Chinook, coho, and steelhead has been made at the dam. The structure is considered to be a partial barrier.	2,785	0.000	0.000	SR valley to tailings
520	Scott R	Scott-37	Scott R: Young's Dam to Clark Cr.	2,805	0.004	1.044	SR valley to tailings
521	Clark Cr	Clark-1	Clark Cr: Confluence with Scott R to Highway 3 crossing at culvert. PAD database list passage status at culvert as unknown (survey date in 2008).	2,837	0.006	1.070	Clark Cr
522	Clark Cr	Clark-2 (culvert)	Clark Cr: Highway 3 crossing at culvert. PAD database list passage status at culvert as unknown (survey date in 2008). Requires a detailed survey per the results of the first-pass (reconnaissance) survey.	2,837	0.000	0.000	Clark Cr
523	Clark Cr	Clark-3	Clark Cr: Highway 3 crossing at culvert to the Timmons Ditch diversion (no. 214-13); gradient steepens above this point (END).	3,310	0.050	1.791	Clark Cr
524	Scott R	Scott-38	Scott R: Confluence with Clark Cr to confluence with French Cr.	2,815	0.003	0.601	SR valley to tailings
525	French Cr	French-1	French Cr: Confluence with Scott R to RB connected channel with beaver ponds. Note: configuration here is based on observations in 2016. These ponds appear to sometimes be connected directly to Scott R and other times to lower French Cr.	2,817	0.035	0.011	French Cr lower
526	French Cr	Unnamed RB beaver pond (French)-1	French Cr: RB channel with beaver ponds; these ponds appear to sometimes be connected directly to Scott R and other times to lower French Cr.	2,819	0.002	0.160	French Cr lower
527	French Cr	French-2	French Cr: Confluence with RB connected beaver pond channel to active diversion (screened). Presume this to be no. 47 (referred to as Lower French diversion; diversion is screened).	2,844	0.006	0.840	French Cr lower
528	French Cr	French-3 (diversion)	French Cr: Diversion no. 47 (referred to as Lower French diversion; diversion is screened).	2,844	0.000	0.000	French Cr lower
529	French Cr	French-4	French Cr: Diversion no. 47 (referred to as Lower French diversion) to Diversion no. 44 (referred to as West French diversion). Diversion screened.	2,864	0.010	0.386	French Cr lower
530	French Cr	French-5 (diversion)	French Cr: Diversion no. 44 (referred to as West French diversion or in PAD as Tobias West Ditch,). Diversion screened. (Diversion no. 44, maximum volume to be diverted 3.49 cfs)	2,864	0.000	0.000	French Cr lower
531	French Cr	French-6	French Cr: Diversion no. 44 (referred to as West French diversion) to upstream diversion dam no. 43 (called the Green Ditch diversion in PAD, Davis 1997 calls it the Richman Diversion).	2,880	0.007	0.437	French Cr lower

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
532	French Cr	French-7 (diversion dam)	French Cr: Diversion dam no. 43 (called the Green Ditch diversion in PAD, Davis 1997 calls it the Richman Diversion). PAD states (retrieved April 2018): The fish screen is approx 1,110 ft downstream from the head-gate, raising the concern that salmonid juveniles may be exposed to adverse conditions in the ditch. In 2004 a boulder weir grade control structure was placed to hold the grade at the point of diversion. It consists of a two curvilinear boulder weir structures placed approx 50 ft apart. Since placement, the lower structure has unraveled, allowing the channel to become marginally incised. Substantial sand retention behind the upper structure has occurred, aggrading the stream surface and filling the low-flow gaps between boulders. The weir poses a fish passage barrierfor juveniles under low flow conditions. Fish have been stranded and dewatered in the ditch. Habitat type data collected in French Creek in 2003 showed this reach to be dominated by riffles and runs, with a low percentage of pools. French Creek is one of two tributaries to the Scott River that have shown Coho presence every year since surveys were started in 2001. Recommendations given for changes. Unknown is carried out.	2,880	0.000	0.000	French Cr lower
533	French Cr	French-8	French Cr: Diversion dam no. 43 to mouth of Miners Cr.	2,929	0.010	0.942	French Cr lower
534	French Cr	Miners (French)-1	Miners Cr: Confluence with French Cr to Cory Ditch diversion (no. 36)(assumed to occur at or near Miners Cr Rd crossing). Diversion is screened and assumed to have no passage issues (based on PAD).	2,985	0.018	0.579	Miners Cr
535	French Cr	Miners (French)-2 (diversion)	Miners Cr: Cory Ditch diversion (no. 36)(assumed to occur at or near Miners Cr Rd crossing). Diversion is screened and assumed to have no passage issues (based on PAD).	2,985	0.000	0.000	Miners Cr
536	French Cr	Miners (French)-3	Miners Cr: Cory Ditch diversion (no. 36) to Lewis Ditch diversion (no. 33). Point of diversion was moved in 2009 upstream to 40 ft natural bedrock, fish screen installed (maximum volume to be diverted 1.46 cfs). The point of diversion now located at a natural falls with unknown passage (from PAD).	3,119	0.019	1.363	Miners Cr
537	French Cr	Miners (French)-4 (diversion)	Miners Cr: Lewis Ditch diversion (no. 33). Point of diversion was moved in 2009 upstream to 40 ft natural bedrock, fish screen installed (maximum volume to be diverted 1.46 cfs). The point of diversion now located at a natural falls with unknown passage (from PAD).	3,119	0.000	0.000	Miners Cr
538	French Cr	Miners (French)-5	Miners Cr: Lewis Ditch diversion (#33) to Miners Ditch Diversion (#29). Gradient steepens above here, assume no anadromous fish upstream of this point (END).	3,861	0.062	2.262	Miners Cr

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
539	French Cr	French-9	French Cr: Mouth of Miners Cr to the Mill House Diversion (no. 23). PAD says of this diversion: "Standard fish screen installed in January 2001, can screen up to 5 cfs, stream and riparian conditions in vicinity are excellent."	2,972	0.019	0.423	French Cr upper
540	French Cr	French-10 (diversion)	French Cr: Mill House Diversion (no. 23). PAD says of this diversion: "Standard fish screen installed in January 2001, can screen up to 5 cfs, stream and riparian conditions in vicinity are excellent."	2,972	0.000	0.000	French Cr upper
541	French Cr	French-11	French Cr: Mill House Diversion (no. 23) to Company Ditch Diversion (no. 20). PAD states of this diversion: "Water right holders moved their point of diversion to other existing diversions (the French Creek Decree) allowing 1.9 cfs to remain in the stream for up to two miles." Year of this completed appears to be 2009 from PAD.	3,040	0.021	0.603	French Cr upper
542	French Cr	French-12 (diversion)	French Cr: Company Ditch Diversion (no. 20). PAD states of this diversion: "Water right holders moved their point of diversion to other existing diversions (the French Creek Decree) allowing 1.9 cfs to remain in the stream for up to two miles." Year of this completed appears to be 2009 from PAD.	3,040	0.000	0.000	French Cr upper
543	French Cr	French-13	French Cr: Company Ditch Diversion (#20) to North Fork French Cr.	3,042	0.025	0.015	French Cr upper
544	French Cr	NF French-1	NF French Cr: Confluence with main French Cr to the North Fork Ditch diversion (no. 17).	3,198	0.043	0.689	French Cr upper
545	French Cr	NF French-2 (diversion)	French Cr: North Fork Ditch diversion (no. 17) (END).	3,198	0.000	0.000	French Cr upper
546	French Cr	French-14	French Cr: Confluence of North Fork French Cr to the Bemrod Ditch (no. 11; called MacGowan Ditch in PAD). Diversion is screened.	3,270	0.025	1.708	French Cr upper
547	French Cr	French-15 (diversion)	French Cr: Bemrod Ditch diversion (no. 11; called MacGowan Ditch in PAD). Diversion is screened.	3,270	0.000	0.000	French Cr upper
548	French Cr	French-16	French Cr: Bemrod Ditch diversion (no. 11; called MacGowan Ditch in PAD) to mouth of Paynes Lake Cr.	3,303	0.037	0.167	French Cr upper
549	French Cr	Paynes Lk (French)-1	Paynes Lake Cr: Confluence with French Cr to Payne Lake Cr diversion (no. 10) (END).	3,417	0.063	0.344	French Cr upper
550	French Cr	French-17	French Cr: Mouth of Paynes Lake Cr to confluence with Horse Range Cr. Assumed to be the end of all potential anadromous migration (END).	3,389	0.041	0.393	French Cr upper
551	Scott R	Scott-39	Scott R: Confluence with French Cr to confluence with Wolford Slough upstream of French Cr.	2,818	0.004	0.153	SR valley to tailings
552	Wolford Slough	Wolford Slough-1	Wolford Slough: Confluence of Wolford Slough to a distance upstream where aquatic habitat in the channel is entirely or mostly perrenial.	2,821	0.002	0.293	Wolford Slough

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
553	Wolford Slough	Wolford Slough-2	Wolford Slough: Wolford Slough channel from where aquatic habitat currently is entirely seasonal depending on inundation to a distance upstream where the relic channel is still plainly evident in aerial photos. This channel is meant to represent a historic river channel that is shown in both the 1875 and 1885 GLO maps; that channel is labeled as "Old river bed." It is assumed that that channel was still functioning as a groundwater fed channel likely populated by beavers, at least during the period prior to heavy beaver trapping. The valley likely had many channels like this one historically; the evidence from the GLO maps is used to place the channel depicted as a current relic in this location. (END).	2,854	0.004	1.679	Wolford Slough
554	Scott R	Scott-40	Scott R: Confluence with Wolford Slough upstream of French Cr to diversion no. 203 for Denny Ditch. Barrier structure was removed in 2009. PAD: Point of diversion moved downstream to the existing sump pond, fish screen not installed (Diversion #203-13 for 4.00 cfs)--note: Lestelle no sure what this means. PAD states regarding barrier:." "Remediated, fish response unconfirmed."	2,837	0.003	1.350	SR valley to tailings
555	Scott R	Scott-41	Scott R: Diversion no. 203 for Denny Ditch to Fay Lane Bridge.	2,856	0.007	0.527	SR valley to tailings
556	Scott R	Scott-42	Scott R: Fay Lane Bridge to diversion no. 198 (Upper Denny Ditch diversion or Tobias West Ditch). Note: Lestelle cannot discern the ditch on aerial photos or on the USGS topo map; location shown adjudication map and in PAD.	2,860	0.002	0.448	SR valley to tailings
557	Scott R	Scott-43	Scott R: Diversion no. 198 (Upper Denny Ditch diversion or Tobias West Ditch) to outflow from the Westside Tailings channel (Lestelle assigned name).	2,885	0.004	1.230	SR valley to tailings
558	Scott R	Westside tailings channel-1	Scott R: Confluence of Westside Tailings channel with Scott R to a tailings levee at downstream end of the tailings.	2,918	0.032	0.197	SR valley to forks
559	Scott R	Westside tailings channel-2 (levee)	Scott R: Tailings levee at downstream end of the tailings on Westside tailings channel. Assumed no fish passage at this point.	2,918	0.000	0.000	SR valley to forks
560	Scott R	Westside tailings channel-3	Scott R: Confluence of Westside Tailings channel with Scott R to a tailings levee at downstream end of the tailings.	2,936	0.003	0.239	SR valley to forks
561	Scott R	Westside tailings channel-4 (levee)	Scott R: Tailings levee at upstream end of the lower (narrow) pond. Assumed no fish passage at this point.	2,936	0.000	0.000	SR valley to forks
562	Scott R	Westside tailings channel-5	Scott R: Tailings levee at upstream end of the lower (narrow) pond to the end of presumed wetted channel within the Westside tailings channel (END).	2,996	0.008	1.555	SR valley to forks
563	Scott R	Scott-44	Scott R: Outflow from the Westside Tailings channel (Lestelle assigned name) to the Farmers Ditch diversion.	2,996	0.009	2.354	SR valley to forks

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
564	Scott R	Scott-45 (diversion)	Scott R: Screened diversion to Farmers Ditch. In 2007, the structure was improved by installing a vortex weir to replace a gravel dam, replaced existing fish screen (PAD).	2,996	0.000	0.000	SR valley to forks
565	Scott R	Scott-46	Scott R: Diversion at top of Farmers Ditch to mouth of Sugar Cr.	3,010	0.014	0.189	SR valley to forks
566	Sugar Cr	Sugar-1	Sugar Cr: Confluence with Scott R to the Highway 3 bridge crossing.	3,011	0.001	0.292	Sugar Cr
567	Sugar Cr	Sugar-2	Sugar Cr: Highway 3 bridge crossing to lower active diversion (no. 179 or 181).	3,091	0.015	1.001	Sugar Cr
568	Sugar Cr	Sugar-3 (diversion)	Sugar Cr: Lower active diversion (no. 179 or 181); diverts up to 6 cfs.	3,091	0.000	0.000	Sugar Cr
569	Sugar Cr	Sugar-4	Sugar Cr: Lower active diversion (no. 179 or 181) to mouth of Tiger Fork.	3,243	0.028	1.012	Sugar Cr
570	Sugar Cr	Sugar-5	Sugar Cr: Confluence with Tiger Fork to unnamed RB tributary; assumed to be end of anadromous salmonid use (END).	3,593	0.040	1.670	Sugar Cr
571	Scott R	Scott-47	Scott R: Confluence with Sugar Cr to mouth of Wildcat Cr.	3,074	0.007	1.673	SR valley to forks
572	Wildcat Cr	Wildcat-1	Wildcat Cr: Confluence with Scott R to diversion no. 153 (start of Ankeny Ditch), assumed to be just downstream of Ankeny Gulch.	3,274	0.021	1.804	Wildcat Cr
573	Wildcat Cr	Wildcat-2 (diversion)	Wildcat Cr: Diversion no. 153 (start of Ankeny Ditch), assumed to be just downstream of Ankeny Gulch. Diversion is screened. It is assumed that this diversion is also tied in somehow to diversion no. 154.	3,274	0.000	0.000	Wildcat Cr
574	Wildcat Cr	Wildcat-3	Wildcat Cr: Diversion no. 153 (start of Ankeny Ditch) to diversion no. 148 (start of Upper Ditch; PAD report at this upper diversion: self-contained screen constructed in the spring of 2003, screens up to 5.5. cfs, habitat is good and complex at this site) (END).	3,663	0.044	1.663	Wildcat Cr
575	Scott R	Scott-48	Scott R: Confluence with Wildcat Cr to diversion no. 133 (start of Butts Ditch, screened in 1966).	3,110	0.007	0.930	SR valley to forks
576	Scott R	Scott-49 (diversion)	Scott R: Diversion no. 133 (start of Butts Ditch, screened in 1966). Diversion diverts up to approx 6 cfs. Note: Lestelle presumes that the ditch goes into a pipe a short distance downstream because it is not visible in aerial photos.	3,110	0.000	0.000	SR valley to forks
577	Scott R	Scott-50	Scott R: Diversion no. 133 (start of Butts Ditch) to the confluence of the East and South forks Scott River.	3,113	0.004	0.148	SR valley to forks
578	SF Scott R	SF Scott-1	SF Scott R: Confluence of the East and South forks Scott River to an unnamed LB trib just upstream from the Hwy 3 bridge. This trib contains a large pond a short distance upstream of its mouth.	3,149	0.037	0.183	South Fork MS
579	SF Scott R	Unnamed RB trib (SF Scott)-1	SF Scott R: Mouth of unnamed LB trib just upstream from the Hwy 3 bridge to the end of the pond. Note: this pond may be inaccessible to juvenile fish due to its apparent elevation above the South Fork (END).	3,182	0.057	0.109	South Fork tribs

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
580	SF Scott R	SF Scott-2	SF Scott R: Mouth of unnamed LB trib just upstream from the Hwy 3 bridge to diversion no. 122 (South Fork Ditch diversion) (diverts up to 2.48 cfs). Diversion is screened.	3,319	0.014	1.877	South Fork MS
581	SF Scott R	SF Scott-3 (diversion)	SF Scott R: Diversion no. 122 (South Fork Ditch diversion) (diverts up to 2.48 cfs). Diversion is screened.	3,319	0.000	0.000	South Fork MS
582	SF Scott R	SF Scott-4	SF Scott R: Diversion no. 122 (South Fork Ditch diversion) to the mouth of Boulder Cr.	3,365	0.030	0.294	South Fork MS
583	Boulder Cr (SF Scott)	Boulder (SF Scott)-1	Boulder Cr (SF Scott R): Confluence of Boulder Cr with the and South Fork to diversion no. 120 (start of Boulder Cr Ditch).	3,546	0.047	0.730	South Fork tribs
584	Boulder Cr (SF Scott)	Boulder (SF Scott)-2 (diversion)	Boulder Cr (SF Scott R): Diversion no. 120 (start of Boulder Cr Ditch); diverts up to 3.4 cfs; diversion is screened.	3,546	0.000	0.000	South Fork tribs
585	Boulder Cr (SF Scott)	Boulder (SF Scott)-3	Boulder Cr (SF Scott R): Diversion no. 120 (start of Boulder Cr Ditch) to Unnamed RB trib near McKeen Mine. No anadromous passage assumed to occur past this point (END).	3,853	0.062	0.936	South Fork tribs
586	SF Scott R	SF Scott-5	SF Scott R: Mouth of Boulder Cr to diversion no. 113 (start of Upper SF Ditch or Int Paper Co Lower Ditch).	3,547	0.022	1.533	South Fork MS
587	SF Scott R	SF Scott-6 (diversion)	SF Scott R: Diversion no. 113 (start of Upper SF Ditch or Int Paper Co Lower Ditch). Diverts up to 2.6 cfs; screened. PAD states: Fish screen installed in spring of 2002, can successfully screen 4.0 cfs, water quality is high.	3,547	0.000	0.000	South Fork MS
588	SF Scott R	SF Scott-7	SF Scott R: Diversion no. 113 (start of Upper SF Ditch or Int Paper Co Lower Ditch) to mouth of Fox Cr.	3,577	0.022	0.262	South Fork MS
589	Fox Cr (SF Scott)	Fox (SF Scott)-1	Fox Cr (SF Scott R): Confluence with SF Scott R to logging road crossing. Sue Mauer spawning survey report from 2002 suggests that coho ascend further than this point, but gradient steepens rapidly beyond here. Lestelle believes it is unlikely that either coho or steelhead move much further, if at all, from this point. Mining tailings also suggest that additional accessibility is very limited (END).	3,628	0.063	0.154	South Fork tribs
590	SF Scott R	SF Scott-8	SF Scott R: Mouth of Fox Cr to confluence with Camp Gulch. The California coho distribution layer shows Camp Gulch as being the upper limit to distribution (END).	3,932	0.042	1.610	South Fork MS
591	EF Scott R	EF Scott-1	EF Scott R: Confluence of the East and South forks Scott River to diversion no. 81 (start of the Callahan EF Ditch).	3,254	0.011	2.405	East Fork MS lower
592	EF Scott R	EF Scott-2 (diversion)	EF Scott R: Diversion no. 81 (start of the Callahan EF Ditch). PAD: Diversion structure is a fish passage barrier during seasonal low-flow periods. Proposed to FRGP in 2009; however, no work was completed. Diverts up to 2.94 cfs. Structure screened in 1994.	3,254	0.000	0.000	East Fork MS lower
593	EF Scott R	EF Scott-3	EF Scott R: Diversion no. 81 (start of the Callahan EF Ditch) to mouth of Noyes Valley Cr.	3,255	0.001	0.334	East Fork MS lower

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
594	Noyes Valley Cr	Noyes Valley (EF Scott)-1	Noyes Valley Cr (EF Scott R): Mouth of Noyes Valley Cr to Diversion no. 78 (diverts to Gasaway Ditch), located approx 2.5 miles up this stream from mouth.	3,434	0.014	2.451	East Fork tribs
595	Noyes Valley Cr	Noyes Valley (EF Scott)-2 (diversion)	Noyes Valley Cr (EF Scott R): Diversion no. 78 (diverts to Gasaway Ditch), located approx 2.5 miles up this stream from mouth. Diverts up to 2.11 cfs.	3,434	0.000	0.000	East Fork tribs
596	Noyes Valley Cr	Noyes Valley (EF Scott)-3	Noyes Valley Cr (EF Scott R): Diversion no. 78 (diverts to Gasaway Ditch) to Diversion nos. 75 and 76 (close proximity), which diverts to Homestead and Schoolhouse ditches. This upper point is assumed to be the upstream limit of historic coho distribution, based on narrative in FEIR document (page 3.3-22). This is 4 miles upstream of mouth. This is assumed end of historic steelhead also. (END).	3,526	0.011	1.583	East Fork tribs
597	EF Scott R	EF Scott-4	EF Scott R: Mouth of Noyes Valley Cr to mouth of Big Mill Cr.	3,256	0.003	0.062	East Fork MS lower
598	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-1	Big Mill Cr (EF Scott R): Confluence with EF Scott R to the Hwy 3 culvert crossing.	3,320	0.057	0.214	East Fork tribs
599	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-2 (culvert)	Big Mill Cr (EF Scott R): Hwy 3 culvert crossing. Site appears to be a complete blockage to upstream migrants. The CA coho distribution layer shows that upstream distribution ends at this point. The SONCC (2014) final recovery plan states: "The Hwy 3/Big Mill Creek road/stream crossing is a Caltrans facility located within SONCC coho salmon critical habitat, and is a high priority for treatment. Remediation of this barrier can be accomplished by returning Big Mill Creek flow to its original channel, but this has been delayed until the landowner can be assured necessary access to property across Big Mill Creek." The plan says that there is 1.5 miles of habitat upstream of this point once the barrier has been corrected.	3,320	0.000	0.000	East Fork tribs
600	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-3	Big Mill Cr (EF Scott R): Hwy 3 culvert crossing to diversion no. 69 (start of Big Mill Cr Ditch), which can take up to 1.6 cfs.	3,336	0.024	0.128	East Fork tribs
601	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-4 (diversion)	Big Mill Cr (EF Scott R): Diversion no. 69 (start of Big Mill Cr Ditch), which can take up to 1.6 cfs. Ditch is assumed to be screened.	3,336	0.000	0.000	East Fork tribs
602	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-5	Big Mill Cr (EF Scott R): Diversion no. 69 (start of Big Mill Cr Ditch) to the vicinity of road end at a residence on the right bank (but back from the stream). Stream gradient begins to increase substantially above here.	3,510	0.052	0.640	East Fork tribs
603	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-6	Big Mill Cr (EF Scott R): vicinity of road end at a residence on the right bank (but back from the stream) to the confluence with Little Mill Cr. (END).	3,740	0.072	0.605	East Fork tribs
604	EF Scott R	EF Scott-5	EF Scott R: Mouth of Big Mill Cr to mouth of Mule Cr.	3,335	0.018	0.823	East Fork MS lower

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
605	Mule Cr (EF Scott)	Mule (EF Scott)-1	Mule Cr (EF Scott R): Confluence with EF Scott R to a distance upstream where gradient steepens quickly. This is based on a comment in the FEIR Vol 1(2009) that states that coho use several hundred yards of Mule Creek. Still, gradient is too steep! (END).	3,363	0.074	0.072	East Fork tribs
606	EF Scott R	EF Scott-6	EF Scott R: Confluence with Mule Cr to diversions nos. 66 and 67 (starts of the China Cove and Masterson Ditches). Assumed to be screened. Two separate diversions but close, so combined here. Total flow diverted is up to 4.8 cfs.	3,363	0.012	0.449	East Fork MS lower
607	EF Scott R	EF Scott-7 (diversion)	EF Scott R: diversions nos. 66 and 67 (starts of the China Cove and Masterson Ditches). Assumed to be screened. Two separate diversions but close, so combined here. Total flow diverted is up to 4.8 cfs. Site location that Lestelle used in GIS is intermediate btween the two diversions.	3,363	0.000	0.000	East Fork MS lower
608	EF Scott R	EF Scott-8	EF Scott R: Diversions nos. 66 and 67 (starts of the China Cove and Masterson Ditches) to mouth of Grouse Cr.	3,485	0.016	1.422	East Fork MS lower
609	Grouse Cr (EF Scott)	Grouse (EF Scott)-1	Grouse Cr (EF Scott R): Confluence with EF Scott R to Hayes Gulch. The FEIR Vol 1 (2014) states that 0.8 miles of Grouse Cr could be used by coho.	3,546	0.026	0.439	East Fork tribs
610	Grouse Cr (EF Scott)	Grouse (EF Scott)-2	Grouse Cr (EF Scott R): Mouth of Hayes Gulch to mouth of Big Carmen Cr.	3,662	0.032	0.685	East Fork tribs
611	Grouse Cr (EF Scott)	Grouse (EF Scott)-3	Grouse Cr (EF Scott R): Mouth of Big Carmen Cr to stream ford at road crossing. This is downstream of Diversion no. 63, which diverts up to 1 cfs. One other diversion exist in the lower stream that diverts up to 0.31 cfs. (END).	3,790	0.050	0.484	East Fork tribs
612	EF Scott R	EF Scott-9	EF Scott R: Confluence with Grouse Cr to Diversions nos. 58 and 59 (combined here)(starts of the Pickrell Good and Franklin Lower Ditches).	3,524	0.008	0.978	East Fork MS upper
613	EF Scott R	EF Scott-10 (diversion)	EF Scott R: Diversions nos. 58 and 59 (combined here)(starts of the Pickrell Good and Franklin Lower Ditches).	3,524	0.000	0.000	East Fork MS upper
614	EF Scott R	EF Scott-11	EF Scott R: Diversions nos. 58 and 59 (combined here)(starts of the Pickrell Good and Franklin Lower Ditches) to the mouth of Kangaroo Cr.	3,564	0.019	0.401	East Fork MS upper
615	Kangaroo Cr	Kangaroo (EF Scott)-1	Kangaroo Cr (EF Scott R): Mouth of Kangaroo Cr to diversion no. 55 (right bank; diversion can take up to 0.56 cfs); this point is downstream of USFS boundary by approx 0.1 mile according to topo map (note: CDFG 2002 habitat inventory report suggest boundary is further upstream, but this seems unfounded; riparian conditions change noticeably at the boundary).	3,657	0.026	0.688	East Fork tribs
616	Kangaroo Cr	Kangaroo (EF Scott)-2 (diversion)	Kangaroo Cr (EF Scott R): Diversion no. 55 (right bank; diversion can take up to 0.56 cfs); this point is downstream of USFS boundary by approx 0.1 mile according to topo map (note: CDFG 2002 habitat inventory report suggest boundary is further upstream, but this seems unfounded; riparian conditions change noticeably at the boundary).	3,657	0.000	0.000	East Fork tribs

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
617	Kangaroo Cr	Kangaroo (EF Scott)-3	Kangaroo Cr (EF Scott R): Diversion no. 55 to Diversion no. 49 (start of Upper Ditch 1).	3,900	0.043	1.064	East Fork tribs
618	Kangaroo Cr	Kangaroo (EF Scott)-4 (diversion)	Kangaroo Cr (EF Scott R): Diversion no. 49 (start of Upper Ditch 1); diverts up to 2.36 cfs.	3,900	0.000	0.000	East Fork tribs
619	Kangaroo Cr	Kangaroo (EF Scott)-5	Kangaroo Cr (EF Scott R): Diversion no. 49 (start of Upper Ditch 1) to near site of small diversion associated with Eagles Rest Ranch (data in CDFG 2002 suggests this may be near upper limit of steelhead distribution) (END)..	4,063	0.050	0.622	East Fork tribs
620	EF Scott R	EF Scott-12	EF Scott R: Mouth of Kangaroo Cr to mouth of Meadow Gulch.	3,742	0.013	2.590	East Fork MS upper
621	EF Scott R	EF Scott-13	EF Scott R: Mouth of Meadow Gulch to confluence with Rail Cr.	3,924	0.016	2.139	East Fork MS upper
622	Rail Cr	Rail (EF Scott)-1	Rail Cr (EF Scott R): Mouth of Rail Cr to dam that forms a reservoir used for irrigation purposes.	3,991	0.037	0.345	East Fork tribs
623	Rail Cr	Rail (EF Scott)-2 (dam)	Rail Cr (EF Scott R): Dam forming Rail Cr reservoir. Dam is a complete block to upstream fish migration.	3,991	0.000	0.000	East Fork tribs
624	Rail Cr	Rail (EF Scott)-3	Rail Cr (EF Scott R): Dam forming Rail Cr reservoir to small RB trib upstream of roadway crossing near a house. Note: there is a substantial diversion in this reach, which is not specifically marked in the dataset here because there is no anadromous fish passage into the reach currently.	4,105	0.029	0.744	East Fork tribs
625	Rail Cr	Rail (EF Scott)-4	Rail Cr (EF Scott R): Small RB trib upstream of roadway crossing near a house to small RB trib downstream of Rock Fence Cr. CDFW surveyed this reach of stream for habitat characteristics in 2008. The upper end of this reach is steep with at least one falls that is likely a barrier to upstream passage (CDFG 2008). (END).	4,361	0.050	0.978	East Fork tribs
626	EF Scott R	EF Scott-14	EF Scott R: Mouth of Rail Cr to Diversion no. 23 (start of Ditch 3 - Lower Newton), which diverts up to 12 cfs; diversion was screened in 1978.	3,978	0.027	0.382	East Fork MS upper
627	EF Scott R	EF Scott-15 (diversion)	EF Scott R: Diversion no. 23 (start of Ditch 3 - Lower Newton), which diverts up to 12 cfs; diversion was screened in 1978.	3,978	0.000	0.000	East Fork MS upper
628	EF Scott R	EF Scott-16	EF Scott R: Diversion no. 23 (start of Ditch 3 - Lower Newton) to Diversion no. 16 (start of the Big Ditch or High Ditch no. 1).	4,118	0.021	1.246	East Fork MS upper
629	EF Scott R	EF Scott-17 (diversion)	EF Scott R: Diversion no. 16 (start of the Big Ditch or High Ditch no. 1), which diverts up to 12.5 cfs; diversion was screened in 1978.	4,118	0.000	0.000	East Fork MS upper
630	EF Scott R	EF Scott-18	EF Scott R: Diversion no. 16 (start of the Big Ditch or High Ditch no. 1) to confluence with Houston Cr.	4,211	0.032	0.555	East Fork MS upper
631	Houston Cr	Houston (EF Scott)-1	Houston Cr (EF Scott R): Mouth of Houston Cr to approx one-third mile upstream (small LB drainage); FEIR (2009) indicates that coho might have used up to one half mile of Houston Cr.	4,299	0.045	0.370	East Fork tribs
632	Houston Cr	Houston (EF Scott)-2	Houston Cr (EF Scott R): Approx one-third mile upstream (small LB drainage) to confluence with Little Houston Cr.	4,468	0.049	0.648	East Fork tribs

No.	Stream	Reach name	Description	Elevation ft	Slope	Length mi	Diagnostic Unit
633	Houston Cr	Houston (EF Scott)-3	Houston Cr (EF Scott R): Mouth of Little Houston Cr to confluence with Cabin Meadow Cr. Diversion no. 13 occurs in the vicinity of the mouth of Cabin Meadow Cr, which diverts to Houston Ditch, diverting up to 2 cfs. CDFG (2002) shows that steelhead (or trout) end of distribution is in this vicinity. (END).	4,690	0.070	0.599	East Fork tribs
634	EF Scott R	EF Scott-19	EF Scott R: Mouth of Houston Cr to confluence with Crater Cr.	4,301	0.035	0.491	East Fork MS upper
635	EF Scott R	EF Scott-20	EF Scott R: Mouth of Crater Cr to confluence with Little Crater Cr.	4,421	0.046	0.491	East Fork MS upper
636	EF Scott R	EF Scott-21	EF Scott R: Mouth of Little Crater Cr to confluence with Mountain House Cr (END).	4,507	0.033	0.486	East Fork MS upper

Appendix E

Historical and Current Baseline Flow and Wetted Width in August (normal flow year)

Appendix E – Historical and Current Baseline Flow and Wetted Width in August (normal flow year)

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
301	Scott R	Scott-1	Scott R: Scott R confluence with Klamath R to Muck-a-Muck Cr	169.9	56.3	84	45
302	Muck-a-Muck Cr	Muck-1	Muck-a-Muck Cr: Muck-a-Muck Cr confluence with Scott R to RB draw (END)	0.2	0.2	2	2
303	Scott R	Scott-2	Scott R: Muck-a-Muck Cr to China Doctor Cr	169.9	56.3	84	45
304	Scott R	Scott-3	Scott R: China Doctor Cr to Mill Cr (lower Scott R)	169.9	56.3	84	45
305	Mill Cr (lower Scott)	Mill (lower Scott)-1	Mill Cr (lower Scott): Mouth to Hossick Gulch	4.7	4.7	11	11
306	Mill Cr (lower Scott)	Mill (lower Scott)-2	Mill Cr (lower Scott): Hossick Gulch to New Barn Gulch	3.4	3.4	9	9
307	Mill Cr (lower Scott)	Mill (lower Scott)-3	Mill Cr (lower Scott): New Barn Gulch to South Fork	2.1	2.1	7	7
308	SF Mill Cr (lower Scott)	SF Mill (lower Scott)-1	SF Mill Cr (lower Scott): Confluence with main Mill Cr to Singleton Cr.	0.5	0.5	3	3
309	Singleton Cr (lower Mill Cr)	Singleton (lower Mill)-1	Singleton Cr (lower Scott): Confluence with SF Mill Cr to 2nd RB draw (trib) (END).	0.2	0.2	2	2
310	SF Mill Cr (lower Mill Cr)	SF Mill (lower Mill)-2	SF Mill Cr (lower Scott): Confluence with Singleton Cr to 2nd LB draw (trib) (END)	0.2	0.2	2	2
311	Mill Cr (lower Scott)	Mill (lower Scott)-4	Mill Cr (lower Scott): South Fork to Coats Cr	1.6	1.6	6	6
312	Mill Cr (lower Scott)	Mill (lower Scott)-5	Mill Cr (lower Scott): Coats Cr to Picnic Cr	0.9	0.9	4	4
313	Mill Cr (lower Scott)	Mill (lower Scott)-6	Mill Cr (lower Scott): Picnic Cr to Gumboot Cr (END)	0.2	0.2	2	2
314	Scott R	Scott-4	Scott R: Mill Cr (lower Scott R) to Pat Ford Cr	165.2	51.6	82	43
315	Pat Ford Cr	Pat Ford-1	Pat Ford Cr: Confluence with Scott R to 1st RB draw (END)	0.6	0.6	3	3
316	Scott R	Scott-5	Scott R: Pat Ford Cr to Schuler Gulch (on RB)	164.6	51.0	82	42
317	Scott R	Scott-6	Scott R: Schuler Gulch (on RB) to Tompkins Cr	151.7	38.1	79	36
318	Tompkins Cr	Tompkins-1	Tompkins Cr: Confluence with Scott R to 1st RB unnamed trib	3.1	3.1	9	9
319	Tompkins Cr	Tompkins-2	Tompkins Cr: 1st RB unnamed trib to intake for ditch	1.8	1.3	6	5
320	Tompkins Cr	Tompkins-3	Tompkins Cr: Intake for ditch to unnamed RB spring-fed trib approx 600 ft upstream of USFS road crossing (END)	0.5	0.5	3	3
321	Scott R	Scott-7	Scott R: Tompkins Cr to Middle Cr	148.7	35.0	78	34
322	Middle Cr	Middle-1	Middle Cr: Confluence with Scott R to 1st LB unnamed trip (draw) (END)	1.5	1.5	6	6
323	Scott R	Scott-8	Scott R: Middle Cr to Kelsey Cr	147.2	33.6	77	33

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
324	Kelsey Cr	Kelsey-1	Kelsey Cr: Confluence with Scott R to falls approx 0.6 miles up; includes spawning channel in current condition (END).	3.8	3.8	10	10
325	Scott R	Scott-9	Scott R: Kelsey Cr to Canyon Cr	143.4	29.8	76	31
326	Canyon Cr (lower Scott)	Canyon (lower Scott)-1	Canyon Cr: Confluence with Scott R to 1st RB unnamed trib (slightly less than 1 mile)	5.2	5.2	12	12
327	Canyon Cr (lower Scott)	Canyon (lower Scott)-2	Canyon Cr: 1st RB unnamed trib (slightly less than 1 mile up) to Second Valley Cr	3.6	3.6	9	9
328	Second Valley Cr	Second Valley-1	Second Valley Cr: Confluence with Canyon Cr to 1st RB trib (immediately below USFS road crossing)(gradient steepens above) (END)	1.0	1.0	5	5
329	Canyon Cr (lower Scott)	Canyon (lower Scott)-3	Canyon Cr: Second Valley Cr to Deep Lake Cr (immediately above USFS road crossing)(gradient steepens substantially just above for substantial distance) (assume END)	2.6	2.6	8	8
330	Scott R	Scott-10	Scott R: Canyon Cr to Boulder Cr	138.2	24.6	75	28
331	Boulder Cr (lower Scott)	Boulder (lower Scott)-1	Boulder Cr: Confluence with Scott R to service road that parallels the Scott R in this vicinity	0.9	0.9	4	4
332	Boulder Cr (lower Scott)	Boulder (lower Scott)-2	Boulder Cr: Service road that parallels the Scott R near the river to forest road crossing upstream (gradient steepens substantially upstream of road) (END)	0.9	0.9	4	4
333	Scott R	Scott-11	Scott R: Boulder Cr to Peregrine Cr (just downstream from Indian Scotty Campground)	137.3	23.7	74	27
334	Peregrine Cr	Peregrine-1	Peregrine Cr: Confluence with Scott R to service road that parallels the Scott R in this vicinity	2.0	2.0	7	7
335	Peregrine Cr	Peregrine-2	Peregrine Cr: Service road that parallels the Scott R near the river to upstream of forest road crossing upstream where gradient steepens (END)	1.0	1.0	5	5
336	Scott R	Scott-12	Scott R: Peregrine Cr (just downstream from Indian Scotty Campground) to Isinglass Cr	137.3	23.7	85	40
337	Scott R	Scott-13	Scott R: Isinglass Cr to Snow Cr	137.3	23.7	74	27
338	Scott R	Scott-14	Scott R: Snow Cr to USGS gauging station on mainstem Scott R	137.3	23.7	85	40
339	Scott R	Scott-15	Scott R:USGS gauging station on mainstem Scott R (below Scott Valley) to Marilyn Cr	137.3	23.7	85	40
340	Marilyn Cr	Marilyn-1	Marilyn Cr: Confluence with Scott R to forks (END)	0.5	0.0	7	0
341	Scott R	Scott-16	Scott R: Marilyn Cr to Meamber Gulch	137.3	23.7	85	27
342	Meamber Gulch	Meamber Gulch-1	Meamber Gulch: Confluence with Scott R to Scott River Rd crossing	0.3	0.0	2	0
343	Meamber Gulch	Meamber Gulch-2 (culvert)	Meamber Gulch: Culvert at Scott River Rd crossing				
344	Meamber Gulch	Meamber Gulch-3	Meamber Gulch: Culvert at Scott River Rd crossing to forks (END)	0.3	0.3	2	2
345	Scott R	Scott-17	Scott R: Meamber Gulch to Meamber Cr	137.3	23.7	85	27
346	Meamber Creek	Meamber-1	Meamber Cr: Confluence with Scott R to Scott River Rd crossing	0.5	0.0	7	0

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
347	Meamber Creek	Meamber-2 (culvert)	Meamber Cr: Culvert at Scott River Rd crossing				
348	Meamber Creek	Meamber-3	Meamber Cr: Culvert at Scott River Rd crossing to forks (upstream of Meamber Cr Rd) (END)	0.5	0.0	3	0
349	Scott R	Scott-18	Scott R: Meamber Cr to Sniktaw Cr	137.3	23.7	85	27
350	Sniktaw Creek	Sniktaw-1	Sniktaw Cr: Confluence with Scott R to 1st unnamed RB trib up from mouth	1.8	0.0	13	0
351	Sniktaw Creek	Unnamed 1st RB trib (Sniktaw)-1	Sniktaw Cr: Confluence with main Sniktah Cr to approx half way up channel (assumed to be end of fish use) (END)	0.2	0.0	5	0
352	Sniktaw Creek	Sniktaw-2	Sniktaw Cr: 1st unnamed RB trib up from mouth to 2nd unnamed RB trib	1.7	0.1	13	1
353	Sniktaw Creek	Unnamed 2nd RB trib (Sniktaw)-1	Sniktaw Cr: Confluence with main Sniktah Cr to end of channel (assumed to not join and upstream ditch) (END)	0.1	0.0	4	0
354	Sniktaw Creek	Sniktaw-3	Sniktaw Cr: 2nd unnamed RB trib to 3rd unnamed RB trib (labeled as ditch on maps)	1.7	0.2	13	2
355	Sniktaw Creek	Unnamed 3rd RB trib (Sniktaw)-1	Sniktaw Cr: Confluence with main Sniktah Cr to approx half way up channel (labeled as ditch on maps)(END)	0.2	0.0	5	0
356	Sniktaw Creek	Sniktaw-4	Sniktaw Cr: 3rd unnamed RB trib (labeled as ditch on maps) to start of diversion upstream of Golden Hoof Ln	1.5	0.4	6	3
357	Sniktaw Creek	Sniktaw-5	Sniktaw Cr: Start of diversion upstream of Golden Hoof Ln to Alder Cr	1.5	0.8	6	4
358	Sniktaw Creek	Alder (Sniktaw)-1	Alder Cr: Confluence with Sniktaw Cr to lower Big Meadows Rd crossing	0.4	0.0	3	0
359	Sniktaw Creek	Alder (Sniktaw)-2 (crossing)	Alder Cr: Lower Big Meadows Rd crossing (type unknown); status unknown				
360	Sniktaw Creek	Alder (Sniktaw)-3	Alder Cr: Lower Big Meadows Rd crossing to upper Big Meadows Rd (name?) crossing	0.2	0.1	2	1
361	Sniktaw Creek	Alder (Sniktaw)-4 (crossing)	Alder Cr: Upper Big Meadows Rd (name?) crossing (type unknown)				
362	Sniktaw Creek	Alder (Sniktaw)-5	Alder Cr: Upper Big Meadows Rd (name?) crossing to forks (assumed END)	0.1	0.1	1	1
363	Sniktaw Creek	Sniktaw-6	Sniktaw Cr: Confluence with Alder Cr to Big Meadows Rd crossing	1.1	1.0	5	4
364	Sniktaw Creek	Sniktaw-7 (culvert)	Sniktaw Cr: Big Meadows Rd crossing (culvert). In 2002 it was determined this crossing failed to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Excessive slope and perched outlet are crossing features that create migration barrier.				
365	Sniktaw Creek	Sniktaw-8	Sniktaw Cr: Big Meadows Rd crossing (culvert) to 2nd unnamed LB trib upstream of Big Meadows Rd crossing. This point is just upstream from the terminus of a ditch that originates to the east.	1.1	1.0	5	5
366	Sniktaw Creek	Sniktaw-9	Sniktaw Cr: 2nd unnamed LB trib upstream of Big Meadows Rd crossing to the edge of the valley where agriculture occurs.	1.1	1.0	5	5
367	Sniktaw Creek	Sniktaw-10	Sniktaw Cr: Edge of the valley where agriculture occurs to the Shackleford Cr Rd crossing.	1.1	1.1	5	5

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
368	Sniktaw Creek	Sniktaw-11	Sniktaw Cr: Shackleford Cr Rd crossing to Forest Rte 43N23 crossing (END).	1.1	1.1	5	5
369	Scott R	Scott-19	Scott R: Sniktaw Cr to Shackleford Cr	135.6	18.8	85	24
370	Shackleford Cr	Shackleford-1	Shackleford Cr: Confluence with Scott R to lower Quartz Valley Rd bridge and 1st diversion point	18.5	0.0	24	0
371	Shackleford Cr	Shackleford-2 (diversion)	Shackleford Cr: 1st diversion from creek mouth, site name B Tozier in PAD. Screened diversion, assessed by CDFW 12-4-2002. Year treated listed as 2007. Fish screen installed, irrigation system improved, pushup dam permanently removed, rock weir installed (not below culvert). Description updated 12-17-2013 in PAD.				
372	Shackleford Cr	Shackleford-3	Shackleford Cr: 1st diversion upstream of mouth (Tozier site) to 2nd diversion upstream.	16.4	1.8	34	6
373	Shackleford Cr	Shackleford-4 (diversion)	Shackleford Cr: 2nd diversion from creek mouth. No information listed in PAD. Maps show this diversion feeds a ditch on the right side (east) of Shackelford Cr.				
374	Shackleford Cr	Shackleford-5	Shackleford Cr: 2nd diversion upstream of mouth to 3rd diversion from mouth (to Freitas Ditch).	14.4	3.5	32	9
375	Shackleford Cr	Shackleford-6 (diversion)	Shackleford Cr: 3rd diversion upstream of creek mouth (to Freitas Ditch SC-17). Assessed by SRCD in 2009. Diversion listed in PAD as a partial barrier (temporal).				
376	Shackleford Cr	Shackleford-7	Shackleford Cr: 3rd diversion from mouth (to Freitas Ditch) to Mill Cr	10.3	7.0	28	14
377	Shackleford Cr	Mill (Shackleford)-1	Mill Cr: Confluence with Shackleford Cr to 1st diversion on RB of creek	6.5	5.0	23	20
378	Shackleford Cr	Mill (Shackleford)-2 (diversion)	Mill Cr: 1st diversion upstream of Mill Cr mouth. No information listed in PAD. Maps show this diversion feeds a ditch on the right side (east) of Mill Cr.				
379	Shackleford Cr	Mill (Shackleford)-3	Mill Cr: 1st diversion upstream of Mill Cr mouth to 2nd diversion upstream of mouth.	6.6	4.7	23	20
380	Shackleford Cr	Mill (Shackleford)-4 (diversion)	Mill Cr: 2nd diversion upstream of Mill Cr mouth. No information listed in PAD. Maps show this diversion feeds a ditch on the right side (east) of Mill Cr. Aerial photos show the diversion comes from ponded areas of the stream, near (or associated with) beaver ponds in Mill Cr. Diversion is located downstream of Quartz Valley Rd crossing.				
381	Shackleford Cr	Mill (Shackleford)-5	Mill Cr: 2nd diversion upstream of Mill Cr mouth to Dell's diversion (assumed 3rd diversion), a short distance downstream of Emigrant Cr.	6.6	4.7	23	20

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
382	Shackleford Cr	Mill (Shackleford)-6 (diversion)	Mill Cr: Dell's diversion. The PAD database indicates that a potential barrier exists at the site (Lestelle - some uncertainty about precise location - using location here given by PAD). Assessed by the SRCD in 2009 and scheduled for treatment which did not occur. A barrier removal project was designed, but not conducted due to access issues to the point of diversion according to PAD. The PAD (2014) states that passage status is unknown.				
383	Shackleford Cr	Mill (Shackleford)-7	Mill Cr: Dell's diversion to Emigrant Cr.	6.7	6.7	23	23
384	Shackleford Cr	Emigrant (Mill)-1	Emigrant Cr: Confluence with Mill Cr to Mill Cr Rd crossing.	3.0	3.0	16	16
385	Shackleford Cr	Emigrant (Mill)-2	Emigrant Cr: Mill Cr Rd crossing to where the Shackleford Ditch crosses (assumed END due to creek size).	2.0	2.0	7	7
386	Shackleford Cr	Mill (Shackleford)-8	Mill Cr: Emigrant Cr to vicinity of where riparian vegetation thins out and largely disappears (appears to be due to drying of channel).	3.7	3.7	10	10
387	Shackleford Cr	Mill (Shackleford)-9	Mill Cr: Vicinity of where riparian vegetation thins out and largely disappears (appears to be due to drying of channel) to diversion that diverts water to left bank (this may be a part of the Big Ditch complex).	3.7	3.7	10	10
388	Shackleford Cr	Mill (Shackleford)-10 (diversion)	Mill Cr: Diversion that diverts water to left bank of Mill Creek. The PAD database does not show a structure at this site but one symbol in the data base may be off and possibly corresponds to this site. Other documentation suggests that this diversion and the one upstream of it are called the Big Ditch diversion. Assuming this to be the case, PAD indicates that SRCD assessed the site in 2009. Action was proposed to remediate. Current status (2014) indicates it remains a partial barrier (temporal effects).				
389	Shackleford Cr	Mill (Shackleford)-11	Mill Cr: Diversion that diverts water to left bank of Mill Creek to Big Ditch diversion that diverts to the right bank of Mill Cr.	3.7	3.7	10	10
390	Shackleford Cr	Mill (Shackleford)-12 (diversion)	Mill Cr: Big Ditch diversion that diverts water to right bank of Mill Creek. The SRCD assessed the site in 2009 and proposed remediation. PAD states that the project was not completed due to difficult nature of the site. PAD states the barrier status is unknown.				
391	Shackleford Cr	Mill (Shackleford)-13	Mill Cr: Big Ditch diversion that diverts to the right bank of Mill Cr to the vicinity of where CDFW estimated coho distribution to end based on a proposal for barrier remediation made in 2009. (END)	3.7	3.7	10	10
392	Shackleford Cr	Shackleford-8	Shackleford Cr: Mill Cr to Quartz Valley Rd bridge crossing	3.8	2.0	18	7
393	Shackleford Cr	Shackleford-9	Shackleford Cr: Mill Cr to Quartz Valley Rd bridge crossing to diversion that diverts water on the LB to the upper Sniktaw Creek valley (ditch shown on GIS layer).	3.8	2.0	10	7

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
394	Shackleford Cr	Shackleford-10 (diversion)	Shackleford Cr: Diversion that diverts water on the LB to the upper Sniktaw Creek valley (ditch shown on GIS layer) (diversion is downstream of the USFS Shackleford Cr road)				
395	Shackleford Cr	Shackleford-11	Shackleford Cr: Diversion that diverts water on the LB to the upper Sniktaw Creek valley to the USFS Shackleford Cr road crossing and diversion structure located in that immediate vicinity	3.8	2.0	10	7
396	Shackleford Cr	Shackleford-12 (diversion)	Shackleford Cr: Diversion in the immediate vicinity of the USFS Shackleford Cr road crossing. PAD indicates this feeds the upper Burton Ditch. Assessed by the RCD in 2009. PAD states that treatment occurred in 2008 moved the point of diversion to a natural pool feature, fish screen installed (diversion #18-SC, maximum diversion volume 0.90 cfs).				
397	Shackleford Cr	Shackleford-13	Shackleford Cr: Diversion in the immediate vicinity of the USFS Shackleford Cr road crossing to natural barrier. (END)	3.8	3.8	10	10
398	Scott R	Scott-20	Scott R: Shackleford Cr to Patterson Cr (north Scott Valley)	126.3	14.5	82	21
399	Patterson Cr (N Scott)	Patterson (N Scott)-1	Patterson Cr (N Scott): Confluence with Scott R to Scott R Rd	1.0	0.0	5	0
400	Patterson Cr (N Scott)	Patterson (N Scott)-2	Patterson Cr (N Scott): Scott R Rd to diversion that diverts to the LB of the stream	1.0	0.5	5	3
401	Patterson Cr (N Scott)	Patterson (N Scott)-3 (diversion)	Patterson Cr (N Scott): Diversion that diverts to the LB of the stream. No information in PAD about the structure.				
402	Patterson Cr (N Scott)	Patterson (N Scott)-4	Patterson Cr (N Scott): Diversion that diverts to the LB of the stream to forks. (assumed END)	1.0	1.0	5	5
403	Scott R	Scott-21	Scott R: Patterson Cr (north Scott Valley) to Tyler Gulch	117.1	14.5	80	21
404	Tyler Gulch	Tyler Gulch-1	Tyler Gulch: Confluence with Scott R to Scott R Rd	0.0	0.0	0	0
405	Tyler Gulch	Tyler Gulch-2	Tyler Gulch: Scott R Rd crossing to forks downstream of Tyler Pl road. (assumed END)	0.0	0.0	0	0
406	Scott R	Scott-22	Scott R: Tyler Gulch to Rattlesnake Cr	117.1	14.5	80	21
407	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-1	Rattlesnake Cr: Confluence with Scott R to Scott R Rd	0.5	0.0	7	0
408	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-2	Rattlesnake Cr: Scott R Rd to intersection with SVID ditch	0.5	0.0	7	0
409	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-3	Rattlesnake Cr: SVID ditch to pond structure approx half way up the Rattlesnake valley	0.5	0.0	7	0
410	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-4 (pond dike)	Rattlesnake Cr: Pond structure dike approx half way up the Rattlesnake valley				
411	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-5	Rattlesnake Cr: Pond structure approx half way up the Rattlesnake valley to Moores Gulch	0.5	0.0	3	0
412	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-6	Rattlesnake Cr: Moores Gulch to Rattlesnake Cr Rd crossing (culvert)	0.5	0.0	3	0

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
413	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-7 (culvert)	Rattlesnake Cr: Rattlesnake Cr Rd crossing (culvert). Assessed by Ross Taylor in 2002. Determined that the culvert is a total barrier to fish passage, failing to meet passage criteria for all species of adult salmonids and all age classes of juveniles. Excessive slope and perched outlet are the features that prevent fish migration. Recommended a properly-sized bridge or open bottom arch-culvert set on concrete footings. Taken from PAD.				
414	Rattlesnake Cr (Scott V)	Rattlesnake (Scott V)-8	Rattlesnake Cr: Rattlesnake Cr Rd crossing to West Fork. (assumed END)	0.5	0.5	3	3
415	Scott R	Scott-23	Scott R: Rattlesnake Cr to Oro Fino Cr	117.1	4.4	80	11
416	Oro Fino Cr	Oro Fino-1	Oro Fino Cr: Confluence with Scott R to Union Rd crossing	2.6	0.0	15	0
417	Oro Fino Cr	Oro Fino-2	Oro Fino Cr: Union Rd crossing to Lighthill Rd crossing.	1.6	0.0	12	0
418	Oro Fino Cr	Oro Fino-3	Oro Fino Cr: Lighthill Rd crossing to Quartz Valley Rd crossing. (END)	0.5	0.5	7	3
419	Scott R	Scott-24	Scott R: Oro Fino Cr to Indian Cr	115.8	4.4	79	11
420	Indian Cr (Scott V)	Indian (Scott V)-1	Indian Cr: Confluence with Scott R to Scott R Rd	0.5	0.0	7	0
421	Indian Cr (Scott V)	Indian (Scott V)-2	Indian Cr: Scott R Rd to intersection with SVID ditch	0.4	0.0	7	0
422	Indian Cr (Scott V)	Indian (Scott V)-3	Indian Cr: SVID ditch to Boardman Gulch Rd crossing	0.3	0.0	6	0
423	Indian Cr (Scott V)	Indian (Scott V)-4	Indian Cr: Boardman Gulch Rd crossing to New York Gulch	0.2	0.1	2	1
424	Indian Cr (Scott V)	Indian (Scott V)-5	Indian Cr: New York Gulch to Walla Walla Cr	0.1	0.1	2	2
425	Indian Cr (Scott V)	Indian (Scott V)-6	Indian Cr: Walla Walla Cr to West Branch. (assumed END)	0.1	0.1	1	1
426	Scott R	Scott-25	Scott R: Indian Cr to Moffett Cr	114.5	4.4	79	11
427	Moffett Cr	Moffett-1	Moffett Cr: Confluence with Scott R to Scott R Rd bridge crossing.	7.3	0.0	24	0
428	Moffett Cr	Moffett-2	Moffett Cr: Scott R Rd bridge crossing 1st RB unnamed trib upstream of Douglas Rd crossing.	7.3	0.0	24	0
429	Moffett Cr	Moffett-3	Moffett Cr: 1st RB unnamed trib upstream of Douglas Rd crossing to McAdam Cr.	7.3	0.0	24	0
430	Moffett Cr	McAdam (Moffett)-1	McAdam Cr: Confluence with Scott R to 1st LB unnamed trib	1.6	0.0	12	0
431	Moffett Cr	McAdam (Moffett)-2	McAdam Cr: 1st LB unnamed trib to McAdam Creek Rd crossing.	0.8	0.0	9	0
432	Moffett Cr	McAdam (Moffett)-3	McAdam Cr: McAdam Creek Rd crossing to Clear Cr.	1.1	0.0	10	0
433	Moffett Cr	Clear (McAdam)-1	Clear Cr: Confluence with McAdam Cr to forks (assumed END).	0.3	0.0	2	0
434	Moffett Cr	McAdam (Moffett)-4	McAdam Cr: Clear Cr to Deadwood Cr (assumed END).	0.5	0.0	3	0

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
435	Moffett Cr	Moffett-4	Moffett Cr: McAdam Cr to diversion that feeds Pereia Ditch (downstream of State Rte 3 highway)	5.7	0.0	21	0
436	Moffett Cr	Moffett-5 (diversion)	Moffett Cr: Diversion that feeds Pereia Ditch (downstream of State Rte 3 highway). PAD does not show this site exactly in its layer but a site a short distance downstream is called Moffet Creek Screen #2. PAD states it is not a barrier. Assessed by the SCRD. PAD states there are year round flows at the diversion point. Species present are steelhead and the site is accessible to coho during wet falls when Moffet Creek connects to the Scott River. The fish screen is designed to screen up to 7cfs while 4.5 cfs has been the lar (text ends).				
437	Moffett Cr	Moffett-6	Moffett Cr: Diversion that feeds Pereia Ditch (downstream of State Rte 3 highway) to Soap Cr.	5.7	1.0	21	10
438	Moffett Cr	Soap (Moffett)-1	Soap Cr: Confluence with Moffett Cr to State Rte 3 highway crossing (culvert).	0.5	0.0	3	0
439	Moffett Cr	Soap (Moffett)-2 (culvert)	Soap Cr: Culvert crossing on State Rte 3 highway. PAD states that barrier status is unknown, based on assessment y CalTrans in 2009. Notes state that there is a jump to the culvert and that it is an anadromous stream. Habitat quality is considered to be high. A weir is needed at the site.				
440	Moffett Cr	Soap (Moffett)-3	Soap Cr: Culvert crossing on State Rte 3 highway to Copper Cr (assumed END).	0.5	0.3	3	2
441	Moffett Cr	Moffett-7	Moffett Cr: Soap Cr to 1st diversion upstream that diverts to the LB.	5.2	1.0	21	10
442	Moffett Cr	Moffett-8 (diversion)	Moffett Cr: Diversion that feeds LB ditch upstream of State Rte 3 highway crossing near Soap Cr. PAD does not show this site exactly in its layer but a site a short distance upstream a site is called Moffet Creek Screen #1. PAD states it is not a barrier. Assessed by the SCRD. PAD states there are year round flows at the diversion point. Species present are steelhead and the site is accessible to coho during wet falls when Moffet Creek connects to the Scott River. Fish screen is designed to screen up to 7cfs while 5.5 cfs has been the lar (text ends).				
443	Moffett Cr	Moffett-9	Moffett Cr: Diversion that feeds LB ditch upstream of State Rte 3 highway crossing near Soap Cr to start of canyon reach.	5.2	1.0	12	5
444	Moffett Cr	Moffett-10	Moffett Cr: Start of canyon reach upstream of State Rte 3 to Log Gulch (just above end of canyon reach).	3.9	0.5	18	7
445	Moffett Cr	Moffett-11	Moffett Cr: Log Gulch to Cottonwood Cr.	2.6	0.5	15	7
446	Moffett Cr	Cottonwood (Moffett)-1	Cottonwood Cr: Confluence with Moffett Cr to 1st major RB trib (assumed END).	0.5	0.0	3	0
447	Moffett Cr	Moffett-12	Moffett Cr: Cottonwood Cr to Duzel Cr.	2.1	0.5	14	7
448	Moffett Cr	Duzel (Moffett)-1	Duzel Cr: Confluence with Moffett Cr to Duzel Cr Rd crossing (box culvert).	0.5	0.0	8	0

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
449	Moffett Cr	Duzel (Moffett)-2 (culvert)	Duzel Cr: Duzel Cr Rd crossing (box culvert). PAD states that it is a total barrier to upstream fish migration. Assessment made by Ross Taylor in 2002. PAD states although FishXing estimated that fish passage criteria are met on 0% of the expected migration flows for adult anadromous salmonids, 0% for resident/two-year old juveniles, and 0% for oneyear old and young-of-year juveniles. The box culvert (text ends). Recommendation called for installing offset baffles to increase depth and reduce water velocities within box culvert.				
450	Moffett Cr	Duzel (Moffett)-3	Duzel Cr: Duzel Cr Rd crossing (box culvert) to Clapboard Gulch	0.5	0.3	8	5
451	Moffett Cr	Duzel (Moffett)-4	Duzel Cr: Clapboard Gulch to Long Gulch (assumed END).	0.5	0.3	8	5
452	Moffett Cr	Moffett-13	Moffett Cr: Duzel Cr to Mill Gulch	1.5	0.5	12	7
453	Moffett Cr	Moffett-14	Moffett Cr: Mill Gulch to East Gulch	1.3	0.5	11	7
454	Moffett Cr	Moffett-15	Moffett Cr: East Gulch to Spring Branch	0.6	0.5	4	3
455	Moffett Cr	Moffett-16	Moffett Cr: Spring Branch to 1st unnamed RB trib upstream (limit based on IP results in NMFS 2014) (END).	1.0	1.0	5	5
456	Scott R	Scott-26	Scott R: Moffett Cr to Kidder Cr.	107.1	4.4	77	11
457	Kidder Cr	Kidder-1	Kidder Cr: Confluence with Scott R to State Rte 3 bridge	20.3	1.7	37	13
458	Kidder Cr	Kidder-2	Kidder Cr: State Rte 3 bridge to Patterson Cr.	20.3	1.7	37	13
459	Kidder Cr	Big Slough (Kidder)-1	Big Slough: Confluence with Kidder Cr to channel narrowing below entrance of Patterson Cr (near Eller Lane crossing)	9.9	1.0	27	10
460	Kidder Cr	Big Slough (Kidder)-2 (dam)	Big Slough: Diversion near the center of Section 34 west of Island Road. Appears to coincide with location of either one of the flashboard dams identified as diversion 405 or the structure associated with diversion 409 in the 1980 adjudication document. The PAD states there was a fish screen and fishway (roughed channel) installed in 2008. The PAD implies that there is no longer an issue based on SRCD assessment made in 2009.				
461	Kidder Cr	Big Slough (Kidder)-3	Big Slough: Diversion near the center of Section 34 west of Island Road to channel narrowing below entrance of Patterson Cr (near Eller Lane crossing)	9.3	2.0	26	14
462	Kidder Cr	Big Slough (Kidder)-4	Big Slough: Channel narrowing below entrance of Patterson Cr (near Eller Lane crossing) to Patterson Cr confluence (near Eller Lane crossing) (is screening structure there but there may not be?)	8.6	4.0	26	18
463	Kidder Cr	Patterson (Kidder)-1	Patterson Cr: Confluence with Big Slough near Eller Lane crossing to 1st LB irrigation tailwater return ditch. (Note: this not visible in aerial images; uncertain about the site).	2.6	0.4	15	6

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
464	Kidder Cr	Patterson (Kidder)-2	Patterson Cr: 1st LB irrigation tailwater return ditch to diversion structure upstream (PAD references site name as Storm Drainage - Pipe Ditch and states that it is screened, mentions no issues). Assessed by CDFW in 2009.	0.6	0.2	8	5
465	Kidder Cr	Patterson (Kidder)-3 (diversion screen)	Patterson Cr: Diversion screen near Eller Lane, PAD references site name as Storm Drainage - Pipe Ditch and states that it is screened, mentions no issues. Assessed by CDFW in 2009. (Note: this appears to be diversion 401 in 1980 adjudication document).				
466	Kidder Cr	Patterson (Kidder)-4	Patterson Cr: Diversion screen near Eller Lane (Storm Drainage - Pipe Ditch) to diversion to Eller Lane Ditch	0.6	0.2	8	5
467	Kidder Cr	Patterson (Kidder)-5 (diversion)	Patterson Cr: Eller Lane Ditch diversion, presumed to be screened though PAD does not state it. PAD states that some form of storm damage repair occurred in 2007. CDFW assessed the site in 2009 but remediated fish response unconfirmed. (Note: this appears to be diversion 400 in 1980 adjudication document).				
468	Kidder Cr	Patterson (Kidder)-6	Patterson Cr: Eller Lane Ditch diversion to Dairy Ditch diversion.	0.6	0.2	8	5
469	Kidder Cr	Patterson (Kidder)-7 (diversion)	Patterson Cr: Dairy Ditch diversion. PAD states that the structure is not a barrier. Assessed by the SRCD. Notes state that it is a 13 cfs diversion, cone-style fish screen built in spring 2003, habitat very good, high number of juveniles onserved during low flow periods. (Note: this appears to be diversion 396 in 1980 adjudication document).				
470	Kidder Cr	Patterson (Kidder)-8	Patterson Cr: Dairy Ditch diversion to near the edge of dense riparian vegetation upstream (just upstream from a stream crossing near a dwelling); this site approximately coincides with where the stream routinely goes dry during the summer.	0.6	0.2	8	5
471	Kidder Cr	Patterson (Kidder)-9	Patterson Cr: Site near the edge of dense riparian vegetation upstream (just upstream from a stream crossing near a dwelling) to North State Hwy 3 crossing (bridge).	0.2	0.1	5	3
472	Kidder Cr	Patterson (Kidder)-10	Patterson Cr: North State Hwy 3 crossing (bridge) to Lower Young Ditch diversion (shown as the first ditch above hwy crossing in the 1:24000 hydro layer).	5.7	1.2	12	5
473	Kidder Cr	Patterson (Kidder)-11 (diversion)	Patterson Cr: Lower Young Ditch diversion (shown as the first ditch above hwy crossing in the 1:24000 hydro layer). The hydro layer apparently shows the site of the diversion downstream of the hwy, which is incorrect. The 1980 adjudication map shows two diversions associated with the Young family (diversions 393 amd 394). which Lestelle is assuming have been combined into one diversion based on PAD info and the hydro layer. PAD states it is a screened structure with no apparent issues. Refers to the ditch as the Lower Young Ditch.				

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
474	Kidder Cr	Patterson (Kidder)-12	Patterson Cr: Lower Young Ditch diversion to diversion 390 in 1980 adjudication.	5.4	2.4	12	7
475	Kidder Cr	Patterson (Kidder)-13 (diversion)	Patterson Cr: Diversion 390 in 1980 adjudication. PAD refers to the structure as a floodgate and states that it is a screened diversion. No issues mentioned in PAD for the site. Note: the 1:24000 hydrolayer shows the diversion being upstream of where it actually is according to mapping information. This is the upper most diversion in Patterson Cr, as documented in Yokel (2009).				
476	Kidder Cr	Patterson (Kidder)-14	Patterson Cr: Diversion 390 in 1980 adjudication to assumed end of historic coho distribution based on Intrinsic Potential analysis by NOAA as given in the finalized SONCC recovery plan (NMFS 2014). (END)	4.8	4.8	11	11
477	Kidder Cr	Big Slough (Kidder)-5	Big Slough: Patterson Cr confluence to Crystal Creek (appears to be turned into a ditch) (Note: the channel upstream of Patterson Cr appears to act as a ditch but the USGS map continues to label it as Big Slough).	3.0	3.0	16	16
478	Kidder Cr	Crystal (Kidder)-1	Crystal Cr: Confluence with Big Slough (operating as a ditch) to current condition ditch connecting Crystal Cr and Johnson Cr. Intrinsic Potential analysis in NMFS (2014) suggests historic distribution extended into lower Crystal Cr; presumably distribution was not higher by IP based on flow limitations, though overwintering habitat should have been very good. (END)	1.0	0.2	10	5
479	Kidder Cr	Big Slough (Kidder)-6	Big Slough: Crystal Creek (appears to be turned into a ditch) to Johnson Cr.	2.0	2.0	14	14
480	Kidder Cr	Johnson (Kidder)-1	Johnson Cr: Confluence with Big Slough (operating as a ditch) to current condition ditch connecting Crystal Cr and Johnson Cr. Intrinsic Potential analysis in NMFS (2014) suggests historic coho distribution extended into lower Crystal Cr; presumably distribution was not higher by IP based on flow limitations, though overwintering habitat should have been very good. IP does not appear to show coho distribution into lower Johnson Cr but watershed conditions appear to be essentially identical between lower Crystal C and lower Johnson Cr. (assumed END)	1.0	0.2	10	5
481	Kidder Cr	Big Slough (Kidder)-7	Big Slough: Johnson Cr to end of Big Slough (based on 1:24000 hydro layer) (END).	1.0	1.0	10	10
482	Kidder Cr	Kidder-3	Kidder Cr: Patterson Cr to 2nd (southern most) crossing on State Rte 3 hwy (bridge).	2.0	0.0	14	2
483	Kidder Cr	Kidder-4	Kidder Cr: State Rte 3 hwy (bridge) to approximate location of diversion numbered 451 (as listed in the 1980 adjudication). This is based on information in the adjudication and associated maps. A diversion is not listed in CDFW PAD, nor is there a ditch shown in the 1:24000 hydro layer. It is assumed here that some form of diversion still exists.	8.9	1.0	26	10

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
484	Kidder Cr	Kidder-5 (diversion)	Kidder Cr: Diversion numbered 451 (as listed in the 1980 adjudication). This is based on information in the adjudication and associated maps. A diversion is not listed in CDFW PAD, nor is there a ditch shown in the 1:24000 hydro layer. It is assumed here that some form of diversion still exists.				
485	Kidder Cr	Kidder-6	Kidder Cr: Diversion numbered 451 (as listed in the 1980 adjudication) to Friden Ditch diversion (number 448/449 in 1980 adjudication).	7.5	2.5	24	15
486	Kidder Cr	Kidder-7 (diversion)	Kidder Cr: Friden Ditch diversion (number 448/449 in 1980 adjudication). A diversion is not listed in CDFW PAD so the status of the diversion is uncertain; the ditch is shown in the 1:24000 hydro layer.				
487	Kidder Cr	Kidder-8	Kidder Cr: Friden Ditch diversion (number 448/449 in 1980 adjudication) to the Wright and Fletcher Ditch diversion (no. 446 in adjudication).	7.0	3.5	14	9
488	Kidder Cr	Kidder-9 (diversion)	Kidder Cr: Wright and Fletcher Ditch diversion (no. 446 in adjudication), sometimes called Altoona Ditch, Greenview Ditch, Kidder Cr Ditch, or Glendenning Ditch. A diversion is not listed in CDFW PAD so the status of the diversion is uncertain; the ditch is shown in the 1:24000 hydro layer.				
489	Kidder Cr	Kidder-10	Kidder Cr: Wright and Fletcher Ditch diversion (no. 446 in adjudication) to Barker Ditch (no. 445 in adjudication).	6.0	4.0	13	10
490	Kidder Cr	Kidder-11 (diversion)	Kidder Cr: Barker Ditch (no. 445 in adjudication). A diversion is not listed in CDFW PAD so the status of the diversion is uncertain; the ditch is shown in the 1:24000 hydro layer. Part of the ditch is contained in a pipe according to the adjudication.				
491	Kidder Cr	Kidder-12	Kidder Cr: Barker Ditch (no. 445 in adjudication) to assumed end of historic coho distribution based on Intrinsic Potential analysis by NOAA as given in the finalized SONCC recovery plan (NMFS 2014). (END)	5.0	5.0	11	11
492	Scott R	Scott-27	Scott R: Kidder Cr lower bridge on State Rte 3 hwy.	85.4	4.4	69	11
493	Scott R	Scott-28	Scott R: State Rte 3 hwy to mouth of East Slough	85.4	4.4	69	11
494	East Slough	East Slough-1	East Slough: Confluence with Scott R to Island Rd crossing.	0.5	0.5	7	7
495	East Slough	East Slough-2	East Slough: Island Rd crossing to crossing by spur road off Eastside Rd just downstream from Sharps Gulch.	0.5	0.5	7	7
496	East Slough	East Slough-3	East Slough:Spur road off Eastside Rd just downstream from Sharps Gulch to end of channel (END).	0.5	0.5	7	7
497	Scott R	Scott-29	Scott R: East Slough to Island Rd bridge.	63.7	4.4	61	19
498	Scott R	Scott-30	Scott R: Island Rd bridge to a point approximately adjacent to the end of a spur road off Eastside Rd just downstream from Sharps Gulch.	63.7	4.4	61	19

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
499	Scott R	Scott-31	Scott R: A point approximately adjacent to the end of a spur road off Eastside Rd just downstream from Sharps Gulch to Eller Lane bridge crossing.	63.7	2.1	61	14
500	Scott R	Scott-32	Scott R: Eller Lane bridge crossing to bridge crossing on the Paul Sweezey property (downstream of Etna).	63.7	3.8	61	18
501	Scott R	Scott-33	Scott R: Bridge crossing on the Paul Sweezey property (downstream of Etna) to Etna Cr.	63.7	5.4	61	21
502	Etna Cr	Etna-1	Etna Cr: Confluence with Scott R to vicinity of site of diversion numbered 272 in adjudication. Etna Cr transitions from a braided channel to more of a single-threaded channel in this vicinity. No diversion is identified as being here in the PAD database. Status is uncertain (Lestelle).	1.5	0.1	12	3
503	Etna Cr	Etna-2	Etna Cr: Vicinity of site of diversion numbered 272 in adjudication to diversion number 266 in adjudication. According to adjudication maps this is also the vicinity of diversion 267, though the 1:24000 hydro layer only identifies the ditch that goes of the stream's LB. The PAD does not identify a diversion structure at this site.	0.2	0.1	5	3
504	Etna Cr	Etna-3 (diversion)	Etna Cr: Diversion number 266 in adjudication. According to adjudication maps this is also the vicinity of diversion 267, though the 1:24000 hydro layer only identifies the ditch that goes of the stream's LB. The PAD does not identify a diversion structure at this site, needs confirmation (Lestelle).				
505	Etna Cr	Etna-4	Etna Cr: Diversion number 266 in adjudication to State Rte 3 highway bridge crossing (no passage barrier at the site according to PAD.	7.1	0.5	24	7
506	Etna Cr	Etna-5	Etna Cr: State Rte 3 highway bridge crossing to diversion number 263 or 264 (both may be together though it is unclear. The RB ditch is shown in the 1:24000 hydro layer. No diversion structure is shown in the PAD database. It is noted that another diversion (no. 265) is also shown in the vicinity on the adjudication map, though it is a LB ditch.	7.1	0.5	14	3
507	Etna Cr	Etna-6 (diversion)	Etna Cr: Diversion number 266 in adjudication. According to adjudication maps this is also the vicinity of diversion 267, though the 1:24000 hydro layer only identifies the ditch that goes of the stream's LB. The PAD does not identify a diversion structure at this site, needs confirmation (Lestelle).				
508	Etna Cr	Etna-7	Etna Cr: Diversion number 266 in adjudication to diversion number 260, which diverts to the LB or north side of Etna Cr. The PAD database identifies the location in GIS as being downstream of where the site actually is. The PAD refers to this ditch as the Depew Ditch and states that it is a partial barrier. Assessed by the SRCD in 2009.	6.6	0.9	13	4

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
509	Etna Cr	Etna-8 (diversion)	Etna Cr: Diversion number 260 in adjudication, which diverts to the LB or north side of Etna Cr. The PAD database identifies the location in GIS as being downstream of where the site actually is. The PAD refers to this ditch as the Depew Ditch and states that it is a partial barrier. Assessed by the SRCD in 2009.				
510	Etna Cr	Etna-9	Etna Cr: Diversion number 260 in adjudication, which diverts to the LB or north side of Etna Cr to diversion number 259 (Etna Mill Ditch).	5.6	1.9	12	7
511	Etna Cr	Etna-10 (diversion)	Etna Cr: Diversion number 259 (Etna Mill Ditch). The PAD does not identify a diversion structure at this site, needs confirmation (Lestelle), but a ditch is identified at the site in the 1:24000 hydro layer.				
512	Etna Cr	Etna-11	Etna Cr: Diversion number 259 (Etna Mill Ditch) to Whisky Cr.	5.0	2.4	11	7
513	Etna Cr	Etna-12	Etna Cr: Whisky Cr to City of Etna diversion. The CDFW coho distribution map shows that coho distribution ends in the vicinity of this diversion (presumably this is estimated current limit of distribution as NMFS 2014 indicates that intrinsic potential exists upstream of this point).	5.0	2.4	11	7
514	Etna Cr	Etna-13 (diversion)	Etna Cr: City of Etna diversion (no. 250 in adjudication). The PAD does not identify a diversion structure at this site. The adjudication map indicates that water is diverted through a pipeline, which is not shown in the 1:24000 hydro layer.				
515	Etna Cr	Etna-14	Etna Cr: City of Etna diversion (no. 250 in adjudication) to Alder Cr.	4.8	4.8	11	11
516	Etna Cr	Etna-15	Etna Cr: Alder Cr to end of intrinsic potential as reported in NMFS (2014). (Assumed END)	4.5	4.5	11	11
517	Scott R	Scott-34	Scott R: Etna Cr to Horn Lane bridge crossing.	51.4	1.8	56	13
518	Scott R	Scott-35	Scott R: Horn Lane bridge crossing to Young's Dam.	51.4	1.8	56	13
519	Scott R	Scott-36 (dam)	Scott R: Young's Dam. Diversion for Scott Valley Irrigation District Ditch. PAD notes state that improved fish passage for Chinook, coho, and steelhead has been made at the dam. The structure is considered to be a partial barrier.				
520	Scott R	Scott-37	Scott R: Young's Dam to Clark Cr.	51.4	4.0	56	18
521	Clark Cr	Clark-1	Clark Cr: Confluence with Scott R to Highway 3 crossing at culvert. PAD database list passage status at culvert as unknown (survey date in 2008).	2.0	0.0	13	0
522	Clark Cr	Clark-2 (culvert)	Clark Cr: Highway 3 crossing at culvert. PAD database list passage status at culvert as unknown (survey date in 2008). Requires a detailed survey per the results of the first-pass (reconnaissance) survey.				
523	Clark Cr	Clark-3	Clark Cr: Highway 3 crossing at culvert to the Timmons Ditch diversion (no. 214-13); gradient steepens above this point (END).	1.3	1.3	5	5

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
524	Scott R	Scott-38	Scott R: Confluence with Clark Cr to confluence with French Cr.	49.4	4.0	55	18
525	French Cr	French-1	French Cr: Confluence with Scott R to RB connected channel with beaver ponds. Note: configuration here is based on observations in 2016. These ponds appear to sometimes be connected directly to Scott R and other times to lower French Cr.	15.6	1.3	22	5
526	French Cr	Unnamed RB beaver pond (French)-1	French Cr: RB channel with beaver ponds; these ponds appear to sometimes be connected directly to Scott R and other times to lower French Cr.	1.0	1.0	10	10
527	French Cr	French-2	French Cr: Confluence with RB connected beaver pond channel to active diversion (screened). Presume this to be no. 47 (referred to as Lower French diversion; diversion is screened).	14.6	0.3	32	6
528	French Cr	French-3 (diversion)	French Cr: Diversion no. 47 (referred to as Lower French diversion; diversion is screened).				
529	French Cr	French-4	French Cr: Diversion no. 47 (referred to as Lower French diversion) to Diversion no. 44 (referred to as West French diversion). Diversion screened.	14.6	1.5	32	12
530	French Cr	French-5 (diversion)	French Cr: Diversion no. 44 (referred to as West French diversion or in PAD as Tobias West Ditch,). Diversion screened. (Diversion no. 44, maximum volume to be diverted 3.49 cfs)				
531	French Cr	French-6	French Cr: Diversion no. 44 (referred to as West French diversion) to upstream diversion dam no. 43 (called the Green Ditch diversion in PAD, Davis 1997 calls it the Richman Diversion).	14.1	2.2	32	14
532	French Cr	French-7 (diversion dam)	French Cr: Diversion dam no. 43 (called the Green Ditch diversion in PAD, Davis 1997 calls it the Richman Diversion). PAD states (retrieved April 2018): The fish screen is approx 1,110 ft downstream from the head-gate, raising the concern that salmonid juveniles may be exposed to adverse conditions in the ditch. In 2004 a boulder weir grade control structure was placed to hold the grade at the point of diversion. It consists of a two curvilinear boulder weir structures placed approx 50 ft apart. Since placement, the lower structure has unraveled, allowing the channel to become marginally incised. Substantial sand retention behind the upper structure has occurred, aggrading the stream surface and filling the low-flow gaps between boulders. The weir poses a fish passage barrierfor juveniles under low flow conditions. Fish have been stranded and dewatered in the ditch. Habitat type data collected in French Creek in 2003 showed this reach to be dominated by riffles and runs, with a low percentage of pools. French Creek is one of two tributaries to the Scott River that have shown Coho presence every year since surveys were started in 2001. Recommendations given for changes. Unknown is carried out.				

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
533	French Cr	French-8	French Cr: Diversion dam no. 43 to mouth of Miners Cr.	13.5	3.2	31	17
534	French Cr	Miners (French)-1	Miners Cr: Confluence with French Cr to Cory Ditch diversion (no. 36)(assumed to occur at or near Miners Cr Rd crossing). Diversion is screened and assumed to have no passage issues (based on PAD).	2.7	0.3	8	2
535	French Cr	Miners (French)-2 (diversion)	Miners Cr: Cory Ditch diversion (no. 36)(assumed to occur at or near Miners Cr Rd crossing). Diversion is screened and assumed to have no passage issues (based on PAD).				
536	French Cr	Miners (French)-3	Miners Cr: Cory Ditch diversion (no. 36) to Lewis Ditch diversion (no. 33). Point of diversion was moved in 2009 upstream to 40 ft natural bedrock, fish screen installed (maximum volume to be diverted 1.46 cfs). The point of diversion now located at a natural falls with unknown passage (from PAD).	2.0	0.8	7	4
537	French Cr	Miners (French)-4 (diversion)	Miners Cr: Lewis Ditch diversion (no. 33). Point of diversion was moved in 2009 upstream to 40 ft natural bedrock, fish screen installed (maximum volume to be diverted 1.46 cfs). The point of diversion now located at a natural falls with unknown passage (from PAD).				
538	French Cr	Miners (French)-5	Miners Cr: Lewis Ditch diversion (#33) to Miners Ditch Diversion (#29). Gradient steepens above here, assume no anadromous fish upstream of this point (END).	1.3	1.3	5	5
539	French Cr	French-9	French Cr: Mouth of Miners Cr to the Mill House Diversion (no. 23). PAD says of this diversion: "Standard fish screen installed in January 2001, can screen up to 5 cfs, stream and riparian conditions in vicinity are excellent."	10.8	1.9	18	7
540	French Cr	French-10 (diversion)	French Cr: Mill House Diversion (no. 23). PAD says of this diversion: "Standard fish screen installed in January 2001, can screen up to 5 cfs, stream and riparian conditions in vicinity are excellent."				
541	French Cr	French-11	French Cr: Mill House Diversion (no. 23) to Company Ditch Diversion (no. 20). PAD states of this diversion: "Water right holders moved their point of diversion to other existing diversions (the French Creek Decree) allowing 1.9 cfs to remain in the stream for up to two miles." Year of this completed appears to be 2009 from PAD.	9.9	2.9	17	8
542	French Cr	French-12 (diversion)	French Cr: Company Ditch Diversion (no. 20). PAD states of this diversion: "Water right holders moved their point of diversion to other existing diversions (the French Creek Decree) allowing 1.9 cfs to remain in the stream for up to two miles." Year of this completed appears to be 2009 from PAD.				
543	French Cr	French-13	French Cr: Company Ditch Diversion (#20) to North Fork French Cr.	9.9	4.9	17	11

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
544	French Cr	NF French-1	NF French Cr: Confluence with main French Cr to the North Fork Ditch diversion (no. 17).	4.9	1.9	11	7
545	French Cr	NF French-2 (diversion)	French Cr: North Fork Ditch diversion (no. 17) (END).				
546	French Cr	French-14	French Cr: Confluence of North Fork French Cr to the Bemrod Ditch (no. 11; called MacGowan Ditch in PAD). Diversion is screened.	4.9	2.9	11	8
547	French Cr	French-15 (diversion)	French Cr: Bemrod Ditch diversion (no. 11; called MacGowan Ditch in PAD). Diversion is screened.				
548	French Cr	French-16	French Cr: Bemrod Ditch diversion (no. 11; called MacGowan Ditch in PAD) to mouth of Paynes Lake Cr.	4.9	4.9	11	11
549	French Cr	Paynes Lk (French)-1	Paynes Lake Cr: Confluence with French Cr to Payne Lake Cr diversion (no. 10) (END).	0.5	0.5	3	3
550	French Cr	French-17	French Cr: Mouth of Paynes Lake Cr to confluence with Horse Range Cr. Assumed to be the end of all potential anadromous migration (END).	4.4	4.4	11	11
551	Scott R	Scott-39	Scott R: Confluence with French Cr to confluence with Wolford Slough upstream of French Cr.	33.8	2.4	46	15
552	Wolford Slough	Wolford Slough-1	Wolford Slough: Confluence of Wolford Slough to a distance upstream where aquatic habitat in the channel is entirely or mostly perrenial.	0.5	0.5	7	7
553	Wolford Slough	Wolford Slough-2	Wolford Slough: Wolford Slough channel from where aquatic habitat currently is entirely seasonal depending on inundation to a distance upstream where the relic channel is still plainly evident in aerial photos. This channel is meant to represent a historic river channel that is shown in both the 1875 and 1885 GLO maps; that channel is labeled as "Old river bed." It is assumed that that channel was still functioning as a groundwater fed channel likely populated by beavers, at least during the period prior to heavy beaver trapping. The valley likely had many channels like this one historically; the evidence from the GLO maps is used to place the channel depicted as a current relic in this location. (END).	0.5	0.5	7	7
554	Scott R	Scott-40	Scott R: Confluence with Wolford Slough upstream of French Cr to diversion no. 203 for Denny Ditch. Barrier structure was removed in 2009. PAD: Point of diversion moved downstream to the existing sump pond, fish screen not installed (Diversion #203-13 for 4.00 cfs)--note: Lestelle no sure what this means. PAD states regarding barrier:." "Remediated, fish response unconfirmed."	33.8	2.4	46	15
555	Scott R	Scott-41	Scott R: Diversion no. 203 for Denny Ditch to Fay Lane Bridge.	33.8	4.4	46	19
556	Scott R	Scott-42	Scott R: Fay Lane Bridge to diversion no. 198 (Upper Denny Ditch diversion or Tobias West Ditch). Note: Lestelle cannot discern the ditch on aerial photos or on the USGS topo map; location shown adjudication map and in PAD.	33.8	4.4	46	19

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
557	Scott R	Scott-43	Scott R: Diversion no. 198 (Upper Denny Ditch diversion or Tobias West Ditch) to outflow from the Westside Tailings channel (Lestelle assigned name).	33.8	3.2	46	17
558	Scott R	Westside tailings channel-1	Scott R: Confluence of Westside Tailings channel with Scott R to a tailings levee at downstream end of the tailings.	2.0	2.0	7	7
559	Scott R	Westside tailings channel-2 (levee)	Scott R: Tailings levee at downstream end of the tailings on Westside tailings channel. Assumed no fish passage at this point.				
560	Scott R	Westside tailings channel-3	Scott R: Confluence of Westside Tailings channel with Scott R to a tailings levee at downstream end of the tailings.	2.0	2.0	14	14
561	Scott R	Westside tailings channel-4 (levee)	Scott R: Tailings levee at upstream end of the lower (narrow) pond. Assumed no fish passage at this point.				
562	Scott R	Westside tailings channel-5	Scott R: Tailings levee at upstream end of the lower (narrow) pond to the end of presumed wetted channel within the Westside tailings channel (END).	2.0	2.0	14	14
563	Scott R	Scott-44	Scott R: Outflow from the Westside Tailings channel (Lestelle assigned name) to the Farmers Ditch diversion.	33.8	2.0	46	7
564	Scott R	Scott-45 (diversion)	Scott R: Screened diversion to Farmers Ditch. In 2007, the structure was improved by installing a vortex weir to replace a gravel dam, replaced existing fish screen (PAD).				
565	Scott R	Scott-46	Scott R: Diversion at top of Farmers Ditch to mouth of Sugar Cr.	33.8	4.6	46	11
566	Sugar Cr	Sugar-1	Sugar Cr: Confluence with Scott R to the Highway 3 bridge crossing.	4.8	2.0	20	7
567	Sugar Cr	Sugar-2	Sugar Cr: Highway 3 bridge crossing to lower active diversion (no. 179 or 181).	4.2	2.0	10	7
568	Sugar Cr	Sugar-3 (diversion)	Sugar Cr: Lower active diversion (no. 179 or 181); diverts up to 6 cfs.				
569	Sugar Cr	Sugar-4	Sugar Cr: Lower active diversion (no. 179 or 181) to mouth of Tiger Fork.	3.5	3.0	9	9
570	Sugar Cr	Sugar-5	Sugar Cr: Confluence with Tiger Fork to unnamed RB tributary; assumed to be end of anadromous salmonid use (END).	2.3	2.3	7	7
571	Scott R	Scott-47	Scott R: Confluence with Sugar Cr to mouth of Wildcat Cr.	29.0	4.6	43	20
572	Wildcat Cr	Wildcat-1	Wildcat Cr: Confluence with Scott R to diversion no. 153 (start of Ankeny Ditch), assumed to be just downstream of Ankeny Gulch.	2.0	0.2	7	2
573	Wildcat Cr	Wildcat-2 (diversion)	Wildcat Cr: Diversion no. 153 (start of Ankeny Ditch), assumed to be just downstream of Ankeny Gulch. Diversion is screened. It is assumed that this diversion is also tied in somehow to diversion no. 154.				

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
574	Wildcat Cr	Wildcat-3	Wildcat Cr: Diversion no. 153 (start of Ankeny Ditch) to diversion no. 148 (start of Upper Ditch; PAD report at this upper diversion: self-contained screen constructed in the spring of 2003, screens up to 5.5. cfs, habitat is good and complex at this site) (END).	1.3	1.3	5	5
575	Scott R	Scott-48	Scott R: Confluence with Wildcat Cr to diversion no. 133 (start of Butts Ditch, screened in 1966).	27.0	7.3	42	24
576	Scott R	Scott-49 (diversion)	Scott R: Diversion no. 133 (start of Butts Ditch, screened in 1966). Diversion diverts up to approx 6 cfs. Note: Lestelle presumes that the ditch goes into a pipe a short distance downstream because it is not visible in aerial photos.				
577	Scott R	Scott-50	Scott R: Diversion no. 133 (start of Butts Ditch) to the confluence of the East and South forks Scott River.	27.0	8.3	42	25
578	SF Scott R	SF Scott-1	SF Scott R: Confluence of the East and South forks Scott River to an unnamed LB trib just upstream from the Hwy 3 bridge. This trib contains a large pond a short distance upstream of its mouth.	11.7	4.5	18	11
579	SF Scott R	Unnamed RB trib (SF Scott)-1	SF Scott R: Mouth of unnamed LB trib just upstream from the Hwy 3 bridge to the end of the pond. Note: this pond may be inaccessible to juvenile fish due to its apparent elevation above the South Fork (END).	1.1	0.5	5	3
580	SF Scott R	SF Scott-2	SF Scott R: Mouth of unnamed LB trib just upstream from the Hwy 3 bridge to diversion no. 122 (South Fork Ditch diversion) (diverts up to 2.48 cfs). Diversion is screened.	10.6	4.0	28	18
581	SF Scott R	SF Scott-3 (diversion)	SF Scott R: Diversion no. 122 (South Fork Ditch diversion) (diverts up to 2.48 cfs). Diversion is screened.				
582	SF Scott R	SF Scott-4	SF Scott R: Diversion no. 122 (South Fork Ditch diversion) to the mouth of Boulder Cr.	9.5	5.2	16	12
583	Boulder Cr (SF Scott)	Boulder (SF Scott)-1	Boulder Cr (SF Scott R): Confluence of Boulder Cr with the and South Fork to diversion no. 120 (start of Boulder Cr Ditch).	2.2	1.5	7	6
584	Boulder Cr (SF Scott)	Boulder (SF Scott)-2 (diversion)	Boulder Cr (SF Scott R): Diversion no. 120 (start of Boulder Cr Ditch); diverts up to 3.4 cfs; diversion is screened.				
585	Boulder Cr (SF Scott)	Boulder (SF Scott)-3	Boulder Cr (SF Scott R): Diversion no. 120 (start of Boulder Cr Ditch) to Unnamed RB trib near McKeen Mine. No anadromous passage assumed to occur past this point (END).	2.2	2.2	7	7
586	SF Scott R	SF Scott-5	SF Scott R: Mouth of Boulder Cr to diversion no. 113 (start of Upper SF Ditch or Int Paper Co Lower Ditch).	7.4	3.7	14	10
587	SF Scott R	SF Scott-6 (diversion)	SF Scott R: Diversion no. 113 (start of Upper SF Ditch or Int Paper Co Lower Ditch). Diverts up to 2.6 cfs; screened. PAD states: Fish screen installed in spring of 2002, can successfully screen 4.0 cfs, water quality is high.				
588	SF Scott R	SF Scott-7	SF Scott R: Diversion no. 113 (start of Upper SF Ditch or Int Paper Co Lower Ditch) to mouth of Fox Cr.	5.2	5.2	12	12

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
589	Fox Cr (SF Scott)	Fox (SF Scott)-1	Fox Cr (SF Scott R): Confluence with SF Scott R to logging road crossing. Sue Mauer spawning survey report from 2002 suggests that coho ascend further than this point, but gradient steepens rapidly beyond here. Lestelle believes it is unlikely that either coho or steelhead move much further, if at all, from this point. Mining tailings also suggest that additional accessibility is very limited (END).	2.2	2.2	7	7
590	SF Scott R	SF Scott-8	SF Scott R: Mouth of Fox Cr to confluence with Camp Gulch. The California coho distribution layer shows Camp Gulch as being the upper limit to distribution (END).	3.0	3.0	9	9
591	EF Scott R	EF Scott-1	EF Scott R: Confluence of the East and South forks Scott River to diversion no. 81 (start of the Callahan EF Ditch).	15.3	3.8	33	18
592	EF Scott R	EF Scott-2 (diversion)	EF Scott R: Diversion no. 81 (start of the Callahan EF Ditch). PAD: Diversion structure is a fish passage barrier during seasonal low-flow periods. Proposed to FRGP in 2009; however, no work was completed. Diverts up to 2.94 cfs. Structure screened in 1994.				
593	EF Scott R	EF Scott-3	EF Scott R: Diversion no. 81 (start of the Callahan EF Ditch) to mouth of Noyes Valley Cr.	14.6	4.5	32	19
594	Noyes Valley Cr	Noyes Valley (EF Scott)-1	Noyes Valley Cr (EF Scott R): Mouth of Noyes Valley Cr to Diversion no. 78 (diverts to Gasaway Ditch), located approx 2.5 miles up this stream from mouth.	0.7	0.0	9	0
595	Noyes Valley Cr	Noyes Valley (EF Scott)-2 (diversion)	Noyes Valley Cr (EF Scott R): Diversion no. 78 (diverts to Gasaway Ditch), located approx 2.5 miles up this stream from mouth. Diverts up to 2.11 cfs.				
596	Noyes Valley Cr	Noyes Valley (EF Scott)-3	Noyes Valley Cr (EF Scott R): Diversion no. 78 (diverts to Gasaway Ditch) to Diversion nos. 75 and 76 (close proximity), which diverts to Homestead and Schoolhouse ditches. This upper point is assumed to be the upstream limit of historic coho distribution, based on narrative in FEIR document (page 3.3-22). This is 4 miles upstream of mouth. This is assumed end of historic steelhead also. (END).	0.7	0.4	9	6
597	EF Scott R	EF Scott-4	EF Scott R: Mouth of Noyes Valley Cr to mouth of Big Mill Cr.	13.9	4.5	32	19
598	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-1	Big Mill Cr (EF Scott R): Confluence with EF Scott R to the Hwy 3 culvert crossing.	1.0	0.4	5	3

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
599	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-2 (culvert)	Big Mill Cr (EF Scott R): Hwy 3 culvert crossing. Site appears to be a complete blockage to upstream migrants. The CA coho distribution layer shows that upstream distribution ends at this point. The SONCC (2014) final recovery plan states: "The Hwy 3/Big Mill Creek road/stream crossing is a Caltrans facility located within SONCC coho salmon critical habitat, and is a high priority for treatment. Remediation of this barrier can be accomplished by returning Big Mill Creek flow to its original channel, but this has been delayed until the landowner can be assured necessary access to property across Big Mill Creek." The plan says that there is 1.5 miles of habitat upstream of this point once the barrier has been corrected.				
600	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-3	Big Mill Cr (EF Scott R): Hwy 3 culvert crossing to diversion no. 69 (start of Big Mill Cr Ditch), which can take up to 1.6 cfs.	1.0	0.4	5	3
601	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-4 (diversion)	Big Mill Cr (EF Scott R): Diversion no. 69 (start of Big Mill Cr Ditch), which can take up to 1.6 cfs. Ditch is assumed to be screened.				
602	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-5	Big Mill Cr (EF Scott R): Diversion no. 69 (start of Big Mill Cr Ditch) to the vicinity of road end at a residence on the right bank (but back from the stream). Stream gradient begins to increase substantially above here.	1.0	1.0	5	5
603	Big Mill Cr (EF Scott)	Big Mill (EF Scott)-6	Big Mill Cr (EF Scott R): vicinity of road end at a residence on the right bank (but back from the stream) to the confluence with Little Mill Cr. (END).	0.5	0.5	3	3
604	EF Scott R	EF Scott-5	EF Scott R: Mouth of Big Mill Cr to mouth of Mule Cr.	12.5	4.1	19	10
605	Mule Cr (EF Scott)	Mule (EF Scott)-1	Mule Cr (EF Scott R): Confluence with EF Scott R to a distance upstream where gradient steepens quickly. This is based on a comment in the FEIR Vol 1(2009) that states that coho use several hundred yards of Mule Creek. Still, gradient is too steep! (END).	0.3	0.3	2	2
606	EF Scott R	EF Scott-6	EF Scott R: Confluence with Mule Cr to diversions nos. 66 and 67 (starts of the China Cove and Masterson Ditches). Assumed to be screened. Two separate diversions but close, so combined here. Total flow diverted is up to 4.8 cfs.	11.8	3.8	29	18
607	EF Scott R	EF Scott-7 (diversion)	EF Scott R: diversions nos. 66 and 67 (starts of the China Cove and Masterson Ditches). Assumed to be screened. Two separate diversions but close, so combined here. Total flow diverted is up to 4.8 cfs. Site location that Lestelle used in GIS is intermediate btween the two diversions.				
608	EF Scott R	EF Scott-8	EF Scott R: Diversions nos. 66 and 67 (starts of the China Cove and Masterson Ditches) to mouth of Grouse Cr.	11.1	4.8	18	11
609	Grouse Cr (EF Scott)	Grouse (EF Scott)-1	Grouse Cr (EF Scott R): Confluence with EF Scott R to Hayes Gulch. The FEIR Vol 1 (2014) states that 0.8 miles of Grouse Cr could be used by coho.	1.0	1.0	5	5

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
610	Grouse Cr (EF Scott)	Grouse (EF Scott)-2	Grouse Cr (EF Scott R): Mouth of Hayes Gulch to mouth of Big Carmen Cr.	1.0	1.0	5	5
611	Grouse Cr (EF Scott)	Grouse (EF Scott)-3	Grouse Cr (EF Scott R): Mouth of Big Carmen Cr to stream ford at road crossing. This is downstream of Diversion no. 63, which diverts up to 1 cfs. One other diversion exist in the lower stream that diverts up to 0.31 cfs. (END).	1.0	1.0	5	5
612	EF Scott R	EF Scott-9	EF Scott R: Confluence with Grouse Cr to Diversions nos. 58 and 59 (combined here)(starts of the Pickrell Good and Franklin Lower Ditches).	10.4	3.8	28	18
613	EF Scott R	EF Scott-10 (diversion)	EF Scott R: Diversions nos. 58 and 59 (combined here)(starts of the Pickrell Good and Franklin Lower Ditches).				
614	EF Scott R	EF Scott-11	EF Scott R: Diversions nos. 58 and 59 (combined here)(starts of the Pickrell Good and Franklin Lower Ditches) to the mouth of Kangaroo Cr.	9.7	3.6	17	9
615	Kangaroo Cr	Kangaroo (EF Scott)-1	Kangaroo Cr (EF Scott R): Mouth of Kangaroo Cr to diversion no. 55 (right bank; diversion can take up to 0.56 cfs); this point is downstream of USFS boundary by approx 0.1 mile according to topo map (note: CDFG 2002 habitat inventory report suggest boundary is further upstream, but this seems unfounded; riparian conditions change noticeably at the boundary).	0.4	0.1	3	1
616	Kangaroo Cr	Kangaroo (EF Scott)-2 (diversion)	Kangaroo Cr (EF Scott R): Diversion no. 55 (right bank; diversion can take up to 0.56 cfs); this point is downstream of USFS boundary by approx 0.1 mile according to topo map (note: CDFG 2002 habitat inventory report suggest boundary is further upstream, but this seems unfounded; riparian conditions change noticeably at the boundary).				
617	Kangaroo Cr	Kangaroo (EF Scott)-3	Kangaroo Cr (EF Scott R): Diversion no. 55 to Diversion no. 49 (start of Upper Ditch 1).	0.4	0.2	3	2
618	Kangaroo Cr	Kangaroo (EF Scott)-4 (diversion)	Kangaroo Cr (EF Scott R): Diversion no. 49 (start of Upper Ditch 1); diverts up to 2.36 cfs.				
619	Kangaroo Cr	Kangaroo (EF Scott)-5	Kangaroo Cr (EF Scott R): Diversion no. 49 (start of Upper Ditch 1) to near site of small diversion associated with Eagles Rest Ranch (data in CDFG 2002 suggests this may be near upper limit of steelhead distribution) (END)..	0.2	0.2	2	2
620	EF Scott R	EF Scott-12	EF Scott R: Mouth of Kangaroo Cr to mouth of Meadow Gulch.	9.0	3.5	26	17
621	EF Scott R	EF Scott-13	EF Scott R: Mouth of Meadow Gulch to confluence with Rail Cr.	8.3	3.5	15	9
622	Rail Cr	Rail (EF Scott)-1	Rail Cr (EF Scott R): Mouth of Rail Cr to dam that forms a reservoir used for irrigation purposes.	1.0	0.5	5	3
623	Rail Cr	Rail (EF Scott)-2 (dam)	Rail Cr (EF Scott R): Dam forming Rail Cr reservoir. Dam is a complete block to upstream fish migration.				

No.	Stream	Reach name	Description	Hist flow cfs	Curr flow cfs	Hist width ft	Curr width ft
624	Rail Cr	Rail (EF Scott)-3	Rail Cr (EF Scott R): Dam forming Rail Cr reservoir to small RB trib upstream of roadway crossing near a house. Note: there is a substantial diversion in this reach, which is not specifically marked in the dataset here because there is no anadromous fish passage into the reach currently.	1.0	1.0	5	5
625	Rail Cr	Rail (EF Scott)-4	Rail Cr (EF Scott R): Small RB trib upstream of roadway crossing near a house to small RB trib downstream of Rock Fence Cr. CDFW surveyed this reach of stream for habitat characteristics in 2008. The upper end of this reach is steep with at least one falls that is likely a barrier to upstream passage (CDFG 2008). (END).	0.5	0.5	3	3
626	EF Scott R	EF Scott-14	EF Scott R: Mouth of Rail Cr to Diversion no. 23 (start of Ditch 3 - Lower Newton), which diverts up to 12 cfs; diversion was screened in 1978.	6.8	3.0	14	9
627	EF Scott R	EF Scott-15 (diversion)	EF Scott R: Diversion no. 23 (start of Ditch 3 - Lower Newton), which diverts up to 12 cfs; diversion was screened in 1978.				
628	EF Scott R	EF Scott-16	EF Scott R: Diversion no. 23 (start of Ditch 3 - Lower Newton) to Diversion no. 16 (start of the Big Ditch or High Ditch no. 1).	5.4	3.7	12	10
629	EF Scott R	EF Scott-17 (diversion)	EF Scott R: Diversion no. 16 (start of the Big Ditch or High Ditch no. 1), which diverts up to 12.5 cfs; diversion was screened in 1978.				
630	EF Scott R	EF Scott-18	EF Scott R: Diversion no. 16 (start of the Big Ditch or High Ditch no. 1) to confluence with Houston Cr.	4.7	4.7	11	11
631	Houston Cr	Houston (EF Scott)-1	Houston Cr (EF Scott R): Mouth of Houston Cr to approx one-third mile upstream (small LB drainage); FEIR (2009) indicates that coho might have used up to one half mile of Houston Cr.	1.0	1.0	5	5
632	Houston Cr	Houston (EF Scott)-2	Houston Cr (EF Scott R): Approx one-third mile upstream (small LB drainage) to confluence with Little Houston Cr.	1.0	1.0	5	5
633	Houston Cr	Houston (EF Scott)-3	Houston Cr (EF Scott R): Mouth of Little Houston Cr to confluence with Cabin Meadow Cr. Diversion no. 13 occurs in the vicinity of the mouth of Cabin Meadow Cr, which diverts to Houston Ditch, diverting up to 2 cfs. CDFG (2002) shows that steelhead (or trout) end of distribution is in this vicinity. (END).	1.0	1.0	5	5
634	EF Scott R	EF Scott-19	EF Scott R: Mouth of Houston Cr to confluence with Crater Cr.	4.0	4.0	10	10
635	EF Scott R	EF Scott-20	EF Scott R: Mouth of Crater Cr to confluence with Little Crater Cr.	4.0	4.0	10	10
636	EF Scott R	EF Scott-21	EF Scott R: Mouth of Little Crater Cr to confluence with Mountain House Cr (END).	4.0	4.0	10	10

Appendix F – Reviewers' Comments and Responses

Page	Reviewer Comment	Change to Report or Response to Comment
	Both reviewers: The reviewers had various minor grammatical, sentence structure, and organizational suggestions at different places in the report.	Changes were incorporated as considered to be appropriate for the report at the author's discretion.
1	Reviewer #1: Asked how population performance is defined? Suggested using a different word besides "performance" in the report and on the title page.	Inserted footnote defining it as in McElhany et al. (2000) on page 1. Performance is the correct word to use – it is frequently used in salmon recovery literature.
14	Reviewer #2: Edit suggested to clarify that the four large subbasins are in the lower Klamath basin.	Edit made.
17	Reviewer #2: Comment that river velocity seems too high for the valley.	This is based on a quote from Sommarstrom et al. (1990) – the point is that the river was going through a transition following the removal of beaver, changing from an anabranching river to a single threaded river going through incision. Added some explanation.
23	Reviewer #1: Suggested that the report explain why steelhead were not addressed.	Explanation was added to page 1 in the Introduction.
23	Reviewer #1: Advised changes in how terms are capitalized or not capitalized as used in the NMFS recovery plan for SONCC coho.	No changes were made; terms were capitalized consistent with how the terms are given the NMFS recovery plan, e.g., see chapter on Scott River coho in NMFS (2014).
25	Reviewer #2: Questions 4% survival used in the table (believing it to be too high). Suggests that a 4% value would be more appropriate for the Washington Coast, where survival is generally higher than compared to California.	The table is reproduced from a report dated 2013. It bears noting that the average survival from smolt to adult return in the Scott River from CDFW reports is 4.6% over 10 years (excluding an anomalously high value). Survival for coho on the Washington Coast, until a recent downturn, is usually about 5%.
29	Reviewer #2: In figure caption, reviewer asked that a table be added to the report giving the data used to construct Figs. 3-3 and 3-4.	Table has been added; new Table 3-5.
30	Reviewer #2: In Figure 3-5 caption, reviewer asked for clarification on bar colors.	Edits made.
31	Reviewer #2: Reviewer interpreted sentence referring to jack coho in Scott River as implying that fewer jacks existed in Pacific Northwest streams.	Unsure why reviewer interpreted text as meaning fewer jacks occur in PNW streams. The average % jacks from Knechtle and Giudice (2018) is about 8%. In Western Washington, very limited data exists for this but 2-year old jacks do occur. No explanation needed in report.
32	Reviewer #2: Reviewer thinks that a statement about a possible increase in outmigration of age-0 coho from Scott River due to habitat changes is too speculative.	Some clarification was made in the text. It is speculative but the author believes it is likely. This view is based on a pattern seen in the Queets River on the Olympic Coast. Toz Soto, biologist with Karuk Tribe, has the same view that this has happened in the Scott River. The reviewer mentions a small percentage of YOYs being seen in Scott River from the rotary screw trap—but he fails to recognize that the trap does not operate in the fall when many fish would be moving, nor during the summer when fish can be moving.

Page	Reviewer Comment	Change to Report or Response to Comment
32	Reviewer #2: Suggests that the short summary from Williams et al. (2008) be expanded to try to explain why the statement about number of spawners needed for viability in the Scott River may not be right. Reviewer also wanted clarification that the number refers to spawners and not total run size prior to harvest.	The number referred to by Williams et al. is for spawners and not total run size prior to harvest. It was beyond the purpose of the report to get into the details of why Williams et al. reached the conclusion they did. No changes made.
33	Reviewer #2: Reviewer clarified that flow regulation in the Klamath River is not the result of the dams in the river operated by PacifiCorps but as a result of flow operations managed by the BOR in the Upper Klamath River (upstream of dams). Reviewer also suggests that *C. shasta* may not be a significant issue to Scott River smolts because the SAR values are quite high—approaching values seen on in coastal Washington rivers where no *C. shasta* issues exist.	Edits made to the text.
36	Reviewer #2: Reviewer suggested examining the pattern in Figure 3-8 a couple of different ways. He pointed out that operations at Iron Gate Hatchery have changed over time. Prior to about 1996 when the hatchery was meeting broodstock needs, the ladder to the hatchery was closed after broodstock was met. As a result large numbers of hatchery fish would spawn in the mainstem in the vicinity of the hatchery and in adjacent Bogus Creek. The number of natural-area spawners, therefore, outside of the Scott River was likely inflated compared to the number of just natural-origin spawners as a result of hatchery fish contributions. He suggested examining the pattern in two additional ways: (1) excluding Bogus Creek spawners from the analysis and (2) just using data beginning in 1996. Excluding Bogus Creek and just using data starting with 1996 shows a much tighter, declining trend for the percentage of spawners contributed by Scott River.	Added a footnote to this paragraph in the report stating that by excluding Bogus Creek and just using data starting with 1996 there is a much tighter, declining trend for the percentage of spawners contributed by Scott River.
37	Reviewer #2: Commented that movement into the estuary also occurs earlier than June.	Edited text and added new citation.
38	Reviewer #2: Suggested that a data table be added showing the percentage of Chinook spawning downstream of the weir.	No change made. The point is clearly made in the text.
41	Reviewer #2: Asked whether ocean survival was modeled as being the same between scenarios, including historical.	Answer is yes.
41	Reviewer #1: Noted that steelhead are mentioned but not being modeled, asked why.	Reviewer asked this earlier and explanation given on page 1 of the report. Steelhead are mentioned here because the reaches were delineated and characterized so that steelhead could potentially be modeled in the future.
41	Reviewer #2: Asked whether the zero length reaches were modeled as barriers.	Standard EDT modeling procedures followed. But in this case, all diversions are supposed to be screened—so the assumption was that no impedance was occurring at these sites.

Page	Reviewer Comment	Change to Report or Response to Comment
42	Reviewer #2: Asked how the mainstem Klamath River was rated and addressed in the analysis.	Text has been added to the report to explain. The mainstem Klamath R. reaches were rated with EDT attributes for both the historical and current conditions.
42	Reviewer #2: Asked why Geographic Areas (or Diagnostic Units) were applied in the analysis.	Explained in Section 5.1.2.
42	Reviewer #1: Asked for clarification on certain attributes.	Text edited.
46	Reviewer #2: Suggested defining the criteria for the color codes in the table.	The colorization was only meant to be a generalized depiction. The numerical values are also shown in the table.
46	Reviewer #1: Commented that the table seems to be results and not methods.	The rating of the attributes is generally considered as part of the methods in EDT modeling. The modeling outputs are the results. Reviewer's comment does point out that the line between methods and results is somewhat blurred for some part of EDT modeling.
49	Reviewer #2: Noted that adults can migrate through steep segments of streams.	The gradient listed is for an entire reach, which in the case of the Scott subbasin, occurs in the upper reaches of streams, and would generally represent the end of use this species.
51	Reviewer #2: Asked if survival rate based on Knechtle and Giudice (2019) was adjusted for survival effect in the mainstem Klamath River.	The rate was not adjusted but was assumed to be within a reasonable range for the sake of modeling. The effect of mortality on coho smolts in the mainstem is modest.
52	Reviewer #2: Commented that the percentage of age-2 fish in the table seems very high.	It is high compared to rivers in Washington state. The Klamath River Chinook have a substantial portion of age-2 and age-3 fish. This is discussed in this paragraph. It was also discussed in Section 3.2.2.
55	Reviewer #2: Asked if fall Chinook juveniles that transition from the fry migrant stage then begin rearing in the mainstem Klamath River.	Yes, if they have not already transitioned within the mainstem Scott River.
56	Both reviewers: Clarify with numbers why this loss is considered to be "massive."	Text added.
56	Reviewer #2: Commented that parameter values in Table 4-6 are those in the absence of any fishing losses in the ocean and river. Same comment was made for the tables for fall Chinook and spring Chinook.	Text was added to clarify.
59	Reviewer #2: Commented that a 5% benefit to the population (if all remaining fisheries to be closed presumably) could be meaningful.	Text was edited.
62	Reviewer #2: Asked for clarification as to where the model is estimating smolt abundance, leaving the Scott subbasin or entering the estuary.	The text in the draft was incorrect. The model estimates smolt abundance entering the estuary. Still, this number is within 10% of the empirical estimate based on RST data.
68	Reviewer #2: Suggests a clarification in the text given the run has been extirpated.	The full text explains the situation and considers how the model projects the numbers.
70	Reviewer #2: Commented that Trinity River spring Chinook exploitation rate estimates are available. Still, the reviewer stated that they are considered to be the same as those for fall Chinook.	Report author was unable to locate those rates. The citation given did correctly state that the authors of that report concluded they were not available. The point though is that the fall Chinook rates are applicable to spring Chinook.

Page	Reviewer Comment	Change to Report or Response to Comment
73	Reviewer #2: Requested more explanation as to why modeling results at a Geographic Area scale are generally more useful than they would be by using a finer scale (reach scale).	Explanation was added.
75	Reviewer #1: Commented that material presented here should be given under the methods section.	A matter of opinion. No change made.
80	Reviewer #2: Commented that the results appear puzzling given that the survival factor “temperature” is not shown to be a major factor affecting coho and spring Chinook.	Explanatory text has been added. Two reasons explain the results. First, the historical temperature conditions during the summer were assumed to be relatively warm at many locations within the subbasin. While temperatures have been assumed to have increased at most locations, some groundwater remains present at many sites, such as near the confluences of the major tributaries, to provide sources of thermal refuge. And secondly, the life histories of the population as modeled have not been primarily affected by summer temperatures to the degree that they have been affected by other factors. However, it is important to recognize that temperature is still having an effect in the model, though not to the extent as other factors.
110	Reviewer #2: Asked whether some discussion should be added to consider effects within the mainstem Klamath River, especially given plans for dam removal.	Text has been added.
115	Reviewer #2: Comment that referring to a “natural” fall Chinook population in the Klamath basin rather than as “wild” would be more appropriate.	Edit made.
115	Reviewer #2: Comment that it may be more appropriate to list the Klamath coho population as endangered instead of just threatened.	Author agrees.
118	Reviewer #2: Suggests that the discussion mention dam removal as a major action in the Klamath River that is expected to provide some benefit.	Text has been added.
118	Reviewer #2: Asks whether the text is saying that the actions have been ineffective?	The text does not say that they have been ineffective. It reads “No doubt, these actions have slowed the rate of decline of the populations. But the effectiveness and scale of these measures are insufficient to change the course of the trajectory given the scope and severity of the issues.“ No change made to the text.
118	Reviewer #2: Asks why the report mentions the year 2040 for possible extirpation.	Edit made to read “some time over the next 20 years.” This is not based on a quantitative analysis – simply the author’s professional opinion given the patterns seen in the decline together with how climate change appears to be trending.
119	Reviewer #2: Asked why the report does not give any attention to having actions implemented in the canyon.	Text was added to read “Consideration could be given to implementing some form of action within the canyon to reduce the effects of bed scour on incubating eggs, though this would be difficult given the characteristics of the canyon.”
119	Reviewer #2: Asked whether there is data on how much money has spent on restoration within the subbasin to date.	Author is unaware of such data. One source of information, though it probably does not cover all actions that have been implemented, would be the Scott River Watershed Council.

Page	Reviewer Comment	Change to Report or Response to Comment
120	Reviewer #2: Commented that the report does not address the "mainstem."	Author thinks the reviewer is referring to the mainstem Klamath River. Sentence was edited to clarify.
120	Reviewer #2: Commented that the flow amount to target exiting the valley should be identified in the text.	Amount has been added to the text. The amount is 62 cfs.
120	Reviewer #2: Asked whether an analysis of Properly Functioning Condition (PFC) might be done since NMFS equates this to "normative conditions".	This might be useful though no analysis of PFC has been done to date. The EDT model as used elsewhere is often used to model PFC. Author's definition of "normative conditions" shown in the report is qualitative and based on how it has been defined in the Columbia River (in the publication *Return to the River*).
121	Reviewer #2: Asked whether the author intended to raise the question at the end of the section without attempting to answer it.	Author meant to leave the question unanswered. The question is raised for the agencies, managers, and stakeholders to consider.

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