NOTES:

This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Forward** process covering the **2016**-**2018** work window for steelhead.

							Original	Updated		Original			Estimates Commen
FCU	Denulation	Codo	According to the it	2012 Standardized	LE Maight	Low	2018	2018	High 2018	3 2033	High 2033	LE Weight and Backande Comments	
ESU Spake River	Lochca River		Assessment Unit	1 1: Habitat Quantity:		PE 6			100	os	100	Level of cortainty = 2: Sources = 5, 7	Actions are on LISES
Steelhead	LOCHSa NIVEI	LASIA	Postoffice to Parachute	Anthropogenic Barriers	570	85.0	05.0	85.0	100	55	100	Level of certainty $-2$ , sources $-3$ , 7	of opportunity is on
			Creeks										structures (circa 199
													Inventory will be co
													until done.
													2016: No actions, th
Snake River	Lochsa River	LAS1A	Upper Lochsa Tributaries	4.1: Riparian Condition:	15%	50	50	50					2016: No actions ex
Steelhead			Postoffice to Parachute	Riparian Vegetation									factor during Atlas p
			Creeks										
Snake River	Lochsa River	LAS1A	Upper Lochsa Tributaries	4.2: Riparian Condition:	5%	66.2	66.2	66.2	70	68	72	Level of certainty = 3; Sources = 5, 6 (Due to past	LF weight due to part
Steelhead			Postoffice to Parachute	LWD Recruitment								timber harvest)	inventorying installe
			Creeks										address installed we
													2016: No actions th
Snake River	Lochsa River	1 4 5 1 4	Unner Lochsa Tributaries	5 2. Perinheral and	15%	70	70	70					2010: No actions, th
Steelhead	Lochisu niver	L/ (31/ (	Postoffice to Parachute	Transitional Habitats:	13/10	/0	/0	/0					factor during Atlas c
			Creeks	Floodplain Condition									
Snake River	Lochsa River	LAS1A	Upper Lochsa Tributaries	6.2: Channel Structure	25%	70.2	74	80	77	70	80	Level of certainty = 4; Sources = 5, 6	Installation of wood
Steelhead			Postoffice to Parachute	and Form: Instream									2016: Two projects
			Creeks	Structural Complexity									continuous along th
													degrees of achiever
													was prorated to acc
													miles effectively tre
													stream miles in the
													expected. EWW 7.1
Snake River	Lochsa River	LAS1A	Upper Lochsa Tributaries	-7.2: Sediment	20%	63.5	63.5	64	75	64	77	Level of certainty = 3; Sources = 5, 6	Use LiDAR data to d
Steelhead			Postoffice to Parachute	Conditions: Increased									to decommission ro
			Creeks	Sediment Quantity									2016: Expert Panel
													stream, and growth
													prorating actions to
													improvements word
													steelhead hearing st
													improvement will be
Snake River	Lochsa River	LAS1A	Upper Lochsa Tributaries	-8.1: Water Quality:	15%	80	80	80	88	82	90	Level of certainty = 3; Sources = 1, 6 (Doesn't meet	Benefits from Ripari
Steelhead		-	Postoffice to Parachute	Temperature								state standards, highly functional)	indirectly impact thi
			Creeks										2016: Although ther
													anticipated there wi
													Therefore, there is r
Snake River	Lochsa River	LAS2A	Lower Colt Killed Creek	1.1: Habitat Quantity:	5%	65.6	65.6	65.6	100	66	100	Level of certainty = 3; Sources = 5, 7 (Walton Creek	Opportunity to addr
Steelhead				Anthropogenic Barriers								fish weir and water intake)	2016: no actions, th
Snake River	Lochsa River	LAS2A	Lower Colt Killed Creek	7.2: Sediment	80%	55.5	55.5	55.52	/0	60	/2	Level of certainty = 5; Sources = 6	Opportunity to addr
Steelhead				Conditions: Increased									LIDAR data will be u
				Sediment Quantity									2016: One project th
													from stroom Thoro
													0.0075 miles Relati
													in the assessment u
													7.19.16
Snake River	Lochsa River	LAS2A	Lower Colt Killed Creek	8.1: Water Quality:	15%	70	70	70	80	70.5	82	Level of certainty = 3: Sources = 2.6 (Doesn't	Benefits from sedim
Steelhead				Temperature								meet state standards)	2016: No actions, th
Snake River	Lochsa River	LAS2B	Big Sand Creek	8.1: Water Quality:	100%	95	95	95	95	95	95	í í	No actions; wilderne
Steelhead				Temperature									2016: No actions, th

	Estimates Comments
ds Comments	
= 5, 7	Actions are on USFS land and may be a few remaining, but majority
	of opportunity is on private land (checker board). Installed log weir
	structures (circa 1990) are potential barriers in several streams.
	Inventory will be complete by 2012. Begin addressing in 2013 and
	until done.
	2016: No actions, therefore no change to low bookend.
	2016: No actions expected by 2018, but identified as a limiting
	factor during Atlas process and will be addressed in the future.
= 5, 6 (Due to past	LF weight due to past timber harvest and fire activities. Currently
	inventorying installed log weirs and wood in all streams. Plan to
	address installed weirs for passage and install wood in all streams
	as appropriate, starting in 2013.
	2016: No actions, therefore no change to low bookend.
	2016: No actions expected by 2018, but identified as a limiting
	factor during Atlas process and will be addressed in the future.
= 5, 6	Installation of wood addressed in LF 4.2 will address this LF.
	2016: Two projects will treat 27 stream miles, but treatment is not
	continuous along the project length and their will be varying
	degrees of achievement of PFC by 2018. Therefore, treated length
	was prorated to account for both those variables = 4.0095 stream
	miles effectively treated. Relative to the 41 steelhead bearing
	stream miles in the assessment unit, a 9.8% improvement is
	expected. EWW 7.19.16
= 5, 6	Use LiDAR data to determine extent of existing road network. Plan
	to decommission roads based on that data.
	2016: Expert Panel accounted for slope position, distance from
	stream, and growth rate of vegetation (assumed 1-2%/year) when
	prorating actions for this limiting factor. Four actions treated 24
	stream miles, but after proration factor was applied, the realized
	improvements were over 0.185 stream miles. Relative to the 41
	steelnead bearing stream miles in the assessment unit, the
- 1 6 (Decen't most	Improvement will be 0.5%. EWW 7.19.16
= 1, 0 (DOESH L MEEL	indirectly impact this LE
lidi)	2016: Although there is one project in the database, it is
	anticipated there will be no measureable improvement by 2018
	Therefore, there is no change to the low bookend. EWW 7.10.16
= 5 7 (Walton Creek	Opportunity to address this LE on checkerboard/private lands
o, , (Watch Creek	2016: no actions, therefore no change to low bookend.
= 6	Opportunity to address this LF on checkerboard/private lands.
	LiDAR data will be use to identify projects in the future.
	2016: One project treated 1.5 stream miles, but was prorated for
	effectiveness of action based on landscape position and distance
	from stream. Therefore, effective treatment stream length =
	0.0075 miles. Relative to the 40.7 steelhead bearing stream miles
	in the assessment unit, there will be a 0.02% improvement. EWW
	7.19.16
= 2, 6 (Doesn't	Benefits from sediment projects
	2016: No actions, therefore no change to low bookend.
	No actions; wilderness
	2016: No actions, therefore no change to low bookend.

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River	Lochsa River	LAS3A	Crooked Fork	1.1: Habitat Quantity:	5%	65	65	66.5	100	70	100	Level of certainty = 3; Sources = 5, 7	There are currently 12 known passage barriers in this AU. 3 will be
Steelhead				Anthropogenic Barriers									replaced in 2013.
													2016: One partial barrier will be replaced. It will open 1 mile, but
													since it's a partial barrier was prorated 50%=0.5 stream miles
													effectively treated. Relative to the 33.4 steelhead bearing stream
													miles in the assessment unit, there will be a 1.5% improvement.
													EWW 7.19.16
Snake River	Lochsa River	LAS3A	Crooked Fork	4.1: Riparian Condition:	5%	70	70	70.03					2016: One project treated 0.5 stream miles, and was prorated at
Steelhead				Riparian Vegetation									2% for expected growth rate = 0.01 stream miles effectively
													treated. Relative to the 33.4 steelhead bearing stream miles in the
													assessment unit, the anticipated improvement = 0.03%. EWW
													7.19.16
Snake River	Lochsa River	LAS3A	Crooked Fork	4.2: Riparian Condition:	30%	50	50	50.03	55	50	60	Level of certainty = 4; Sources = 5, 6	No projects currently planned.
Steelhead				LWD Recruitment									2016: One project treated 0.5 stream miles, and was prorated at
													2% for expected growth rate = 0.01 stream miles effectively
													treated. Relative to the 33.4 steelhead bearing stream miles in the
													assessment unit, the anticipated improvement = 0.03%. EWW
													7.19.16
Snake River	Lochsa River	LAS3A	Crooked Fork	6.2: Channel Structure	35%	45	45	45.01	50	45	55	Level of certainty = 4; Sources = 5, 6	No projects currently planned.
Steelhead				and Form: Instream									2016: One remeandering project, treating 0.25 stream miles was
				Structural Complexity									considered by Expert Panel. The stream miles treated were
													prorated to estimate progress toward PFC by 2018 = 1% therefore,
													treated stream miles = 0.0025. Relative to the 33.4 steelhead
													bearing stream miles in the assessment unit, the anticipated
													improvement = 0.01%. EWW 7.19.16
Snake River	Lochsa River	LAS3A	Crooked Fork	7.2: Sediment	20%	53.1	53.1	53.5	70	55	75	Level of certainty = 3; Sources = 5, 6	Most of the problem on private land; some actions proposed on
Steelhead				Conditions: Increased									USFS land. Weed treatment and tree planting on decommissioned
				Sediment Quantity									roads will address this LF.
													2016: Six projects treated 6.25 stream miles, but effectiveness of
													probability (rick (1, 2% per year) of foilures that yould cond
													probability/fisk (1-2% per year) of failures that would send
													length = 0.1102E stream miles. Relative to the 22.4 steelhead
													hearing stream miles in the assessment unit, there will be a 0.4%
													improvement EW/W 7 19 16
Snake River	Lochsa River	1 4 5 3 4	Crooked Fork	8 1: Water Quality:	5%	50	50	50	55	51	57	Level of certainty = $3 \cdot Sources = 3$ (Doesn't meet	Benefits from sediment projects
Steelhead	Lochsa Kiver	LAJJA	CIOOREUTOIR	Temperature	576	50	50	50	55	51	57	state standards)	2016: No actions, therefore no change to low bookend
Snake River	Lochsa River	LAS3B	Upper Crooked	1.1: Habitat Quantity:	5%	85	85	85	100	85	100	Level of certainty = 2: Sources = 5, 7	LiDAR data will be use to identify projects in the future.
Steelhead		1.000	Fork/Boulder Creek	Anthropogenic Barriers									2016: No actions, therefore no change to low bookend.
Snake River	Lochsa River	LAS3B	Upper Crooked	7.2: Sediment	95%	70.6	70.6	70.61	80	70	82	Level of certainty = 3; Sources = 6 (Mostly from	LiDAR data will be use to identify projects in the future. Weed
Steelhead			Fork/Boulder Creek	Conditions: Increased						-	-	natural sources (fire))	treatment and tree planting on decommissioned roads will address
				Sediment Quantity									this LF.
													2016: In an attempt to control invasive species, 0.25 stream miles
													will be treated, but based on landscape position and the potential
													for native vegetation to recolonize by 2018 (realized
													improvement), stream miles treated = 0.00125 stream miles.
													Relative to the 19.3 steelhead bearing stream miles in the
													assessment unit, there will be a 0.01% improvement. EWW 7.19.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Lochsa River	LAS6	Lochsa Mainstem	4.1: Riparian Condition: Riparian Vegetation	40%	85	85	85	87	85	90	Level of certainty = 3; Sources = 5, 6	The upper 30 miles of the Lo This is due in part to Hwy 12 as headwater streams (Croo logged in the past. Therefor installation of large wood in 2016: No actions, therefore
Snake River Steelhead	Lochsa River	LAS6	Lochsa Mainstem	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	20%	50	50	50.4				2016: Spill concerns on highway (tanker trucks): low probability, but high risk. MgCl use in winter.	2016: One project treating ( PFC by 2018 = 0.285 stream the 71.4 steelhead bearing s there will be a 0.4% improve
Snake River Steelhead	Lochsa River	LAS6	Lochsa Mainstem	7.2: Sediment Conditions: Increased Sediment Quantity	35%	76.7	76.7	76.71	90	78	78	Level of certainty = 3; Sources = 3, 5, 6	benefits from actions in oth 2016: Invasive species treat for landscape position and a recolonize by 2018 = 0.009 Relative to the 71.4 steelhea assessment unit, there will b
Snake River Steelhead	Lochsa River	LAS6	Lochsa Mainstem	8.1: Water Quality: Temperature	5%	85	85	85	87	87	88	Level of certainty = 3; Sources = 3, 5, 6 (Doesn't meet state standards; TMDL completed- viewed as natural condition, No TMDL established)	Benefits from actions in oth impacted by the potential p 2016: no actions, therefore
Snake River Steelhead	Lochsa River	LAS7	Lower Lochsa (Deadman Creek to Pete King Creek)	1.1: Habitat Quantity: Anthropogenic Barriers	5%	73.4	73.4	88.7	100	73	100	Level of certainty = 2; Sources = 5, 7	Found an additional 3 fish p 2012. Planning to remove th comments in the "look forw 2016: Removing two full bar Relative to the 29.4 steelher assessment unit, there will b
Snake River Steelhead	Lochsa River	LAS7	Lower Lochsa (Deadman Creek to Pete King Creek)	4.1: Riparian Condition: Riparian Vegetation	20%	70.2	70.2	70.2	80	71	82	Level of certainty = 4; Sources = 3, 4, 5,6	Accrued benefits from rd de 2016: No actions, therefore
Snake River Steelhead	Lochsa River	LAS7	Lower Lochsa (Deadman Creek to Pete King Creek)	4.2: Riparian Condition: LWD Recruitment	10%	60	60	60				Based on assessment of present conditions.	2016: No actions, therefore
Snake River Steelhead	Lochsa River	LAS7	Lower Lochsa (Deadman Creek to Pete King Creek)	6.2: Channel Structure and Form: Instream Structural Complexity	20%	70	70	70.1	80	71	82	Level of certainty = 3; Sources = 1,3, 4, 5, 7	Benefits from other projects 2016: This pilot project is ve gain scour pools and willow beaver dams blew out and t Prorated by 50% to reflect in miles treated. Relative to th in the assessment unit, ther 7.19.16
Snake River Steelhead	Lochsa River	LAS7	Lower Lochsa (Deadman Creek to Pete King Creek)	7.2: Sediment Conditions: Increased Sediment Quantity	35%	52.5	52.5	55.6	80	62	85	Level of certainty = 2; Sources = 2, 4, 5, 6	LiDAR will be utilized to dete 2012 several more miles of Bear Canyon area. 2016: Two road decommiss prorated based on landscap improvement by 2018 = 0.9 steelhead bearing stream m a 3.1% improvement. EWW
Snake River Steelhead	Lochsa River	LAS7	Lower Lochsa (Deadman Creek to Pete King Creek)	8.1: Water Quality: Temperature	10%	65	65	65	75	66	77	Level of certainty = 2; Sources = 1,3, 4, 5, 6	Benefits from sediment pro 2016: No measureable chan

	Estimates Comments
ght and Bookends Comments	
nty = 3; Sources = 5, 6	The upper 30 miles of the Lochsa River mainstem is very simplified. This is due in part to Hwy 12 preventing wood recruitment (as well as headwater streams (Crooked and Brushy Forks) being heavily logged in the past. Therefore, we are beginning to investigate the installation of large wood into the mainstem Lochsa in this section. 2016: No actions, therefore no change to low bookend.
ncerns on highway (tanker trucks):	2016: One project treating 0.3 stream miles that will achieve 95%
y, but high risk. MgCl use in winter.	PFC by 2018 = 0.285 stream miles effectively treated. Relative to the 71.4 steelhead bearing stream miles in the assessment unit, there will be a 0.4% improvement. EWW 7.19.16
nty = 3; Sources = 3, 5, 6	benefits from actions in other assessment units 2016: Invasive species treatments across 0.5 stream miles, prorated for landscape position and ability for native vegetation to recolonize by 2018 = 0.009 stream miles effectively treated. Relative to the 71.4 steelhead bearing stream miles in the assessment unit, there will be a 0.01% improvement. EWW 7.19.16
nty = 3; Sources = 3, 5, 6 (Doesn't andards; TMDL completed- viewed as ion, No TMDL established)	Benefits from actions in other AU. This LF will also be slightly impacted by the potential placement of wood in the upper river. 2016: no actions, therefore no change to low bookend.
nty = 2; Sources = 5, 7	Found an additional 3 fish passage barriers in Canyon Creek in 2012. Planning to remove these barriers in future projects. Refer to comments in the "look forward actions" spreadsheet. 2016: Removing two full barriers will open 4.5 stream miles. Relative to the 29.4 steelhead bearing stream miles in the assessment unit, there will be a 15.3% improvement. EWW 7.19.16
nty = 4; Sources = 3, 4, 5,6	Accrued benefits from rd decommissioning projects 2016: No actions, therefore no change to low bookend
ssment of present conditions.	2016: No actions, therefore no change to low bookend.
nty = 3; Sources = 1,3, 4, 5, 7	Benefits from other projects to address sediment 2016: This pilot project is very small. They hope to trap sediment, gain scour pools and willow growth in a low gradient area. Natural beaver dams blew out and there wasn't much food left for them. Prorated by 50% to reflect improvements by 2018 = 0.025 stream miles treated. Relative to the 29.4 steelhead bearing stream miles in the assessment unit, there will be a 0.1% improvement. EWW 7.19.16
nty = 2; Sources = 2, 4, 5, 6	LiDAR will be utilized to determine extent and needs for this LF. In 2012 several more miles of road were found on the ground in the Bear Canyon area. 2016: Two road decommissioning projects will treat 2 stream miles, prorated based on landscape position and potential realized improvement by 2018 = 0.9 stream miles. Relative to the 29.4 steelhead bearing stream miles in the assessment unit, there will be a 3.1% improvement. EWW 7.19.16
nty = 2; Sources = 1,3, 4, 5, 6	Benefits from sediment projects 2016: No measureable changes anticipated by 2018

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River	Lochsa River	LAS8	Middle Lochsa North	1.1: Habitat Quantity:	5%	85	85	86.7	100	90	100		LiDAR will be utilized to determine extent and needs for this LF.
Steelhead			Face tributaries - Weir to	Anthropogenic Barriers									2016: Two stream miles treated with culvert replacement during
			Tick Creeks	1 0									road relocation. Prorated 50% because it's a partial barrier = $1$
													stream mile realized change. Relative to the 57.7 steelhead bearing
													stream miles in the assessment unit, there will be a 1.7%
													improvement. FWW 7.19
													16
Snake River	Lochsa River	LAS8	Middle Lochsa North	4.1: Riparian Condition:	25%	85.2	85.2	85.21	92	87	95	Level of certainty = 2: Sources = 3, 4, 5, 6 (time	Bimerick Meadows road-to-trail conversion project is planned for
Steelhead			Face tributaries - Weir to	Riparian Vegetation		00.1	00.2	00.22	-			needed, regeneration returning from previous	2015 (2 miles). Weir Creek trail construction (0.5 miles) and
			Tick Creeks									fires)	rehabilitation project planned for 2013
													2016: Rinarian vegetation (0.25 stream miles) will be planted in
													association with road relocation. Prorated (2%) to reflect
													vegetative growth by $2018 = 0.005$ Relative to the 57.7 steelhead
													bearing stream miles there will be a $0.01\%$ improvement FWW
													7 19 16
Snake River	Lochsa River	LAS8	Middle Lochsa North	4.2: Riparian Condition:	5%	80	80	80				2016: Weighting and low bookend based on 2016	2016: No actions, therefore no change to low bookend.
Steelhead			Face tributaries - Weir to	LWD Recruitment								existing conditions.	
			Tick Creeks										
Snake River	Lochsa River	LAS8	Middle Lochsa North	7.2: Sediment	35%	85.6	85.6	85.8	95	88	95	Level of certainty = 3; Sources = 3, 4, 5	Bimerick Meadows road-to-trail conversion project is planned for
Steelhead			Face tributaries - Weir to	Conditions: Increased									2015 (2 miles). LiDAR will be used to determine extent and needs
			Tick Creeks	Sediment Quantity									for other road decommissioning projects in this AU.
													2016: Road relocation and invasives treatment to address sediment
													issues. 0.5 stream miles treated, but prorated for consideration of
													landscape position and potential for realized improvement by 2018
													= 0.10225 stream miles treated. Relative to the 57.7 steelhead
													bearing stream miles in the assessment unit, there will be a 0.2%
													improvement. EWW 7.19.16
Snake River	Lochsa River	LAS8	Middle Lochsa North	8.1: Water Quality:	30%	95	95	95	95	95	95	Level of certainty = 4; Sources = 3, 4	Currently no projects planned for this LF.
Steelhead			Face tributaries - Weir to	Temperature									2016: Parking lot improvements and toilet project will benefit
			Tick Creeks										water quality, but not temperature. Therefore, no change to low
													bookend. EWW 7.19.16
Snake River	Lochsa River	LAS9	Middle Lochsa South	8.1: Water Quality:	100%	95	95	95	95	95	95	Level of certainty = 4; Sources = 3, 4, 6 (Doesn't	Wilderness/roadless area- no projects planned for this AU.
Steelhead			Face tributaries - Lottie	Temperature								meet state standards)	2016: No measureable benefit from invasives project by 2018.
			to Robin Creeks										
Snake River	Clearwater	LCS1	Big Canyon Creek	4.1: Riparian Condition:	10%	45	45	45	50	45	65	Level of Certainty = 3. Conservative LF weight as	2015: There were no actions undertaken during the 2012-2015
Steelhead	River lower			Riparian Vegetation								linked to all other impacts. HIGH BOOKENDS:	time frame, therefore, there was no change from Low Bookend.
	mainstem											Short-term (2018) response to initial riparian	EWL 3.9.16
												plantings throughout invasive weed treatment	2016: No actions during look forward, therefore no change from
												reaches and fencing/off-site watering corridors.	low bookend.
												Long-term (2033) response to maturation of	2016 UPDATED after 8/2/16 Lapwai Meeting: One project will treat
												riparian plantings and natural revegetation of	0.03 stream miles and by 2018 the expected improvement will be
												treatment areas. LF TARGET: Riparian buffer	5% (prorated to reflect progress toward ultimate improvement) =
												extending >=300' from floodplain with riparian	0.001 stream miles improved. Relative to the 54.3 steelhead
												vegetation having >75% similarity to potential	bearing stream miles in the assessment unit, there will be a 0.003%
												natural community composition. EXTANT DATA:	improvement. EWW 9.16.16
												2003-2006 NPT canopy cover and riparian width,	
	1	1	1	1	1	1	1	1	1	1	1	density and composition data	

				2012 Standardized		Low	Original	Updated	High 2019	Original	High 2022	
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	6.1: Channel Structure and Form: Bed and Channel Form	10%	45	45	45	50	45	65	Level of Certainty = 3. Unstable channel condit noted throughout 2003-2006 NPT surveys; particularly throughout middle reaches of Big Canyon Creek. HIGH BOOKENDS: Short-term (2018) response to no-till, drain tile decommissioning, bank stabilization, wetland development and grassed waterways. Long-ter (2033) response to riparian/upland growth, for regeneration, fencing/off-site watering and be recolonization. LF TARGET: Bank stability >90% Rosgen C channel, >95% for A & B channel, 100 for E channel. Width:Depth ratio<10 for A char <20 for B channel, <40 for C channel and <7 fo channel. EXTANT DATA: 2003-2006 NPT bank stability and width:depth ratio data, 2008 NPT NPSWCD assessment
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	6.2: Channel Structure and Form: Instream Structural Complexity	15%	45	45	45.05	50	45	65	Level of Certainty = 3. Relatively low channel/habitat complexity noted through 200 2006 NPT datasets HIGH BOOKENDS: Short-te (2018) response to no-till, drain tile decommissioning, wetland development and grassed waterways. Long-term (2033) respons riparian/upland growth, forest regeneration, fencing/off-site watering, LWD maturation/recruitment and beaver recolonization. LF TARGET: Potential natural values for pool frequency, pool quality and LW quantity. EXTANT DATA: 2003-2006 NPT chanr morphology data
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10%	50	50	50	60	50	65	Level of Certainty = 3. Beyond effects of turbid on juvenile and adult physiology, habitat impar primarily localized within low gradient reaches to high transport capacity of "flashy" systems. HIGH BOOKENDS: Short-term (2018) response no-till, grassed waterways, wetland developme bank stabilization and fencing/off-site watering Long-term (2033) response to riparian/upland growth and forest regeneration. LF TARGET: Cobble Embeddedness <20%. Surface fines (<6mm) =10% for A & B channels and =20% for E channels. EXTANT DATA: 2003-2006 NPT pet count, surface fines, embeddedness, periphyto and macroinvertebrate data.

	Estimates Comments
litions d erm orest beaver )% for 00% annel, for E c T /	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: 2016: No actions during look forward, therefore no change from low bookend
003- term se to WD nnel	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend 2016 UPDATED after 8/2/16 Lapwai Meeting: One project will treat 0.03 stream miles and by 2018 the expected improvement will be 90% (prorated to reflect progress toward ultimate improvement) = 0.03 stream miles improved. Relative to the 54.3 steelhead bearing stream miles in the assessment unit, there will be a 0.05% improvement. EWW 9.16.16
idity acts es due s. ie to ment, ng. d or C & ebble ton	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend 2016 UPDATED after 8/2/16 Lapwai Meeting: One project will treat 0.03 stream miles. Landscape position prorates the effectiveness by 50% and by 2018 the expected progress improvement will be 1% ( = 0.00001 stream miles improved). Relative to the 54.3 steelhead bearing stream miles in the assessment unit, there will be a 0.0003%% improvement. This small of an improvement is not recordable in Taurus. EWW 9.16.16

FSU	Population	Code	Assessment Unit	2012 Standardized	LF Weight	Low	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	8.1: Water Quality: Temperature	25%	30	30	30	40	30	55	Level of Certainty = 2. Instantaneous max in ex of 26Å <sup>o</sup> C recorded at multiple locations; 28.8Å recorded at mouth of Big Canyon Creek. HIGH BOOKENDS: Short-term (2018) response to dra tile decommissioning, wetland development a education/enforcement coordination on illega withdrawals. Long-term (2033) response to riparian growth and effects of hydrological stabilization actions on W:D ratios and pool habitat. LF TARGET: Water temperature <14Å <sup>s</sup> EXTANT DATA: 2003-2005 NPT thermograph d BOR thermograph data
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	8.7: Water Quality: Toxic Contaminants	2%	85	85	85	90	85	90	Level of Certainty = 5. Lack data, but anecdote about Little Canyon Creek headwater sources common; supported through biological data in upper Little Canyon Creek. HIGH BOOKENDS: Short-term (2018) response to education/enforcement coordination, grassed waterways and wetland development. LF TARC Low levels of chemical contamination from agricultural, grazing, industrial and other sourc no excess nutrients. EXTANT DATA: 2003-2 NPT diatom and macroinvertebrate data
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	9.1: Water Quantity: Increased Water Quantity	8%	50	50	50	55	50	70	Level of Certainty = 4. Beyond direct impacts t redds, extremely "flashy" spring events linked all limiting factors except 8.7. HIGH BOOKEND Short-term (2018) response to no-till, grassed waterways, drain tile decommissioning and wetland development. Long-term (2033) respo to wetland maturation, riparian/upland growt and forest regeneration. LF TARGET: Discharge volume and timing of peak flows comparable t watershed functioning within its natural disturbance regime. EXTANT DATA: 2008 NPT NPSWCD assessment
Snake River Steelhead	Clearwater River lower mainstem	LCS1	Big Canyon Creek	9.2: Water Quantity: Decreased Water Quantity	20%	35	35	35	40	35	55	Level of Certainty = 2. Low baseflow levels pre within all streams; intermittent reaches preser mainstem Big Canyon and Little Canyon creeks HIGH BOOKENDS: Short-term (2018) response drain-tile decommissioning, wetland developm and education/enforcement coordination on illegal withdrawals. Long-term (2033) response wetland maturation, riparian/upland growth, forest regeneration and beaver recolonization TARGET: Discharge volume and timing of base flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2003-2006 NPT discharge data

	Estimates Comments
xcess ºC H ain- ind al	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
ºC. lata;	
es n I GET:	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
ces, 2005	
:0 to DS: onse th e to a	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
esent nt on s. e to ment e to h. LF	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16

				2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033		Estimates Co
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Clearwater River lower mainstem	LCS2	Camas Prairie tributaries	4.1: Riparian Condition: Riparian Vegetation	15%	40	40	40	50	40	65	Level of Certainty = 3 . Conservative LF weight as linked to all other impacts. HIGH BOOKENDS: Prolonged response to invasive weed treatments, maturation of riparian plantings and revegetation of fencing/off-site watering corridors. LF TARGET: Level of Certainty = 3 . Conservative LF weight as linked to all other impacts. HIGH BOOKENDS: Prolonged response to invasive weed treatments, maturation of riparian plantings and revegetation of fencing/off-site watering corridors. LF TARGET: Riparian buffer extending =300' from floodplain with riparian vegetation having >75% similarity to potential natural community composition. EXTANT DATA: 2008-2011 NPT photos and canopy cover dataRiparian buffer extending =300' from floodplain with riparian vegetation having >75% similarity to potential natural community composition. EXTANT DATA: 2008-2011 NPT photos and canopy cover data	2015: There time frame, EWL 3.9.16 2016: No act low bookend
Snake River Steelhead	Clearwater River lower mainstem	LCS2	Camas Prairie tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10%	40	40	40	50	40	60	Level of Certainty = 3. Unstable channel conditions noted through 2008-2011 NPT datasets; particularly throughout Cottonwood, Threemile and Butcher creeks. HIGH BOOKENDS: Short-term (2018) response to no-till, drain tile decommissioning, wetland development, bank stabilization and grassed waterways. Long-term (2033) response to wetland maturation, riparian/upland growth, forest regeneration, fencing/off-site watering and beaver recolonization. LF TARGET: Bank stability >90% for Rosgen C channel, >95% for A & B channel, 100% for E channel. Width:Depth ratio<10 for A channel, <20 for B channel, <40 for C channel and <7 for E channel. EXTANT DATA: 2008-2011 NPT undercut bank and wetted width/depth data	2015: There t time frame, t EWL 3.9.16 2016: No act low bookend
Snake River Steelhead	Clearwater River lower mainstem	LCS2	Camas Prairie tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	10%	40	40	40	50	40	60	Level of Certainty = 3. Relatively low channel/habitat complexity noted through 2008- 2011 NPT datasets HIGH BOOKENDS: Short-term (2018) response to no-till, drain tile decommissioning, wetland development and grassed waterways. Long-term (2033) response to riparian/upland growth, forest regeneration, fencing/off-site watering, LWD maturation/recruitment and beaver recolonization. LF TARGET: Potential natural values for pool frequency, pool quality and LWD quantity. EXTANT DATA: 2008-2011 NPT channel morphology data	2015: There time frame, t EWL 3.9.16 2016: No act low bookend

	Estimates Comments
ht as S: nents, tation	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from
RGET: ht as S: hents, tation RGET: lain rity to XTANT over 75%	low bookend
ditions mile t-term nk erm , 0% for 100% nannel, for E lercut	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
2008- •term d nse to ,	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
l _WD annel	

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River	Clearwater	LCS2	Camas Prairie tributaries	7.2: Sediment	10%	45	45	45	55	45	65	Level of Certainty = 4. Beyond impacts of turbidity	2015: There were no actions undertaken during the 2012-2015
Steelhead	River lower			Conditions: Increased								on juvenile and adult physiology, habitat impacts	time frame, therefore, there was no change from Low Bookend.
	mainstem			Sediment Quantity								primarily localized within low gradient reaches due	EWL 3.9.16
												to high transport capacity of "flashy" systems.	2016: No actions during look forward, therefore no change from
												HIGH BOOKENDS: Short-term (2018) response to	low bookend
												no-till, grassed waterways, wetland development,	
												bank stabilization and fencing/off-site watering.	
												Long-term (2033) response to riparian/upland	
												growth and forest regeneration. LF TARGET:	
												Cobble Embeddedness <20%. Surface fines	
												(<6mm) =10% for A & B channels and =20% for C &	
												E channels. EXTANT DATA: 2008-2011 NPT	
												dominant substrate and pebble count data	
Spake Biver	Cloanwatar	1000	Camac Drairia tributarias	9 1: Water Ovelity	25%	25	25	25	20	25	50	Lougl of Cortainty - 2. Water temperatures	2015: There were no actions undertaken during the 2012 2015
Stoolbood	River lower	LC32	Callias Plaine tributaries	Tomporaturo	55%	25	25	25	50	25	50	to exceed lethal levels throughout Cottonwood	time frame, therefore, there was no change from Low Rookend
Steemeau	mainstem			remperature								Creek: may be primary limitation to Lawyer Creek	EWI 3 0 16
	manistern											productivity HIGH BOOKENDS: Short-term (2018)	2016: No actions during look forward, therefore no change from
												response to drain-tile decom, wetland	low bookend
												development and education/enforcement	low bookend
												coordination on illegal withdrawals. Long-term	
												(2033) response to riparian growth and	
												hydrological stabilization actions effect on W:D	
												ratios and pool habitat. LF TARGET: Water	
												temperature <14ºC. EXTANT DATA: 2008-2011	
												NPT instantaneous and Water Resources	
												thermograph data	
Snake River	Clearwater	LCS2	Camas Prairie tributaries	9.1: Water Quantity:	5%	40	40	40	45	40	60	Level of Certainty = 5. Beyond direct impacts to	2015: There were no actions undertaken during the 2012-2015
Steelhead	River lower			Increased Water								redds, extremely "flashy" spring events linked to	time frame, therefore, there was no change from Low Bookend.
	mainstem			Quantity								all limiting factors; evidence of extremely	EWL 3.9.16
												disruptive flows within Cottonwood, Threemile	2016: No actions during look forward, therefore no change from
												and Butcher creeks. HIGH BOOKENDS: Short-term	low bookend
												(2018) response to no-till, grassed waterways,	
												drain tile decommissioning and wetland	
												development. Long-term (2033) response to	
												wetland maturation, riparian/upland growth and	
												forest regeneration. LF TARGET: Discharge volume	
												and timing of peak flows comparable to a	
												watershed functioning within its natural	
												disturbance regime. EXTANT DATA: 2008-2011	
												NPT BF to wetted width data	

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Clearwater River lower mainstem	LCS2	Camas Prairie tributaries	9.2: Water Quantity: Decreased Water Quantity	15%	30	30	30	35	30	50	Level of Certainty = 3. Low baseflow levels present throughout all watersheds; significant portions of mainstem Threemile and Butcher creeks intermittent. HIGH BOOKENDS: Short-term (2018) response to drain-tile decommissioning, wetland development and education/enforcement coordination on illegal withdrawals. Long-term (2033) response to riparian/upland growth, wetland maturation, forest regen and beaver recolonization. LF TARGET: Discharge volume and timing of base flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2008-2011 NPT wetted width and denth data	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10%	65	65	65	95	65	95	Level of Certainty = 4. Previous value overinflated for original AU. Data for new AU restricted to Tom Taha, Maggie, Sally Ann and Sill Creek; info for remainder of AU received from regional staff. HIGH BOOKENDS: Immediate response to replacement of fish passage barriers; <100% HB as potential for barrier(s) to be located upon uncooperative landowner parcel(s). LF TARGET: Full upstream and downstream passage for adult and juvenile fish at all flows. EXTANT DATA: 2008- 2011 NPT groundtruthing observations	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	4.1: Riparian Condition: Riparian Vegetation	10%	50	50	50	55	50	70	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; details for remainder of AU received from regional staff. HIGH BOOKENDS: Prolonged response to maturation of riparian plantings and natural revegetation of fencing/off-site watering corridors and weed treatment reaches. LF TARGET: Riparian buffer extending =300' from floodplain with riparian vegetation having >75% similarity to potential natural community composition. EXTANT DATA: 2008-2011 NPT photos and canopy cover data	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	6.1: Channel Structure and Form: Bed and Channel Form	15%	45	45	45	55	45	70	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; details for remainder of AU received from regional staff. HIGH BOOKENDS: Short-term (2018) response to levee removal, bank stabilization and wetland development. Long-term (2033) response to riparian/upland growth, forest regeneration and fencing/off-site watering. LF TARGET: Bank stability >90% for Rosgen C channel, >95% for A & B channel, 100% for E channel. Width:Depth ratio<10 for A channel, <20 for B channel, <40 for C channel and <7 for E channel. EXTANT DATA: 2008-2011 NPT undercut bank and wetted width/depth data	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend

ECII	Population	Codo	Accordment linit	2012 Standardized	LE Woight	Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LE Weight and Packands Comments
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	10%	50	50	50	60	50	75	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; detai for remainder of AU received from regional sta HIGH BOOKENDS: Short-term (2018) response levee removal and wetland development. Long term (2033) response to riparian/upland growt forest regeneration, LWD maturation/recruitm and fencing/off-site watering. LF TARGET: Potential natural values for pool frequency, po quality and LWD quantity. EXTANT DATA: 2008 2011 NPT channel morphology data
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15%	40	40	40	45	40	60	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; detai for remainder of AU received from regional sta HIGH BOOKENDS: Short-term (2018) response wetland development, bank stabilization and fencing/off-site watering. Long-term (2033) response to riparian/upland growth, road decommissioning and forest regeneration. LF TARGET: Cobble Embeddedness <20%. Surface fines (<6mm) =10% for A & B channels and =20 for C & E channels. EXTANT DATA: 2008-2011 M dominant substrate and pebble count data
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	8.1: Water Quality: Temperature	15%	40	40	40	45	40	60	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; detai for remainder of AU received from regional sta HIGH BOOKENDS: Short-term (2018) response wetland development and education / enforcement coordination on illegal withdrawa Long-term (2033) response to riparian/upland growth and effects of levee removal/hydrologi stabilization action on W:D ratios and pool hab LF TARGET: Water temperature <14°C. EXTAN DATA: 2008-2011 NPT instantaneous data
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	9.1: Water Quantity: Increased Water Quantity	10%	50	50	50	55	50	65	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; detai for remainder of AU received from regional sta HIGH BOOKENDS: Short-term (2018) response no-till, grassed waterways, and wetland development. Long-term (2033) response to wetland maturation, riparian/upland growth ar forest regeneration. LF TARGET: Discharge volu and timing of peak flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2008-2011 NPT BF to wetted width data

_	Estimates Comments
etails staff. ong- owth, itment pool 008-	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
etails staff. nse to nd LF ace =20% 11 NPT	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
etails staff. nse to awals. nd logical habitat. TANT	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
etails staff. nse to o h and volume D11	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend

FSU	Population	Code	Assassment Unit	2012 Standardized	LE Weight	Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LE Weight and Bookends Comments
Snake River Steelhead	Clearwater River lower mainstem	LCS3	Clearwater Mountain tributaries	9.2: Water Quantity: Decreased Water Quantity	15%	40	40	40	45	40	55	Level of Certainty = 5. Data for revised AU restricted to Maggie and Sally Ann Creek; detai for remainder of AU received from regional sta HIGH BOOKENDS: Short-term (2018) response wetland development and education / enforcement coordination on illegal withdrawa Long-term (2033) response to riparian/upland growth, wetland maturation and forest regeneration. LF TARGET: Discharge volume ar timing of base flows comparable to a watershe functioning within its natural disturbance regin EXTANT DATA: 2008-2011 NPT wetted width a depth data
Snake River Steelhead	Clearwater River lower mainstem	LCS4	Lapwai Creek Basin	1.1: Habitat Quantity: Anthropogenic Barriers	10%	60	60	71.3	95	60	95	Level of Certainty = 1. Passage currently blocke 25% of productive channel as well as critical co water refugia. HIGH BOOKENDS: Immediate response to replacement of fish passage barrie <100% HB as potential for barrier(s) to be locat upon uncooperative landowner parcel(s). LF TARGET: Full upstream and downstream passa for adult and juvenile fish at all flows. EXTANT DATA: NPT Passage Barrier Assessment
Snake River Steelhead	Clearwater River lower mainstem	LCS4	Lapwai Creek Basin	4.1: Riparian Condition: Riparian Vegetation	15%	36.4	36.4	36.6	55	45	65	Level of Certainty = 3. Conservative LF weight a linked to all other impacts. HIGH BOOKENDS: Short-term (2018) response to initial riparian plantings throughout invasive weed treatment reaches, fencing/off-site watering corridors and removal of RR prism, levees and I95 pullouts. L term (2033) response to maturation of ripariar plantings and natural revegetation of treatment areas. LF TARGET: Riparian buffer extending =: from floodplain with riparian vegetation having >75% similarity to potential natural community composition. EXTANT DATA: 2003-2006 NPT canopy cover and riparian width, density and compositon data. These efforts will also affect 6.1, 6.2, 7.2, and 8.1. High bookend changed from 40 to 55 (2018) ar 60 to 65 (2033) per NPT CLW_Lapwai_expert p edits_Oct2012.xlsx. spreadsheet.

	Estimates Comments
tails staff. se to wals.	2015: There were no actions undertaken during the 2012-2015 time frame, therefore, there was no change from Low Bookend. EWL 3.9.16 2016: No actions during look forward, therefore no change from low bookend
id and hed gime. i and	
ked to cool riers; cated sage IT	Mission Creek Bridge Replacement #15-1586 ("184. Install Fish Habitat Structure" should read barrier removal: 11 miles of upstream habitat; was a seasonal partial barrier with debris blockage issues depending on county clean-out timing actions - often blocked during critical migration season, so 50% proration) included. No credit assigned (0% proration) to Flat Iron Bridge Replacement #12-157 ("29. Increase Instream Habitat Complexity and Stabilization": 7 miles of upstream habitat, 4 foot drop, SRBA 2017 project not in database) because there is also a downstream barrier that needs to be addressed before this one helps. East Fork Sweetwater Culvert Replacement 2017 is also above the other barrier, and is slated for 2019 or 2020. New uplift (including previous Look Forward sessions) = 11.3%. EWW 9.16.16
t as i nt and Long- ian ent =300' ing iity d ct LF and t panel	Comments entered 7/18/16 and updated after 8/2/16 Lapwai meeting on 9/16/16 EWW. See calculation table. Added Mission Creek Bridge Stream bank Enhancement; 5% proration = 0% uplift due to rounding. Sweetwater Exclusion Fence will benefit springs and Webb Creek, no plantings, but natural regeneration for 800 ft. Site 11-128 water developments expected completion 2016. Project provides off channel water for livestock, protection 600 ft of Mission Creek; regeneration of mature plants; 5% proration. South Tom Beall Buffer Project Phase V expected completion 2016. Planting project along 1.25 miles of stream to establish a 150 ft buffer; currently no shade or woody veg; 5% proration. Install fence at Site 16-1847 expected completion 2016.Fence installed along Sweetwater Creek along 1000 ft.(5% proration). Expected completion 2018. Fence installation along 300 ft of Sweetwater Creek for spring protection Fors 0.02 miles downstream of Sweetwater Creek." Water Development Fors, Windmill Road Phase I expected completion 2017. Fence installed along Sweetwater Creek." Water Development Fors, Windmill Road Phase I expected completion 2018. Planting project along 600 feet of stream (5% proration). Tom Beall Reconnect Phase II expected completion 2016. Planting project along 300 ft of stream both banks planted (5% proration). Tom Beall Reconnect Phase I expected completion 2016. Planting along 300 ft of stream.New uplift = 0.2%.

							Original	Updated		Original			Estimates Comments
5011				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River	Clearwater	LCS4	Lapwai Creek Basin	5.2: Peripheral and	15%	29	29	32.9				Approximately 21 out of 75 miles have no side	2016: Two projects will treat 1 stream miles, but prorated to
Steelhead	River lower			Transitional Habitats:								channels.	account for achieving PFC by 2018 = 0.825 stream miles. Relative
	mainstem			Floodplain Condition									to 21 steelhead bearing mainstem miles, there will be a 3.9%
													improvement. EWW 7/18/16
Snake River	Clearwater	LCS4	Lapwai Creek Basin	6.1: Channel Structure	5%	51.1	55	55	75	55	75	Level of Certainty = 2. Anthropogenic channel	Comments entered 7/18/16 and updated after 8/2/16 with L.
Steelhead	River lower			and Form: Bed and								confinement particularly limiting in Lapwai and	Rasmussen 9/16/16 EWW. Mission Creek bridge replacement will
	mainstem			Channel Form								lower Mission creeks. HIGH BOOKENDS: Short-	pass more bed material, but bed and channel form is a secondary
												term (2018) response to removal of RR prism,	minor localized benefit. Flat Iron Bridge replacement will benefits
												levees and I95 pullouts. LF TARGET: Bank stability	other limiting factors. Webb Creek Floodplain project will relocate
												>90% for Rosgen C channel, >95% for A & B	road out of the floodplain to restore channel meanders. Because
												channel, 100% for E channel. Width:Depth	there are not direct changes to the channel be constructed benefits
												ratio<10 for A channel, <20 for B channel, <40 for	were weighted at 0%. Sweetwater Creek sediment reduction near
												C channel and <7 for E channel. EXTANT DATA:	the Flat Iron project will benefit sediment and was not included in
												2003-2006 NPT reports, 2008 NPT assessment.	benefits to this limiting factor. New uplift 3.9%.
												These efforts will also affect LF 4.1, 6.2, 7.2, and	
												8.1.	
Snake River	Clearwater	LCS4	Lapwai Creek Basin	6.2: Channel Structure	10%	40.3	40.3	41.9	50	45	60	Level of Certainty = 3. Relatively low	Comments entered 7/18/16 and updated after 8/2/16 Lapwai
Steelhead	River lower			and Form: Instream								channel/habitat complexity noted through 2003-	meeting on 9/16/16 EWW. Group discussed time frame which
	mainstem			Structural Complexity								2006 NPT datasets HIGH BOOKENDS: Short-term	benefits would accrue and did not include the fence projects,
												(2018) response to floodplain connectivity, no-till,	plantings, or water developments. Mission Creek bank protection
												drain tile decommissioning, wetland development	expected completion 2018. Log revetment and toe rock placement
												and grassed waterways. Long-term (2033)	to create pools in 0.05 miles with 75% proration. New uplift = 1.6%.
												response to riparian/upland growth, forest	
												regeneration, fencing/off-site watering, LWD	
												maturation/recruitment and beaver	
												recolonization. LF TARGET: Potential natural	
												values for pool frequency, pool quality and LWD	
												quantity. EXTANT DATA: 2003-2006 NPT channel	
												morphology data	

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Clearwater River lower mainstem	LCS4	Lapwai Creek Basin	7.2: Sediment Conditions: Increased Sediment Quantity	5%	42.1	42.1	45.6	50	43	70	Level of Certainty = 3. Beyond effects of turbidity on juvenile and adult physiology, habitat impacts primarily localized within low gradient reaches due to high transport capacity of "flashy" systems. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, wetland development, bank stabilization and fencing/off-site watering. Long-term (2033) response to riparian/upland growth, forest regeneration and road decommissioning. LF TARGET: Cobble Embeddedness <20%. Surface fines (<6mm) <=10% for A & B channels and <=20% for C & E channels. EXTANT DATA: 2003-2006 NPT pebble count, surface fines, embeddedness, periphyton and macroinvertebrate data.	Comments entered 7/18/16 and updated 8/2/16 Lapwai meeting on 9/16/16 EWW. Mission Creek Bridge replacement will eliminate fine sediment erosion to creek. See calculation tables for sediment reduction projects. Proration based on landscape position and potential benefit in project area. Sweetwater exclusion mid- slope water development and fencing. Webb Creek enhancement. Flat Iron Bridge replacement will eliminate erosion along 400 ft of stream. Road erosion reduction will partially treat incoming sediments. Webb Creek floodplain road will treat 2,300 ft. Benefits prorated based on road slope position. Sweetwater Creek sediment reduction (two segments) will treat 800 and 200 ft of old logging road near Mill Creek with water bars and other BMPs. Numerous other roads in the area so benefits were prorated lower. Sweetwater drainage no-till conservation expected completion 2016. Project expected to reduce erosion and water surface runoff (anticipated to reduce erosion 5 tons/ac of sediment) from treatment of 90% of acreage. 1.5 miles adjacent to creek. Sweetwater drainage no-till projects planned between 2015 and 2018. South Tom Beall buffer project Phase V will treat 1.25 mi. Mission Creek bank protection project benefits prorated at 90%. Windmill mostly channel erosion, so small/no measurable benefit from plantings. Gully Erosion treatments are considered to be 75- 80% effective in reducing erosion (in Sweetwater Cr drainage), will affect 300 ft. of creek, but other sediment sources exist from land use. Revised uplift 3.5%.
Snake River Steelhead	Clearwater River lower mainstem	LCS4	Lapwai Creek Basin	8.1: Water Quality: Temperature	15%	30.4	35	48.25	45	38	55	Level of Certainty = 1. Instantaneous max in excess of 26°C recorded at multiple locations; 31.8°C recorded at mouth of Lapwai Creek. HIGH BOOKENDS: Short-term (2018) response to drain- tile decommissioning, wetland development, education/enforcement coordination on illegal withdrawals and decommissioning of LOID diversions. Long-term (2033) response to riparian growth and effects of hydrological stabilization actions on W:D ratios and pool habitat. LF TARGET: Water temperature <14°C. EXTANT DATA: 2003-2005 NPT thermograph data; BOR thermograph data	Benefits from 3.25 miles of riparian restoration, in addition to benefits from influence on hyporheic flow from NPT trust unit 40 stream restoraiton and 4 major levee systems to be addressed. Vegetation growth response within 2018 period not expected to yield measurable benefits to temperature. These projects accounted for already under different limiting factors. Recognizing that temperature improvements can come from both shading and flow increases, the expert panel calculated temperature improvements through the additive uplifts from both vegetation improvement projects = 0.05% and flow improvements from limiting factor 9.2 = 17.8%. Therefore, a 17.85% improvement is expected. EWW 7/18/16
Snake River Steelhead	Clearwater River lower mainstem	LCS4	Lapwai Creek Basin	8.7: Water Quality: Toxic Contaminants	2%	80	80	80	85	80	90	Level of Certainty = 5. Lack data, but adjacent to 195 and Culdesac trap range and anecdotal information re. residential impacts common. HIGH BOOKENDS: Short-term (2018) response to education/enforcement coordination, grassed waterways and wetland development . Long-term (2033) response to maturation of riparian plantings adjacent 195. LF TARGET: Low levels of chemical contamination from agricultural, grazing, industrial and other sources, no excess nutrients. EXTANT DATA: NPT water quality analysis of Culdesac trap range.	No projects planned 2016: No actions, therefore no change to low bookend.

							Original	Updated		Original			Estimates Commer
501	Demulation	Code	A	2012 Standardized	LE Maishe	Low	2018	2018	High 2018	2033	High 2033	LE Weight and Realized Comments	
ESU Snake River	Clearwater	LCS4	Assessment Unit	9 1: Water Quantity:	LF Weight	45	Listimate	45	50	Listimate	Bookend	LF Weight and Bookends Comments	No actions no chan
Steelhead	River lower mainstem			Increased Water Quantity			*5			**		redds, extremely "flashy" spring events linked to all limiting factors except 1.1 and 8.7. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, drain tile decommissioning and wetland development. Long-term (2033) response to wetland maturation, riparian/upland growth and forest regeneration. LF TARGET: Discharge volume and timing of peak flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: USGS gauge data	
Snake River Steelhead	Clearwater River lower mainstem	LCS4	Lapwai Creek Basin	9.2: Water Quantity: Decreased Water Quantity	15%	35	38	52.8	55	38	65	Level of Certainty = 2. Low baseflow levels present within all streams; Webb, Sweetwater and lower Lapwai Creek discharge impacted by BOR water withdrawals. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, drain tile decommissioning, wetland development and decommissioning of LOID diversions. Long-term (2033) response to wetland maturation, riparian/upland growth and forest regeneration. LF TARGET: Discharge volume and timing of base flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: USGS gauge data and 2003-2006 NPT discharge data	Comments entered well project will ad needs are seasonal over historical base 7.18.16 Lapwai Ref convert 30 ac of cro upland hydrology.
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	1.1: Habitat Quantity: Anthropogenic Barriers	10%	71	75	89.1	75	75	75	Migration barriers are planned for removal on the W. Fork Little Bear. Culvert replacements are scheduled throughout the Potlatch River system that currently serve as migration barriers. Add Comment Per D. Keen 2/21/2013 "An additional barrier on Big Bear Creek is scheduled for evaluation and for passage improvement."	In 2016 the expert improve 59 stream partial barriers, imp miles. Relative to t assessment unit, 18 entered 7/18/16 EV
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	4.1: Riparian Condition: Riparian Vegetation	10%	50.7	50.7	50.9	55	65	65	A large portion of the diminished riparian cooridors are located within the basin where agricluture has been active and continues to be active as well as areas of active livestock grazing. The riparian conditions in these area will be enhanced through livestock exclusion, riparian plantings with native species, and the implementation of upland agriclutural practices that reduce sheet and gully erosion. These efforts will also affect 6.1, 6.2, 7.2, and 8.1.	In 2016 the expert treating 5.21 strear 2018. Because vege prorated based on 2018. Therefore 0. steelhead bearing s credited for improv EWW.
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15%	30	30	33.3				Much incision throughout assessment unit.	In 2016 five project toward PFC by 2012 stream miles with I expert panel recogn due to different geo improvement. Con

	Estimates Comments
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icts to iked to GH to no-till, oning (33) /upland ET: /s ithin its A: USGS	No actions no change. Comments entered 9/26/16 RM.
s present d lower water rm (2018) rain tile and g-term eration. LF base hing FANT PT	Comments entered 7/9/16 and updated 9/16/16 EWW. LOP pilot well project will add 4 cfs, over 22 stream miles, but flows and needs are seasonal. The annual average flow affected = 2.7 cfs over historical baseflow of 15 cfs = 17.8% improvement. EWW 7.18.16 Lapwai Reforestation (expected completion 2016) will convert 30 ac of cropland to forestlands, is anticipated to improve upland hydrology.
al on the are system n eduled ent."	In 2016 the expert panel evaluated three projects anticipated to improve 59 stream miles. When prorated to account for full or partial barriers, improvement was considered over 32.5 stream miles. Relative to the 179.5 steelhead bearing stream miles in the assessment unit, 18.1% improvement is anticipated. Comments entered 7/18/16 EWW.
ere to be grazing. be arian actices se efforts	In 2016 the expert panel evaluated five riparian vegetation projects treating 5.21 stream miles that are anticipated for completion by 2018. Because vegetation takes time to grow up, projects were prorated based on their anticipated realized improvement by 2018. Therefore 0.3125 stream miles relative to the 179.5 steelhead bearing stream miles in the assessment unit were credited for improvement of 0.2%Comments entered 7/18/16 EWW.
t.	In 2016 five projects were prorated based on anticipated progress toward PFC by 2018 along 2.9325 stream miles. Relative to the 90 stream miles with less than 2% slope in the assessment unit (the expert panel recognizes that not all reaches will have floodplains due to different geomorphology/confinement), there will be a 3.3% improvement. Comment entered 7/18/16 EWW.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	E
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	6.1: Channel Structure and Form: Bed and Channel Form	10%	47.1	47.1	50.6	55	60	60	Channel structure and stability will be enhanced in the agricluture and forest landscapes through meadow and instream channel restorations where channel sinuosity has been lost and riparian restoration plantings. Areas of focus through 2018 will include Big Bear Creek, Little Bear Creek, Corral Creek, Fry Creek, and E. Fork Potlatch River.	In to in st a: w so
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	6.2: Channel Structure and Form: Instream Structural Complexity	10%	41.7	41.7	43.5	45	55	55	Instream structural complexity will be enhanced through instream channel restorations (e.g., large woody debris when appropriate) and riparian plantings with native species will take place to add instream structural complexity	In to in st as so
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	7.2: Sediment Conditions: Increased Sediment Quantity	10%	41	41	41	50	55	55	Upland forest and agriculture practices will be installed to minimize the delivery of fine sediments to critical streams. Emphasis will be placed on road rocking projects near fish bearing streams, replacing undersized culverts, and implementing agricultural practices designed to minimize sheet, rill and gully erosion.	N
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	8.1: Water Quality: Temperature	15%	30	30	34.4	35	45	45	Practices will place an emphasis on restoring degraded riparian areas to minimize direct summer solar inputs to local streams. Meadow restorations will take place to provide for a source of cool groundwater inputs to streams. These efforts will also affect 4.1, 6.1, and 6.2.	C n c f f
Snake River Steelhead	Clearwater River lower mainstem	LCS5	Potlatch River Basin	9.2: Water Quantity: Decreased Water Quantity	20%	30	30	34.2	35	40	40	Meadows and wetland restorations will take place to provide for a source of base flows throughout the summer and fall. These efforts will also affect 6.2 and 8.1.	Ci ci di te si gi a
Snake River Steelhead	Clearwater River lower mainstem	LCS6A	Weippe Prairie	4.1: Riparian Condition: Riparian Vegetation	15%	55	55	55	60	55	75	Level of Certainty = 3. Conservative LF weight as linked to all other impacts. HIGH BOOKENDS: Short-term (2018) response to initial riparian plantings throughout invasive weed treatment reaches and fencing/off-site watering corridors. Long-term (2033) response to maturation of riparian plantings, natural revegetation of treatment areas and forest regeneration. LF TARGET: Riparian buffer extending =300' from floodplain with riparian vegetation having >75% similarity to potential natural community composition. EXTANT DATA: 2008-2011 NPT photos and canopy cover data	2( lir E\ 2(

	Estimates Comments
nced in h where h 2018 , River.	In 2016 the expert panel evaluated treatments to 5.46 stream miles total from meadow restoration projects. Based on anticipated improvements by 2018 3.1475 stream mi relative to 90 mi of steelhead bearing streams were expected to improve < 2% of the assessment unit. The expert panel recognizes that not all reaches will have floodplains due to different geomorphology/confinement, so estimated a 3.5% uplift. Comments entered 7/18/16 EWW.
nced large n to add	In 2016 the expert panel evaluated treatments to 5.46 stream miles total from meadow restoration projects. Based on anticipated improvements by 2018 3.1475 stream mi relative to 90 mi of steelhead bearing streams were expected to improve < 2% of the assessment unit. The expert panel recognizes that not all reaches will have floodplains due to different geomorphology/confinement, so estimated a 1.8% uplift. Comments entered 7/18/16 EWW.
oe iments on ms, nting heet,	No actions no change. Comments entered 9/26/2016 RM.
g low source se	Comments entered 7/16/16 EWW and updated 9/26/16 RM. Panel noted that dissolved oxygen is a factor in this assessment unit, but considered it within limiting factor 8.1 and limiting factor 9.2 and noted that dissolved oxygen is improved by actions that benefit flow and temperature. Sum of riparian and flow uplifts results in 4.4% uplift that was recorded for this limiting factor.
e place hout affect	Comments entered 7/18/16 EWW and edited 9/26/16 RM. Panel noted that dissolved oxygen is a factor in this assessment unit, but considered it within limiting factors 8.1 and 9.2 and noted that dissolved oxygen is improved by actions that benefit flow and temperature. Spring Valley Reservoir flow augmentation will supplement low flows by 0.25 cfs, affecting 12 mi, 7 that currently go dry. Mainstem Potlatch baseflow in August is 6 cfs. Using this as a denominator results in 4.2% uplift.
nt as S: 	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.

ESU Snake River Steelhead	Population Clearwater River lower mainstem	Code LCS6A	Assessment Unit Weippe Prairie	2012 Standardized Limiting Factor 6.1: Channel Structure and Form: Bed and Channel Form	LF Weight 5%	Low Bookend 45	Original 2018 Estimate 45	Updated 2018 Estimate 45	High 2018 Bookend	Original 2033 Estimate 45	High 2033 Bookend 60	LF Weight and Bookends Comments Level of Certainty = 4. Unstable channel conditions noted through 2008-2011 NPT datasets HIGH BOOKENDS: Short-term (2018) response to no-till, drain tile decommissioning, wetland development, bank stabilization and grassed waterways. Long- term (2033) response to wetland maturation, riparian/upland growth, forest regeneration, fencing/off-site watering and beaver recolonization. LF TARGET: Bank stability >90% for Rosgen C channel, >95% for A & B channel, 100% for E channel. Width:Depth ratio<10 for A channel,	20 lim EW 20
Snake River Steelhead	Clearwater River lower mainstem	LCS6A	Weippe Prairie	6.2: Channel Structure and Form: Instream Structural Complexity	10%	50	50	50	55	50	65	<20 for B channel, <40 for C channel and <7 for E channel. EXTANT DATA: 2008-2011 NPT undercut bank and wetted width/depth data Level of Certainty = 4. Relatively low channel/habitat complexity noted through 2008-2011 NPT datasets HIGH BOOKENDS: Short-term (2018) response to no-till, drain tile decommissioning, wetland development and grassed waterways. Long-term (2033) response to wetland maturation, riparian/upland growth, forest regeneration, fencing/off-site watering, LWD maturation/recruitment and beaver	20: lim EW 20:
Snake River Steelhead	Clearwater River lower mainstem	LCS6A	Weippe Prairie	7.2: Sediment Conditions: Increased Sediment Quantity	15%	40	40	40	45	40	55	recolonization. LF TARGET: Potential natural values for pool frequency, pool quality and LWD quantity. EXTANT DATA: 2008-2011 NPT channel morphology data Level of Certainty = 4. Beyond impacts of turbidity on juvenile and adult physiology, habitat impacts primarily localized within low gradient reaches due to high transport capacity of "flashy" systems. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, wetland development, bank stabilization and fencing/off-site watering. Long-term (2033) response to riparian/upland growth, road decommissioning and forest regeneration. LF TARGET: Cobble Embeddedness <20%. Surface fines (<6mm) =10% for A & B channels and =20% for C & E channels. EXTANT DATA: 2008-2011 NPT dominant substrate and pebble count data	20: lim EW 20:

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onditions HIGH to no-till, clopment, clon, tion, >90% for cl, 100% A channel, <7 for E indercut	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
h 2008- ort-term and ponse to wth, ering, ural d LWD channel	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
turbidity impacts aches due ems. onse to opment, tering. oland t dedness & B (TANT e and	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.

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				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Clearwater River lower mainstem	LCS6A	Weippe Prairie	8.1: Water Quality: Temperature	25%	35	35	35	40	35	50	Level of Certainty = 3. Max temps appear particularly limiting to Jim Ford and mid-lower Orofino Creek HIGH BOOKENDS: Short-term (2018) response to drain-tile decom, wetland development and education/enforcement coordination on illegal withdrawals. Long-term (2033) response to riparian growth and effects of hydrological stabilization actions on W:D ratios and pool habitat. LF TARGET: Water temperature <14°C. EXTANT DATA: 2008-2011 NPT instantaneous and Water Resources thermograph data	2015: No actior limiting factor, EWL 3.10.16 2016: No actior
Snake River Steelhead	Clearwater River lower mainstem	LCS6A	Weippe Prairie	9.1: Water Quantity: Increased Water Quantity	5%	45	45	45	50	45	55	Level of Certainty = 5. Beyond direct impacts to redds, extremely "flashy" spring events linked to all limiting factors. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, drain tile decom and wetland development. Long- term (2033) response to wetland maturation, riparian/upland growth and forest regeneration. LF TARGET: Discharge volume and timing of peak flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2008-2011 NPT BF to wetted width data	2015: No actior limiting factor, EWL 3.10.16 2016: No actior
Snake River Steelhead	Clearwater River lower mainstem	LCS6A	Weippe Prairie	9.2: Water Quantity: Decreased Water Quantity	25%	30	30	30	35	30	50	Level of Certainty = 3. Low rheic flows appear particularly limiting to Whiskey and Big Creek HIGH BOOKENDS: Short-term (2018) response to drain-tile decommissioning, wetland development and education/enforcement coordination on illegal withdrawals. Long-term (2033) response to riparian/upland growth, wetland maturation, forest regeneration and beaver recolonization. LF TARGET: Discharge volume and timing of base flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2008-2011 NPT wetted width and depth data	2015: No action limiting factor, f EWL 3.10.16 2016: No action
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	2%	75	75	75	95	75	95	Level of Certainty = 3. Barrier at mouth of Lindsay Creek responsible for majority of habitat loss. HIGH BOOKENDS: Immediate response to replacement of fish passage barriers; <100% HB as potential for barrier(s) to be located upon uncooperative landowner parcel(s). LF TARGET: Full upstream and downstream passage for adult and juvenile fish at all flows. EXTANT DATA: 2008- 2011 NPT groundtruthing observations	2015: No action limiting factor, f EWL 3.10.16 2016: No action

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ower rm and : term fects of ratios erature	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
liograph	
cts to ked to rt-term vays, it. Long- ion, ration. LF peak hing ANT data	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
eear eek onse to lopment on oonse to on, ition. LF base hing ANT depth	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
Lindsay oss. 0% HB as RGET: or adult A: 2008-	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.

ESU Snake River Steelhead	Population Clearwater River lower mainstem	Code LCS6B	Assessment Unit Lower canyon tributaries	2012 Standardized Limiting Factor 4.1: Riparian Condition: Riparian Vegetation	LF Weight 10%	Low Bookend 45	Original 2018 Estimate 45	Updated 2018 Estimate 45	High 2018 Bookend	Original 2033 Estimate 45	High 2033 Bookend 60	LF Weight and Bookends Comments Level of Certainty = 3. Conservative LF weight as linked to all other impacts. HIGH BOOKENDS: Short-term (2018) response to initial riparian plantings throughout invasive weed treatment reaches, fencing/off-site watering corridors and removal or setback of levees. Long-term (2033) response to maturation of riparian plantings and natural revegetation of treatment areas. LF TARGET: Riparian buffer extending =300' from	Estimates Comments 2015: No actions were limiting factor, therefo EWL 3.10.16 2016: No actions, ther
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10%	45	45	45	50	45	65	floodplain with riparian vegetation having >75% similarity to potential natural community composition. EXTANT DATA: 2008-2011 NPT photos and canopy cover data Level of Certainty = 4. Unstable channel conditions noted through 2008-2011 NPT datasets HIGH BOOKENDS: Short-term (2018) response to no-till, drain tile decommissioning, wetland development, bank stabilization and grassed waterways. Long- term (2033) response to wetland maturation, riparian/upland growth, forest regeneration, fencing/off-site watering and beaver	2015: No actions were limiting factor, therefo EWL 3.10.16 2016: No actions, ther
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	15%	50	50	50	55	50	70	recolonization. LF TARGET: Bank stability >90% for Rosgen C channel, >95% for A & B channel, 100% for E channel. Width:Depth ratio<10 for A channel, <20 for B channel, <40 for C channel and <7 for E channel. EXTANT DATA: 2008-2011 NPT undercut bank and wetted width/depth data Level of Certainty = 4. Relatively low channel/habitat complexity noted through 2008- 2011 NPT datasets HIGH BOOKENDS: Short-term	2015: No actions were limiting factor, therefo EWL 3.10.16
												(2018) response to no-till, drain tile decommissioning, wetland development and grassed waterways. Long-term (2033) response to wetland maturation, riparian/upland growth, fencing/off-site watering, forest regeneration, LWD maturation / recruitment and beaver recolonization. LF TARGET: Potential natural values for pool frequency, pool quality and LWD quantity. EXTANT DATA: 2008-2011 NPT channel morphology data	

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ght as DS: an nent s and 2033) gs and .F rom >75% PT	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
enditions IGH o no-till, opment, Long- on, on, 90% for , 100% channel, 7 for E ndercut	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
a 2008- rt-term nd ponse to th, ion, ral d LWD hannel	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16

				2012 Standardized		low	Original	Updated	High 2019	Original	High 2022		Estimates Commen
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10%	45	45	45	55	45	70	Level of Certainty = 4. Beyond impacts of turbidity on juvenile and adult physiology, habitat impacts primarily localized within low gradient reaches due to high transport capacity of "flashy" systems. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, wetland development, bank stabilization and fencing/off-site watering. Long-term (2033) response to riparian/upland growth and road decommissioning. LF TARGET: Cobble Embeddedness <20%. Surface fines (<6mm) =10% for A & B channels and =20% for C & E channels. EXTANT DATA: 2008-2011 NPT dominant substrate and pebble count data	2015: No actions we limiting factor, then EWL 3.10.16 2016: No actions, th
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	8.1: Water Quality: Temperature	20%	35	35	35	40	35	50	Level of Certainty = 3. Max temps appear particularly limiting to lower Cottonwood Creek. HIGH BOOKENDS: Short-term (2018) response to drain-tile decommissioning, wetland development and education/enforcement coordination on illegal withdrawals. Long-term (2033) response to riparian growth and effects of hydrological stabilization actions on W:D ratios and pool habitat. LF TARGET: Water temperature <14°C. EXTANT DATA: 2008-2011 NPT instantaneous and Water Resources thermograph data	2015: No actions we limiting factor, then EWL 3.10.16 2016: No actions, th
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	9.1: Water Quantity: Increased Water Quantity	8%	45	45	45	50	45	60	Level of Certainty = 5. Beyond direct impacts to redds, extremely "flashy" spring events linked to all limiting factors. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, drain tile decommissioning and wetland development. Long-term (2033) response to wetland maturation, riparian/upland growth and forest regeneration. LF TARGET: Discharge volume and timing of peak flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2008-2011 NPT BF to wetted width data	2015: No actions we limiting factor, there EWL 3.10.16 2016: No actions, th
Snake River Steelhead	Clearwater River lower mainstem	LCS6B	Lower canyon tributaries	9.2: Water Quantity: Decreased Water Quantity	25%	30	30	30	35	30	45	Level of Certainty = 3. Low baseflow levels present within all streams, intermittant reaches present throughout majority of streams. HIGH BOOKENDS: Short-term (2018) response to no-till, grassed waterways, drain tile decommissioning and wetland development. Long-term (2033) response to wetland maturation, riparian/upland growth and forest regeneration. LF TARGET: Discharge volume and timing of base flows comparable to a watershed functioning within its natural disturbance regime. EXTANT DATA: 2008- 2011 NPT wetted width and depth data	2015: No actions we limiting factor, there EWL 3.10.16 2016: No actions, th

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nments	2015: No actions were undertaken during 2012 2015 for this
ts of turbioity bitat impacts nt reaches due ' systems. ) response to development, te watering. an/upland LF TARGET: te fines d =20% for C & L1 NPT nt data	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
ppear wood Creek. ) response to development lation on t) response to logical nd pool ture <14ºC. ntaneous and	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
impacts to nts linked to S: Short-term raterways, and conse to d growth and charge volume e to a ural 2008-2011	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
levels present hes present GH onse to no-till, imissioning m (2033) arian/upland TARGET: e flows ing within its DATA: 2008- ata	2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.

FCII	Population	Codo	Assassment Unit	2012 Standardized	LE Woight	Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LE Weight and Bookonds Commonts	Estimates Comments
Snake River Steelhead	Lolo Creek	LOS1	Eldorado Creek	1.2: Habitat Quantity: Natural Barriers	0%	5	5	5	5	5	5	Eldorado Falls (natural barrier) blocks 95% of the habitat in this drainage.	2012: Natural barrier LF mimics historic accessal 2015: 2015: No actions limiting factor, therefor EWL 3.10.16 2016: no actions, theref
Snake River Steelhead	Lolo Creek	LOS1	Eldorado Creek	4.1: Riparian Condition: Riparian Vegetation	50%	70	70	70	75	70	80	NPT Lolo Creek monitoring report (2011) reports heavily impacted by history of logging, infrastructure development (roads, powerlines, etc), and/or grazing	2012: No actions planne 2015: 2015: No actions limiting factor, therefor EWL 3.10.16 2016: No actions, therefor
Snake River Steelhead	Lolo Creek	LOS1	Eldorado Creek	7.2: Sediment Conditions: Increased Sediment Quantity	50%	60	65	65	70	70	75	Upper Lolo EAWS (2003): sediment estimated at 6 tons/sq miles/year and currently elevated by an estimated 33 percent over natural.	2012: 20 miles of road of disease. 2015: 2015: No actions limiting factor, therefore EWL 3.10.16 2016: One road decomm but prorated by landsca results in a 0.05 stream steelhead bearing stream a 5% improvement. EW
Snake River Steelhead	Lolo Creek	LOS2	Jim Brown Creek	1.1: Habitat Quantity: Anthropogenic Barriers	15%	80.7	80.7	80.7	85	72	85	NPT Culvert Assessment (2010) identified 13 culverts in this watershed which are identified as fish passage barriers.	2012: Jim Brown MP 39 stream habitat; Compet date. 2015: Jim Brown 2012 c habitat, but there are 26 17 miles are still blocked road. Only one left on m installed without passag treatment accounting fc (75%) there is some sp stream miles. Benefits c required an estimate of Assessment Unit. Streal so the Expert Panel appi 3rd order streams. Stee Jim Brown. Habitat is lin present, and seen durin 3.75/35.1*100 = a 10.79 2016: No actions, there
Snake River Steelhead	Lolo Creek	LOS2	Jim Brown Creek	4.1: Riparian Condition: Riparian Vegetation	15%	40.1	40.1	40.1	50	43	65	NPT Lolo Creek monitoring report (2011) reports heavily impacted by history of logging, infrastructure development (roads, powerlines, etc), and/or grazing	2012: 1 mile of riparian 2015: Vegetation planti project resulted in 0.079 through 2018, the strea 35.1 steelhead bearing s on summation of 2nd an this limiting factor = 0.1 2016: No actions, there

	Estimates Comments
sht and Bookends Comments	
(natural barrier) blocks 95% of the drainage.	2012: Natural barrier LF weight set to 0%. Current distribution mimics historic accessability. 2015: 2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16
x monitoring report (2011) reports ed by history of logging, development (roads, powerlines, azing	2016: No actions, therefore no change to low bookend. 2012: No actions planned 2015: 2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
WS (2003): sediment estimated at 6 year and currently elevated by an percent over natural.	2012: 20 miles of road decommisioning through Lolo insect and disease. 2015: 2015: No actions were undertaken during 2012-2015 for this limiting factor, therefore there was no change from low bookend. EWL 3.10.16 2016: One road decommission project would affect 1 stream miles, but prorated by landscape position and realized benefits to 2018 results in a 0.05 stream miles effectively treated. Relative to the 1 steelhead bearing stream miles in the assessment unit, there will be a 5% improvement. EWW 7.19.16
sessment (2010) identified 13 watershed which are identified as ırriers.	2012: Jim Brown MP 39 scheduled for 2013 will return 5 miles of stream habitat; Competed 4 barrier removals in the watershed to date. 2015: Jim Brown 2012 culvert replacement opened up 5 miles of habitat, but there are 26 known remaining culverts, 18 surveyed; 17 miles are still blocked. Two other culverts were replaced on this road. Only one left on mainstem, near top. A new culvert was installed without passage. The Expert Panel adjusted the miles of treatment accounting for life history stage use of upstream habitat (75%) there is some spawning, but mostly used for rearing = 3.75 stream miles. Benefits considered across the Assessment Unit required an estimate of total steelhead bearing stream miles in the Assessment Unit. Streamnet had no steelhead use miles mapped, so the Expert Panel approximated using the 35.1 miles of 2nd and 3rd order streams. Steelhead are seen stacking up in pool below Jim Brown. Habitat is limited, but has some use. O. mykiss is present, and seen during construction salvage. Therefore 3.75/35.1*100 = a 10.7% improvement. EWL 3.10.16 2016: No actions, therefore no change to low bookend.
k monitoring report (2011) reports ed by history of logging, development (roads, powerlines, azing	2012: 1 mile of riparian planting planned 2015: Vegetation planting associated with a culvert replacement project resulted in 0.075 stream miles treated, adjusted for growth through 2018, the stream miles improved were 0.023. Across the 35.1 steelhead bearing stream miles in the Assessment Unit (based on summation of 2nd and 3rd order streams), the improvement for this limiting factor = 0.1% (0.023/35.1*100). EWL 3.10.16 2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Es
Snake River Steelhead	Lolo Creek	LOS2	Jim Brown Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25%	40	41	41.3	45	43	50	Upper Lolo EAWS (2003), Jim Brown Coordinated Resource Mangement Plan (1997): Impacts from roads and road construction have had the greatest effect on erosional processes in this watershed,	2( cc 2( re ov dc riv be st st or fr 2(
Snake River Steelhead	Lolo Creek	LOS2	Jim Brown Creek	8.1: Water Quality: Temperature	30%	40.1	40.1	40.1	45	45	50	NPT Lolo Creek monitoring report (2011) reports warm temperature due to loss of riparian cover due to grazing, elevation, geology, and influence of tributary streams	2( ex sig to 2( ( w ch in gr ac cc A st % 2(
Snake River Steelhead	Lolo Creek	LOS2	Jim Brown Creek	8.2: Water Quality: Oxygen	15%	40	40	40	65	43	70	Upper Lolo EAWS (2003): polltants of concern include: bacteria, dissolved oxygen, flow and habitat alterations, nutrients, oil and grease, sediment and temperature	20 20 lir 20
Snake River Steelhead	Lolo Creek	LOS3A	Lower Lolo Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10%	86.1	86.1	86.1	90	86	90	NPT Culvert Assessment (2010) identified 19 culverts in this watershed which are identified as fish passage barriers. 2016: Revised Assessment Unit (AU) boundary, AU code, and AU name	M 20
Snake River Steelhead	Lolo Creek	LOS3A	Lower Lolo Creek	4.1: Riparian Condition: Riparian Vegetation	40%	60.1	60.1	60.1	75	75	80	NPT Lolo Creek monitoring report (2011) reports heavily impacted by history of logging, infrastructure development (roads, powerlines, etc), and/or grazing 2016: Revised Assessment Unit (AU) boundary, AU code, and AU name	Co of 20
Snake River Steelhead	Lolo Creek	LOS3A	Lower Lolo Creek	6.2: Channel Structure and Form: Instream Structural Complexity	10%	70.5	70.5	70.5	75	75	80	Upper Lolo EAWS (2003): roads and trails that cross streams or are adjacent to streams have the hightest potential to deliver sediment to streams. Road densities in the lower part of Lolo equals 4.7 mi/sq mi. and hasthe hightes number of crossings (74). 2016: Revised Assessment Unit (AU) boundary, AU code. and AU name	Co of 20

	Estimates Comments
d Bookends Comments	
003), Jim Brown Coordinated	2012: Secondary benefits from 1 mile of riparian planting to be
nt Plan (1997): Impacts from	completed
truction have had the greatest	2015: The Expert Panel assessed the Jim Brown project, which
processes in this watershed,	replaced an undersized pipe that was at risk of failure, and was
	overtopping the road. It is a low gradient area, so affected
	downstream 1 mile, but the Expert Panel adjusted the affected
	river miles with weighting based on landscape position and total
	benefit possible there (lots of additive cattle impacts) to 0.45
	stream miles affected. Therefore, across the 35.1 steelhead bearing
	stream miles in the Assessment Unit (estimated from 2 and $3ru$
	Order tributaries), there was a 1.3% (0.45/35.1° 100) improvement
	TROM THE IOW DOOKEND. EVEL 5.10.10
itoring report (2011) reports	2010. No actions, therefore no change to low bookend.
due to loss of riparian cover	exceedences, the $16\hat{A}^{\circ}C$ daily average and the instantaneous
ation. geology, and influence of	maximum of 20°C, for the Lolo Creek watershed have decreased
	significantly since measurements began; 1 mile of riparian planting
	to be completed.
	2015:A project that rerouted of water and planted vegetation
	(which cools the stream as it grows up) was considered. The stream
	was re-meandered out of a road ditch and back into the stream
	channel (which was by the way in a shady location). It also
	increased channel length, reduced slope, and there is more
	groundwater interaction now. The 0.075 stream miles treated was
	adjusted for realized improvement by 2018 (=0.0225) and
	Considered over the entire scienced bearing science in the
	estreams as ner the Expert Panel) Therefore, $0.0225/35.1*100=0.1$
	% improvement to this limiting factor. EWL 3.10.16
	2016: No actions, therefore no change to low bookend.
003): polltants of concern	2012: Benefits from 1 mile of riparian planting to be completed
ssolved oxygen, flow and	2015: No actions undertaken during 2012-2015 that address this
nutrients, oil and grease,	limiting factor, therefore no change to low bookend. EWL 2.10.16
erature	2016: No actions, therefore no change to low bookend.
nent (2010) identified 19	Molly Creek to return 3 miles of stream habitat
rshed which are identified as	2016: No actions, therefore no change to low bookend.
smont Unit (AU) boundary AU	
Sillent Onit (AO) boundary, Ao	
itoring report (2011) reports	Colette Mine Stream Restoration will restore approximately 5 miles
history of logging,	of stream habitat, recontour, and reconnect the flood plain and
opment (roads, powerlines,	wetlands
	2016: No actions, therefore no change to low bookend.
sment Unit (AU) boundary, AU	
003): roads and trails that	Colette Mine Stream Restoration will restore approximately 5 miles
adjacent to streams have the	of stream habitat, recontour, and reconnect the flood plain and
deliver sediment to streams.	wetlands
e lower part of Lolo equals 4.7	2016: No actions, therefore no change to lowbookend.
e nightes number of crossings	
sment Unit (AU) boundary, AU	

				2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033		Estimates Comm
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Lolo Creek	LOS3A	Lower Lolo Creek	7.2: Sediment Conditions: Increased Sediment Quantity	40%	71.7	71.7	71.7	80	79	85	Upper Lolo EAWS (2003): sediment estimated at 6 tons/sq miles/year and currently elevated by an estimated 33 percent over natural. 2016: Revised Assessment Unit (AU) boundary, AU code, and AU name	35 miles of road o EIS 2016: No actions,
Snake River	Lolo Creek	LOS4	Musselshell Creek	1.1: Habitat Quantity:	25%	56.7	56.7	56.7	90	75	90	Clearwater Subbasin Plan, NOAA Recovery Plan	14.4 miles of stre
Steelhead				Anthropogenic Barriers									2016: No actions,
Snake River Steelhead	Lolo Creek	LOS4	Musselshell Creek	4.1: Riparian Condition: Riparian Vegetation	25%	60.4	60.4	60.4	70	67	75	NPT Lolo Creek monitoring report (2011) reports heavily impacted by history of logging, infrastructure development (roads, powerlines, etc), and/or grazing	4 miles of stream 2016: No actions,
Snake River Steelhead	Lolo Creek	LOS4	Musselshell Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25%	41.6	41.6	41.6	55	55	60	Upper Lolo EAWS (2003): sediment standards can be between 45 % and 55% for 10 out of 30 years. Current sedimant production is 25% over natural.	15 miles s of road and Disease 2016: No actions,
Snake River Steelhead	Lolo Creek	LOS4	Musselshell Creek	8.1: Water Quality: Temperature	25%	50.4	50.4	50.4	60	59	65	Upper Lolo EAWS (2003), NPT Lolo Creek monitoring report (2011) reports warm temperature due to loss of riparian cover due to grazing, elevation, geology, and influence of tributary streams	From approximat Gulch. 2016: No actions,
Snake River Steelhead	Lolo Creek	LOS6	Upper Lolo Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10%	85	85	85	90	85	90	Upper Lolo EAWS (2003): low pool quantity/quality and high cobble embeddedness levels in Yoosa Creek, which is caused by lack of instream (wood) and bank cover (wood/ vegetation). 2016: New downstream boundary of LOS5 is confluence of Lolo and Jim Brown creeks. Renamed as "Upper Lolo Creek" = LOS6. Updated assessment unit weights: moved old LOS3 weight to new LOS6 + 10% (= 40%. Low bookend updated by panel based on percentage of properly functioning condition. EWW 7.19.16	No actions planne 2016: No actions,
Snake River Steelhead	Lolo Creek	LOS6	Upper Lolo Creek	4.1: Riparian Condition: Riparian Vegetation	20%	60	60	60.2	70	60	75	Upper Lolo EAWS (2003): low pool quantity/quality and high cobble embeddedness levels in Yoosa Creek, which is caused by lack of instream (wood) and bank cover (wood/ vegetation). 2016: New downstream boundary of LOS5 is confluence of Lolo and Jim Brown creeks. Renamed as "Upper Lolo Creek" = LOS6. Updated assessment unit weights: moved old LOS3 weight to new LOS6 + 10% (= 40%. Low bookend updated by panel based on percentage of properly functioning condition. EWW 7.19.16	No actions planne 2016: Riparian en Prorated 10% to a 0.05 stream miles steelhead bearing a 0.2% improvem
Snake River Steelhead	Lolo Creek	LOS6	Upper Lolo Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10%	70	70	71.9				2016: New downstream boundary of LOS5 is confluence of Lolo and Jim Brown creeks. Renamed as "Upper Lolo Creek" = LOS6. Updated assessment unit weights: moved old LOS3 weight to new LOS6 + 10% (= 40%. Low bookend updated by panel based on percentage of properly functioning condition. EWW 7.19.16	2016: Berm remo upstream. Prorat the effective trea steelhead bearing a 1.9% improvem

	Estimates Comments
nts	
nated at 6	35 miles of road decommisioning through Lolo insect and disease
d by an	EIS
	2016: No actions, therefore no change to low bookend.
ndary, AU	
ry Plan	14.4 miles of stream access to be restored
	2016: No actions, therefore no change to low bookend.
reports	4 miles of stream and wetland plantings at Deer Gulch.
orlinos	2016: No actions, therefore no change to low bookend.
ernines,	
dards can	15 miles s of road decommisioning and improvement in Lolo Insect
30 years.	and Disease
r natural.	2016: No actions, therefore no change to low bookend.
k	From approximately 4 miles of stream and wetland planting at Deer
	Gulch.
r due to	2016: No actions, therefore no change to low bookend.
2 01	
	No actions planned.
dedness	2016: No actions, therefore no change to low bookend.
lack of	
65 is	
Updated	
3 weight 1 undated	
y updated	
d a dua a a a	No actions planned.
lack of	2016: Riparian enhancement project will treat 0.5 stream miles.
	0.05 stream miles effectively treated. Relative to the 23.7
	steelhead bearing stream miles in the assessment unit, there will be
65 is	a 0.2% improvement. EWW 7.19.16
Llodatad	
Opdated 3 weight	
d updated	
У	
5 IS	2016: Berm removal at Collette mine will open 90% of floodplain
Updated	the effective treatment is 0.45 stream miles. Relative to the 23.7
3 weight	steelhead bearing stream miles in the assessment unit, there will be
d updated	a 1.9% improvement. EWW 7.19.16
У	

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	Lolo Creek	LOS6	Upper Lolo Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20%	70	70	71.9				2016: New downstream boundary of LOS5 is confluence of Lolo and Jim Brown creeks. Renamed as "Upper Lolo Creek" = LOS6. Updated assessment unit weights: moved old LOS3 weight to new LOS6 + 10% (= 40%. Low bookend updated by panel based on percentage of properly functioning condition. EWW 7.19.16	2016: Berm removal at Collette mine will open 90% of floodplain upstream. Prorated 90% to reflect progress toward PFC by 2018, the effective treatment is 0.45 stream miles. Relative to the 23.7 steelhead bearing stream miles in the assessment unit, there will be a 1.9% improvement. EWW 7.19.16
Snake River Steelhead	Lolo Creek	LOS6	Upper Lolo Creek	7.2: Sediment Conditions: Increased Sediment Quantity	40%	55	55	59.6	65	65	75	Upper Lolo EAWS (2003): sediment estimated at 6 tons/sq miles/year and currently elevated by an estimated 33 percent over natural. 2016: New downstream boundary of LOS5 is confluence of Lolo and Jim Brown creeks. Renamed as "Upper Lolo Creek" = LOS6. Updated assessment unit weights: moved old LOS3 weight to new LOS6 + 10% (= 40%. Low bookend updated by panel based on percentage of properly functioning condition. EWW 7.19.16	Lolo insect and Disease EIS, approximately 20 miles of road decommissioning planned 2016: Road decommissioning will treat 22 stream miles, but prorated 50% because it is midslope road and another 10% to reflect progress toward sediment reduction by 2018. Therefore total effective treatment area = 1.1 stream miles. Relative to 23.7 steelhead bearing stream miles in the assessment unit, there will be 4.6% improvement. EWW 7.19.16
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	1.1: Habitat Quantity: Anthropogenic Barriers	10%	100	100	100	90	80	90	Level of Certainty= 4 3. GIS mapping depicts 167 culverts in the American River Watershed. Best professional judgement that at least 10% are fish passage barriers blocking approximately 25% of the habitat. Target= 100% passable.	Culvert surveys from 2012 show about 8 passage barriers; address 4 to 5 in 2012-18. A partial barrier at very low and very high flows still exists at the mouth of American River. This is an expernsive project (approximately 500k) and cost-share funds are being pursued. 2016:One project treated 10 stream miles and was prorated 50% because it is a partial barrier to steelhead adults and juveniles at high flows due to velocity. There are no other barriers upstream. Therefore 5 stream miles improved relative to 93 steelhead bearing stream miles in the assessment unit = 5.4%. However, the low bookend is already 100%, so this improvement cannot be accounted for in the look forward. EWW 7.11.16
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	4.1: Riparian Condition: Riparian Vegetation	20%	35	35	35.05	65	45	80	Level of Certainty= 2. Loss of riparian veg from grazing, dredge mining, and urbanization. Occular observations. SF Cleawater River TMDL Appendix K (IDEQ 2003); American and Crooked River EIS (USFS 2005), Aquatic Specialist Report (USFS 2007). CNF and NPNF Matrix of Watershed Condition for Chinook, Steelhead, and Bull Trout is > 75% shade. Most sub-watersheds are less than 50%	Approximently 2 miles of riparian area (10 acres) along American River will be planted. There are many miles left along the mainstem American River, Big Elk and Little Elk Creeks to be planted. Majority of these areas are on private land and future projects in these areas will be explored. 2016: One project treated 0.25 stream miles, but was prorated 20% to reflect the realized improvement through 2018 = 0.05. Relative to the 93 steelhead bearing stream miles in the assessment unit, this project resulted in a 0.05% improvement. EWW 7.11.16
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	4.2: Riparian Condition: LWD Recruitment	10%	50	50	50	65	52	75	Level of Certainty= 4. Loss of riparian veg from grazing, dredge mining, and urbanization. Occular observations, SF Cleawater River TMDL Appendix K (IDEQ 2003); American and Crooked River EIS ( USFS 2005), Aquatic Specialist Report (USFS 2007). CNF and NPNF Matrix of Watershed Condition for Chinook, Steelhead, and Bull Trout is > 75% shade. Most sub-watersheds are less than 50%. Assume that floodplain projects will promote recruitment or woody debris will be physically added from restoration activities.	Planting along American River will provide LWD recruitment in the long term. 2016: No actions, no change to low bookend

				2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033		Estimates Comments
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10%	60	60	60	65	60	68	Level of Certainty= 3. Historic side channel and wetland condition is difficult to estimate. Since floodplains have been drastically altered and lost, it is likely that a significant amount of wetlands and side channels were also lost. Percent lost is based on an estmate of lost floodplains in the watershed. With the restoration of floodplain functions, it is likely that wetland and side channel functions will also be restored.	No side channels or wetla this watershed by 2018. I 2018. 2016: No actions, therefo
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15%	45	45	45	65	45	75	Level of Certainty= 4. Loss of floodplain for approximately 14 miles of American River, 4 miles of Buffalo Gulch due to dredge mining. Impaired floodplain function along 12 miles Big and Little Elk Creeks from grazing activities. No projects are planned that address this liminting factor before 2018.	No floodplain or side cha are being explored for be 2016: No actions, therefo
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	6.2: Channel Structure and Form: Instream Structural Complexity	15%	50	50	50	70	50	75	Level of Certainty= 3.American River should have 140 pools per mile to meet the CNF and NPNF Matrix of Watershed Condition for Chinook, Steelhead, and Bull Trout. Pool frequency ranges from 18 pools per mile in American River to about 48 pools per mile is the tributaries (South Fork Clearwater River TMDL- Appendix K, 2003). Target for pool quanity based on stream width; pool quality >4, LWD near natural levels.	No instream work will be 2018. Projects are being 2016: No actions, therefo
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	7.2: Sediment Conditions: Increased Sediment Quantity	15%	40.1	40.1	40.1	60	50	75	Level of Certainty = 3. 167 mapped culverts that are potentially sediment sources. Road surveys conducted in 2012 show that road densities are 2.5 miles per square mile. Approximately 75 miles of trail in American River watershed with the majority of trail miles in the riparian area.	Approximately 70 miles of potentially be decommis decommissioned by 2018 are being explored for be 2016: No actions, therefo
Snake River Steelhead	South Fork Clearwater River	SCS1	American River	8.1: Water Quality: Temperature	5%	60	60	60	75	65	85	SF Clearwater River TMDL (2003) lists the majority of streams in the South Fork Clearwater Rivers as being impaired for temperature. Projects that improve riparian condition and instream complexity are likley to improve temperature conditions in the watershed.	Benefits from riparian pla 2016: One project could there is not enough time implemented and the en any improvement. EWW
Snake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	1.1: Habitat Quantity: Anthropogenic Barriers	5%	80	80	80.6	90	83	90	Level of Certainty= 3. There are over 60 mapped stream crossings in the Crooked River watershed (GIS). Three of the larger tributaries have partial or complete fish barriers and contribute to 10% of the potential habitat. There are at least three other know barriers to streams with rearing habitat. Target= 100% fish passage.	Replacing 2 culverts in Cr 2016: One project treate because it is a partial bar to the 44 steelhead beari unit, there will be a 0.6%

	Estimates Comments
kends Comments	
oric side channel and ult to estimate. Since stically altered and lost, amount of wetlands to lost. Percent lost is st floodplains in the pration of floodplain retland and side channel pred.	No side channels or wetlands will be constructed or improved in this watershed by 2018. Projects are being explored for beyond 2018. 2016: No actions, therefore no change to low bookend.
of floodplain for American River, 4 miles edge mining. Impaired 12 miles Big and Little Elk ies. No projects are iminting factor before	No floodplain or side channel work will be done by 2018. Projects are being explored for beyonnd 2018. 2016: No actions, therefore, no change to low bookend
ican River should have t the CNF and NPNF lition for Chinook, Pool frequency ranges American River to about butaries (South Fork opendix K, 2003). Target stream width; pool ral levels.	No instream work will be done in the American River watershed by 2018. Projects are being explored for beyond 2018. 2016: No actions, therefore no change to low bookend
mapped culverts that purces. Road surveys nat road densities are Approximately 75 miles vatershed with the e riparian area.	Approximately 70 miles of road are non-system roads and can potentially be decommissioned. 15-20 miles will be decommissioned by 2018. Grazing still exists on private land and are being explored for beyond 2018. 2016: No actions, therefore no change to low bookend
(2003) lists the majority rk Clearwater Rivers as ature. Projects that and instream prove temperature d.	Benefits from riparian planting actions. 2016: One project could address the water temperature issue, but there is not enough time between when the project was implemented and the end of the reporting period (2018) to realize any improvement. EWW 7.11.16
e are over 60 mapped boked River watershed ributaries have partial nd contribute to 10% of re are at least three eams with rearing passage.	Replacing 2 culverts in Crooked River by 2018. 2016: One project treated 0.5 stream miles, but was prorated 50% because it is a partial barrier = 0.25 stream miles treated. Relative to the 44 steelhead bearing stream miles across the assessment unit, there will be a 0.6% improvement. EWW 7.11.16

							Original	Updated		Original			Estimates Comment
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Shake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	4.1: Riparian Condition: Riparian Vegetation	20%	25.3	25.3	25.3	50	40	65	Level of Certainty= 3. Loss of floodplain for entire 12 miles of mainstem Crooked River. Loss of floodplain for lower 1 mile Five Mile Creek; loss of floodplain for lower 2 miles Relief Creek, loss of floodplain for lower 1 mile Rainbow Gulch Creek. Sources: local observation, American and Crooked River Project EIS 2005, SF Clearwater River Landscape Assessment 1998. Target= > 75% adequate shade.	Benefits from the Cr 120 acres will be reh replanted. Approxim along the mainstem 2016: No actions, th
Snake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	4.2: Riparian Condition: LWD Recruitment	5%	40	40	40	55	46	60	Level of Certainty= 4. Loss of floodplain for entire 12 miles of mainstem Crooked River. Loss of floodplain for lower 1 mile Five Mile Creek; loss of floodplain for lower Quartz Creek; loss of floodplain for lower 0.5 mile of Baker Gulch, loss of floodplain for lower 2 miles Relief Creek, loss of floodplain for lower 1 mile Rainbow Gulch Creek. Sources: personal observation, American and Crooked River EIS 2005, South Fork Landscape Assessment 2003.	The Meanders proje area that would not Also, recontrcuting f upstream to recruit i through. Plantings in debris recruitment. 2016: No actions, the
Snake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10%	35	35	35.6	45	45	50	Level of Certainty= 5. Historic side channel and wetland condition is difficult to estimate. Since floodplains have been drastically altered and lost, it is likely that a significant amount of wetlands and side channels were also lost. Percent lost is based on an estimate of lost floodplains in the watershed. With the restoration of floodplain functions, it is likely that wetland and side channel functions will also be restored.	Design criteria from to fish during all flow meadows adjacent t 2016: One project (2 will be no realized in (until the channel is 7.20.16: An update k stream miles and wil 2018 = 0.25 side cha acres of which 6 will channel miles in the improvement. EWW
Snake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	5.2: Peripheral and Transitional Habitats: Floodplain Condition	20%	35	35	38.3	50	50	60	Level of Certainty= 4. Loss of floodplain for entire 12 miles of mainstem Crooked River. Loss of floodplain for lower 1 mile Five Mile Creek; loss of floodplain for lower Quartz Creek; loss of floodplain for lower 2 miles Relief Creek, loss of floodplain for lower 1 mile Rainbow Gulch Creek. Sources: local observation, American and Crooked River EIS 2005, South Fork Landscape Assessment 2003.	Design criteria from along the lower 2 mi floodplain, with varie 2016: One project (2 will be no realized in after the look forwar 7.20.16: An update b stream miles and wil 2018 = 0.4 stream m which 6 will be weta bearing stream miles

	Estimates Comments
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oss of floodplain for entire rooked River. Loss of nile Five Mile Creek; loss of artz Creek; loss of niles Relief Creek, loss of nile Rainbow Gulch Creek. ion, American and Crooked SF Clearwater River 1998. Target= > 75%	Benefits from the Crooked River Meanders project. Approximately 120 acres will be rehabilitated and new floodplain will be replanted. Approximately 1 mile of streambank will be planted along the mainstem Crooekd River. 2016: No actions, therefore no change to low bookend.
oss of floodplain for entire rooked River. Loss of nile Five Mile Creek; loss of artz Creek; loss of mile of Baker Gulch, loss 2 miles Relief Creek, loss of nile Rainbow Gulch Creek. rvation, American and , South Fork Landscape	The Meanders project will use existing woody debris in the project area that would not likely be recruited to create instream habitat. Also, recontrcuting floodplain will allow woody debris from upstream to recruit in the lower two miles instead of being passed through. Plantings in the valley bottom will provide future woody debris recruitment. 2016: No actions, therefore no change to low bookend
listoric side channel and ficult to estimate. Since drastically altered and lost, ant amount of wetlands also lost. Percent lost is f lost floodplains in the estoration of floodplain t wetland and side channel estored.	Design criteria from 2012 show increased side channels accessible to fish during all flows. Design criteria also provides wetland meadows adjacent to Crooked River in place of dredge ponds. 2016: One project (2 phases) will be completed by 2018, but there will be no realized improvement during the look forward period (until the channel is rewatered). EWW 7.11.16 7.20.16: An update by NPT: One additional project will treat 0.5 stream miles and will achieve 50% improvement toward PFC by 2018 = 0.25 side channel miles effectively treated (regarding 11 acres of which 6 will be weland by 2018). Relative to the 44 side channel miles in the assessment unit, there will be a 0.6% improvement. EWW 9.1.16
oss of floodplain for entire rooked River. Loss of nile Five Mile Creek; loss of artz Creek; loss of niles Relief Creek, loss of nile Rainbow Gulch Creek. ion, American and Crooked ork Landscape Assessment	Design criteria from 2012 shows that by removing mine tailings along the lower 2 miles of Crooked River approx. 120 acres of floodplain, with various stages of flooding, will be provided. 2016: One project (2 phases) will be completed by 2018, but there will be no realized improvement until the channel is rewatered after the look forward period. EWW 7.11.16 7.20.16: An update by NPT: One additional project will treat 0.5 stream miles and will achieve 80% improvement toward PFC by 2018 = 0.4 stream miles effectively treated (regarding 11 acres of which 6 will be wetland by 2018). Relative to the 12 steelhead bearing stream miles in the assessment unit, there will be a 3.3% improvement. EWW 9.1.16

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5011	Demolation	C. I.	A	2012 Standardized	15 Mainte	Low	2018	2018	High 2018	2033	High 2033		
ESU Cuello Diver	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	Decise estado fo
Shake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	6.2: Channel Structure and Form: Instream Structural Complexity	25%	40	40	40.9	65	60	80	Level of Certainty= 3. Loss of natural channel morphology for entire mainstem Crooked River (12 miles); loss of natural channel morphology for lower 2 miles Relief Creek. SF Clearwater River Subbasin Assessment- Appendix K (IDEQ 2003); Crooked River Habitat Improvement Project (USFS 1985); South Fork Clearwater Landscape Assessment 1998. Target= Pool quantity based on channel width, pool quality >4, LWD near natural levels.	approximately 1 improved instrea 2016: No actions 7.20.16: One pro debris structures be excavated and was prorated to stream miles imp stream miles in t improvement. E
Snake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	7.2: Sediment Conditions: Increased Sediment Quantity	10%	60.5	60.5	60.5	65	65	70	Level of Certainty= 4. Percent fines in Crooked River watershed approximately 15% (IDEQ Appendix K, 2003). There are 38 mapped culverts in the watershed. The majority of those are high in the watershed and likely sources of fine sediment. Road denisty is approximately 2.0 miles per square mile. Watershed condition indicators suggest >1 mi per square mile. Target= Embeddedness <20%, surface fines <20 % for C&E channels and <10 % for A&B Channels.	Two culverts are 2018, which will levels of sedimer the Meanders pr lower two valley 2016: No actions
Snake River Steelhead	South Fork Clearwater River	SCS2	Crooked River	8.1: Water Quality: Temperature	5%	60	60	60	70	68	80	SF Clearwater River TMDL (2003) lists the majority of streams in the South Fork Clearwater Rivers as being impaired for temperature. Projects that improve riparian condition and instream complexity are likley to improve temperature conditions in the watershed.	Improvements fr floodplain will pr reducing the amo reduce overall st 2016: No actions
Snake River Steelhead	South Fork Clearwater River	SCS3	John's Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20%	80	80	80	90	85	90	LOC:4 There are 9 known road crossings, based on stream miles blocked and assuming 3 are barriers, this results in a LBE of 80% and assuming 2 could be replaced by 2018 results in a HBE of 90%. Future crossing inventory and assessment is needed to priotitize actions.	1 unidentified str for 2013-2018. E number of strear gets to us to 85% 2016: No actions
Snake River Steelhead	South Fork Clearwater River	SCS3	John's Creek	4.1: Riparian Condition: Riparian Vegetation	40%	80	80	80	85	85	90	LOC: 4 Specific areas of the watershed are affected by livestock resulting in loss of stream bank stability and increased width depth ratio. Goal bank stability of greater than 90% and width depth ratio of less than 10. Current conditions are approximately 70-80% and width depth ratios are 15-20	Slight additional impacts to riparia 2018. 2016: No actions
Snake River Steelhead	South Fork Clearwater River	SCS3	John's Creek	7.2: Sediment Conditions: Increased Sediment Quantity	40%	80	80	80	85	84	90	LOC: 4 Goal for cobble embeddedness is less than 30%; occular estimates of cobble embeddedness in Johns Creek is less than 40%. Goal for road density is 1 mile/sq. mile. Current road density in the roaded portion is 2.2 mi./sq. mi. There are 54 miles of known roads in the drainage. Additonal non inventoried roads increase road densities above stated values.	5 miles decommi 2018. 2016: No actions

	Estimates Comments
l ver gy for er 3); (USFS sed on sural	Design criteria from 2012 field season show an increace of approximately 1 mile of new stream channel and approx. 4 miles of improved instream structural complexity. 2016: No actions, therefore no change to low bookend 7.20.16: One project was added, which will add 10 large woody debris structures along 0.5 miles of river. The streambed will not be excavated and pools will form naturally, therefore the project was prorated to 80% to reflect progress toward PFC by 2018 = 0.4 stream miles improved. Relative to the 44 steelhead bearing stream miles in the assessment unit, there will be a 0.9% improvement. EWW 9.12.16
ed verts high miles tors • C&E	Two culverts are being replaced in the Crooked River watershed by 2018, which will reduce some sediment. Projects that will affect levels of sediment the most are planned beyond 2018. However, the Meanders project will provide better sediment transport in the lower two valley miles. 2016: No actions, therefore no change to low bookend.
jority rs as at	Improvements from the Meanders project. Restoring the floodplain will provide better groundwater connection and reducing the amount of exposed suface water in the ponds will reduce overall stream temperatures in the lower Crooked River. 2016: No actions, therefore no change to low bookend
ed on riers, ould	1 unidentified stream crossing is planned in the Hugary Ridge EIS for 2013-2018. Based on stream miles blocked and the total number of stream miles in the AU replacing 1 culvert in 2013- 2018 gets to us to 85% 2016: No actions, therefore no change to low bookend
am o. vidth ns are s are	Slight additional benefit from road decommissioning reducing impacts to riparian zone. No additional activities planned for 2013- 2018. 2016: No actions, therefore no change to low bookend
than ness d ity in re 54 onal s	5 miles decommissioning in the roaded portion planned for 2013- 2018. 2016: No actions, therefore no change to low bookend

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033	3	
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	South Fork Clearwater River	SCS4	Meadow Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10%	80	80	80	90	80	90	LOC: 2. There are 67 known road crossings, 34 are known barriers based on stream miles blocked, this results in a LBE of 80% and assuming 8 could be replaced by 2018 results in a HBE of 90%. Future crossing inventory and assessment is needed to priotitize actions.	2012: No actions planned for 2013-2018 2015: No actions were undertaken during 2012-2015 that address this limiting factor, therefore there is no change to low bookend 2016: No actions, therefore no change to low bookend
Snake River Steelhead	South Fork Clearwater River	SCS4	Meadow Creek	4.1: Riparian Condition: Riparian Vegetation	15%	61.1	61.1	61.1	70	70	75	LOC: 3 Specific areas of the watershed are affected by livestock resulting in loss of stream bank stability and increased width depth ratio. Goal bank stability of greater than 90% and width depth ratio of less than 10.	2012: 3.0 miles riparian planting planned for 2013-2018. Additional benefit from road decommissioning reducing access to riparian zone. 2015 A 1-mile planting project occurred at McComas Meadows from 2012 through 2015. The entire area was not intensely treated, only 0.25 mile per year. A riparian weed treatment of 0.25 mile also occurred but it was not a stand-alone action, but rather part of many projects, so assigned 0 miles in the end. The Expert Panel adjusted the functional miles treated by prorating based on percentage of properly functioning condition expected by 2018: anywhere from 15% to 30% depending on what year the action occurred (assumes 5% improvement=growth/year). The resultant stream miles affected by the prorated actions = 0.225 and made relative to all the steelhead stream miles in the Assessment Unit. Streamnet steelhead distribution is 15 miles and includes mainstem and not North Meadow. The Expert Panel added 6.0 miles of additional tributary lengths of known steelhead distribution, resulting in 21 stream miles total for the Assessment Unit. Therefore 0.225/21*100 = 1.1% improvement. EWL 3.8.16 2016: No actions, therefore no change to low bookend
Snake River Steelhead	South Fork Clearwater River	SCS4	Meadow Creek	4.2: Riparian Condition: LWD Recruitment	15%	65	65	65	70	65	75	LOC: 4. Lack of recuitment of riparian vegetation in some areas has resulted in less than desired LWD. Goal is greater than 30 pieces of LWD per mile.	<ul> <li>2012: 3.0 miles riparian planting planned for 2013-2018. Riparian planting will not provide LWD recruitment until the long term (75 plus years).</li> <li>2015: Riparian vegetation projects would not improve conditions for this limiting factor within 2012-2018 period. Furthermore planted species would not provide large wood. Therefore, there was no change assessed from the low bookend. EWL 3.9.16 2016: No actions, therefore no change to low bookend</li> </ul>
Snake River Steelhead	South Fork Clearwater River	SCS4	Meadow Creek	7.2: Sediment Conditions: Increased Sediment Quantity	45%	50.7	50.7	50.7	70	60	75	LOC: 4 Goal for cobble embeddedness is less than 30%; occular estimates of cobble embeddedness in Meadow Creek is less than 40%. Goal for road density is 1 mile/sq. mile. Current road density is 4.6 mi./sq. mi. There are 174 miles of known roads in the drainage. Additonal non inventoried roads increase road densities above stated values.	2012:15 miles decommissioning planned for 2013-2018. Additional benefit from 3.0 miles riparian planting planned for 2013-2018. 2015: Meadow Face Road Decommissioning III (2012) and IV (2014) occurred in separate locations in the Assessment Unit. Improved stream miles were estimated by measuring down to next downstream major tributary junction, then adjusted by slope position and weighted by considering all existing anthropogenic sediment sources including grazing, mining, etc. Resultant metric was 0.15 miles of stream improved by the action and assessed over total steelhead stream miles in the Assessment Unit (21 miles). Therefore, 0.15/21*100 = 0.7% improvement over low bookend. EWL 3.9.16. 2016: No actions, therefore no change to low bookend

							Original	Updated		Original			Estimates Comments
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033		
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	South Fork Clearwater River	SCS4	Meadow Creek	8.1: Water Quality: Temperature	15%	66.1	66.1	66.1	70	70	75	LOC: 2. Goal is 20 degree max and 16 degree max for spawning. Over 40 days annually exceeded 20 degrees in each of the past few years.	2012: 3.0 miles riparian planting planned for 2013-2018. Recent trends show 20-25 days exceedence. 2015: Because vegetative shading cools stream temperature, the Expert Panel considered riparian projects listed under limiting factor 4.1 as improving limiting factor 8.1. A 1-mile planting project occurred at McComas Meadows from 2012 through 2015. The entire area was not intensely treated, only 0.25 mile per year. A riparian weed treatment of 0.25 mile also occurred but it was not a stand-alone action, but rather part of many projects, so assigned 0 miles in the end. The Expert Panel adjusted the functional miles treated by prorating based on percentage of properly functioning condition expected by 2018: anywhere from 15% to 30% depending on what year the action occurred (assumes 5% improvement=growth/year). The resultant stream miles affected by the prorated actions = 0.225 and made relative to all the steelhead stream miles in the Assessment Unit. Streamnet steelhead distribution is 15 miles and includes mainstem and not North Meadow. The Expert Panel added 6.0 miles of additional tributary lengths of known steelhead distribution, resulting in 21 stream miles total for the Assessment Unit. Therefore 0.225/21*100 = 1.1% improvement. EWL 3.8.16 2016: No actions, therefore no change to low bookend
Snake River Steelhead	South Fork Clearwater River	SCS5	Mill Creek	1.1: Habitat Quantity: Anthropogenic Barriers	15%	91.9	91.9	91.9	94	90	94	LOC: 3 There are 48 known road crossings, based on stream miles blocked 10 a known as barriers, this results in a LBE of 83% and assuming 6 could be replaced by 2018 results in a HBE of 94%. Future crossing inventory and assessment is	4 stream crossings a scheduled for 2013-2018, 2 at Black George, Hunt Creek, and 1 with the planned road decommissioning. Based on stream miles blocked and the total number of stream miles in the AU replacing /removing these culverts in 2013- 2018 gets to us to 90%
Snake River Steelhead	South Fork Clearwater River	SCS5	Mill Creek	4.1: Riparian Condition: Riparian Vegetation	30%	60.1	60.1	60.1	70	67	75	LOC: 3 Specific areas of the watershed are affected by livestock resulting in loss of stream bank stability and increased width depth ratio. Goal bank stability of greater than 90% and width depth ratio of less than 10.	1.0 miles riparian planting planned for 2013-2018. Additional benefit from road decommissioning reducing access to riparian zone. 2016: No actions, therefore no change to low bookend
Snake River Steelhead	South Fork Clearwater River	SCS5	Mill Creek	4.2: Riparian Condition: LWD Recruitment	20%	60	60	60	65	60	70	LOC: 4. Lack of recuitment of riparian vegetation in some areas has resulted in less than desired LWD. Goal is greater than 30 pieces of LWD per mile.	<ol> <li>1.0 miles riparian planting planned for 2013-2018. Riparian planting will not provide LWD recruitment until the long term (75 plus years).</li> <li>2016: No actions, therefore no change to low bookend</li> </ol>
Snake River Steelhead	South Fork Clearwater River	SCS5	Mill Creek	7.2: Sediment Conditions: Increased Sediment Quantity	20%	60	60	64.5	75	73	80	LOC: 4 Goal for cobble embeddedness is less than 30%; occular estimates of cobble embeddedness in Meadow Creek is less than 40%. Goal for road density is 2 mile/sq. mile. Current road density is 2.6 mi./sq. mi. There are 95 miles of known roads in the drainage. Additonal non inventoried roads increase road densities above stated values. 2016: Revised the low bookend from 71 to 60 during 2016 EP LF. MAH6.7.16	10 miles decommissioning planned for 2013-2018. Additional benefit from 1.0 miles riparian planting planned for 2013-2018. 2016: One project treated 2.3 stream miles (5 road miles), but was prorated (90% & 50%) based on position on landscape and total benefit possible in the watershed = 1.035 realized treatment stream miles. Relative to the 22.8 steelhead bearing stream miles in the assessment unit, there will be a 4.5% improvement. EWW 7.11.16
Snake River Steelhead	South Fork Clearwater River	SCS5	Mill Creek	8.1: Water Quality: Temperature	15%	70.1	70.1	70.1	75	75	85	LOC: 2. Goal is 20 degree max and 16 degree max for spawning. Over 30 days annually exceeded 20 degrees in each of the past few years.	<ol> <li>1.0 miles riparian planting planned for 2013-2018. Recent trends show 10-15 days excedence.</li> <li>2016: No actions, therefore no change to low bookend</li> </ol>

							Original	Updated		Original			Estimates Com
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033	3	
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments	
Snake River Steelhead	South Fork Clearwater River	SCS6	Misc Clearwater Tribs	1.1: Habitat Quantity: Anthropogenic Barriers	25%	40	40	69.4	80	77	80	LOC: 4 There are 168 known road crossings, based on stream miles and assuming 42 are barriers, this results in a LBE of 75% and assuming 8 could be replaced by 2018 results in a HBE of 80%. Future crossing inventory and assessment is needed to priotitize actions. Reassigned LF based on review of watershed conditions and goals. 2016:Expert Panel decided that low bookend was too high given current knowledge of what needs to be replaced = 40%	3 stream cross Hunt Creek, an on stream mile the AU replacin to 77% 2016: Three pr to 6.7 stream r the quality of t steelhead bear a 29.4% impro
Snake River Steelhead	South Fork Clearwater River	SCS6	Misc Clearwater Tribs	4.1: Riparian Condition: Riparian Vegetation	20%	60	60	60	70	60	80	LOC: 4 Specific areas of the watershed are affected by livestock resulting in loss of stream bank stability and increased width depth ratio. Goal bank stability of greater than 90% and width depth ratio of less than 10. Reassigned LF based on review of watershed conditions and goals.	No actions pla 2016: No actio
Snake River Steelhead	South Fork Clearwater River	SCS6	Misc Clearwater Tribs	6.2: Channel Structure and Form: Instream Structural Complexity	10%	80	80	80.7	90			2016: Low and high bookend revised when LF added.	2016: One hist was prorated 5 0.165 stream r miles in the ass EWW 7.11.16
Snake River Steelhead	South Fork Clearwater River	SCS6	Misc Clearwater Tribs	7.2: Sediment Conditions: Increased Sediment Quantity	30%	57.9	57.9	57.9	60	60	70	LOC: 4 Goal for cobble embeddedness is less than 30%. Goal for road density is 2 mile/sq. mile. Current road density is 2.6 mi./sq. mi. There are 163 miles of known roads in the drainage. Additonal non inventoried roads increase road densities above stated values. Reassigned LF based on review of watershed conditions and goals.	30 miles decon 2018. Additior Leggett and Pe 2016: No actio
Snake River Steelhead	South Fork Clearwater River	SCS6	Misc Clearwater Tribs	8.1: Water Quality: Temperature	15%	60	60	60	65	60	75	LOC:4 The NPPC 1994 standards 20 degree max and 16 degree max for spawning is exceeded annually. Reassigned LF based on review of watershed conditions and goals.	No actions plan 2016: No actio
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5%	83	83	83	90	83	90	LOC: 2. Only 2 high priority culverts for fish passage identified (both replaced already). More may be found upon further investigation.	Identified high No actions plan investigation. 2016: No actio
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	4.1: Riparian Condition: Riparian Vegetation	10%	47	47	47.2	50	55	65	LOC: 3. Newsome Watershed Assessment (EAWS) recommended riparian restoration for reaches heavily impacted by dredge mining and streamside roads (approx. 10 stream miles)	All stream and 2016: One proj to account for miles. Relative assessment un 7.11.16
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	4.2: Riparian Condition: LWD Recruitment	10%	40.2	40.2	40.2	42	40	45	LOC: 3. Newsome Watershed Assessment (EAWS) recommended riparian restoration for reaches heavily impacted by dredge mining and streamside roads (approx. 10 strea miles)	Conifers will be revegetation a from planting o 2016: One proj because there 2018. EWW 7.

	Estimates Comments
ts	
s, based riers, this uld be Future	3 stream crossings a scheduled for 2013-2018, 2 at Black George, Hunt Creek, and 1 with the planned road decommissioning. Based on stream miles blocked and the total number of stream miles in the AU replacing /removing these culverts in 2013- 2018 gets to us
led to review end was	to 77% 2016: Three project that will treat 18.8 stream miles were prorated to 6.7 stream miles based on if they are partial or full barriers or the quality of the habitat above the barrier. Relative to the 22.8
needs	steelhead bearing stream miles in the assessment unit, there will be a 29.4% improvement. EWW 7.11.16
e rream atio. d width based als.	No actions planned for 2013-2018 2016: No actions, therefore no change to low bookend.
'N LF	was prorated 50% to reflect realized improvements by 2018 = 0.165 stream miles. Relative to the 22.8 steelhead bearing stream miles in the assessment unit, the anticipated improvement = 0.7%. EWW 7.11.16
ess than iile. ere are road I LF and	30 miles decommissioning in the roaded portion planned for 2013- 2018. Additional benefits 5.1 miles road improvement planned for Leggett and Peasley Creeks 2016: No actions, therefore no change to low bookend
e max led of	No actions planned for 2013-2018 2016: No actions, therefore no change to low bookend
h . More	Identified high priority culverts for fish passage replaced already. No actions planned, but more may be found upon further investigation. 2016: No actions, therefore no change to low bookend
(EAWS) ches reamside	All stream and floodplain restoration to be planted by 2018. 2016: One project treated 1.95 stream miles, but was prorated 5% to account for potential improvement to 2018 = 0.0975 stream miles. Relative to the 51.1 steelhead bearing stream miles in the assessment unit, the anticipated improvement = 0.2%. EWW 7.11.16
(EAWS) ches reamside	Conifers will be planted as part of the floodplain/valley bottom revegetation after the stream restoration complete. The benefits from planting on LWD is a long-term benefit (75 years plus). 2016: One project treated 1.95 stream miles but was prorated 0 because there is not enough time to realize any improvement by 2018. EWW 7.11.16

		Original Updated Original							Estimates Comments					
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033			
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments		
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15%	30	30	41.4				Not many functioning side channels remain in this assessment unit.	2016: New Limiting factor added during 2016 Look Forward. 1.95 stream miles treated, but prorated 70% to reflect realized improvements to 2018. Therefore, 1.365 stream miles treated across 12 steelhead bearing stream mainstem miles yields 11.4% improvement. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15%	60.8	60.8	60.8	55	57	65	LOC: 3. Newsome EAWS recommends restoration of areas impacted by dredge mining (approx 8 miles)	Reach 2 will be implemented over a 2-3 year period to maximize floodplain connectivity. 2016: No actions, therefore no change to low bookend.	
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30%	42.3	42.3	54.5	60	55	65	LOC: 3. Newsome Watershed Assessment (EAWS) recommended stream habitat complexity for the entire mainstem from the mouth up to Radcliff Creek (approx. 11 miles)	Reach 2 will be implemented over a 1-2 year period after the floodplain has been reconnected. Newsome Cr. From the mouth to the townsite will be evaluated as well. The stream restoration includes the installation of approximately 350 instream structures. 2016: One project will treat 1.95 stream miles, but by 2018, 75% improvement will be realized = 1.4625 stream miles. Relative to 12 mainstem miles in the assessment unit, the project results in a 12.2% improvement. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10%	42.2	42.2	42.2	70	47	75	LOC: 2. Newsome Watershed Assessment (EAWS) recommended road density reduction from 3.4 mi/mi^2 to 1.4 mi/mi^2	Approx. 168 miles of roads covered under NEPA. Road improvement and decommissioning will take several years to complete. 2016: No actions, therefore no change to low bookend.	
Snake River Steelhead	South Fork Clearwater River	SCS7	Newsome Creek	8.1: Water Quality: Temperature	5%	61.2	61.2	61.5	65	65	70	LOC: 3. Newsome Watershed Assessment (EAWS) cites dredge mining and reduced vegetation cover as major contributors to increased stream temps.	Benefits from vegetation planting and channel work. Hyporheic flow 2016: One project treated 1.95 stream miles, but the hyporheic benefits will be realized slightly by 2018 = 8%. Therefore, total improved stream miles = 0.14625 relative to the 51.1 steelhead bearing stream miles in the assessment unit. Yielding an improvement of 0.3%. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater River	SCS8	Red River	1.1: Habitat Quantity: Anthropogenic Barriers	10%	64.8	65	67.5	80	65	80	LOC: 2. 200 stream/road crossings. 40 are passage barriers.	Six crossings currently indentified and prioritized for design and replacement. Additional culverts will be addressed in outyears (beyond 2018). 2016: One project replaced 2 culverts, which were full barriers, but opened 5 miles of high gradient habitat. Assuming high gradient reduces the value of the habitat, the Expert Panel prorated the improved stream miles by 50% = 2.5 stream miles. Relative to the 94.1 steelhead bearing stream miles in the assessment unit, the project resulted in a 2.7% improvement. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater River	SCS8	Red River	4.1: Riparian Condition: Riparian Vegetation	25%	51.1	51.1	51.5	65	65	75	LOC 2:RR EAWS - loss of large established woody veg in meadows. Red Pines NEPA clears 32 miles for planting. LOC: 2. Red River EAWS recommends easements and/or land purchase on private meadow in- holdings	36-48 streambank (one side of river) miles total to be planted. Estimate does not include future potential conservationn easements or land purchases. 2016: Two projects treated 3.5 miles, but prorated to reflect vegetative growth to 2018 = 0.3875 stream miles. Relative to the 94.1 steelhead bearing stream miles in the assessment unit, there will be a 0.4% improvement. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater River	SCS8	Red River	4.2: Riparian Condition: LWD Recruitment	5%	60	60	60	65	60	70	Red River EAWS identifies lack of LWD due to streamside roads & past dredge mining. Most of RR has streamside roads or is meadow complexes.	Conifers will be planted as part of the floodplain/valley bottom revegetation after the stream restoration complete. The benefit from riparian planting on LWD is a long-term benefit. 2016: No actions, therefore no change to low bookend.	

							Original	Updated		Original		Estimates Comments		
				2012 Standardized		Low	2018	2018	High 2018	2033	High 2033			
ESU	Population	Code	Assessment Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	LF Weight and Bookends Comments		
Snake River Steelhead	South Fork Clearwater River	SCS8	Red River	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5%	65	65	66.7	75	73	80	LOC: 2. RR EAWS identified RR Narrows as key project for floodplain restoration (2 stream miles). Some work exists on private property as well.	Benefits estimated include channel restoration. This reflects a combination of multiple WEs. 2016: One project will remove floodplain berms to reconnect floodplain and reactivate meanders for 2.25 miles, but will project benefits will be realized at 70% of PFC by 2018 (1.575 stream miles). Therefore, relative to the 94.1 steelhead bearing stream miles in the assessment unit, there will be a 1.7% improvement.	
Snake River Steelhead	South Fork Clearwater River	SCS8	Red River	6.2: Channel Structure and Form: Instream Structural Complexity	20%	40	40	42.2	60	47	70	LOC: 2. Red River Narrows project area key area for restoration (2 miles). Meadows also simplified habitat (approx. 12 miles)	Estimate is a combination of multiple WEs. Meadows will not have LWD structures placed, will focus on floodplain connectivity and revegetation. 2016: One project will excavate deep pools and increase sinuosity. By 2018, it is anticipated improvements will yield 90% improvement to PFC. = 2.025 stream miles. Therefore, across the 94.1 steelhead bearing stream miles in the assessment unit, there will be a 2.2% improvement. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater	SCS8	Red River	7.2: Sediment Conditions: Increased	20%	58.3	58.3	58.3	70	62	80	LOC: 2. Road densities are 3.6 mi/mi^2. Goal for road densities are 1.0 mi./sg. mi.	45-50 miles total of road decommissioning and 10-15 miles of road improvements to be completed. Road density is taken from 1998	
	River			Sediment Quantity									data. NPT and FS has implemented many miles of road decommissioning watershed wide to date. 2016: No actions, therefore no change to low bookend	
Snake River Steelhead	South Fork Clearwater River	SCS8	Red River	8.1: Water Quality: Temperature	15%	40	40	40.2	60	55	70	LOC: 2. RR EAWS - temps commonly exceeded in mainstem RR, streamside shading reduced.	Benefits from stream & floodplain restoration (hyphorheic flow) as well as riparian planting work. 2016:Planting projects treated 3.25 stream miles were prorated to reflect realized improvement of temperature by 2018, which is dependent on vegetative growth = 0.18 stream miles. Relative to the 94.1 steelhead bearing stream miles across the assessment unit, there will be a 0.2% improvement. EWW 7.18.16	
Snake River Steelhead	South Fork Clearwater River	SCS9	South Fork Clearwater Mainstem	6.2: Channel Structure and Form: Instream Structural Complexity	20%	60	60	60	70	60	75		2016: No actions, therefore no change from low bookend.	
Snake River Steelhead	South Fork Clearwater River	SCS9	South Fork Clearwater Mainstem	7.2: Sediment Conditions: Increased Sediment Quantity	40%	61.75	61.75	61.75	70	67	75	LOC: 4 Improvements would come from habitat actions within the tributaries.	2016: No measureable benefits to mainstem expected from upstream sediment actions.	
Snake River Steelhead	South Fork Clearwater River	SCS9	South Fork Clearwater Mainstem	8.1: Water Quality: Temperature	40%	50	50	50	60	60	70	LOC:4 Improvements would come from habitat actions within the tributaries.	2016: No actions, therefore no change to low bookend	
Snake River Steelhead	South Fork Clearwater River	SCS10	Ten Mile Creek	1.1: Habitat Quantity: Anthropogenic Barriers	30%	85	85	85	95	90	95	LOC:4 There are 9 known road crossings, based on stream miles and assuming 2 are barriers, this results in a LBE of 85% and assuming 1 could be replaced by 2018 results in a HBE of 95%. Future crossing inventory and assessment is needed to priotitize actions.	1 unidentified stream crossings a scheduled for 2013-2018. Based on stream miles blocked and the total number of stream miles in the AU replacing /removing this culvert in 2013- 2018 gets to us to 90% 2016: No actions, therefore no change to low bookend.	
Snake River Steelhead	South Fork Clearwater River	SCS10	Ten Mile Creek	7.2: Sediment Conditions: Increased Sediment Quantity	70%	83.9	83.9	83.9	87	87	90	LOC: 4 Goal for cobble embeddedness is less than 30%; occular estimates of cobble embeddedness in Ten Mile Creek is less than 40%. Goal for road density is 2 mile/sq. mile. Current road density in the roaded portion is 1.2 mi./sq. mi. There are 29 miles of known roads in the drainage. Additonal non inventoried roads increase road densities above stated values.	Sediment reduction due to Tenmile Creek Bridge replacment, 2012 2016: No actions, therefore no change to low bookend	

							Original	Updated		Original		
FSU	Population	Code	Assessment Unit	2012 Standardized	I F Weight	Bookend	2018 Estimate	2018 Estimate	Bookend	2033 Estimate	Hign 2033 Bookend	LE Weight and Bookends Comments
Snake River Steelhead	Selway River	SRS1	Lower Selway River	1.1: Habitat Quantity: Anthropogenic Barriers	30%	84.5	84.5	85.3	90	83	90	LOC: 3. 4 large stream crossings were identified passage barriers. 2 have been relaced with 2 remaining. Surveys need to be completed in remainder of Lower Drainage.
Snake River Steelhead	Selway River	SRS1	Lower Selway River	7.2: Sediment Conditions: Increased Sediment Quantity	50%	65.1	65.1	65.3	75	69	80	LOC: 4 Goal for cobble embeddedness is less th 30%. Goal for road density is 1 mile/sq. mile.
Snake River Steelhead	Selway River	SRS1	Lower Selway River	8.1: Water Quality: Temperature	20%	60	60	60	65	60	70	LOC: 2. Goal is (20 degree max and 16 degree for spawning), average temperature for the low Selway River is over 19 degrees (2001).
Snake River Steelhead	Selway River	SRS2	Meadow Creek	7.2: Sediment Conditions: Increased Sediment Quantity	100%	90	92	94.1	95	93	95	LOC: 3. Selway and Middle Fork Clearwater Riv Subbasin Assessment (2001) describe sediment yield as 8% over base levels.
Snake River Steelhead	Selway River	SRS3	O'Hara Creek	4.1: Riparian Condition: Riparian Vegetation	20%	60	60	60	70	70	75	LOC: 2. Selway and Middle Fork Clearwater Riv Subbasin Assessment (2001) cites that stream temperatures in the Selway at Ohara Creek average 19.5 degrees C
Snake River Steelhead	Selway River	SRS3	O'Hara Creek	7.2: Sediment Conditions: Increased Sediment Quantity	60%	54.8	54.8	57.5	65	62	75	LOC: 3. Selway and Middle Fork Clearwater Riv Subbasin Assessment (2001) describe road den at approx 1.8 mi/sq. mi with 52 miles of excess roads. Goal is 1 mi/sq. mi. Culverts should be inventoried for sediment sources.
Snake River Steelhead	Selway River	SRS3	O'Hara Creek	8.1: Water Quality: Temperature	20%	60	60	60	65	62	70	LOC: 2. Selway and Middle Fork Clearwater Riv Subbasin Assessment (2001) cites that stream temperatures in the Selway at Ohara Creek average 19.5 degrees C.
Snake River Steelhead	Selway River	SRS4	Wilderness Area (Moose Creek, Upper Selway River, etc.)	7.2: Sediment Conditions: Increased Sediment Quantity	100%	85	85	85.03	90	85	90	LOC: 3. Selway and Middle Fork Clearwater Riv Subbasin Assessment (2001) describe sediment yield as 3% over base levels.

	Estimates Comments
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tified as h 2 in	3 culvert replacements for approx. 24 miles upstream passage 2016: Nineteenmile Bridge Project (2016) will open 1 mile. It is a partial barrier, so prorated at 50%=0.5 stream miles treated. Relative to the 60.4 steelhead bearing stream miles in there assessment unit, there was a 0.8% improvement. EWW 7.7.16
ess than ile.	20-30 miles of road improvement/decommissioning 2016: One bridge replacement project, weighted 10% to reflect total improvement possible from action = 0.1 stream miles treated. Relative to 60.4 steelhead bearing stream miles in the assessment unit, there will be a 0.2% improvement. EWW 7.7.16
gree max ie lower	No actions planned 2016: No actions, no change
r Rivers ment	Horse Creek Road improvement/decommission, Falls Creek Road improvement 2016: One project anticipated in 2018 to decommission 12 miles of road, but weighted by 50% due to its landscape position (midslope) and another 50% for total possible benefit of the project results in a realized change over 3 stream miles. Relative to the 73 steelhead bearing stream miles in the assessment unit, there will be a 4.1% improvement. EWW 7.7.16
er Rivers eam k	Plant 3 miles of riparian vegetation-O'Hara Creek 2016: No actions, no change to low bookend
r Rivers I density kcess be	15 miles road improvments 2016: One Road Improvement Project in 2017 will treat 2 miles of road and benefit 5 miles of creek adjacent to stream. Because it is a riparian road, it was prorated 90%, but only 8% of that will influence the sediment problem (=0.36 stream miles. Relative to 13.1 steelhead bearing stream miles in the assessment unit, there will be a 2.7% improvement. EWW 7.7.16
er Rivers eam k	Plant riparian vegetation-O'Hara Creek 2016: No actions, therefore no change to low bookend
r Rivers ment	No actions planned 2016: Invasives treatment over 24 stream miles across mid slopes will have a realized benefit of 1% = 0.12 streamiles of realized improvement. Relative to the 418.9 steelhead bearing stream miles in the assessment unit, there will be a 0.03% improvement