Biological notes from May 3-4, 2016 Expert Panel session in Enterprise, Oregon (Chinook Assessment Units).
Notetaker: Kim Gould, Cardno, Inc.
Combined Look Back and Look Forward

Notes:
If a cell is blank, presume not discussed due to no applicable actions for that LF.
Yellow cells are highlighted per Panel request to revisit.
"No action" statements refer to Action Agency nexus projects. Other actions with no Action Agency nexus may have ocurred, but are not considered in EP process.
Calculation tables (separate spreadsheets) accompany these biological notes and capture project metrics and uplift calculations. Separate calculation tables were created for the look back and look forward process.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 AU Weight	2012 LF Weight	2012 Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments	2012-15 Look Back Function (Updated 2018 Estimate)	2012-15 Look Back % Change	2012-15 Look Back Estimate Comments and Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2015 Low Bookend	2016-18 Look Forward Function (Updated 2018 Estimate)	2016-18 Look Forward % Change	2016-18 Look Fwd Estimate Comments and Rationale
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	1.1: Habitat Quantity: Anthropogenic Barriers	44.22%	5.00%	85	85.5		90	85.5	90	Little empirical evidence of chinook use in Little Sheep Ck.	Camp Ck not documented Chinook stream; approx. 1/2 - 1mile improved chinook access	100.6	15.6	Buhler Irrigation and Fish Passage project was completed in 2012 (was not included in last EP): Grande Ronde Model Watershed project, with full funding from BPA. The project fixed a 3-foot drop. It only affected limiting factor 1.1. Chinook are considered "functionally extirpated" by some, but they are known to occur in this system. The project opened 10.5 miles (note that it also opened miles into BSC2). The denominator was set at 22.2 miles (Streamnet). No other irrigation or culvert barriers are known/listed above this location, but there could be something unknown to the panel. Improvement prorated in calc table based on life stages that the barrier affected and the extent of blockage: 50%. Little Sheep considered only juvenile habitat, but the project barrier was upstream of confluence. Previously saw Chinook spawning above the site, so some adults were passing, but it is definitely an upstream juvenile barrier. Results in a 23.6% uplift. Revised by panel: Panel initially assumed that it was a full juvenile barrier, but then adjusted to 33% as a partial barrier, resulting in 15.6% uplift.						100.6	100.6	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	4.1: Riparian Condition: Riparian Vegetation	44.22%	15.00%	50	50		60	50	75	Primarily private land.		50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	6.2: Channel Structure and Form: Instream Structural Complexity	44.22%	5.00%	50.1	50		55	50	60			50.1	0	No actions applicable to this LF performed within 2012-2015 period in this AU. No change in function percentage.						50.1	50.1	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	7.2: Sediment Conditions: Increased Sediment Quantity	44.22%	5.00%	50	50		75	50	85			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	8.1: Water Quality: Temperature	44.22%	15.00%	50	50		65	50	75			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	8.2: Water Quality: Oxygen	44.22%	5.00%	80	80		90	80	90	feedlot in low end of system approx. 1/2 mile		80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80	80	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC1	Lower Big Sheep and Little Sheep Creeks	9.2: Water Quantity: Decreased Water Quantity	44.22%	50.00%	30	30		80	30	80	Irrigation diversions; 90 cfs flows for a couple of months		30	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						30	30	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC2	Upper Big Sheep Creek	1.1: Habitat Quantity: Anthropogenic Barriers	34.10%	16.66%	95	95		100	95	100			128	33	Buhler Irrigation and Fish Passage project discussed for assessment unit BSC1 also benefited BSC2. Denominator used was 18.8 Chinook miles per Streamnet, but the panel discussed habitat use (natural versus hatchery outplanting). Panel initially assumed that this was a full juvenile barrier, but then adjusted proration to 33% as a partial barrier. This yields a 33% uplift.						128	128	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC2	Upper Big Sheep Creek	6.2: Channel Structure and Form: Instream Structural Complexity	34.10%	16.66%	80	80		82	80	90			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80	80	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC2	Upper Big Sheep Creek	7.2: Sediment Conditions: Increased Sediment Quantity	34.10%	16.66%	50	50		65	50	75			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50		Check with USFS.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC2	Upper Big Sheep Creek	8.1: Water Quality: Temperature	34.10%	16.68%	60	60		62	60	65			60	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						60	60	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC2	Upper Big Sheep Creek	8.2: Water Quality: Oxygen	34.10%	16.66%	75	75		80	75	85			75	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						75	75	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC2	Upper Big Sheep Creek	9.2: Water Quantity: Decreased Water Quantity	34.10%	16.68%	50	50		80	50	85			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC3	Big Sheep Creek Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	21.70%	16.70%	90	95		100	95	100	LOW BOOKEND RAISED FROM 60 TO 95 11/16/12	No more known barriers after Lick Ck culvert	99.6	9.6	Buhler Irrigation and Fish Passage project discussed for assessment unit BSC1 may have also benefited BSC3, but benefit depends on how far juvenile Chinook are expected to migrate upstream; panel adjusted proration to account for the fact that most rearing habitat value is downstream. Panel also considered how much of the observed rearing is from hatchery outplanting rather than natural production. There is a barrier known in this assessment unit near the campground at Lick Creek confluence. Streamnet mileage is 6.8 miles for Chinook; removed last 0.3 mile of Lick Creek, so 6.5 miles treated. Panel prorated improvement at 10%, resulting in 9.6% uplift. NOTE: Re-examine Low Bookend during Look Forward.						99.6	100.6	1	Lick Creek culvert will open 0.7 mile of habitat in 2017. Yields 1% uplift. Differing opinions regarding extent of Chinook distribution. Ask USFS for input.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC3	Big Sheep Creek Tributaries	5.2: Peripheral and Transitional Habitats: Floodplain Condition	21.70%	16.66%	95	95		100	95	100			95	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						95	95	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC3	Big Sheep Creek Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	21.70%	16.66%	75	75		77	75	80			75	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						75	75	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC3	Big Sheep Creek Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	21.70%	16.66%	85.05	85.05		90	85.05	95			85.05	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						85.05	85.05	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC3	Big Sheep Creek Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	21.70%	16.66%	50.25	50.35		65	50.35	75			50.25	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50.25	50.25	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Big Sheep Creek	BSC3	Big Sheep Creek Tributaries	8.2: Water Quality: Oxygen	21.70%	16.66%	80.1	80.1		85	80.1	90			80.1	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80.1	80.1	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.

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Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC1	Lower Imnaha Mainstem	7.2: Sediment Conditions: Increased Sediment Quantity	35.50%	25.00%	80.05	80.05		85	80.05	90			80.25	0.2	Marr project: Avoided riprap by bioengineering 350 feet of formely eroding bank: logs, sticks, cattle exclusion. Planted vegetation. Log deflector structure, but maintained side channel. Project expected to affect sediment conditions up to 5 miles downstream, but is more likely measurable within 1 mile only. Denominator was set at 36.3 miles based on Streamnet, resulting in 0.2% uplift.						80.25	80.25	0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC1	Lower Imnaha Mainstem	8.1: Water Quality: Temperature	35.50%	25.00%	75	75		77	75	80			75	0	Marr project is not yet affecting water quality. No change in function.						75		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC1	Lower Imnaha Mainstem	8.2: Water Quality: Oxygen	35.50%	25.00%	70	70		80	70	85			70	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						70		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC1	Lower Imnaha Mainstem	9.2: Water Quantity: Decreased Water Quantity	35.50%	25.00%	85	85		90	85	90			85	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						85		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC2	Cow, Lightening & Horse Cr.	6.1: Channel Structure and Form: Bed and Channel Form	22.70%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC2	Cow, Lightening & Horse Cr.	6.2: Channel Structure and Form: Instream Structural Complexity	22.70%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC2	Cow, Lightening & Horse Cr.	7.2: Sediment Conditions: Increased Sediment Quantity	22.70%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC2	Cow, Lightening & Horse Cr.	8.1: Water Quality: Temperature	22.70%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC3	Upper Imnaha River Mainstem	1.1: Habitat Quantity: Anthropogenic Barriers	37.70%	20.00%	75	75		100	75	100			75	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						75		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC3	Upper Imnaha River Mainstem	6.2: Channel Structure and Form: Instream Structural Complexity	37.70%	20.00%	85	85		86	85	90			85	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						85		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC3	Upper Imnaha River Mainstem	7.2: Sediment Conditions: Increased Sediment Quantity	37.70%	20.00%	80	80		82	80	85			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC3	Upper Imnaha River Mainstem	8.1: Water Quality: Temperature	37.70%	20.00%	80	80		82	80	85			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC3	Upper Imnaha River Mainstem	8.2: Water Quality: Oxygen	37.70%	20.00%	90	90		95	90	96			90	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						90		0	No actions applicable to this limiting factor are expected within the 2016-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	1.1: Habitat Quantity: Anthropogenic Barriers	4.20%	10.00%	80	90		100	90	100	raised low bookend from 60	Grouse Ck. rearing only for Chinook; total from 3 project about 3 miles improved access	80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	4.1: Riparian Condition: Riparian Vegetation	4.20%	20.00%	60	60		62	60	65			60	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						60		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	6.1: Channel Structure and Form: Bed and Channel Form	4.20%	10.00%	80	80		85	80	90			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.

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Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	6.2: Channel Structure and Form: Instream Structural Complexity	4.20%	10.00%	80	80		82	80	85			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	7.2: Sediment Conditions: Increased Sediment Quantity	4.20%	20.00%	80	80		85	80	90			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	8.1: Water Quality: Temperature	4.20%	20.00%	80	80		82	80	85			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	8.2: Water Quality: Oxygen	4.20%	0.00%	75	75		80	75	85			75	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						75		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	9.1: Water Quantity: Increased Water Quantity	4.20%	0.00%	70	70		72	70	75			70	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						70		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Imnaha River mainstem	IRC4	Upper Imnaha River Tribs.	9.2: Water Quantity: Decreased Water Quantity	4.20%	10.00%	80	80		85	80	90			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80		0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.

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Snake River Spring/Summer Chinook	Lookingglass Creek	LGC1	Lookingglass Creek	1.1: Habitat Quantity: Anthropogenic Barriers	100%	40.00%	70	70		100	70	100			70	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						70	70	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lookingglass Creek	LGC1	Lookingglass Creek	6.2: Channel Structure and Form: Instream Structural Complexity	100%	60.00%	80	80		85	80	90			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80	80	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.

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Snake River Spring/Summer Chinook	Lostine River	WLC1	Lower Wallowa River (Mouth to Minam R. & Howard Cr.)	6.2: Channel Structure and Form: Instream Structural Complexity	9.90%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC1	Lower Wallowa River (Mouth to Minam R. & Howard Cr.)	7.2: Sediment Conditions: Increased Sediment Quantity	9.90%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC1	Lower Wallowa River (Mouth to Minam R. & Howard Cr.)	8.1: Water Quality: Temperature	9.90%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC1	Lower Wallowa River (Mouth to Minam R. & Howard Cr.)	9.2: Water Quantity: Decreased Water Quantity	9.90%	25.00%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC2	Middle Wallowa River (Minam R. to Dry Cr. And Deer Cr.)	6.2: Channel Structure and Form: Instream Structural Complexity	10.20%	33.33%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC2	Middle Wallowa River (Minam R. to Dry Cr. And Deer Cr.)	7.2: Sediment Conditions: Increased Sediment Quantity	10.20%	33.33%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC2	Middle Wallowa River (Minam R. to Dry Cr. And Deer Cr.)	8.1: Water Quality: Temperature	10.20%	33.34%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	1.1: Habitat Quantity: Anthropogenic Barriers	30%	5.00%	91	92		100	92	100		Only Lower Alder considered for estimate	95.1	4.1	Calc table contains 2 actions: Trout Creek/Alpine Meadows project (spring-fed cool water - removed small irrigation push-up dam and pump pool, which was a seasonal barrier, but not to Chinook; project opened 2 miles of channel to Chinook) and the Cross Canal (seasonal check log: mid-July onward through irrigation season, now replaced by roughened channel; 15 miles of upstream habitat affected). Panel prorated based on life stage/timing and degree of blockage. But Streamnet Chinook extent does not extend up to Trout Creek site (so prorated to 0% for limiting factor 1.1). Cross Canal: location is low in system and affected many fish, but was not a complete barrier and was seasonal (placed log and mounded substrate up against in) - thus, 10% proration. Four or five other barriers also exist. Panel determined 4.1 % uplift.						95.1	95.1	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	4.1: Riparian Condition: Riparian Vegetation	30%	10.00%	40.25	40.5		45	40.75	60		6 Ranch Project 2 benefits	40.28	0.03	Six Ranch project (2015): 0.38 mile treated. Panel discussed methods of prorating based on riparian growth average from Beechie paper. No major benefit expected till 30 years out. Alternately, assigning 1% per year, assuming that it takes 100 years to reach riparian shade properly functioning condition and linear growth yields a 3% proration and 0.03% uplift.						40.28	40.31	0.03	Wallowa-Baker project: Planting 0.6 mile on 1 bank, fencing = 0.3 mile treated. Baremore project will probably not occur in 2018 period. On calc table, prorated at 1% resulting in 0.03% uplift expected. Also: Tamkaliks project.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions											0				10	Added limiting factor 5.1 and reweighted.	35	Panel's estimate of percentage of properly functioning condition in assessment unit. Lower end of assessment unit is in okay shape. Worse condition upstream. Not all reaches would have had side channels (e.g., canyon reach).	35	36.8	1.8	Length to be treated: Wallowa-Baker: 0.6 mainstem miles. Panel prorated as 75% of properly functioning condition. Tamkaliks: 0.4 mile prorated at 70%. Yields 1.8% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	6.1: Channel Structure and Form: Bed and Channel Form	30%	15.00%	40	40.5		65	40.75	80		6 Ranch benefits	40.8	0.8	Six Ranch project: Panel discussed degree of new sinuosity versus constraints from railroad and maturation time re: percent of properly functioning condition by 2018. Now able to access floodplain, but is wood structure constraining plan form dynamics? Now set up for channel processes to work at next flood. Improvement prorated to 75% in calc table, resulting in 0.8 % uplift.		10	Added limiting factor 5.1 and reweighted.			40.8	42.6	1.8	Wallowa-Baker (0.45 mile of main side channel creation + additional 25 meters sinuous spring creek side channel connection) and Tamkaliks (side channel creation project at powwow grounds). Wallowa-Baker: 3,917 feet of side channel. Per calc table, 1.8% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	6.2: Channel Structure and Form: Instream Structural Complexity	30%	25.00%	40.3	50.4		65	50.4	80		30 mile reach channelized	40.8	0.5	Six Ranch wood loading occurred along 0.38 mile. Previously had almost no rearing value. Panel used Minam large wood loading reference condition of 27 pieces per 100 meters. Post-project: 67 pieces per 100 meters (far exceeding properly functioning condition); also constructed pools and riffles. But half of those logs were for bank stability rather than instream structure/cover, so improvement prorated to 50%. Cross-canal was grade control and roughening stream simulation rock material, and a few logs. Panel prorated to 0% (was more for passage than instream structure). Yields 0.5% uplift.						40.8	44.1	3.3	Wallowa-Baker (3,917 feet of side channel; 689 total large woody debris pieces, plus racking material = 32 pieces per 100 meters) and Tamkaliks (0.3 mile: conceptual at this point) projects. Goal is rearing habitat, added pool complexity: zero-velocity for winter rearing. Prorated in calc table per percentage of properly functioning condition expected to be achieved within project areas. Yields 3.3% expected uplift.

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Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	7.2: Sediment Conditions: Increased Sediment Quantity	30%	20.00%	50.1	50.2		60	50.2	75		6-Ranch Project 2 benefits	50.8	0.7	One goal of projects affecting this limiting factor was to restore natural sediment transport processes. Calc table has 2 projects: Six Ranch (which addressed bank sedimentation and substrate embeddedness within project footprint) and Cross-Canal (which had less benefit than Six Ranch - length treated was 0.9 mile; less sediment moving through now than before; due to timing of cross-log placement, which was not during major sediment transport season, not much benefit). Improvement was prorated based on percentage of properly functioning condition achieved in 2018 period, taking into account upstream sources and on-site improvements in function as riparian vegetation matures (60% and 30%). Yields 0.7% uplift.						50.8	52.6	1.8	Wallowa-Baker: 8.2 acres of floodplain roughness and bank layback over 1.3 miles (including side channel length; 0.6 mile of main channel length) to capture sediment. Prorated at 75% of properly functioning condition within 2018 period. Tamkaliks: will create a lot of backwater rearing habitat in floodplain. Prorated at 75% of properly functioning condition within 2018 period. 1.8% uplift expected.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	8.1: Water Quality: Temperature	30%	10.00%	85.1	85.1		87	85.1	90			85.1	0	No measurable benefit from flow project.						85.1	85.14	0.04	Wallowa-Baker 2017-2018: Hyporheic benefits expected. Monitoring will show actual changes in future. Sum of riparian and flow benefits yields 0.04% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	8.2: Water Quality: Oxygen	30%	0.00%	70	70		80	70	85			70	0	No measurable benefit from flow project.						70	70	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC3	Upper Wallowas River (Dry Cr. To Wallowas Lake)	9.2: Water Quantity: Decreased Water Quantity	30%	15.00%	80.1	80.6		85	80.6	90			80.6	0.5	Trout Creek project: Permanent 1 cfs back in stream during irrigation season (verifiable by pump data). Average baseflow as denominator: 150 cfs in August and September; gage is 3 miles below on Wallowa River. Calc table lists flow benefits per year in assessment period. No flow benefit from Cross Canal. Yields 0.5% uplift.		10	Added limiting factor 5.1 and reweighted.			80.6	80.71	0.11	Wallowa-Baker 2017-2018: Adds 4-50 cfs of residual stock water 1,600 feet upstream from current location. There is known spawning in this area, as well as rearing. Flow denominator at this location: 207 cfs (95% low exceedance per Anderson Perry design report) end of summer baseflow. Yields 0.011% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	1.1: Habitat Quantity: Anthropogenic Barriers	3.80%	15.00%	50	50		100	50	100			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	4.1: Riparian Condition: Riparian Vegetation	3.80%	15.00%	30	35		35	38	60		Hurricane Ck/Tippet Project applies	30	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						30	30	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	3.80%	15.00%	30	30		50	30	60			30	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						30	30	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	6.2: Channel Structure and Form: Instream Structural Complexity	3.80%	15.00%	30	35		50	38	60		1 of 6 miles improved;	30	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						30	30	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	7.2: Sediment Conditions: Increased Sediment Quantity	3.80%	4.00%	60	62.5		70	63	80		Hurricane Ck/Tippet project applies - bank stabilization	60	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						60	60	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	8.1: Water Quality: Temperature	3.80%	15.00%	70	70		72	70	75			70	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						70	70	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	8.2: Water Quality: Oxygen	3.80%	1.00%	70	70		80	70	80			70	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						70	70	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC4	Hurricane Creek	9.2: Water Quantity: Decreased Water Quantity	3.80%	20.00%	40	40		90	40	95			40	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						40	40	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	1.1: Habitat Quantity: Anthropogenic Barriers	7.70%	14.28%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	4.1: Riparian Condition: Riparian Vegetation	7.70%	14.28%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	7.2: Sediment Conditions: Increased Sediment Quantity	7.70%	14.30%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	8.1: Water Quality: Temperature	7.70%	14.28%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	8.2: Water Quality: Oxygen	7.70%	14.28%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 AU Weight	2012 LF Weight	2012 Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments	2012-15 Look Back Function (Updated 2018 Estimate)	2012-15 Look Back % Change	2012-15 Look Back Estimate Comments and Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2015 Low Bookend	2016-18 Look Forward Function (Updated 2018 Estimate)	2016-18 Look Forward % Change	2016-18 Look Fwd Estimate Comments and Rationale
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	9.1: Water Quantity: Increased Water Quantity	7.70%	14.28%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC5	Prairie Creek	9.2: Water Quantity: Decreased Water Quantity	7.70%	14.30%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC6	Bear Creek	1.1: Habitat Quantity: Anthropogenic Barriers	14.80%	10.00%	60	65		85	65	85	Old City of Wallowa irrigation diversion; seasonal juvenile & some adult barrier; Gobel diversion - partial barrier; another at upper Diamond Lane		60	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						60	60	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC6	Bear Creek	6.2: Channel Structure and Form: Instream Structural Complexity	14.80%	20.00%	40	40		70	40	80	bottom 5 miles channelized & incised, not much wood, lots of rock		40	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						40	40	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC6	Bear Creek	7.2: Sediment Conditions: Increased Sediment Quantity	14.80%	4.00%	70	70.05		75	70.05	80	pre-Dock Creek.	city of wallowa diversion	70	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						70	70	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC6	Bear Creek	8.1: Water Quality: Temperature	14.80%	10.00%	50	50		60	50	70			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC6	Bear Creek	8.2: Water Quality: Oxygen	14.80%	1.00%	80	80		80	80	80			80	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						80	80	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC6	Bear Creek	9.2: Water Quantity: Decreased Water Quantity	14.80%	55.00%	25	25		70	25	70	mid-late irrigation season functionally dewaters lower 5 miles; abt 12-15 miles above		25	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						25	25	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC7	Lower Lostine River (Mouth to Silver Cr.)	1.1: Habitat Quantity: Anthropogenic Barriers	12.60%	15.00%	85	95		100	95	100		partial barrier - adult chinook pass, significant juvenile barrier especially during summer; important rearing & spawning area Flow is only known remaining barrier	104.9	19.9	Calc table contains all fish passage actions and miles opened, prorated per life stages benefited and extent of blockage. Some were partial barriers to adults as well as juveniles (both low-flow and high-flow velocity barriers). Adjusted each project benefit mileage length within assessment unit boundaries, and adjusted to avoid double-counting access mileage for in-line projects. Streamnet shows 14.1 Chinook miles, which was used as the denominator. Other partial barriers exist upstream of City of Lostine diversion. Lostine minimum flow agreement affected all of the area. Intent of flow projects was to help passage of fish adults (combined in table under one line item, affecting 3 miles): effects go to river mile (RM) 5. Telemetry data show delays at site, but not blockage. Improvement prorated based on effect of delay - increased possible risk of prespawn mortality. Assuming benefit to fish that are able to access each site. Design is meant to pass all fish at 25 cfs, which is natural hydrology low flow, and 15 cfs is seen now, so prorated at 60%. Yields 19.9% uplift. NOTE: adjust Low Bookend in Look Forward.				25	Panel adjusted low bookend to account for known remaining passage flow deficiencies, thermal barriers, and diversion structures left to remedy by 2018 and beyond. This is the main assessment unit of concern for barriers (wilderness above). 30% remaining to do after 2018 = 25% new low bookend.	25	70.1	45.1	Calc table lists 5 passage projects, with river miles and amount of access to be opened. Minimum Flow project allows for passage where flow barriers exist. Panel prorated projects based on life stage and degree of blockage. Tully Hill at RM 2 diversion is partial barrier (5-6 months per year for juveniles and documented delays for adults) and is to be completely remedied for all species and life stages. Clearwater at RM 3 and Foster at RM 4 are next barriers up, but are not complete blockages. Many of the remaining barriers are partial, but cause migration delays of adults (telemetry data) and/or block juvenile upstream migration. No known barriers upstream of Sheep Ridge project. Sheep Creek is juvenile barrier at many times of year, occasional adult barrier (have to move rocks to allow passage). Minimum flow project increases in later years to 18-20 cfs (Look Forward credit assigned for full amount because it's an annual landowner decision/action), out of target flow, 25 cfs, in Recovery Plan, resulting in 72% proration. Also added portions of Wolfe Conserve Water (2 cfs in August) and Wolfe Split Season Lease (Aug-Sept, 9.5 cfs) projects (RM 5.5), which will enable better passage at diversions, but this reach is less likely to dry up (fewer days below 25 cfs), so less (half) benefit and prorated at 4% and 38%. Good habitat above these areas. Yields 45.1% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC7	Lower Lostine River (Mouth to Silver Cr.)	6.2: Channel Structure and Form: Instream Structural Complexity	12.60%	30.00%	57	57		60	57	65		257 acres in wlc7 & wlc3; estimate 200 ac. in WLC 7; est 2 stream miles; no credit for protection - benefits will be added if active restoration occurs	57.1	0.1	City of Lostine project: built roughened channel and grade break; boulder pods and a small number (10 pieces) increased complexity. Emphasis was passage, so channel complexity was a secondary benefit. Improvement prorated to 15%, yielding 0.1% uplift.						57.1	57.1	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC7	Lower Lostine River (Mouth to Silver Cr.)	7.2: Sediment Conditions: Increased Sediment Quantity	12.60%	10.00%	50	50		65	50	70			50	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						50	50	0	Sheep and Tully Hill projects: roughened channels will restore sediment transport processes, but no measurable uplift.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 AU Weight	2012 LF Weight	2012 Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments	2012-15 Look Back Function (Updated 2018 Estimate)	2012-15 Look Back % Change	2012-15 Look Back Estimate Comments and Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2015 Low Bookend	2016-18 Look Forward Function (Updated 2018 Estimate)	2016-18 Look Forward % Change	2016-18 Look Fwd Estimate Comments and Rationale
Snake River Spring/Summer Chinook	Lostine River	WLC7	Lower Lostine River (Mouth to Silver Cr.)	8.1: Water Quality: Temperature	12.60%	10.00%	77	77		77	77	80			78.2	1.2	Panel considered effect of limiting factor 9.2 flow projects on temperature and concluded that Minimum Flow Agreement provided measurable benefit, but not other projects. Water in this area (above Cross-Country Canal) is cooler than in main river. Panel discussed fish occupancy in reach affected by project. Major spawning is upstream of this area, so no benefit there. Contributes at RM 5. Contributes 15 cfs of 14 degree water into 80 cfs (Lostine R.) at 17-20 degrees C at RM 5.5. Reach was previously dry in mid-August to mid-September. Wallowa River mainstem is too big to see benefits downstream. Panel prorated benefit in calc table for each reach (RM 0-5.5 and RM 5.5-9). Panel examined water temperature logger data showing extent of downstream effects (3 degree difference). Project started in 2005, but minimum flow increased in 2015. Discussion of additional water mass effect on heat loading rates as water flows downstream. Lower section sees hyporheic flows and return flows. Have seen fish stacked up due to temperature barrier, and managed irrigation accordingly. Panel was convinced the action had a benefit, but was difficult to quantify. For upper reach, 1 degree difference out of 20 degrees C resulted in 5% proration. For lower reach, improvement prorated at 0% (assumed to be not measurable). Yields 1.2% uplift.						78.2	90.9	12.7	Using weighted sum of limiting factor 9.2 flow projects in this assessment unit: 6.8 cfs. Calc table contains 6 flow projects, prorated based on expected effect on temperature (e.g., early season May-July) - leases have less of an effect. Water additions are similar temperature to stream, so mass buffer addition, but not cooler. Yields 12.7% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC7	Lower Lostine River (Mouth to Silver Cr.)	8.2: Water Quality: Oxygen	12.60%	0.00%	75	75		80	75	90			75	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						75	75	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC7	Lower Lostine River (Mouth to Silver Cr.)	9.2: Water Quantity: Decreased Water Quantity	12.60%	35.00%	50	50		80	50	80		improvement from lease already accounted for in 2010-12 period	62.5	12.5	Three flow projects listed in calc table by dates active. Carlsen (BPA-funded staff time): 1 cfs, but only biologically relevant during fish presence period. 2012-2018 benefits not counted in previous panels, so counted here (May 2016). 2.22 cfs early season May - July rate for 90 days, and less 0.73 cfs (1/3) later in the season (Aug -Sept: 60 days). For fish, the later portion is more critical, but in some years, late July is important, depending on fish migration/holding timing. Denominator: natural (without irrigation) baseflow estimated as 35 cfs. Restoration target in Recovery Plan is 25 cfs, but properly functioning condition is higher. Panel prorated each project based on location of point of diversion (divided river miles downstream of diversion by total Streamnet miles in assessment unit). This yields 29.1% uplift. But given that leases are paid yearly, panel then chose to split 2016-2018 additional flow actions off to count them in the Look Forward, so only 2012-2015 included in Look Back. Revised uplift is 31.3%. NOTE: include 2016-2018 flow actions in Look Forward. On Day 2 (May 4, 2016),						62.5	81.8	19.3	Calc table contains flow projects by year and prorations. Includes actions carried forward as mentioned in Look Back. Note that Minimum Flow project compensated additional flows to account for other enhancements. Carlsen is 2.2 cfs May-July; 0.96 cfs Aug-September. Wolfe: Split into 3 lines for seasonal changes in agreement: 12.5 cfs in May, June, July portions, but unknown ecological significance downstream, considering shifting climate conditions. Wolfe Aug-Sep 9.5 cfs: 0 cfs in 2017 due to Oregon Water Resources Department administrative issue (restarts in 2018). Denominator: 35 cfs baseflow. Caveat: deals with senior right reliable holders to have highest probability of paper right turning into wet right, but not guaranteed to translate into instream water due to water management and other users. Panel discussed timing of flow benefits in relation to Chinook migration and differences between hydrology of upper and lower portions of assessment unit. Last 2 months of irrigation season is when most fish problems occur, so added temporal weighting factor to account for Aug-Sept critical portion of irrigation season. Yields 19.3% expected uplift.
Snake River Spring/Summer Chinook	Lostine River	WLC8	Upper Lostine River (Silver Cr. To Headwaters)	7.2: Sediment Conditions: Increased Sediment Quantity	11.20%	33.40%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC8	Upper Lostine River (Silver Cr. To Headwaters)	8.1: Water Quality: Temperature	11.20%	33.30%									0	0	No actions applicable to this limiting factor were performed within 2012-2015 period in this assessment unit. Therefore, there is no change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.
Snake River Spring/Summer Chinook	Lostine River	WLC8	Upper Lostine River (Silver Cr. To Headwaters)	8.2: Water Quality: Oxygen	11.20%	33.30%									0	0	No actions applicable to this LF performed within 2012-2015 period in this AU. No change in function percentage.						0	0	0	No actions applicable to this limiting factor are expected within the 2013-2018 period in this assessment unit. Therefore, no change in function percentage is expected.