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.

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	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	80	80	80		2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	90	90	90	90	90	90		2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	80	80	80	80	80	80		2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	8.1: Water Quality: Temperature	30.00%	50	50	50	50	50	50		2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	8.2: Water Quality: Oxygen	10.00%	50	50	50	51	50	51		2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	9.2: Water Quantity: Decreased Water Quantity	30.00%	50	50	50	51	50	51		2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	25.00%	40	40	40	50	41	60		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16

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	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	40	40	40	45	41	50		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	30	30	30	32	30.1	35		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	8.1: Water Quality: Temperature	10.00%	30	30	30	31	30	32		Projects would not provide enough water to provide temperature improvements yet, but would contribute to improvements if more water is secured over time. EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	8.2: Water Quality: Oxygen	5.00%	50	50	50	51	50	51		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	30.00%	30	30	30	31	30	32		Estimate based on not knowing if water is protected; improvements would be estimated if water is protected. EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	90	90	90	95	90	95	Riverside Park/Spruce St Bridge, trib through tunnel @ Perry + barriers in Conley Cr + Wright Slough	Estimate considers benefits from Voelz project. EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	55	45	60		Estimate based on about 4.5 MI riparian planting. EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	45	60		2033 estimate based on projects listed in LF 4.1. EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	30	30	30	35	30	40		No actions, no change. -MAH 5/24/16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	30	30	30	35	30	40		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	30.9	30.9	30.9	32	30.9	35		EP LB 2015: Voelz push-up dam was constructed. Removing this provides sediment benefit. Should be 0.2 mi /22.4 miles = 0.9% uplift. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	8.1: Water Quality: Temperature	28.00%	30	30	30	31	30	32		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	8.2: Water Quality: Oxygen	5.00%	80	80	80	90	80	90		EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30	40	30	40		Assume Voelz provides 0.5 cfs w/ 1863 water right and 3 cfs from FWT project. EP LB 2015: No actions, no change. / 2016 EP LF: No actions, no change. -MAH5.24.16

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	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	4.1: Riparian Condition: Riparian Vegetation	14.00%	50	50	50	60	51.6	70		NOTE TO AA'S: SHOULD THIS HAVE THE SAME ESTIMATE AS UGC2 OR DO PROJECTS LISTED ONLY BENEFIT CHINOOK? NO IMPROVEMENTS ESTIMATED IN 2012 EP WORKSHOP. kpfisher - 7/10/12 / Workshop notes indicate that EP called for steelhead HFchanges to be same as those for chinook. jms-7/13/12 // EP LB 2015: No actions, no change. // 2016 EP LF: No improvement by 2018. Uplift of 1.6% in 2033. See UGC2 for rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	50	50	50	60	50.8	70		EP LB 2015: No actions, no change. / 2016 EP LF: No uplift by 2018. Uplift of 0.8% by 2033. See UGC2 rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	50	50	58.1		59.7			2016 EP LF: Added this Limiting Factor at 2016 EP. Panel agreed on a 50% functioning bookend, and calculated a 8.1% uplift for 2018. An additional 1.6% uplift by 2033; see UGC2 rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	50	50	58.1		59.7			2016 EP LF: Added this Limiting Factor at 2016 EP. Panel agreed on a 50% functioning bookend, and calculated a 8.1% uplift for 2018. An additional 1.6% uplift by 2033; see UGC2 rationale. -MAH5.24.16

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	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	53	58.1	60	59.7	70		Estimate based on total of abt. 6 miles improved channel, floodplain connectivity, morphology. EP LB 2015: No actions, no change. / 2016 EP LF: Panel calculated an 8.1% uplift for 2018. An additional 1.6% uplift by 2033; see UGC2 rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	50	56	58.1	60	59.7	70		Estimate considers about 20 miles total improved complexity (does not include USFS LGR Project). EP LB 2015: No actions, no change. // 2016 EP LF: Panel calculated an 8.1% uplift for 2018. An additional 1.6% uplift by 2033; see UGC2 rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	70	72	75.4	75	76.5	80		Rock Ck is main sediment producer. EP LB 2015: No actions, no change. // 2016 EP LF: Panel calculated a 5.4% uplift for 2018, and an additional 1.1% uplift by 2033; see UGC2 rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	8.1: Water Quality: Temperature	25.00%	40	40	40	41	41.1	45		Estimate considers improvements from projects listed under other UGC2 LFs. EP LB 2015: No actions, no change. // 2016 EP LF: No uplift for 2018, but a calculated uplift of 1.1% by 2033; see UGC2 rationale. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	9.2: Water Quantity: Decreased Water Quantity	1.00%	50	50	50	51	50	52		Conservative estimate based on 3 cfs permanent acquisition. 2015 EP LB 2015: No actions, no change. -MH // 2016 EP LF: No actions, no change. -MAH5.24.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	80	80	80	90	80	90	passes all steelhead; lookingglass weir stress w/handling	EP LB 2015: No actions, no change. // 2016 EP LF: No actions. Some land acquisitions in the works, but no benefit expected to 2018. Actions here will be beyond 2018 period. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	80	80	80	85	80	90		EP LB 2015: No actions, no change. // 2016 EP LF: No actions. Some land acquisitions in the works, but no benefit expected to 2018. Actions here will be beyond 2018 period. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	20.00%	80	80	80	80	80	85		EP LB 2015: No actions, no change. // 2016 EP LF: No actions. Some land acquisitions in the works, but no benefit expected to 2018. Actions here will be beyond 2018 period. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	40.00%	75	75	75	80	75	85		EP LB 2015: No actions, no change. // 2016 EP LF: No actions. Some land acquisitions in the works, but no benefit expected to 2018. Actions here will be beyond 2018 period. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	70	70	70	80	70	80	Several diversions on Cabin, etc.	EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16

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	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	50	50	50	50	50	55		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	40	40	40	45	40	50		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	8.1: Water Quality: Temperature	15.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%	40	40	40	41	40	42	flow big issue on Phillips Cr	EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	75	75	100	75	100		EP LB 2015: No action, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	65	65	65	75	65	85		Estimate based on Little Indian Ck. Project; not enough project info at 2012 EP workshop to estimate improvements from USFS Riparian Mtnce & Thinning project. EP LB 2015: No known actions, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	65	75	65	85		EP LB 2015: No action, no change. EP discussed spatial and temporal variability for SH habitat and suggested GIS methods to map habitat. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	55.7	55.7	55.7	65	55.7	75		EP LB 2015: No action, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	8.1: Water Quality: Temperature	25.00%	60	60	60	65	60	70		EP LB 2015: No action, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%	50	50	50	60	50	65		EP LB 2015: No action, no change. // 2016 EP LF: No actions, no change. -MAH5.26.16

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	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	70.7	70.7	70.7	90	70.7	90		2012- Dry Cr upper obstruction, Willow Cr. Huber Diversion lower obstruction. Basin managers need to address up to 8 additional partial obstructions b/w upper & lower obstructions addressed by projects. McKenzie project - addressed 4 trib partial barriers. / 2015 EP LB: Culverts on several tribs removed. Coon Cr (0.42 mi of new access from drop structure removal [not in database? Need to add to Willow Cr entry]). In database: Lanman Cr Culvert Removal (2013), 1.4 mi]. Keep Willow Cr, (1.1 mi). Dry Cr Upper Obstruction was not removed. See EP's table of actions = 2.4 mi of new access, prorated by usable habitat, as informed by intrinsic potential model, and modified using field observations of conditions and other barriers. Note that IP doesn't always match field obs and that other barriers still exist on Willow Creek and tribs. Many fish up Dry Creek. Denominator: 64.7 SH mi (from Streamnet). Without
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	65	61.3	70		Per EP LB 2015: Willow C- Coon Cr. Project: No planting yet completed by action agencies. OAF property. Consider in Look FWD. No change in percentage. // 2016 EP LF: Willow Creek OAF (2016): 157 acres: 5.52 miles of Willow, Dry, and Fir Creeks. Also Dry Creek 2018 Project would treat 0.21 miles for all limiting factors. Panel determined no short-term uplift from riparian planting by 2018, but 1.3% uplift by 2033. -MAH5.26.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60	60.7	65		Per EP LB 2015: Willow C- Coon Cr. Project: No planting yet completed by action agencies. OAF property. Consider in Look FWD. No change in percentage. // 2016 EP LF: Willow Creek OAF (2016): 157 acres: 5.52 miles of Willow, Dry, and Fir Creeks. Also Dry Creek 2018 Project would treat 0.21 miles for all limiting factors. Panel determined no short-term uplift from riparian planting by 2018, but 0.7% uplift by 2033(half of the uplift expected for LF4.1). - MAH5.26.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	62.8	62.8	63	65	63	70		2012 -McKenzie Project would reactivate 1 mile historic channel. / Per 2015 EP LB: Side channel created: 1 mi of reactivated historic channel + 4 miles of enhancement (wood additions). Wood added both complexity and bank stabilization: multiple benefit types from same action. Helped w/d ratio, sediment sorting, etc. 5 mi treated out of 64.7 mi = 7.7% uplift. EP thought this total was too high, and so prorated (25% estimated function for time lag in LWD effects; 80% function for side construction) = 2.8% uplift. Low gradient system which forms some pools w/o wood, but wood helps maintain them. Reach has a range of sediment conditions. Now seeing more sediment sorting post construction. Takes time to achieve all channel structural changes. This differs from previous estimate because of the additional LWD installations (originally anticipated only 1 mile of chan reactivate). // 2016 EP LF: Panel

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	62.8	62.8	63.1	65	63.1	70		2012 - WEST LEVEE PROJECT NOT CONSIDERED IN THE WORKSHOP(ADDING LWD TO 1.2 STREAM MILES OF APPROX 20 MI REACH) - IS THIS WHY CHINOOK ESTIMATE IS 5% IMPROVEMENT AND STEELHEAD IS 1%? McKenzie - 118 wood additions to 4 miles stream. / EP LB 2015: Per 2015 EP LB: Same project actions as for LF 6.1. See EP's table. 73 structures installed; 650-700 pieces. Lots of racking and roughness. 73 pools created by this wood = 7.3 pc/100m large pcs. Compare to Minam 20 pc/100m reference? Still in "poor" range, but a big improvement. 37% improvement in wood load/function. Note that engineered structs vs natural accumulation: different. Total = 2.8% uplift. This differs from previous EP's estimate because now based on empirical wood loading data. // 2016 EP LF: Panel calculated a 0.3% uplift for the Dry Creek Project for 2018, and no additional uplift by 2033. Dry

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	52.9	52.9	52.9	55	53.6	60		2012-WHY IS CHINOOK ESTIMATE 2% AND STEELHEAD ESTIMATE 1%?McKenzie Project - eliminates 18000 ft of eroding streambank. / Per 2015 EP LB: Same project actions as for LF 6.1 and LF 6.2. See EP's table. Project decreased sediment input and increased gravel sorting. Total of 9000 linear ft of bank that was actively eroding that was addressed. This (1 mile of chan reconstruction) took care of ~50-90% of erosion problems in this reach, but veg still has to grow, so lengths in table are prorated accordingly. LWD project element accounted for 34% of length in project area, but targeted the most active erosion areas in both the project reach and the entire AU. Floodplain recconnection reduces erosive power too. Prorated to 50% and 34%. Denom: 64.7 miles; = 2.9% uplift.This uplift number is higher than previous EP's estimate, but it is more empirically based. May need to adjust bookends in next Local Eval. // 2016 EP LF: Panel
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	8.1: Water Quality: Temperature	20.00%	40	40	40	42	40.4	45		EP LB 2015: To early for temperature benefits. No change. // 2016 EP LF: Panel determined there would be no immediate effect from the 2 projects to get a measurable uplift in 2018, but estimated a 0.4% uplift in 2033 based on projected growth. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	20.00%	45	45	45	47	45	50		EP LB 2015: No actions in this AU that affected this LF. No change. // 2016 EP LF: No flow actions, no change. -MAH5.26.16

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	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	90	90	90	100	90	100	Elmer	2012 EP: MORE PASSAGE ISSUES ON MILL CK AND LITTLE CK. / 2015 EP LB: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	2.1: Injury and Mortality: Predation	0.00%							small mouth bass; invasive spp noted, but impacts unknown	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%							altered food web-carp, panfish impacts unknown	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	50	45	60		2015 EP LB: Panel estimated a 0% improvement prorate factor for 0.25 miles treated for 1 project, as the vegetation has not matured enough to uplift LF 4.1 or 4.2. 0% uplift. // 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	45	50		2015 EP LB: Panel estimated a 0% improvement prorate factor for 0.25 miles treated for 1 project, as the vegetation has not matured enough to uplift LF 4.1 or 4.2. 0% uplift. // 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	20.3	20.3	20.3	35	20.3	40	<25 percentage levies; many oxbows have been truncated	2015 EP LB: Panel estimated a 50% improvement prorate factor for 0.25 miles treated for 1 project, resulting in a 0.3% uplift over the 36 mile steelhead presence reach. // 2016 EP LF: No actions, no change. -MAH5.24.16

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	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	40.3	40.3	40.3	50	40.3	55	many oxbows have been truncated	2015 EP LB: Panel estimated a 50% improvement prorate factor for 0.25 miles treated for 1 project, resulting in a 0.3% uplift over the 36 mile steelhead presence reach. // 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40.03	40.03	40.03	50	40.03	55	many oxbows have been truncated	2015 EP LB: Panel estimated a 5% improvement prorate factor for 0.25 miles treated for 1 project, resulting in a 0.03% uplift over the 36 mile steelhead presence reach. // 2016 EP LF: No actions, no change. -MAH5.24.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	25.03	25.03	25.03	35	25.03	40		2015 EP LB: Panel estimated a 5% improvement prorate factor LF6.1 and LF6,2 for 0.25 miles treated for 1 project, resulting in a 0.03% uplift over the 36 mile steelhead presence reach. -MAH 2/3/16 // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50	50	55	50	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	2015 EP LB: No action, no change. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	8.1: Water Quality: Temperature	10.00%	40	40	40	40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a chance in temp	2015 EP LB: No measurable benefits from actions listed in LF 9.2 because not enough water and solar radiation too high. Temperature readings show above lethal for rearing. Not enough flow to significantly affect this LF. 20-22 deg C. A few cfs is not enough to decrease temps measurably, especially given backwater from Davis Dam. No % change. // 2016 EP LF: No actions, no change. -MAH5.24.2016

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	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	8.2: Water Quality: Oxygen	5.00%	40	40	40	45	40	45	Links to flow & temp	2015 EP LB: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	9.2: Water Quantity: Decreased Water Quantity	10.00%	32.2	32.2	35.8	35	32.2	35	m/s migration corridor; refugia @ mouths of tribs	2015 EP LB: 14 leases total between 2012-2015. Average of leases was 2.8025 cfs annually, but that volume was weighted based on locations of leases and an overall steelhead presence of 36 miles. Discussion: But is that water usable (due to temperature and LH timing re: migration seasons)? Davis Dam consultation considered other ecological benefits of flow, even when temps are high. Used to have leakage, but no longer, so basline has changed. Discussion of thresholds: at what point does flow augmentation benefit fish? At what point is it inhabitable by fish? Not a 1:1 linear relationship. Depends on channel cross-section and temperature regime. Also considered location in reach of flow addition. Flow additions are during critical summer months. Check basin flow data for denominator. The weighted average of 0.76 cfs annually, based on release location and timing, was divided by the determined

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	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	61.6	61.6	61.6	60	61.6	70	Little; Ladd; Mill; Warm Crs.	2015 EP LB: Little Creek diversion Removal in 2012, was a partial juvenile barrier 2-3 ft tall. Upstream the next (partial) barrier is LC2 (a few inches), LC3 (1-2 ft) LC4 (tall barrier). These barriers are 1.5 miles upstream, so 1.5 mi of improved access. Ladd Highway 203 Bridge replaced undersized culvert (partial barrier?) in 2013, associated with primary aim of channel reconnect at Ladd (had been ditched to run along RR, so new channels built and then reconnected; crossing location was changed by ~1.1 miles). Steelhead in Ladd Cr now have 1 more mile of new channel, but this was determined not applicable to LF 1.1, only under LF 6.1. Uplift was calculated as 1.5 miles improved access 50% of the year, divided by a total streamnet fish presence length of 47 miles = 1.6% uplift. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	2.1: Injury and Mortality: Predation	0.00%							small mouth bass; invasive spp noted, but impacts unknown	2015 EP LB: No actions. No weight for this LF at this time. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%							altered food web-carp, panfish impacts unknown	2015 EP LB: No actions. No weight for this LF at this time. No change.

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	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	60.1	60	80		2015 EP LB: No actions that contributed to LF 4.1, although some vegetation management was completed on exposed banks in a small area near reconnected channel. No uplift. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60.1	60	70		2012 EP: ESTIMATES COPIED FROM CCC2B / 2015 EP LB: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	65	65	65	75	65	80		2012 EP: COPIED ESTIMATE FROM CCC2B - kpfisher, 7/10/12 // 2015 EP LB: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	66.9	66.9	66.9	75	66.9	80		2012 EP: COPIED ESTIMATE USED FOR CCC2B - kpfisher, 7/10/12 / 2015 EP LB: Hwy 203 Bridge Replacement channel reconnection at Ladd Creek. Total 1.1 mile project length, and a total of 47 miles steelhead miles in this AU per Streamnet. Percent current function status was determined to be 80% of the 1.1 miles, divided by 47 miles total fish use = 1.9% uplift. // 2016 EP LF: No actions, no change. -MAH5.24.2016

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	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	67.1	67.1	67.1	75	67.1	80		2015 EP LB: Hwy 203 Bridge Replacement channel reconnection at Ladd Creek. Total 1.1 mile project length, and a total of 47 miles steelhead miles in this AU per Streamnet. Percent current function status for LF6.1 was determined to be 90% of the 1.1 miles, divided by 47 miles total fish use = 2.1% uplift. // 2016 EP LF: No actions, no change. - MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	65.1	65.1	65.1	75	65.1	80		2012 EP: ESTIMATE COPIED FROM CCC2B. / 2015 EP LB: Hwy 203 Bridge Replacement channel reconnection at Ladd Creek. Total 1.1 mile project length, and a total of 47 miles steelhead miles in this AU per Streamnet. Percent current function status for LF6.2 was determined to be only 5% of the 1.1 miles, divided by 47 miles total fish use = 0.1% uplift. // 2016 EP LF: No actions, no change. - MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50	50	55	50	55	bank erosion - more Little Cr than Ladd	2015 EP LB: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.24.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	8.1: Water Quality: Temperature	10.00%	40	40	40	40.1	40	45		2012 EP: ESTIMATE COPIED FROM CCC2C (Lower Catherine Ck). / 2015 EP LB: Existing temperatures exceed 20 deg between 81% and 100% of days (20-22 deg C) so flow increases are insufficient to help fish and cause uplift. No uplift at this time. // 2016 EP LF: No actions, no change. - MAH5.24.2016

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	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	8.2: Water Quality: Oxygen	0.00%							need to quantify; not issue in upper reaches- some issue d/s	2015 EP LB: No actions. No weight for this LF at this time. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	9.2: Water Quantity: Decreased Water Quantity	15.00%	30.6	30.6	31	35	31	35	several diversions on Little, Mill, and Ladd Crs	2012 EP: Conservative estimate - assumes 3 cfs from water transactions. / 2015 EP LB: The EP reviewed upstream AU flow action benefits and weighted for effect to this AU using Little Cr mileage affected portion relative to total AU miles. 4 total leases were identified to impact this AU: Boyd Little Creek SSL (4 entries) 0.21 cfs lease 2012-2015. 0.15 cfs, 0.15 cfs, 0.38 cfs, 0.38 cfs. Freshwater Trust 2014 0.15 cfs. Umatilla Tribe (CTUIR) Water Transaction 0.38 cfs. Total average of leases from 2012-15 was calculated to be 0.6875 cfs. However, the AU includes several tributaries and Little Cr. is only a small part of the whole AU (22-29% of Catherine Cr total flows [avg 25%]), so these leases were prorated to a weight of 6% of the entire AU. The base flow in this stretch was estimated to be 7.5 cfs. Total calculated % uplift was therefore ((.6875cfs x 6%) / 7.5cfs) = 0.6% uplift. -MH 2/3/2016 // 2016 EP LF: 2 flow
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	95	95	95	100	95	100	increased from 80 partial juvenile barrier at mouth of Pyles Ck	2016 EP LF: No actions, no change. MAH5.25.16

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	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	4.1: Riparian Condition: Riparian Vegetation	6.50%	45	45	45	47	46.3	60		2016 EP LF: No actions, no change in 2018. A 1.3% uplift expected by 2033, in addition to 3% uplift from lookback projects = 49.3%. Identical to CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	4.2: Riparian Condition: LWD Recruitment	6.50%	45	45	45	45.1	45.7	60		Estimate considers improvements from LF 4.1 projects. // 2016 EP LF: No actions, no change in 2018. A 0.7% uplift expected by 2033, in addition to a 1.5% uplift from lookback actions = 47.2% in 2033. Identical to CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	22.2	22.2	23	30	23.1	35	Potential u/s of Union (confined and semi-confined reaches); less below Union (unconfined)	CC-37, 38 & 39 PROJECTS PROVIDE CHANNEL ADDITION AND WETLAND CONNECTION. // 2016 EP LF: Panel calculated a 0.8% uplift by 2018, and an additional 0.1%uplift by 2033. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	25.1	25.1	25.2	30	25.3	35		Implementation planned for CC 37 in 2012, CC 36 in 2014, 38 & 39 in 2015/16.// 2016 EP LF: Panel calculated a 0.1% uplift by 2018, and an additional 0.1% uplift by 2033. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	48.1	48.1	49	45	49	50	33% of channel within Union ; 67%: d/s of Union; channelized throughout reach	2016 EP LF: Panel calculated a 0.9% uplift by 2018, with no additional uplift estimated by 2033. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16

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	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	50.1	50.1	56.9	65	56.9	80		2016 EP LF: Panel calculated a 6.8% uplift by 2018, with no additional benefit or uplift by 2033. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	45.7	45.7	48.1	45	50.8	50		2016 EP LF: Panel calculated a 2.4% uplift by 2018, and an additional 0.7% uplift by 2033. The 2033 estimate includes an additional 2.0% uplift estimated from lookback projects, for a total of 50.8%. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	8.1: Water Quality: Temperature	15.00%	20	20	20	41	20	42	lower third temp limited;	Estimate considers benefits from CC-44 & other upstream projects plus conservative assumption of 3 cfs for upstream water transactions. //2016 EP LF: Panel calculated a 0% uplift for 2018 and 2033 for this limiting factor. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	8.2: Water Quality: Oxygen	0.00%							Associated w/flow/temp; non-point sources need more info to quantify	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	8.4: Water Quality: Turbidity	0.00%							Point discharge between RM 38-39; need more info to quantify impact	

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	9.2: Water Quantity: Decreased Water Quantity	20.00%	25	25	34.3	50	34.3	55	Many Diversions in this reach	Conservative estimate based on 3 cfs. // 2016 EP LF: Panel calculated a 9.3% uplift by 2018, but could not project that same uplift out to 2033. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	100	100	100	100	100	100	one diversion structure ~ rm 41 impedes juvenile movement	***CONFIRM 2016 EP Look Forward ESTIMATES (MAH-5.25)*** Estimate based on CC 44 project; may be more steelhead barriers not yet known/identified.// 2016 EP LF: Panel calculated a 27% uplift by 2018, starting with a 114.6% bookend. Anything above 100% cannot be inputted into taurus, so the numbers below reflect 100%, even though the panel calculations totaled a 141.6% 2018 update, and same by 2033. The panel used Identical rationale as CCC3A: same actions and denominator. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	4.1: Riparian Condition: Riparian Vegetation	6.50%	60	60	60	65	62.9	75		Estimate does not consider USFS Catherine Ck Riparian Mtnce & Thinning Project - not enough project information known to estimate improvements at 2012 EP Workshop. // 2016 EP LF: Panel calculated no uplift by 2018, however a realized 2% uplift by 2033 plus 0.9% uplift realized by 2033 from lookback projects. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16

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	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	4.2: Riparian Condition: LWD Recruitment	6.50%	60	60	60	60	61.5	70		Estimate considers improvement from 4.1 LF projects. // 2016 EP LF: Panel calculated no uplift by 2018, however a realized 1% uplift by 2033 on top of a realized 0.5 uplift from lookback projects = 61.5%. Same actions and rationale as CCC3B, but different denominator used in calculation tables. - MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	68.9	68.9	79.5	70	79.5	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Estimate based on CC44 project - 5.5 miles restoration potential. Little benefit from water transactions until channels are formed. // 2016 EP LF: Panel calculated a 10.6% uplift, with no additional uplift by 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	65.3	65.3	71.1	70	71.1	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop. // 2016 EP LF: Panel calculated a 5.8% uplift, with no additional uplift by 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	62.3	62.3	68.3	70	68.3	75		Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop. // 2016 EP LF: Panel calculated a 6% uplift, with no additional uplift by 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. - MAH5.25.16

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	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	64.3	64.3	77	70	77	75		7 of 9 miles treated; conservative estimate due to uncertainty of design at time of 2012 EP workshop. // 2016 EP LF: Panel calculated a 12.7% uplift, with no additional uplift by 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	65.4	65.4	68	65	69.4	75		Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop. // 2016 EP LF: Panel calculated a 2.6% uplift, with an additional 1.4% uplift by 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	8.1: Water Quality: Temperature	10.00%	60	60	60	65	60.5	75	upper 2/3 in good conditions	// 2016 EP LF: Panel calculated a 0% uplift by 2018, but calculated 0.5% uplift by 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	9.2: Water Quantity: Decreased Water Quantity	20.00%	42.8	42.8	44.4	50	44.4	50	30 cfs baseflow Aug-Sep; 10 cfs of this diverted	CC-44 Project indirectly addresses this LF but not considered in estimate. Assume 3 cfs permanent lease/acquired for estimate. (10% imp based on 3 of 30 cfs). // 2016 EP LF: Panel calculated a 1.6% uplift in 2018, but could not project any uplift out to 2033. Same actions and rationale as CCC3B, but different denominator used in calculation tables. -MAH5.25.16

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	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	90	88.1	95		Not enough info about USFS projects to estimate benefits at 2012 EP Workshop. // 2016 EP LF: No actions, no change. Panel noted that they did not add limiting factor 1.1, due to limited habitat. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	4.2: Riparian Condition: LWD Recruitment	15.00%	80	80	80	90	84.1	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	92	92	92	90	92	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	97.6	97.6	97.6	85	100	95		Not enough info about USFS projects to estimate benefits at 2012 EP Workshop. // 2016 EP LF: No actions, no change.Panel noted that Collins will not happen in 2018 period. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	8.1: Water Quality: Temperature	10.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	85	85	85	90	85	90		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	12		12		12			PASSAGE IMPROVEMENT PROJECT IDENTIFIED BUT PASSAGE LF has 0% weight so no benefit from project. If barrier exists consider adding weight. // 2016 EP LF: No benefit from adult weir project due to limited habitat value.No uplift. -MAH5.26.16

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	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	4.2: Riparian Condition: LWD Recruitment	15.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	70	70	70	85	70	95		Not enough info about USFS project to estimate benefits at 2012 EP Workshop. // 2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	8.1: Water Quality: Temperature	10.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	85	85	85	90	85	90		2016 EP LF: No actions, no change. -MAH5.26.16

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	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	84.8	84.8	84.8	100	84.8	100		EP LB 2015: Five Points Cr Barrier Removal: 4-ft high concrete dam (UPRR legacy stucture) removal in 2015, added LWD, will remove ATV trail in future. Barrier was partial: SH were jumping it (large pool below it), but also helped juv US and DS passage. Benefits: SH use hab all the way up to RM 12, plus 9 miles of tribs = 21-22 miles total opened. Streamnet total miles: 43.5. Adjusted benefit to consider only juvenile passage benefits: prorated to 10% functional benefit. See EP's table for calculations. Total change = 4.8% uplift. Note this project was not considered in the 2012 Lookfwd Expert Panel. Project also installed LWD dowstream. // 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%	75	75	75	75	77.4	80		EP LB 2015: 1.5 mi Dry Creek Fence Enclosure 2015. Not mature enough to show functional change. No change in percentage. // 2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 2.4% uplift by 2033. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	15.00%	75	75	75	75	76.2	80		2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 1.2% uplift by 2033. -MAH5.27.16

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	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	5.00%	50	50	50		50.8			2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 0.8% uplift by 2033. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5.00%	50	50	50		50.8			2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 0.8% uplift by 2033. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	70	70	70	75	71.6	85		EP LB 2015: Five Points Cr Barrier Removal did not create pools. No functional change yet, but expected to benefit LF 6.1 in future. // 2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 1.6% uplift by 2033. -MAH5.27.16

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	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	70.7	70.7	77.9	75	77.9	85		EP LB 2015: Five Points Cr Barrier Removal included LWD installation below dam. Approx 7 sites, 15 LWD pieces per site along 0.5 mile of stream in 2015 (project called "Five Points LWD Planting Phase 1/2" in Pisces. Next summer: structures to be built US of dam site. 105 pcs total/0.5 mi = 13pcs/100m = 65% (of 20pcs/100m reference). = 0.7% uplift. 2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. Panel calculated a 7.2% uplift by 2018, with no additional uplift by 2033. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	70	70	70	75	71.2	85		2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 1.2% uplift by 2033. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	8.1: Water Quality: Temperature	20.00%	80	80	80	80	80.8	85		EP LB 2015: 1.5 mi Dry Creek Fence Enclosure 2015. Not mature enough to show functional change. No change in percentage. 2016 EP LF: Project and rationale are identical to UGC1A, but calculation table uses a different denominator for steelhead. No uplift by 2018, but an estimated 0.8% uplift by 2033. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	5.00%	80	80	80	80	80	85		2016 EP LF: No actions, no change. -MAH5.27.16

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	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	90	90	90	95	90	95	Riverside Park/Spruce St Bridge, trib through tunnel @ Perry + barriers in Conley Cr + Wright Slough	EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	55	45	60		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	45	60		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	30	30	30	35	30	40		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	30	30	30	35	30	40		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	30	30	30	32	30	35		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	8.1: Water Quality: Temperature	28.00%	30	30	30	31	30	32		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	8.2: Water Quality: Oxygen	5.00%	80	80	80	90	80	90		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16

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	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30	31	30	32		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	70	63.4	80	more tribs for steelhead; but same LF requirements as chinook; Not enough info available to make site-specific changes between spp	Not enough information about USFS Riparian Thinning & Mtnce Project to estimate improvements at 2012 EP workshop. Per EP LB 2015: Two projects in database: Meadow Cr LWD and Planting (7.25 miles treated) and Battle Campbell Cr. (3 miles treated). SH habitat in Streamnet: 63.7 mi in AU. EP confirmed. Note that project mapping shows a few projects (passage improvements) upstream of Streamnet SH distribution lines. SH spawn high in system. Limited by water quant in some of these upper channels in some years.No functional % change yet, due to short time elapsed since planting. // 2016 EP LF: Conservation acquisitions (cattle will be removed and fencing to be done in Meadow and Dark Canyon). Acquired 2015. No uplift by 2018, but an estimated 0.2% uplift projected by 2033, along with a 3.2% uplift from lookback projects = 63.4%. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60	61.7	70		EP LB 2015: Same projects as LF 4.1. EP: No functional % change yet, due to short time elapsed since planting. // 2016 EP LF: Conservation acquisitions (cattle will be removed and fencing to be done in Meadow and Dark Canyon). Acquired 2015. No uplift by 2018, but an estimated 0.1% uplift projected by 2033, along with 1.6% from Lookback projects = 61.7% -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	68.3	68.3	68.3	80	68.3	85		EP LB 2015: 2 projects, Meadow Cr LWD and Planting in Starkey Exp Forest(7.25 miles treated, >400 pcs, 29 structs, 14: 64 pcs, 82 holders, 15:175 pcs = 239 pcs of LWD; 560 pcs total for both phases; have not yet had major flows, but some changes seen) and Battle Campbell Cr. 2012 (1.75 miles of RR grade removed in 2012 (floodplain benefits of various width, less constrained now in terms of habitat forming processes), wood to mobilize embeded seds, 10 CHaMP sites showed large sed movements, scouring and deposition, unembeding of gravels). Meadow: added 4.8 pcs/100m (=25% of reference). See EP's table of project metrics and prorations re: functional condition and channel changes seen since construction (prorated: 25% function of 7.25 mi treated). Wood spacing varies. Only count portion of project within SH use, so reduced length to 2.75 miles. Will take time to achieve channel structural

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	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	69	69	69	80	69	85		EP LB 2015: Meadow: added 4.8 pcs/100m (=25% of reference). Battle: 600-700 pcs of LWD in 6 miles (estimated 323 pcs in SH habitat = 7.3pcs/100m compared to 20/100m 36.5% function). Compare to LIttle Minam 27pcs/100m reference condition. See EP's table of project metrics and prorations re: functional condition and channel changes seen since construction. Total in AU= 4% uplift. Also see LH 6.1 rationale. // 2016 EP LF: No actions, no change. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	64.7	64.7	64.7	70	71.6	80		Not enough project info to estimate improvements at 2012 EP Workshop. EP LB 2015: See LF 6.2 projects, but included entire 6 miles of Battle Cr. project. Also considered floodplain connections benefits from Meadow Cr (7.25 mi) project. See EP's table for proration calculations. Meadow: Saw 8% decrease in pool tailout fines in 2011 to 2014, which relates to significant increases in fry survival. 25% current functional status. Battle Cr.: Actions above SH distrib, but they have DS benefits re: sediment imputs (culvert removals, stabilizations, 2 pond/dike removals, ~20% partial cattle exclusions. EP: 20% current function for Battle project. Total = 4.7% uplift. // 2016 EP LF: Conservation acquisitions (cattle will be removed and fencing to be done in Meadow and Dark Canyon). Acquired 2015. The panel projected no uplift by 2018, but a 6.8% uplift by 2033 (66.8% total) for look back actions in addition to an estimated 0.1% uplift for look
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	8.1: Water Quality: Temperature	25.00%	40	40	40	45	40.1	50		EP LB 2015: No actions. No change. // 2016 EP LF: Panel estimated a pro-rated uplift of 0.1% by 2033, with no actions expected in the 2018 period. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	9.2: Water Quantity: Decreased Water Quantity	5.00%	60	60	60	65	60	75		EP LB 2015: No actions. No change. 2016 EP LF: No actions, no change. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	1.00%	100	100	100	100	100	100	one culvert high in system- 1.5 mi access for steelhead	EP LB 2015: Dark Canyon Culvert Replacement Project. Benefitted SH, but above CHK distrib. Was a partial barrier: not an adult barrier, only for juveniles. Seasonal barrier. McCoy culvert issues? EP: None known. SH miles in this AU: 39mi from Streamnet. No other culverts remain in the canyon. EP: Increase by 2% to 100% for this SH AU. // 2016 EP LF: No actions, no change. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	70	63.7	80	more tribs for steelhead; but same LF requirements as chinook; Not enough info available to make site-specific changes between spp	EP LB 2015: No actions, no change. // 2016 EP LF: No anticipated uplift by 2018 from 4 actions. Conservation acquisitions (cattle will be removed and fencing to be done in Meadow -- spans UGS 14 and UGS 15). Acquired in 2015. The panel determined these actions will have an estimated benefit uplift of 3.7% by 2033. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60	61.8	70		EP LB 2015: No actions, no change. // 2016 EP LF: No anticipated uplift by 2018 from 4 actions. Conservation acquisitions (cattle will be removed and fencing to be done in Meadow -- spans UGS 14 and UGS 15). Acquired in 2015. The panel determined these actions will have an estimated benefit uplift of 1.8% by 2033. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	65	65	65.6	80	66	85		EP LB 2015: No actions, no change. // 2016 EP LF: 4 actions. Conservation acquisitions (cattle will be removed and fencing to be done in Meadow -- spans UGS 14 and UGS 15). Acquired in 2015. The panel determined these actions will have an estimated uplift of 0.6% by 2018, and an additional 0.4% by 2033. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	67.7	80	67.7	85		EP LB 2015: No actions, no change. // 2016 EP LF: 2 projects,12 pieces per 100 meters proposed on McCoy Creek. Properly Functioning Condition would be ~27 pieces per 100 m, so prorated accordingly in calculations table, resulting in 2.7% uplift for both 2018 and 2033. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	70	61.8	80		EP LB 2015: Antler Spring enclosure fence (not on Actions list): above SH distrib, but will benefit downstream sediment and WQ LFs in the future. No functional uplift yet, though. // 2016 EP LF: Same projects as for riparian limiting factors. Fence will benefit quickly, but not immediate. Therefore, no functional change expected in 2018. Reach is highly embedded. Revised to include riparian exclusion. Panel determined 1.8% uplift in 2033. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	8.1: Water Quality: Temperature	24.00%	40	40	40	45	41	50		EP LB 2015: No actions, no change. // 2016 EP LF: No flow in summer at McCoy Creek currently. Revised to include riparian exclusion. Panel determined 1% uplift by 2033. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	9.2: Water Quantity: Decreased Water Quantity	5.00%	60	60	60	65	60	75		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	85.1	85.1	90.3	100	90.3	100	greater effect for steelhead than chinook- more use by steelhead	EP LB 2015: EP determined that Rock Cr Phase 1 and 2 barrier removal for projects is not yet completed, which were originally listed under LF 1.1. EP noted USFS South Fork Spring Creek culvert project during EP within SH distrib zone; GRModelWS paid for design (12.5 mi of habitat above, but was partially passable before - 6" drop-small juvenile partial barrier= 5% funct). Added to Spring Creek to database, and removed Rock Creek Phase 1&2, which will need to be added in 2015-18 assuming the barrier/culvert work is completed. EP: 0.1% improvement total. // 2016 EP LF: Rock Creek Phase 3 (2016): Partial seasonal barrier (undersized culvert) replacement, expected to open 3 miles of habitat, including Graves Creek culvert. Denominator set at 110.7 miles. Panel prorated improvement to 25% for juvenile/seasonal barrier. Also added Highway 244 Whiskey Creek (2018), which is expected to open 10 miles of habitat. Not an adult

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	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%	45	45	45	50	47.1	60		EP LB 2015: 2 projects (Rock Cr Phase 1 and Phase 2). Phase (actually on Graves Cr - correct in database) 1: 6 mi, Phase 2 (Rock Cr): 5 mi. SH Streamnet miles in AU: 110.7. Plantings have not had many years to mature yet, so no measurable uplift yet. 7000 plants at first, then additional plantings through CRP program ongoing. No % function change at this time; reevaluate in 2018. // 2016 EP LF: Rock Creek Phase 3 (2016), no change in 2018 but a prorated uplift of 0.1% by 2033 based on riparian growth. The original lookback estimated a 47% function by 2033 based on look back projects. With a 0.1% anticipated uplift from actions that should yield benefits by 2033 the total 2033 estimated uplift would be 47.1%. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	50	50	50	60	51.1	70		EP LB 2015: 2 projects (Rock Cr Phase 1 and Phase 2). Phase (actually on Graves Cr - correct in database) 1: 6 mi, Phase 2 (Rock Cr): 5 mi. SH Streamnet miles in AU: 110.7. Plantings have not had many years to mature yet, so no measurable uplift yet. 7000 plants at first, then additional plantings through CRP program ongoing. No % function change at this time; reevaluate in 2018. // 2016 EP LF: Rock Creek Phase 3 (2016), no change in 2018 but a prorated uplift of 0.1% by 2033 based on riparian growth. A prior expert panel estimated a 51% function by 2033 based on look back projects, so with an estimated 0.1% increase the total 2033 estimate is 51.1%. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	5.00%	50	50	50.7		50.8			2016 EP LF: Add LF5.1. Activation of floodplain and side channels from Rock Creek Phase 3. Panel calculated an uplift of 0.7% by 2018, and an additional 0.1% by 2033. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5.00%	50	50	50.7		50.8			2016 EP LF: Add LF5.1. Activation of floodplain and side channels from Rock Creek Phase 3. Panel calculated an uplift of 0.7% by 2018, and an additional 0.1% by 2033. -MAH5.31.16

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	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	52.7	52.7	53.4	60	53.5	70		Per EP LB 2015: 2 projects (Rock Cr Phase 1 and Phase 2): Phase 1 installed: 128 wood complexes; 1480 pieces (750 large pcs, rest was slash/racking). 25 riffle andn wood complexes installed, channel aggraded and reconnected to floodplain. Also reactivating 1 mile of pre-1937 channel (now at 90% function). Ph 1 wood with riffles: 60% function. Ph 1 LWD: 25% function. Phase 2 (Rock): 167 complexes, each with 5 key members/root wads = 1650 large pieces total (25% current functional value). 1.09 to 1.3 pre-project sinuosity.Total calc uplift: 3.7%. This AU is particularly variable in terms of SH habitat differences btwn creeks. Beaver is closer to PFC than Rock Cr.; more potential for restoration there? Rock Cr. still has much work to be done, as do Whiskey and Jordan. But also consider process & functions of Graves re: DS contributions too. And note Graves historic potential re: previous and

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	48.4	48.4	49.3	70	49.3	70	CHANGED HIGH BOOKENDS AT 2012 WORKSHOP TO REFLECT NEW OPPORTUNITIES	Per EP LB 2015: Same projects as LF6.1. 58% (Graves: 3 miles only treated with wood) 76% (Rock: 5 miles only treated with wood) post-project LWD loading percentages, based on 27 pcs/100m Minnam reference. Total functional uplift: 3.4%. // 2016 EP LF: Rock Creek Phase 3 RM 0.5-1.5 (2016): meandering a straight section, which should change channel form significantly. 1 mile treated. Wood loading will exceed Properly Functioning Condition densities. Prorated at 100% function for both time periods, resulting in 0.9% uplift for 2018 and no additional uplift by 2033. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	40	40	40.5	55	43.5	70		Per EP LB 2015: LF 6.1 (same projects). Included conservation easements, exclusion fencing, some on connected, but non-fish-bearing tribs. Total miles treated: 11 mi. EP considered time elapsed since fenced re: current functional value. Literature shows 2-20 year response time for fine sediment reduction projects. Current uplift: 0%. // 2016 EP LF: Rock Creek Phase 3 estimated to result in 0.5% uplift for 2018 and same in 2033. The lookback panel calculated a 43% function by 2033, which the 0.5% uplift from the LF panel is added to equals 43.5% - MAH5.31.16

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	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	8.1: Water Quality: Temperature	15.00%	45	45	45	46	45.1	50		Per EP LB 2015: No functional change from exclusion fencing yet, as per LF 7.2. Also evaluated effect from 3.5 cfs seasonal Beaver water releases from dam. See UGC3 discussion, but SH range further US. Benefit of mostly local, near release point (not measureable all the way down to MS Grande Gronde). Not much instream data from DS, but little water temp difference seen from background. Heatsource model shows still within SH optimal rearing conditions, regardless of water additions. EP: No % change. // 2016 EP LF: Rock Creek 3: changing width to depth ratio. Beaver Creek reservoir: temperatures are already within preferred range. No benefit from dam releases expected, so prorated as 0%. No change from riparian in 2018, but a measurable increase by 2033. - MAH5.31.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	9.2: Water Quantity: Decreased Water Quantity	5.00%	70	70	70	72	70	75		Per EP LB 2015: See UGC3 discussion and UGS16 LH 8.1, but SH range further US. Evaluated effect from 3.5 cfs seasonal Beaver water releases from dam. Given season and life history changes during releases, and durration of flow addition, no measurable functional changes (just enough to move fish around for a few weeks). Would expect more benefit to spreading the same flow addition over a longer period. No change to % function. // 2016 EP LF: No percent change from Beaver creek releases, therefore, 0% uplift. -MAH5.31.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	95	100	CTUIR weir installed Mar 1 not much of a factor for steelhead	2015 EP LB: No actions. No change. // 2016 EP LF: No actions, no change. -MAH5.31.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	65.1	65.1	65.1	70	66.7	80		2012 Estimate based only on Starkey Mdws project. / Per EP LB 2015: 2 projects: UGR Fence Installation 2012 and Warm Springs Fence. 17.8 SH miles in Streamnet. See EP's table with mileage and functional percentage prorations. See UGC5 re pod fencing. Note: Warm Springs 2014 was included as part of Pod project. Spring development, fencing, 0.5 stream mile (1 mile of fence) of cattle exclusion. No functional benefit yet, but expected in future. No % change for steelhead (or chinook). 2015 EP LB: No actions. No change. // 2016 EP LF: No actions, no change. However, EP during lookback estimated a 1.7% total uplift by 2033 from lookback actions, which results in 66.7% by 2033. - MAH6.1.16

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	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	65	65	65	65	65.8	70		2012 Estimate considers Starkey Project for 2033 improvement./ Per EP LB 2015: 2 projects: UGR Fence Installation 2012 and Warm Springs Fence. 17.8 SH miles in Streamnet. See EP's table with mileage and functional percentage prorations. See UGC5 re pod fencing. Note: In PISCES: Warm Springs 2014 was included as part of Pod project. Spring development, fencing, 0.5 stream mile (1 mile of fence) of cattle exclusion. No functional benefit yet, but expected in future. No % change. // 2016 EP LF: No actions, no change. However, EP during lookback estimated a 0.8% total uplift by 2033 from lookback actions, which results in 65.8% by 2033. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	70.3	70.3	81.5	75	81.5	80		Per 2015 EP LB: UGR Pod project:small diameter slash racking wood additions only in this period. LWD was pre- 2012. See also CHK discussion (UGC5): small effect (1% functional change for treated area). Add this project in database to this LF. See EP's table of mileage and functional percentages. Adjusted project length to fit AU boundaries. Other project: Warm Springs Fence: Remove project from this LF. Different denominator for SH, due to distribution difference: 17.8mi from Streamnet. Total uplift = 0.3%. // 2016 EP LF: USFS Grande Ronde River Large Restoration Complex: just a wood project. Will treat 8 miles with 400-800 pieces total, plus racking material, at approximately 1 jam per mile. Will add 5 pieces per 100 meters to what is there already. Prorated at 25%, resulting in 11.2% uplift for 2018 and 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	65	65	65	70	69.5	80		Per 2015 EP LB: Pod fencing only, not full riparian fencing. Minimal benefit yet from Warm Springs fencing yet either. No change in %. // 2016 EP LF: Large wood project could change sediment routing/retention. Panel rated at 0% function in 2018 and 10% in 2033, resulting in 0% in 2018 and 4.5% uplift in 2033. - MAH6.1.2016

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	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	8.1: Water Quality: Temperature	25.00%	50	50	50	52	50	55		Per EP LB 2015: See LF 4.1 action, and UGS 5 rationale: Pod fencing only, not full riparian fencing. Note: In PISCES: Warm Springs 2014 was included as part of Pod project. Spring development, fencing, 0.5 stream mile (1 mile of fence) of cattle exclusion. This AU is US of Beaver Cr, so remove that project from this AU sin database. No change in %. // 2016 EP LF: No actions, no change. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	9.2: Water Quantity: Decreased Water Quantity	15.00%	70	70	70	75	70.3	75		2012 NOTE TO AA'S: AQUIFER STORAGE PROJECT NOT INCLUDED IN ESTIMATE FOR UGC5 SO NO BENEFITS ESTIMATED FOR CHINOOK. HOWEVER, BENEFITS WERE ESTIMATED FOR STEELHEAD. IS THIS CORRECT? Note: benefits for chinook and steelhead are TBD- jms 7-13-12 // Per 2015 EP LB: No actions, no change. // 2016 EP LF: No actions, no change. However, actions from LB result in a 0.3% estimated uplift by 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50	55	50	60		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	75	60	80	Per Paul B. - significant LWD recruitment opportunities.	EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	60	60	60	65	60	70		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	7.2: Sediment Conditions: Increased Sediment Quantity	30.00%	55	55	55	65	55	70	Fine sediments primarily from road system. No USFS grazing allotments in UGS18. Increase to 2033 High Bookend reflects potential from recently approved USFS Travel Management Plan.	EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	8.1: Water Quality: Temperature	30.00%	75	75	75	80	75	85		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	90	90	96.9		96.9			2016 EP LF: Added LF1.1. Skydd project: 2.5 miles. Prorated at 15% for 2018 and 2033 resulting in 6.9% uplift. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	4.1: Riparian Condition: Riparian Vegetation	25.00%	75	75	75	85	87.5	95		Per EP LB 2015: See UGC7 CHK actions (pods and slash). But change mileage to 3 mi. See EP's table. Denominator mileage from Streamnet: 5.4 mi. No % change yet. // 2016 EP LF: Skydd project: 2.5 miles. No change in 2018, but prorated at 15% for 2033 resulting in 6.9% uplift expected in 2033. Along with another 5.6% uplift from LB projects, the final 2033 function is 75%+5.6%+6.9% = 87.5%. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	4.2: Riparian Condition: LWD Recruitment	20.00%	75	75	75	85	81.3	95		Per EP LB 2015: See UGC7 CHK actions (pods and slash). But change mileage to 3 mi. See EP's table. Denominator mileage from Streamnet: 5.4 mi. No % change yet. // 2016 EP LF: Skydd project: 2.5 miles. No change in 2018, but prorated at 7.5% for 2033 resulting in 3.5% uplift expected in 2033. Along with another 2.8% uplift from LB projects, the final 2033 function is 75%+2.8%+3.5% = 81.3%. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	85.6	85.6	85.6	90	85.6	95		Per EP LB 2015: Added pods and slash project to LF 6.2. See EP's table calcs = 0.6% uplift. // 2016 EP LF: No actions, no change. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	80	65.6	90		Per 2015 EP LB: See UGC7 CHK actions (pods and slash). But change mileage to 3 mi. See EP's table. Denominator mileage from Streamnet: 5.4 mi. No % change yet, as per CHK. // 2016 EP LF: No actions, no change. 5.6% uplift by 2033 from lookback actions. - MAH6.1.16

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	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	80	80	88.2		88.2			2016 EP LF: Added LF1.1. 2 actions, Limber Jim Creek 2017 culverts (2) by USFS will open 1.5 and 1.25 miles on N and S forks. Panel prorated improvements in calculations table based on the fact that they are seasonal partial juvenile barriers: 25% proration, resulting in 8.2% uplift. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	75	75	75	85	78.6	90		EP LB 2015: No actions, no change. // 2016 EP LF: Same proration calculations as chinook result in 0% uplift by 2018, and 3.6% uplift by 2033. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	20.00%	75	75	75	80	76.8	85		EP LB 2015: No actions, no change. // 2016 EP LF: Same proration calculations as chinook result in 0% uplift by 2018, and 1.8% uplift by 2033. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	75	80	85.7	80	85.7	85		EP LB 2015: No actions, no change. // 2016 EP LF: Same proration calculations as chinook result in 10.7% uplift by 2018, and no additional change by 2033. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	75	75	75	85	77.2	90		EP LB 2015: No actions, no change. // 2016 EP LF: Same proration calculations as chinook result in no uplift by 2018, and a 2.2% uplift in 2033. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	0.00%	70	70	70	75	70	85		EP LB 2015: No actions, no change. // 2016 EP LF: No action, no change. -MAH.6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	95	100	Complete barrier on 5160 road	EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. - MAH6.1.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	65	65	65	70	65.7	75		EP LB 2015: No actions, no change. // 2016 EP LF: Fly Creek Smith (called 2015, but 2016 completion) fence project: 1.5 miles. A few trees across stream, and willow pods for elk browse control. All passive, no planting. 25 year easement. No uplift expected in 2018, but 0.7% expected in 2033.- MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	15.00%	65	65	65	65	65.4	70		EP LB 2015: No actions, no change. // 2016 EP LF: Fly Creek Smith (called 2015, but 2016 completion) fence project: 1.5 miles. A few trees across stream, and willow pods for elk browse control. All passive, no planting. 25 year easement. No uplift expected in 2018, but 0.4% expected in 2033.- MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	75	75	75	80	75	85		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change.- MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	40	40	40	55	40.1	70		EP LB 2015: No actions, no change. // 2016 EP LF: Fly Creek Smith (called 2015, but 2016 completion) fence project: 1.5 miles. A few trees across stream, and willow pods for elk browse control. Some immediate effect from fencing, but not significant. 0% uplift expected for 2018 and 0.1% for 2033.- MAH.6.1.16

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	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	8.1: Water Quality: Temperature	25.00%	45	45	45	46	45.2	50		EP LB 2015: No actions, no change. // 2016 EP LF: Fly Creek Smith (called 2015, but 2016 completion) fence project: 1.5 miles. Using CHaMP temperature model output, 0% change expected in 2018 and 0.2% in 2033.- MAH.6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	80	80	82.3		82.3			2016 EP LF: Added LF1.1. 2 projects on calculations table (Sheep and Chicken Creeks, 2 culverts each). Panel prorated per life history use and partial barriers. Undersized culverts, even though some were retrofitted in the past. West Chicken has 6-12-inch drop. Yields 2.3% uplift in 2018, same by 2033. -MAH6.1.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%	50	50	50	60	55.3	80		NOTE TO AA'S: CHICKEN CR. NOT CHINOOK HABITAT SO NO ESTIMATE WAS MADE FOR CHINOOK TO COPY TO STEELHEAD - kpfisher, 7/10/12. Per 2015 EP LB: See EP's table with calcs. Added Chicken Cr. Culvert Replacement (USFS). More relevant to LF 1.1, but 1.1 is not an LF for this AU. [Revisit this in the next LookFWD, because there are many culverts in this area that need work]. Was a partial velocity barrier. Note: Wider watershed restoration actions and long-term veg projects will have many benefits that may not show up in EP calculations yet. 0% uplift. // 2016 EP LF [Revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 3.7% uplift in 2033. The 2033 estimate includes 3.7% plus 1.6% uplift from lookback actions. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	15.00%	60	60	60	75	62.7	80	Per Paul B. - significant LWD recruitment opportunities.	PER EP LB 2015: Sheep Creek LWD and Planting Project were added to this LF and AU (3 miles treated in 2014/2015, was "pretty bare to start with"). Plantings are young, so no credit in this time period yet. No functional uplift yet. // 2016 EP LF [Revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 1.9% uplift in 2033. The 2033 estimate includes 1.9% plus 0.8% uplift from lookback actions. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	52.4	52.4	52.4	60	52.4	80		2012 Estimate based on Sheep Ck project only. Per 2015 EP LB: Sheep Creek LWD and Planting Project were added to this LF and AUwood projects: Sheep Cr. (2.5 mi, 27 structures, avg of 7 pieces 192 pieces from completion report = 68 pc per mile=5pc/100m) and Chicken Cr. (2 mi, 13 struct, avg. 9 pc LWD each and 15 small, 117 pcs total= 4pc/100m) treated. Note that project length does not provide treatment intensity. Similar to USFS Meadow Cr. project, which showed pools scoured within 1 year. Sheep and Chicken come off of north-facing slopes. HabRate target for summer parr rearing: 20 pc/100m. This reference condition is similar to 20.17 pc/100m counted in Chinook Domain in Minam (inc. Little Minam). See EP's table, functional % of each project prorated as compared to target (25% [5/20] and 20% [4pc/100m = 20%] of PFC). Using only Little Minam (size is more appropriate for comparison) number of 27 pc/

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	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	30	30	30	50	33.3	80	Significant private land grazing.	Not enough known about USFS Sheep Cr rd decommissioning project for estimate to be made at 2012 EP workshop. / EP LB 2015: EP: These projects did not benefit this LF within this period. CHaMP surveys showed no reduction in sedimentation here. No USFS road decommisionings in period. No change in %. // 2016 EP LF: Riparian projects benefit, but most sediments are coming from fire areas (Tanner or Tower fires), and heavy grazing on private land. Panel determined 0% change for 2018 and 1.2% uplift in 2033. Revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 1.9% uplift in 2033. The 2033 estimate includes the 1.9% plus 1.4% uplift from lookback actions. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	8.1: Water Quality: Temperature	20.00%	70	70	70	70	71.2	75		Per EP LB 2015: No temperature benefit from Chicken and Sheep projects yet. No % change. // 2016 EP LF: Panel determined no uplift by 2018. Prorated fence and pods to 2033, resulting in 0.2% uplift. Revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 1.2% uplift in 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%			0		0			Passage improvement projects identified but Passage LF given 0% weight. If barriers exist, consider reweighting this LF at next EP workshop.EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.27.16

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	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	30.00%	75	75	75	85	75	95		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	30.00%	60	60	60	60	60	70		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	70	70	70	75	70	85		EP LB 2015: No actions, no change. // 2016 EP LF: No actions, no change. -MAH5.27.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	80	60	90		EP LB 2015: No actions, no change.// 2016 EP LF: No actions, no change. -MAH5.27.16