These are the Biological Notes from the Upper Grande Ronde Expert Panel Look Forward session, conducted in LaGrande, OR from 3/8/2016 to 3/10/2016. Notes are specific to Chinook. Raw notes were collected during Panel discussions, and later checked for typographical errors and for consistency with supporting tables. This spreadsheet also contains revisions look back uplifts and rationale in response to Panel review comments and revisions during the look forward meeting.
"EP table" references are to spreadsheets developed and compiled during the session. This spreadsheet references both look back and look forward calculation spreadsheets (tables). These two files are named the following:

Look Back Calculation Table:
UGRCC_EP_2012-15_LookBack_CalcSpreadsheet_3-29-16.xlsx

Look Forward Calculation Table:
UGRCC_EP_2016-18_LookForward_CalcSpreadsheet_3-29-16.xlsx

Primary biological note taker: Kim Gould, Cardno, Inc.

Key:
Bracketing in rationale columns demarks content added during the QA process.

ESU	Population	Code	Assessment Unit	Updated AU Weight (3/2016 adj)	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adj. 3/2016)	Updated Low Bookend Rationale (adj. 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adj. 3/2016)	Look Back 2018 % Change (adj. 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adj. 3/2016)	Updated 2033 Look Back Estimate (adj. 3/2016)	Look Back 2033 % Change (adj. 3/2016)	Look Back 2033 Estimate Comments / Rationale (adj. 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	LookForward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward)	LookForward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		1.1: Habitat Quantity: Anthropogenic Barriers	40.00%	0.00	No other Chinook barriers are left to fix in this AU. Redistribute weight to other limiting factors. Panel concerned about all-terrain vehicle (ATV) use in floodplain and side channels. Panel added limiting factors and weights: limiting factors 5.1 (5%), 5.2 (5%). This matches ATLAS weightings.	20						110.9	90.9	EP discussed Five Point rail barrier removal project, conducted in October 2015. Streamnet shows 0.1 mile (before barrier removal), intrinsic potential layer shows ~11 miles of potential Chinook habitat. Adults will not go up there to spawn, but juveniles can use it. Add this to the previous look back, as it was considered for steelhead. Denominator (distribution) discussed for Chinook and determined as 11 miles based on intrinsic potential calculation with tributaries. Union Pacific RR diversion dam resulted in 90.9% uplift.	110.9			110.9	110.9	0	Potential Barrier on Dry Creek: Railroad: more of an issue for steelhead rather than Chinook. No actions.	110.9	0	No actions.	20		95	20	95	barrier a couple miles u/s from mouth just inside USFS boundary	
	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		4.1: Riparian Condition: Riparian Vegetation	10.00%	15.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	75						75			75			75	75	0	Five Points Wood and Planting 2016: 7 miles. Prorated in table based on growth rates.	84.5	9.5	15% proration based on growth to 2033.	75		75	75	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		4.2: Riparian Condition: LWD Recruitment	10.00%	15.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	75						75			75			75	75	0	Same project as for limiting factor 4.1, but half of rate.	79.8	4.8	Same project as for limiting factor 4.1, but half of rate.	75		75	75	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions		5.00	Added by EP on 8 March 2016		50.00	New limiting factor				0			0			50	50	0	Five Points Wood and Planting 2016: No functional change in 2018.	53.2	3.2	Five Points Wood and Planting 2016: For 2033, panel assumed a 5% proration resulting in 3.2% uplift.							
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		5.2: Peripheral and Transitional Habitats: Floodplain Condition		5.00	Added by EP on 8 March 2016		50.00	New limiting factor				0			0			50	50	0	Five Points Wood and Planting 2016: No functional change in 2018.	53.2	3.2	Five Points Wood and Planting 2016: For 2033, panel assumed a 5% proration resulting in 3.2% uplift.							
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		6.1: Channel Structure and Form: Bed and Channel Form	5.00%		Weight unchanged	70						70			70.1	0.1	[3/27/2016: Added 0.1% uplift based on calculation spreadsheet indicating 2033 benefit from Five Points Phase I LWD and Planting Project]	70	70	0	Five Points Wood and Planting 2016: 7 miles. No change in function expected for 2018.	76.4	6.4	Five Points Wood and Planting 2016: 7 miles. For 2033, 10% prorate factor leads to 6.4% uplift expected from changes in bed form morphology (changes in width to depth ratio).	70		75	70	85	Pelican Ck and lower Five Points conditions worse than remainder of Five Points	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	20.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	70	30.00	EP reduced low bookend to 30%, based on change seen and assessment of what needs to be done to reach properly functioning condition (PFC), considering wood loading and other metrics. Currently we have 15 pools per mile. Should have over 20 pools per mile. Width to depth ratio is far from PFC.				70			70			30	58.6	28.6	1,003 key pieces proposed. Properly Functioning Condition wood loadings based on stream width: 21 pieces per 100 m. Proposed: 89.5 pieces per km, or 8.9 pieces per 100 m. Prorated accordingly, this results in 28.6% uplift.	58.6	28.6	Same as for 2018.	70		75	70	85	Remote area- bed and channel form OK	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		7.2: Sediment Conditions: Increased Sediment Quantity	5.00%		Weight unchanged	70						70			70			70	70	0	Travel management plan to manage ATV use is unlikely to be fully implemented. Five Points Wood and Planting 2016: cattle and ATV trail exclusion. No functional change in 2018.	74.8	4.8	Using 2% and 10% prorate in calculation table for 2033 results in 4.8% uplift, including riparian growth.	70		75	70	85	Travel MgmtPlan to manage ATV use	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		8.1: Water Quality: Temperature	15.00%	25.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	80						80			80			80	80	0	See calculations table for Five Points Wood and Planting 2016. No flow projects. No change in function predicted for 2018.	83.2	3.2	Proration based on riparian shade effectiveness, gravel bar sorting increasing hyporheic exchange results in 3.2% uplift by 2033.	80		80	80	85		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			85						85			85			85	85	0	No actions.	85	0	No actions.	86		100	86	100	Riverside Park/Spruce St Bridge, trib through tunnel@ Perry	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		4.1: Riparian Condition: Riparian Vegetation	10.00%			45						45			45			45	45	0	No actions.	45	0	No actions.	46		55	50	60		Estimate based on about 4.5 MI riparian planting.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		4.2: Riparian Condition: LWD Recruitment	10.00%			45						45			45			45	45	0	No actions.	45	0	No actions.	45		55	46	60		2033 estimate based on long term recruitment improvements from Greenway, Nilson, & Gooderham projects listed in LF 4.1
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		6.1: Channel Structure and Form: Bed and Channel Form	10.00%			30						30			30			30	30	0	No actions.	30	0	No actions.	35		35	40	40		Estimate considers Greenway, Nilson, & Gooderham projects - ABT 4 miles treatment of 19 miles in AU
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		6.2: Channel Structure and Form: Instream Structural Complexity	10.00%			30						30			30			30	30	0	No actions.	30	0	No actions.	35		35	35	40		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			30						30			30			30	30	0	No actions.	30	0	No actions.	32		32	35	35		Estimate considers Voetz, Gooderham & Nilson & Greenway projects
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		8.1: Water Quality: Temperature	30.00%			30						30			30			30	30	0	No actions.	30	0	No actions.	30		31	30	32		Water in reach is too warm to estimate benefits from water transaction project at this time.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)- excludes Five-Points Ck		9.2: Water Quantity: Decreased Water Quantity	20.00%			30						30			30			30	30	0	No actions.	30	0	No actions.	40		40	40	40	base flow less than 20 cfs	Assumes Voelz provides 0.5 cfs w/ 1863 water right and 3 cfs from FWT project.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)		9.2: Water Quantity: Decreased Water Quantity	5.00%		Weight unchanged	80						80			80			80	80	0	No actions.	80	0	No actions.	80		80	80	85	Forest mgmt/succession conditions	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		1.1: Habitat Quantity: Anthropogenic Barriers	1.00%		Whiskey Creek is a juvenile barrier. No change to limiting factor weight.	95			95	0	No action. No change.	95			95			95	95		Not discussed.	95		Not discussed.	95		100	95	100	Whiskey Ck culvert (small effect for ck?)	Jordan, Lowe, Whiskey Cr diversion projects located in this AU but don't apply to Chinook.

ESU	Population	Code	Assessment Unit	Updated AU Weight (3/2016 adj)	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adj. 3/2016)	Updated Low Bookend Rationale (adj. 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adj. 3/2016)	Look Back 2018 % Change (adj. 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adj. 3/2016)	Updated 2033 Look Back Estimate (adj. 3/2016)	Look Back 2033 % Change (adj. 3/2016)	Look Back 2033 Estimate Comments / Rationale (adj. 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	LookForward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward)	LookForward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		4.1: Riparian Condition: Riparian Vegetation	12.00%	13.00	13% in Atlas.	50			50	0	No action. No change.	50			50			50	50	0	Hilgard not expected to happen (indefinitely delayed), Tier 3 in Atlas, so should be removed from database. Bird Track Springs should be in this AU. No riparian functional uplift expected to 2018. Calculation table broke Bird Track into phases (length adjusted) to account for the fact that part of it will be after 2018.	51.7	1.7	15% proration to 2033 for riparian growth results in 2.1% uplift. [3-27-16: Notes incorrectly stated uplift of 2.1, which likely reflected a project mileage used early in the Panel discussion. Since the mileage in the calculation spreadsheet (1.59 miles) matches later limiting factors, uplift was revised to 1.7% to match the calculation spreadsheet.]	52		60	55	70		Estimate considers improvements from listed projects and Rock Ck Fish Habitat Enhancement & Lowe Ranch projects
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		4.2: Riparian Condition: LWD Recruitment	12.00%	10.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	50			50	0	No action. No change.	50			50			50	50	0	See limiting factor 4.1	50.8	0.8	Used half of limiting factor 4.1 functional change. [3-27-16: Notes incorrectly stated uplift of 1, which likely reflected a project mileage used early in the Panel discussion. Since the mileage in the calculation spreadsheet (1.59 miles) matches later limiting factors, uplift was revised to 0.8% to match the calculation spreadsheet.]	50.2		60	50.3	70		
	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions		10.00	Added by EP on 8 March 2016. Also included in Atlas.		50.00	New limiting factor				0			0			50	58.3	8.3	Based on 1.91 miles of side channel proposed. Calculations table shows prorations as per limiting factor 6.1.	60	10	Based on 1.91 miles of side channel proposed. Calculations table shows prorations as per limiting factor 6.1.							
	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		5.2: Peripheral and Transitional Habitats: Floodplain Condition		10.00	Added by EP on 8 March 2016. Also included in Atlas.		50.00	New limiting factor				0			0			50	58.3	8.3	Based on 1.91 miles of side channel proposed. Calculations table shows prorations as per limiting factor 6.1.	60	10	Based on 1.91 miles of side channel proposed. Calculations table shows prorations as per limiting factor 6.1.							
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		6.1: Channel Structure and Form: Bed and Channel Form	10.00%		Weight unchanged	50			50	0	No action. No change.	50			50			50	58.3	8.3	Bird Track Springs project will add 1.2 miles of channel plus peripheral channel. Current length is 1.59 miles. Changing width to depth ratio closer to Properly Functioning Condition. Panel calculated 75% prorate to 2018, resulting in 8.3% uplift.	60	10	19% of function expected by 2033, resulting in 10% uplift.	53		60	53	70		Estimate based on total of abt. 6 miles improved channel, floodplain connectivity, morphology
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		6.2: Channel Structure and Form: Instream Structural Complexity	15.00%		Weight unchanged	50			50	0	No action. No change.	50			50			50	58.3	8.3	As per limiting factor 6.1.	60	10	As per limiting factor 6.1.	56		60	56	70		Estimate considers about 20 miles total improved complexity (does not include USFS LGR Project)
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	5.00	8% in Atlas.	70			70	0	No action. No change.	70			70			70	75.6	5.6	Bird Track Springs project will have immediate effect on sediment sorting due to channel changes. Treated length = ~10% of AU mileage. Less than 15% fines shown in CHaMP and Aquatic Inventories, but that does not account for embedded armoring, which reduced rearing habitat quality. Bird Track Springs is expected to improve this, but construction will mobilize some embedded fines. Most of fine sediment is coming from Rock Creek. Prorating to 50% for 2018 results in 5.6% uplift.	76.7	6.7	Prorating to 60% for 2033 results in 6.7% uplift.	72		75	75	80		Rock Ck is main sediment producer.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		8.1: Water Quality: Temperature	20.00%	25.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	40			40	0	See Limiting Factor 9.2 flow change. EP: consider Feb 2015 Freshwater Trust report on temperature: 1 measurement: 0.3 mile downstream of reservoir; effects were not detectable in mainstem. In July-Oct of that year, some bumps in flow seen, but may not be attributable to Beaver Creek. Stochastic weather. But CHaMP data showed no change at average August flows. Note that Beaver Creek/reservoir water is not all that much cooler than stream water because the reservoir is shallow. On July 31, 12.5 degrees C temperature went down to 12.1 degrees C. So there was local benefit in the tributary, but limited temperature benefits to the mainstem from this flow addition. Limited fish occupancy in this reach in summer. EP: Zero temperature benefit	40			40			40	40	0	Will be in construction through 2018 period. No change.	41.1	1.1	Hyporheic flow benefits to temperature should happen quickly, so panel prorated to 10%, resulting in 1.1% uplift. Temperature problems come from upstream. Project will protect and expand cold water refugia in reach and reduce heating by changing channel geometry. There is uncertainty regarding how exactly it will perform. Most of the cold water seeps are in the Longley Meadows reach.	40.1		41	41	45		Estimate considers improvements from projects listed under other UGC2 LFs.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)		9.2: Water Quantity: Decreased Water Quantity	20.00%	1.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	50			50	0	One project in database: Beaver Creek water releases from City of LaGrande reservoir (3.5 cfs) (Lease started in 2013, 7-year lease for 150 acre-feet, release timing is experimental/adaptive, and release occurs over 1-2 month periods). Panel discussed flow benefits based on location (biological significance of flow improvements depend on where they are; not all reaches have equal value). Denominator: 25 cfs average baseflow (Oregon Water Resources Department - mainstem staff gage near Perry). See EP table: 2.625 cfs average annual flow benefit = 10.5% change, but adjusting for flow augmentation period (e.g., in 2014, August only; 2013 release	50	0	City reservoir lease is for 20 years?, decided annually. No difference.	50			50	50	0	No actions.	50	0	No actions.	51		51	51	52	some small diversions; general watershed conditions/function impacted by timber harvest/veg mgmt/lack of fire/natural succession stages	Conservative estimate based on 3 cfs permanent acquisition.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		1.1: Habitat Quantity: Anthropogenic Barriers	10.00%			75			75	0	No action, no change.	75			75			75	75	0	No actions.	75	0	No actions.	75		90	75	90	La Grande reservoir + a couple diversions u/s and d/s of reservoir	Little Beaver Ck high in system & not a Chinook stream.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		3.3: Food: Altered Prey Species Composition and Diversity	0.00%							0	No action, no change.	0			0			0	0	0	No actions.	0	0	No actions.						PLACEHOLDER: Invasive spp- brook trout	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		4.1: Riparian Condition: Riparian Vegetation	10.00%			65			65	0	No actions. No change.	65			65			65	65	0	No actions.	65	0	No actions.	65.1		70	65.1	80	reluctance to include LW on private property	Estimate considers Lowe Ranch - small portion of Beaver Cr. so minimal benefits
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		4.2: Riparian Condition: LWD Recruitment	25.00%			65			65	0	No actions. No change.	65			65			65	65	0	No actions.	65	0	No actions.	65.1		70	65.1	80	riparian disturbance on 5 mi of private property; USFS property in confined reaches	Estimate considers Lowe Ranch Project - small portion of Beaver Cr. so provides some improvement
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		6.2: Channel Structure and Form: Instream Structural Complexity	25.00%			65			65	0	No actions. No change.	65			65			65	65	0	No actions.	65	0	No actions.	65.1		75	65.1	85		Estimate considers Lowe Ranch Project - small portion of Beaver Ck so provides some improvement.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		7.2: Sediment Conditions: Increased Sediment Quantity	15.00%			75			75	0	No actions. No change.	75			75			75	75	0	No actions.	75	0	No actions.	75		75	75	80	most roads closed	Lowe Ranch Project - only small portion in Beaver Cr. so no improvement estimated

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Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek		8.1: Water Quality: Temperature	15.00%			75			75	0	See UGC2 LF 8.1 and 9.2 for discussion of mainstem effects from Beaver Creek flow releases from City of LaGrande Reservoir (3.5 cfs) (lease started in 2013, 7-year lease for 150 acre-feet, release timing is experimental/adaptive, released over 1-2 month periods, sometimes in Aug, but released in Oct one year). Beaver Creek utilization: lower half only (first 2-3 miles), despite Streamnet showing none. Amount of use unknown, because there is no access to the lower half. It may be an undervalued stream though, based on landowner opinion and observations when access was granted. Habitat is decent, despite cattle grazing impacts. In the upstream section downstream of reservoir, the city tries to release additional flow from bottom of dam to support summer baseflow, even when there is no inflow to reservoir, per their standard operating procedure. There is evaporative loss in reservoir. Freshwater Trust has relevant data: 0.54% (0.5 degree C) 12.4 to 12.1 degrees C on July 31st decrease in water temp less than 1 mile downstream of reservoir. Constantly releasing just under 3 cfs from dam. Baseline: heat source model showed below threshold (August temperatures) all the way from dam to mouth. Baseflow was 2.7 cfs	75	0	No adjustment.	75	0	Benefit expected to 2033, but only if lease is continued, and still not measurable, per previous rationale. No adjustment.	75	75	0	No actions.	75	0	No actions.	75		75	75	80	good upstream; not bad below	Lowe Ranch - only small portion in Beaver Cr so no improvement estimated.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek		4.1: Riparian Condition: Riparian Vegetation	15.00%			65						65			65			65	65	0	No actions.	65	0	No actions.	65		65	65	70		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek		4.2: Riparian Condition: LWD Recruitment	20.00%			65						65			65			65	65	0	No actions.	65	0	No actions.	65		70	65	75		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek		6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			75						75			75			75	75	0	No actions.	75	0	No actions.	75		80	75	85	USFS added wood to lower 4 miles	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek		7.2: Sediment Conditions: Increased Sediment Quantity	15.00%			40						40			40			40	40	0	No actions.	40	0	No actions.	40		55	40	70	Fly meadows-related riparian/streambank condition	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek		8.1: Water Quality: Temperature	30.00%			45						45			45			45	45	0	No actions.	45	0	No actions.	45		46	45	50		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		1.1: Habitat Quantity: Anthropogenic Barriers	1.00%			98			98	0	No actions in database. EP: Dark Canyon culvert was fixed, funded by Grande Ronde Model Watershed (ask Forest Service for details). However, this is not within Chinook distribution, so no Chinook benefit (but did benefit steelhead). McCoy actions? Note: in next Look Forward, adjust bookend, because of Chinook distribution (should be 100%: there are no barriers left).	98			98			98	98	0	No actions.	98	0	No actions.	100		100	100	100	one culvert high in system; may have limited effect for juvenile chinook (?)	Juvenile chinook in lower portion of basin; limited Chinook use otherwise
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		4.1: Riparian Condition: Riparian Vegetation	10.00%			60			60	0	1 project in database: Meadow Creek Large Wood and Planting Project (7.25 miles treated 2013-2014 planting, heavy browsing pressure, only half caged as experiment) in Starkey Experimental Forest, but above most current Chinook use (only 1 or 2 seen in this area), and above Streamnet distribution. EP: No change for Chinook.	60			60			60	60	0	No actions.	60	0	No actions.	60		70	60	80		Not enough info on USFS Riparian Thinning project to estimate improvements at 2012 EP workshop
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		4.2: Riparian Condition: LWD Recruitment	10.00%			60			60	0	EP: No change; same reasoning as for limiting factor 4.1.	60			60			60	60	0	No actions.	60	0	No actions.	60		70	60	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		6.1: Channel Structure and Form: Bed and Channel Form	10.00%			65			65	0	1 project in database: Meadow Creek Large Wood and Planting Project. Past panel had hoped that Chinook would move up higher to take advantage of habitat changes, but not many (1 fish only) have been seen in this reach since. EP: No change for Chinook.	65			65			65	65	0	No actions.	65	0	No actions.	65		80	65	85		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			65			65	0	EP: No change, same reasoning as given for limiting factor 6.1.	65			65			65	65	0	No actions.	65	0	No actions.	70		80	70	85		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		7.2: Sediment Conditions: Increased Sediment Quantity	20.00%			60			60	0	1 project in database: Meadow Creek Large Wood and Planting Project (7.25 miles treated during 2013-2014 planting, heavy browsing pressure, only half caged as experiment) in Starkey Experimental Forest. However, this is mostly above current Chinook use (only 1 or 2 seen in this area), and above Streamnet distribution. CHaMP data showed no downstream benefit.	60			60			60	60	0	No actions.	60	0	No actions.	60		70	60	80		Not enough info available on USFS projects to estimate improvements at 2012 EP Workshop
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		8.1: Water Quality: Temperature	24.00%			40			40	0	EP: No change. Not enough riparian vegetation growth yet.	40			40			40	40	0	No actions.	40	0	No actions.	40		45	40	50	still high	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries		9.2: Water Quantity: Decreased Water Quantity	5.00%			60			60	0	EP: No change. Not enough riparian vegetation growth yet.	60			60			60	60	0	No actions.	60	0	No actions.	60		65	60	75		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		1.1: Habitat Quantity: Anthropogenic Barriers	10.00%			85			85	0	No actions; no change.	85			85			85	85		Starkey will not happen within 2018 period. No actions.	85	0	No actions	85		95	85	95	CTUIR weir changed protocol to improve passage	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		4.1: Riparian Condition: Riparian Vegetation	10.00%			65			65.2	0.2	See EP's table: 2 projects. This is within Chinook zone. Chosen metric: stream miles. 2 miles of vegetation planting and fencing in 2012; 1 mile of planting (pod fencing in specific areas only, not overall streamside fencing) and large wood. Vegetation is not mature yet. Also, some of these areas were already in decent shape, with mature vegetation. Not all of the area was bare. Adjust % function based on vegetation growth status, as well as location of projects re: effective benefits. Use large wood recruitment potential as a surrogate for baseline riparian condition? But the Low Bookend already considered these baseline conditions. Were these plantings done in the right locations? Yes. Denominator: use fish bearing length of 11.1 miles, but can use 14.4 miles for channel structure limiting factors. NOTE: See CHaMP data and maps and revisit. Uplift 0.2%.	65.2	0.2	EP discussed growth rates to 2018 and 2033 per Roni and Beechie references. At the site level, growth depends on elevation and aspect, but a general average is needed. Properly Functioning Condition is considered achieved at 100 years (C. Justice), so panel used 5% increments. Douglas-fir grows to 7 ft tall in 5 years (ref). Mostly conifers here, so slower growth. See calculations table for prorations: 1% to 2018 resulting in 0.2% uplift. More growth out to 2033, so 20% proration, resulting in 4.2% uplift.	69.2	4.2		65.2	65.2	0	No actions	65.2	0	No actions	66		70	67	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		4.2: Riparian Condition: LWD Recruitment	10.00%			65			65	0	EP: No uplift yet. No change in %.	65	0	Trees are still maturing and would not fall in the stream in time period. No adjustment.	67.1	2.1	Still not enough time for much recruitment to 2033, and depends on browsing too. Not much growth of tree heights expected in the first 50 years -- HeatSource model shows effect at 75 years, topping out at 100 years. Benefits start accruing once trees are higher than browse height. 30 cm by 6 m large wood key piece definition. Now early seral stage, with a passive restoration treatment. Proration in calculation tables: 10% per limiting factor 4.1 growth rates, adjusted downward for riparian large wood recruitment rates. Panel expected 2.1% uplift.	65	65	0	No actions	65	0	No actions	65		65	66	70		Estimate considers Starkey Project for 2033 improvement.

ESU	Population	Code	Assessment Unit	Updated AU Weight (3/2016 adj)	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adj. 3/2016)	Updated Low Bookend Rationale (adj. 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adj. 3/2016)	Look Back 2018 % Change (adj. 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adj. 3/2016)	Updated 2033 Look Back Estimate (adj. 3/2016)	Look Back 2033 % Change (adj. 3/2016)	Look Back 2033 Estimate Comments / Rationale (adj. 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	LookForward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward)	LookForward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			70			70.3	0.3	See EP's table: UGR Small Wood and Pods (8 miles treated per database). Funded via Grande Ronde Model Watershed This was a follow-up (adding racking material) to larger prior (2010-2011) project. Project summary report: OHaMP sites don't always match projects locations, so there are questions regarding whether wood was added where it was most needed. Also consider U.S. Forest Service large wood actions funded by BPA? Or were they before period? Simple metric: no. of large wood pieces before and after. Denominator: 14.4 miles. Racking material has moved in some areas since installation, stayed in some areas, and gone in others. 8-mile length looks like it includes upstream tailings area actions too; should be 5 miles within this assessment unit. Remaining 3 miles should be in upstream assessment unit (UGC 7). Change this in database. Racking materials were limbs that are smaller than 10 cm diameter large wood definition. How do we calculate percent habitat change to instream complexity from smaller material? It primarily benefits juvenile fish due to increased cover/complexity. Based on sensitivity/model analysis of OHaMP data, pool creation from large channel-forming wood is the primary benefit (but not the only benefit). Note that	70.3			70.3			70.3	84.2	13.9	Added USFS wood project, resulting in 13.9% uplift. See steelhead UGS17 rationale.	84.2	13.9	Prorated for 2033.	72		75	72	80	USFS work 2010-12	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		7.2: Sediment Conditions: Increased Sediment Quantity	10.00%			65			65	0	1 project in database: UGR fence 2012 (1 mile): plant protection (previous project) only, so no sediment benefit. From Beechie (2002): response time for plantings is 5-20 years. No percentage change.	65	0	No adjustment.	65	0	Per Beechie reference, prorated in calculations table based on growth rate of root mass. In past projects, have seen faster response in root holding sediments than for riparian shade. Discussed elk grazing effects on shrub growth. Most sediment is coming from roads, which were not dealt with. But lower reaches do have a lot of sediment inputs from grazing on private lands too. Fencing was just pods, so less area affected (just to reduce browse on vegetation in pods). No adjustment.	65	65	0	Added USFS wood project resulting in 5.6% uplift for 2033. See steelhead UGS17 rationale.	70.6	5.6	Prorated for 2033.	66		70	67	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		8.1: Water Quality: Temperature	25.00%			50			50	0	Discussion of planting locations with regard to spatial distribution of benefits. From Beechie (2002): response time for plantings is 5-20 years. No functional change yet.	50	0	No adjustment.	51	1	Should see benefit as riparian zone matures. See limiting factor 4.1. Calculations table uses 5% proration to account for shade effect from only coverage from pods. Referenced Justice paper regarding temperature buffering effects. Best would be to cover more areas. Yields 1% change in 2033.	50	50	0	No actions	50	0	No actions	50		52	50.1	55	temp wt should be higher than structure	
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)		9.2: Water Quantity: Decreased Water Quantity	15.00%			70			70	0	No action. No change.	70			70			70	70	0	No actions	70	0	No actions	70		75	70	75	no irrigation withdrawals mix of USFS/private lands	Note: benefits from Aquifer Storage project to be determined; not estimated at 2012 EP Workshop.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)		4.1: Riparian Condition: Riparian Vegetation	20.00%			50						50			50			50	50	0	No action.	50	0	No action.	50		60	50	80		Aquifer Storage Project implementation too late in cycle to improve riparian condition
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)		4.2: Riparian Condition: LWD Recruitment	4.00%			50						50			50			50	50	0	No action.	50	0	No action.	50		60	50	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)		6.2: Channel Structure and Form: Instream Structural Complexity	24.00%			50						50			50			50	50	0	No action.	50	0	No action.	50		60	50	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)		7.2: Sediment Conditions: Increased Sediment Quantity	24.00%			30						30			30			30	30	0	No action.	30	0	No action.	30		45	30	80		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)		8.1: Water Quality: Temperature	24.00%			30						30			30			30	30	0	No action.	30	0	No action.	35		35	35	70		assumes Aquifer project implemented by 2018, estimates conservative due to early stages of project design
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)		9.2: Water Quantity: Decreased Water Quantity	4.00%			75						75			75			75	75	0	No action.	75	0	No action.	80		80	76	80	changed high bookends (from 76/77) in 6/20/2012 workshop due to emerging water opportunities. Base flow approx. 20 cfs	Assumes Aquifer project by 2018; Estimate assumes 3 cfs (early project design stage)
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)		4.1: Riparian Condition: Riparian Vegetation	30.00%			75			75	0	EP examined OHaMP GIS data. Large wood recruitment layer was considered as a proxy for general riparian condition. Denominator determined to be 6.2 miles, from Streamnet. Action: Small Wood and Pods Project (3 mile portion from North Fork upstream to Tanner Gulch). No change in function within this timeframe = 0% change.	75	0	No adjustment.	79.8	4.8	Vegetation growth is difficult on mine tailings at high elevations, except for lodgepole growth, which has been relatively fast. Calculations table prorated to 10% to account for pods only, and mine tailing growth rates, yielding 4.8%.	75	75	0	Add elk deterrent spray project: Plant Skydd 2016, 2017. 2.5 miles to be treated. No percent function improvement expected by 2018.	81	6	Using 15% proration for 2033, but experimental. Panel expected 6% uplift.	75		85	75	95		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)		4.2: Riparian Condition: LWD Recruitment	30.00%			75			75	0	EP examined OHaMP GIS data. Large wood recruitment layer was considered as a proxy for general riparian condition. Denominator was determined to be 6.2 miles, from Streamnet. Action: Small Wood and Pods Project (3 mile portion from North Fork upstream to Tanner Gulch). No change in function within this timeframe = 0% change.	75	0	No adjustment.	77.4	2.4	Half of the 10% proration for large wood vs. riparian vegetation, resulting in 2.4% uplift expected in 2033.	75	75	0	Add elk deterrent spray project: Plant Skydd 2016, 2017. 2.5 miles to be treated. No percent function improvement expected by 2018.	78	3	Used half of limiting factor 4.1 functional change.	75		85	75	95		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)		6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			85			85.5	0.5	3 miles treated with racking wood. See adjacent assessment unit (UGC5). See EP's table with proration; panel calculation determined 0.5% uplift.	85.5			85.5			85.5	85.5	0	No action.	85.5	0	No action.	85		90	85	95		
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)		7.2: Sediment Conditions: Increased Sediment Quantity	20.00%			60			60	0	No relevant actions in this time period. No change in %.	60	0	No adjustment.	64.8	4.8	Upstream roads and Tanner Gulch fire area are the main sediment sources, which will be dealt with in future. Calculations table prorated at 10%, so 4.8% uplift expected in 2033.	60	60	0	No action.	60	0	No action.	60.1		80	60.1	90	New TMP & significant rd. work will reduce sediments.	

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Look Back Updated 2033 Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward	Look Forward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			75			75	0	No actions in this assessment unit.	75			75			75	75	0	No action. No change expected.	75	0	No action. No change expected.	75		100	75	100	number of existing structures	Camp Cr Culvert & EF Indian Ck Culvert projects located in steelhead habitat so no benefits estimated for Chinook.
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%			65			65	0	No actions in this assessment unit.	65			65			65	65	0	No action. No change expected.	65	0	No action. No change expected.	65		75	65	85		Little Indian Ck. projects not located in CCC1 - no benefits estimated. NF Clark Ck not part of Chinook population. Not enough project information about USFS Riparian Mnce & Thinning to estimate benefits at this time.
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	4.2: Riparian Condition: LWD Recruitment	10.00%			65			65	0	No actions in this assessment unit.	65			65			65	65	0	No action. No change expected.	65	0	No action. No change expected.	65		65	65	70		
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	6.1: Channel Structure and Form: Bed and Channel Form	15.00%			65			65	0	No actions in this assessment unit.	65			65			65	65	0	No action. No change expected.	65	0	No action. No change expected.	65		70	65	75	change based on improving river processes	
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			65			65	0	No actions in this assessment unit.	65			65			65	65	0	No action. No change expected.	65	0	No action. No change expected.	65		75	65	85		Little Indian Ck. project not located in CCC1 - no benefits estimated.
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%			55			55	0	No actions in this assessment unit.	55			55			55	55	0	No action. No change expected.	55	0	No action. No change expected.	55		65	55	75		NF Clark Ck. not included in Chinook population - no benefits estimated.
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	8.1: Water Quality: Temperature	20.00%			60			60	0	No actions in this assessment unit.	60			60			60	60	0	No action. No change expected.	60	0	No action. No change expected.	60		60	60	65	benefits accrue from channel complexity actions	
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%			50			50	0	No actions in this assessment unit.	50			50			50	50	0	No action. No change expected.	50	0	No action. No change expected.	50		55	50	55		
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			0			0	0	No actions (steelhead actions did not affect Chinook); no change.	0			0			0	0	0	No actions.	0	0	No actions.	91		95	91	95	lower Willow Cr diversions; marginal Chinook habitat.	Passage issues above Huber project
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	2.1: Injury and Mortality: Predation	0.00%						0			0			0			0	0	0	No actions.	0	0	No actions.						small mouth bass; invasive spp noted, but impacts unknown	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%						0			0			0			0	0	0	No actions.	0	0	No actions.						altered food web-carp, panfish impacts unknown	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	4.1: Riparian Condition: Riparian Vegetation	10.00%			45			0	0	No actions (steelhead actions did not affect Chinook); no change.	45			45			45	45	0	No actions.	45	0	No actions.	45.1		50	46	60		ONLY 1.2 RIPARIAN MILES TREATED FROM WEST LEVEE SETBACK PROJECT CONSIDERED FOR ESTIMATE AT 2012 WORKSHOP. McKenzie Project not considered in estimate - in marginal Chinook habitat. Some upstream/downstream benefits. Primary improvements from West Levee Project.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	4.2: Riparian Condition: LWD Recruitment	10.00%			45			0	0	No actions (steelhead actions did not affect Chinook); no change.	45			45			45	45	0	No actions.	45	0	No actions.	45.1		45.1	45.2	50		WEST LEVEE PROJECT LARGE WOOD STRUCTURES & RIPARIAN PLANTING CONSIDERED IN ESTIMATE.. MCKENZIE PROJECT BENEFITS STEELHEAD ONLY.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%			20			20	0	No Chinook actions in this assessment unit.	20			20			20	20	0	No actions.	20	0	No actions.	21		35	21	40	High percentage levies; many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			20			20	0	No Chinook actions in this assessment unit.	20			20			20	20	0	No actions.	20	0	No actions.	21		30	21	35	many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			40			0	0	No actions steelhead actions did not affect Chinook); no change.	40			40			40	40	0	No actions.	40	0	No actions.	40.1		50	40.1	55	many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%			25			0	0	No actions (steelhead actions did not affect Chinook); no change.	25			25			25	25	0	No actions.	25	0	No actions.	30		35	30	40	REACH LENGTH >14 MILES (20 mi including Willow)	ESTIMATE BASED ON WEST LEVEE SETBACK PROJECT; DRY CREEK PROJECT NOT CONSIDERED IN 2012 WORKSHOP ESTIMATE.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			60			60	0	No Chinook actions in this assessment unit.	60			60			60	60	0	No actions.	60	0	No actions.	62		65	62	65	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	ESTIMATE BASED ON WEST LEVEE SETBACK PROJECT; DRY CREEK PROJECT NOT CONSIDERED IN 2012 WORKSHOP ESTIMATE.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	8.1: Water Quality: Temperature	10.00%			40			40	0	No Chinook actions in this assessment unit.	40			40			40	40	0	No actions.	40	0	No actions.	40		40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a chance in temp	ONLY WEST LEVEE PROJECT CONSIDERED FOR 2012 WORKSHOP ESTIMATE. DRY CREEK PROJECT NOT INCLUDED IN ESTIMATE AT THAT TIME & no temperature effects expected from water transactions.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	8.2: Water Quality: Oxygen	5.00%			40			40	0	No Chinook actions in this assessment unit.	40			40			40	40	0	No actions.	40	0	No actions.	40		45	40	45	Links to flow & temp	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	9.2: Water Quantity: Decreased Water Quantity	10.00%			40			40	0	No Chinook actions in this assessment unit.	40			40			40	40	0	No actions.	40	0	No actions.	40		45	40	45	m/s migration corridor; refugia @ mouths of tribs	Estimate assumes 3 cfs water transactions are not protected. Greater benefits if water is protected.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			90						90			90			90	90	0	No actions.	90	0	No actions.	90		100	90	100	Elmer	small diversions remain; Mill Cr. not a Chinook stream so no benefits. Mill Crk Project is located in CCC2b but benefits occur in CCC2C.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	2.1: Injury and Mortality: Predation	0.00%									0			0			0	0	0	No actions.	0	0	No actions.						small mouth bass; invasive spp noted, but impacts unknown	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%									0			0			0	0	0	No actions.	0	0	No actions.						altered food web-carp, panfish impacts unknown	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	4.1: Riparian Condition: Riparian Vegetation	10.00%			45						45			45			45	45	0	No actions.	45	0	No actions.	45.1		50	45.2	60		LITTLE EFFECT FROM WATER TRANSACTION PROJECTS; ESTIMATE BASED MOSTLY ON BOYD PROJECT
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	4.2: Riparian Condition: LWD Recruitment	10.00%			45						45			45			45	45	0	No actions.	45	0	No actions.	45.1		45.1	45.2	50		
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%			20						20			20			20	20	0	No actions.	20	0	No actions.	21		35	21	40	<25 percentage levies; many oxbows have been truncated	Estimate based on approx. 0.5 miles side channel enhancement from Wilson Wetland Project.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			40						40			40			40	40	0	No actions.	40	0	No actions.	41		50	41	55	many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			40						40			40			40	40	0	No actions.	40	0	No actions.	40.1		50	40.1	55	many oxbows have been truncated	

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Look Back Updated 2033 Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward	Look Forward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%			25						25			25			25	25	0	No actions.	25	0	No actions.	28		35	28	40		Estimate based on treatment of 0.75 miles in 15-20 MILES of reach needing treatment.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			50						50			50			50	50	0	No actions.	50	0	No actions.	50.1		55	50.1	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	8.1: Water Quality: Temperature	10.00%			40			40	0	Benefits from actions listed in LF 9.2 because not enough water, and solar radiation too high. Existing temperatures exceed 20 degrees between 81% and 100% days(20-22 deg C) so flow increases are insufficient to cause uplift. No uplift.	40			40			40	40	0	No actions.	40	0	No actions.	40		40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a change in temp	Estimate showing no improvement based on EP judgement that 3 CFS is not enough water to make a difference yet. If more water is secured over time then increments would be expected to improve temperature.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	8.2: Water Quality: Oxygen	5.00%			40						40			40			40	40	0	No actions.	40	0	No actions.	40		45	40	45	Links to flow & temp	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	9.2: Water Quantity: Decreased Water Quantity	10.00%			30			31.9	1.9	See EP's table of flow project(s), prorated at 100% for benefit to the assessment unit based on location of point of diversion. Davis to Mouth 0.76 cfs = 1.9% uplift. Chinook don't rear in this area in summer due to lack of suitable habitat, lack of access, temperatures, and lack of flow during the period when this water is added, but there are other ecological benefits to stream from this water. Currently dominated by non-natives and non-salmonids, but they are thought to have reared here in summer historically, so it is a potential rearing area. Current habitat suitability is zero, but may not see occupancy until some threshold is reached. We want to track incremental uplift toward that threshold from incremental flow additions. Not there yet, but with enough water, would eventally see occupancy benefits. Need to track incremental improvement in flow going forward. See steelhead discussion.	31.9			31.9			31.9	31.9	0	No actions.	31.9	0	No actions.	35		35	35	35	m/s migration corridor; refugia @ mouths of tribs	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			80			80.8	0.8	Panel examined steelhead actions in equivalent assessment unit, and adjusted as relevant to Chinook. Chinook use just the mainstem for winter rearing. Benefits include Little Creek Diversion project, which benefited passage for Chinook juveniles (1.5 miles of access). Are fish arriving via irrigation infrastructure? They are not overwintering in Little Creek, but use is not well understood here. Low densities seen. Prorated to 10% function. Denominator is 18.3 Chinook miles per Streamnet. See EP's table; results in 0.8% improvement.	80.8			80.8			80.8	80.8	0	No actions.	80.8	0	No actions.	90		95	90	95	undersized culvert on Ladd Cr, @ RM 1; numerous passage issues in Gekeler's Slough & Little Cr diversions	Estimate includes effects of Mill Ck Project, which is located in CCC2B but Mill Ck travels back into CCC2C upstream from diversion. Little Cr. diversions partially block juvenile access to about 3.4 miles (from mouth to Hwy) - each diversion abt. 1/2 mile apart.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	2.1: Injury and Mortality: Predation	0.00%									0			0			0	0	0	No actions.	0	0	No actions.						small mouth bass; invasive spp noted, but impacts unknown	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	3.2: Food: Food-Competition	0.00%									0			0			0	0	0	No actions.	0	0	No actions.						altered food web-carp, panfish impacts unknown	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	4.1: Riparian Condition: Riparian Vegetation	10.00%			45			45	0	CC Baum Restoration project. No change yet.	45		No adjustment.	45.1	0.1	For 2033, prorated at 10%, resulting in 0.1% uplift.	45	45	0	No actions.	45	0	No actions.	45.1		50	50	60		Conservative estimates due to uncertainty of implementation timing; AU is large area & these projects don't address everything.
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	4.2: Riparian Condition: LWD Recruitment	10.00%			45			45	0	CC Baum Restoration Project - Panel estimated a 0% improvement prorate factor for 0.25 miles treated for 1 project, as the vegetation has not matured enough to uplift limiting factor 4.1 or 4.2. 0% uplift.	45		No adjustment.	45.1	0.1	For 2033, prorated at 5%, resulting in 0.1% uplift.	45	45	0	No actions.	45	0	No actions.	45		45	45.5	50		Estimate considers projects under LF 4.1 that would provide some recruitment improvements in the longer term
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%			40			40.7	0.7	See EP's table. Adjustments for Chinook based on steelhead projects. 50% prorated improvement factor based on 0.25 mile treated under CC Baum project, resulting in 0.7% uplift using a denominator of 18.3 Chinook miles per Streamnet.	40.7			40.7			40.7	40.7	0	No actions.	40.7	0	No actions.	40.5		50	40.5	55	>75 percentage levies from Pyles to Godley Cr; many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			40			40.7	0.7	See EP's table. Adjustments for Chinook based on steelhead projects. Remove Hwy 203 project. 50% prorated improvement factor based on 0.25 miles treated under CC Baum project, resulting in 0.7% uplift using a denominator of 18.3 Chinook miles per Streamnet.	40.7			40.7			40.7	40.7	0	No actions.	40.7	0	No actions.	40.1		50	40.1	55	many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			40			40.1	0.1	CC Baum project. Panel estimated 5% prorated improvement factor based on 0.25 miles treated under CC Baum project, resulting in 0.1% uplift.	40.1			40.1			40.1	40.1	0	No actions.	40.1	0	No actions.	40.1		50	40.1	55	many oxbows have been truncated	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%			25			25.1	0.1	CC Baum project. Panel estimated 5% prorated improvement factor based on 0.25 miles treated under CC Baum project, resulting in 0.1% uplift.	25.1			25.1			25.1	25.1	0	Rearing habitat improvements are needed, but no actions planned now.	25.1	0		30		35	30	40		
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			50			50	0	No actions, no change.	50			50			50	50	0	No actions.	50	0	No actions.	50.1		55	50.2	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	8.1: Water Quality: Temperature	10.00%			40			40	0	No change. Benefits from actions listed in LF 9.2 because not enough water and solar radiation too high. Existing temperatures exceed 20 degrees between 81% and 100% days(20-22 deg C), so flow increases are insufficient to cause uplift. No uplift.	40			40			40	40	0	No change, as in Look Back.	40	0	No change, as in Look Back.	40.1		40.1	41	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a change in temp	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	8.2: Water Quality: Oxygen	0.00%			40						40			40			40	40	0	No actions.	40	0	No actions.	40		45	40	45	Links to flow & temp; decreasing concern progressing upstream- flow most important in this reach	
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	9.2: Water Quantity: Decreased Water Quantity	20.00%			30			32.5	2.5	Panel examined steelhead actions in equivalent assessment unit, and adjusted as relevant to Chinook. See EP's table of flow leases and weighting factors regarding length affected down to Davis Dam. This area is a huge summer rearing area for Chinook, although temperatures are in the low to mid 20s. 40-45% of all Catherine Creek summer rearing juveniles are seen here. Dispersal model shows much movement in first 10 days post fry emergence; they end up here. Every drop counts: benefit are seen from any increase in cfs. 2.8 cfs average annual flow benefit. Total calculation results in 2.5% uplift.	32.5		No adjustment.	32.5		No adjustment.	32.5	36.1	3.6	CCC2C calculations list is based on upstream flow projects lists, and modified based on location. Becker Little Creek easement now has become permanent transfer (0.21 cfs). With weightings, panel determined 3.6% uplift for 2018. [Need to verify Davis to Mouth info]	32.5		Some permanent leases in table, but renewal of others is unknown at this time. [3-27-16: After Panel was decided that 2033 flow estimates to be eliminated due to uncertainty in leases]	35		35	35	35	Overwinter habitat and m/s migration corridor; refugia @ mouths of tribs	Conservative estimate - assumes 3 cfs from water transactions.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%			95			95	0	No actions. No change in % function.	95			95			95	95	0	No actions.	95	0	No actions.	97		100	97	100	increased from 80 partial juvenile barrier at mouth of Pyles Ck	10th street diversion doesn't pass juveniles
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	4.1: Riparian Condition: Riparian Vegetation	6.50%			45			45	0	16 acres, 0.75 miles treated. Total steelhead/Chinook stream use (aka denominator for calculations) is 3.7 miles. Using Beechie et al. reference that 5-20 years of growth are needed for effectiveness, 0% prorated improvement factor, so no change at this time.	45	0	No adjustment.	48	3	Using 20% proration at 2033 gives a 4.1% uplift. But agreement is not for full period to 2033 (only till Dec 31, 2027), so we cannot assume benefit will continue for full period, especially with new landowner. With land management changes, we have seen function go down to 0% in other areas. EP was uncomfortable with speculating out to 2033, given uncertainites without permanent or longer-term easements. EP: Cannot project past 2027, given term of agreements. Adjusted proration to account for partial time period -- reduced by 5% to account for lack of full-term protection to 2033, resulting in 15% proration and 3% uplift.	45	45	0	CC38 fish habitat enhancement project planned for 2017: 1,600 ft. (0.32 miles). No functional uplift expected in 2018.	46.3	1.3	Prorated growth to 2033, resulting in 1.3% uplift.	46		47	55	60		Estimate based on abt. 3.5 miles riparian treatment
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	4.2: Riparian Condition: LWD Recruitment	6.50%			45			45	0	16 acres, 0.75 miles treated. Total steelhead/Chinook stream use (aka denominator for calculations) is 3.7 miles. Using Beechie et al. reference that 5-20 years of growth are needed for effectiveness, 0% prorated improvement factor, so no change at this time.	45	0	No adjustment.		1.5	Using 7% proration out to 2033 (half of that for limiting factor 4.1) gives an uplift of 1.5%.	45	45	0	No functional uplift in 2018.	45.7	0.7	Used half of limiting factor 4.1 proration.	45.1		45.1	46	60		Estimate considers that improvements from LF 4.1 projects.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%			20			22.2	2.2	0.75 miles treated, resulting in 2.2% uplift. Panel used an 11% peripheral habitat ratio as the 11% function improvement prorating factor.	22.2						22.2	23	0.8	CC38 fish habitat enhancement project planned for 2017.	23.1	0.9	Prorated change out to 2033.	25		30	30	35	Potential upstream of Union (confined and semi-confined reaches); less below Union (unconfined)	CC-37, 38 & 39 PROJECTS PROVIDE CHANNEL ADDITION AND WETLAND CONNECTION;

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Look Back Updated 2033 Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward	Look Forward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			20			22.1	2.1	0.75 miles treated. Main channel was oversized due to flood concerns, which reduced floodplain connection. Thus panel used a small percent improvement factor -- 25%, resulting in an uplift of 5.1%.	22.1						22.1	22.2	0.1	CC38 fish habitat enhancement project planned for 2017: 100 feet of side channel, resulting in 0.1% uplift	22.3	0.2	Prorated change out to 2033.	25		30	30	35		implementation planned for CC 37 in 2012, CC 36 in 2014, 38 & 39 in 2015/16.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			40			48.1	8.1	Sinuosity and width to depth ratio from ChaMP, design criteria, and historical reference used to arrive at 40% improvement. Design sinuosity = 1.1-1.45. Historic baseline was 2.2-2.4. W/D reduced from 22.6 to 18.6 at bankfull. Using 0.75 miles treated and prorate factor 40 percent, panel determined uplift of 8.1%.	48.1						48.1	49	0.9	CC38 fish habitat enhancement project planned for 2017: 1,197 feet to be treated, resulting in 0.9% uplift.	49	0.9	Same as for 2018	45		45	50	50	33% of channel within Union ; 67%: downstream of Union; channelized throughout reach	
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%			45			50.1	5.1	There are 13 wood complexes and 81 key members. CHaMP data indicates large wood piece frequency went from 13.4 (pre-project) to 14 (post-project) pieces per 100 meters in bankfull channel. Compared 14 logs (of which 50% were buried and were not providing complexity) per 100 meters to target value of 18 pieces per 100 meters for the Minam River. Many of the structures do not mimic natural wood accumulations. In addition, the 39 percent was adjusted downward further due to recent research showing engineered structures oftentimes don't have fish response of natural structures. Panel determine percent improvement to be 25 percent, resulting in 5.1 percent uplift.	50.1						50.1	56.9	6.8	CC38 fish habitat enhancement project planned for 2017: will end up with 21 pieces per 100 meters in 7 complexes and 8 smaller 2-3 log apex jams (compare to 27 pieces as properly functioning condition; most of Catherine Creek only has 5 pieces per 100 m). Panel expected 6.8% uplift.		6.8	Same as for 2018	60		65	60	80		
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%			40			45.7	5.7	See UGS10A, adjusted for Chinook use. See EP's table for CCC3b. Temperatures preclude spawing. Project included bank stabilization, so there was some immediate benefit. There was a reduction in bank height as well. Project treated 1,125 lineal feet of eroding bank, which is 28% of the 0.75 mile treated. This results in an uplift of 5.7%.	45.7		No adjustment.		7.7	Added 10% additional proration for 2033 (total proration 38% prorate), giving a 7.7% uplift.	45.7	48.1	2.4	CC38 fish habitat enhancement project planned for 2017: expected to benefit sediment. For 2018, improvement prorated at 28%; for 2033, at 36%, resulting in 2.4% uplift for 2018 and 3.1% uplift for 2033.		3.1		42.5		45	46	50		
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	8.1: Water Quality: Temperature	15.00%			20			20	0	100 percent of summer days (July 20 to Aug 31st) have been in exceedence of 20 degree C, which precludes spawning. Background temperatures are too hot for flow increases to have measurable effect. Thus, no uplift identified.	20						20	20	0	No uplift expected, as per Look Back rationale.		0	No uplift expected, as per Look Back rationale.	21		41	23	42	lower third temp limited;	Estimate considers benefits from CC-44 & other upstream projects plus conservative assumption of 3 cfs for upstream water transactions.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	8.2: Water Quality: Oxygen	0.00%									0						0	0	0	No actions.		0	No actions.						Associated w/flow/temp; non-point sources need more info to quantify	
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	8.4: Water Quality: Turbidity	0.00%									0						0	0	0	No actions.		0	No actions.						Point discharge between RM 38-39; need more info to quantify impact	
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	9.2: Water Quantity: Decreased Water Quantity	20.00%			20			25	5	Nine lease projects considered, with an average of 1.64 cfs and various weightings. After weighting, panel calculated 1.5 cfs average annual flow benefit. Estimated baseflow was 30 cfs. ODFW instream flow target is 30 cfs and 95% exceedance flow is 25 cfs. Total uplift was calculated using average 1.5 cfs divided by 30 cfs baseflow, resulting in 5.0% uplift.	25		No adjustment.			No adjustment.	25	34.3	9.3	Same project calculation and proration structure as for Look Back. Calculations table lists flow lease projects, which includes applicable upstream AU projects. It accounts for lease years and permanent water acquisitions. Most flow projects measured at Davis Dam. [NEED TO ASK FRESHWATER TRUST RE: "LEASING GENERAL RM 15-11" ~ GRCC Malmberg" DETAILS] After weighting, yields 9.3% uplift.			Cannot predict to 2033 at this point.	40		50	40	55	Many Diversions in this reach, base flow is about 5 cfs	Conservative estimate based on 3 cfs.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%			95			102.3	7.3	See UGS10B notes, adjusted for Chinook use. See EP's table for CCC3B. CC44 project consisted of 10.5 miles of new/improved access. Denominator mileage was determined to be 14.4 miles. Barrier to juvenile upstream migration depended on seasonal push-up dam timing (June-Sept). Downstream migration was seen before project occurred. Uplift was prorated as 10% functional value. Calculated total uplift is 7.3%. Note: Low Bookend is too high, as 3 other barriers are still to be removed, including Kinsley; upcoming review of passage at state ditch downstream of CC44.							0	43.1	43.1	Add Catherine Creek Adult Weir 2018 project: Year-round barrier to juveniles 50% prorated; 12.4 miles; resulting in 43.1% uplift expected.		43.1		98		100	98	100	one diversion structure ~ rm 41 impedes juvenile movement; reach is summer/winter rearing & spawning habitat	5 pushup dams/diversions are barriers, esp. during low flow; 6 water right holders; only 1 remaining known barrier (private pushup) after this project;
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	4.1: Riparian Condition: Riparian Vegetation	6.50%			60			60	0	See UGS10B notes, which are adjusted for Chinook use. See EP's table for CCC3B. Panel considered CC44 Project Phase 1 (666 plants at wood sites: 1,400 lineal feet) and Phase 2 (11,119 plants and fencing along 1.13 miles). No woody vegeration yet in exclusion fencing areas and 2 CRP projects (included due to action agency nexus -- BPA contract to Asotin County in PISCES. Link to Model Watershed? Was it completed?). No functional effect yet. Little Catherine Rivermile 28/Milk Creek/Pinship Fencing and Planting consisted of 18.63 acres of riparian fencing, planting, acquisition (assume 1.8 miles, if 35 feet on each side). See EP's table of projects and percentage of current function. Plantings are too young, so no uplift at this time. Note: Count Phase 3 in Look Fwd.		0	No adjustment.	1.9	1.9	Using 20% proration in calculation table gives 1.9% uplift.	0	0	0	Remove CCC38 (wrong location). Calculations table has projects and prorations: CC44 Phase 4 2016, Hall Ranch 2017 (side channel and mainstem), Southern Cross. No functional change for 2018.		3.1	Prorated for 2033 vegetation growth.	61		65	67	75		Hall Ranch & CC44 projects would address about 1/2 of reach. Slow growth makes 2018 Hi bookend difficult to achieve
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	4.2: Riparian Condition: LWD Recruitment	6.50%			60			60	0	No percentage change for same reasons as mentioned for limiting factor 4.1		0	No adjustment.	1	1	Using 10% proration in calculation table gives 1% uplift.	0	0	0	Calculations table has projects and prorations: CC44 Phase 4 2016, Hall Ranch 2017 (side channel and mainstem), Southern Cross. No functional change for 2018.		1.6	Used half of limiting factor 4.1 proration.	60		60	61	70		Estimate considers long term recruitment improvement from 4.1 LF projects.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%			65			71.3	6.3	See EP's table. Rated value based on current percentage of Properly Functioning Condition rather than using portion of total length treated. For phases 1-3 of CC44 project (See limiting factor 6.2 project description) side channel work was contrained by landowner. Fish use of Side Channel #3 was seen immediately. Phase 1 treated 862 feet, currently at 5% of PFC. Phase 2 treated 5,961 feet (1.13 miles). Phase 3 is rated at 50% current function (0.66 mile treated; 60% of channel length). This a more forested reach. Historical imagery indicated many beaver and side channels. Total prorated functional change resulted uplift of 6.3%							0	16.9	16.9	Calculations table has 4 projects and prorations. Hall is unconfined, so 1:1 main to side channel benefit. Immediate benefit in 2018 period is 16.9% uplift for 2018 and 2033.		16.9		66		70	66	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.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			65			71.9	6.9	See EP's table. For CC44 project phases 1-3, rated value based on current percentage of Properly Functioning Condition rather than using the portion of total length treated. Phase 1 (0%), Phase 2 already enhanced low spots in floodplain (0%), and Phase 3: oversized for landowner concern, so only activated at higher flows, which reduces biological value, but side channels increase floodplain complexity (10%). Uplift was determined to be 6.9%.							0	9.2	9.2	Calculations table is based on limiting factor 5.1: removed CC44. Adjusted length for main channel (same as riparian length). Same uplift for both time periods -- 9.2%.		9.2		66		70	66	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Conservative estimate due to uncertain designs, etc.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			60			63.6	3.6	Panel considered CC44 phases 1-3, with prorate factors of 8, 10, and 60 percent, respectively. Rated value based on current percentage of Properly Functioning Condition or portion of total length treated. Phase 1: bank stability and gravel sorting 850 feet spread over almost 2 miles (8% factor). Phase 2, including roughened channel had a prorate factor of 10%. Phase 3 considered width to depth ratio improvement. Tight radius pools also added improvement. 1.95 miles were treated, resulting in an uplift of 3.6%.							0	9.6	9.6	Same projects as for limiting factor 5.1 in calculations table. Prorated based on form changes expected by 2018, resulting in 9.6% change expected.		9.6	Same as for 2018	62		70	63	75		Conservative estimates due to uncertain designs, etc.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%			60			66.9	6.9	Panel considered CC44 phases 1-3. Phase 1 (2013) was wood placement and side channels only, on Kerbie, Fite, and Smith properties (6+5=11) large wood complexes, 862 feet of main channel, 546 feet of side channel including alcoves); 802 pieces added to 1,408 ft (262 m) including side channels, which equals 300 pieces per 100 m, even if caculation uses entire reach length above Properly Functioning Condition wood density (27 pieces per 100 m reference condition). Phase 2 consisted of 970 pieces over 1,870 feet at Kirby and Fite, 29 large wood complexes, 1 side channel built (421 feet long), 2 alcoves built, and roughened channel at new intake. Phase 3 in 2015 wa on Smith property and is still underway: 56 wood structures, 0.66 miles, 2,113 feet of side channel, and 5 alcoves. But phases are overlapping, so recalculation with all wood phases lumped results in 2 miles (3,200 meters) total treatment, [1,772 [Phase 1 and Phase 2] + Phase 3 = over 100 pieces per 100 meters, which is well over the 27 pierces per 100 meters Properly Functioning Condition reference from Little Minam River. But note that up to 40 pieces per 100 m is seen in reaches upstream, and configurations may differ from natural (e.g., channel-spanning jams, key vs. other smaller wood). Panel prorated percent function to 50% based on how many pieces were in the channel vs being embeded. Note that some (e.g. Phase 2), large wood was for bank stabilization rather than instream habitat structures. Phases 1 (apex jams) and 3 have more of a fish habitat aim focus. Side channel wood additions benefit winter rearing more than summer rearing. But this does not change value because population life history phase bottleneck has not been identified. This reach is in transition for water temperatures. It has high temperatures, but is still used. Snorkel surveys have seen fish use associated with even single wood pieces. Denominator was set at 23 miles. Total calculated uplift seemed high to EP, so adjusted proration to account for large piece configuration type as it affected Properly Functioning Condition (50% of pieces). Final total uplift was determined to be 6.9%.							0	20.2	20.2	Calculations table has 4 projects. Proration based on percentage of Properly Functioning Condition (27 pieces per 100 m). Hall: 30 pieces per 100 m. Panel expects 20.2% uplift in 2018 and 2033.		20.2	Same as for 2018	65		70	65	75		7 of 9 miles treated; conservative estimate due to uncertainty of design
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			60			68.6	8.6	See EP's table and other limiting factor discussion notes. Rated values based on current percentage of Properly Functioning Condition. Project CC44 projects considered: Phase 1 bank stability work (100% of length stabilized); Phase 2: 80% of project length stabilized; Phase 3: 80% of project length stabilized. Uplift was calculated at 8.6%.		8.6	See calculations table changes.		9.8	See calculations table changes.	0	4.1	4.1	Low spawning habitat quality above Ricker (embedded). Planting projects: no benefit in 2018, but instream projects will aid sorting of substrates. In 2018 panel expects 4.1% uplift and in 2033, 6.4% uplift.		6.4		61		65	63	75		conservative estimate due to uncertain designs
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	8.1: Water Quality: Temperature	10.00%			60			60	0	57% of days from July 20 to Aug 31 are in exceedance of 20 degrees C (based on CHaMP data). It is cooler upstream of this assessment unit, but there is a lot of solar radiation warming as water flows downstream to this assessment unit. No uplift identified.							0	0	0	No benefit from flow projects, as per Look Back rationale, but riparian projects and channel form changes will benefit temperature, especially from forks down to Union. 3.5 degrees C would be expected if all 14 miles were treated (from C. Justice results), so 0.5 degree expected from these actions. Calculations table yields 0% change in 2018.		0.9	2033 calculations table proration for riparian vegetation growth indicates 0.9% uplift.	60.1		65	61	75	upper 2/3 in good condition	

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	2012-2015 Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Look Back Updated 2033 Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments / Rationale	Updated 2033 Estimate (2016 Look Forward	Look Forward Updated 2033 Estimate % Change	Updated 2033 Estimate Comments/Rationale (2016 Look Forward)	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	2012 Estimates Comments
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	9.2: Water Quantity: Decreased Water Quantity	20.00%			40			42.8	2.8	See EP's table of instream flow leases and term dates. Include upstream projects if relevant. Cross-checked Freshwater Trust list of flow projects (used "final order rate at point of diversion" cfs, which accounted for loss rate vs. 10th Street measurements). Four projects are listed in the table – two Ricker leases (0.39 and 0.33 cfs, one is TLT), Southern Cross Forbearance 1.075 cfs, and Glen Smith Full 0.22 cfs. Schubert at 0.22 cfs (same as "downstream" project) was not included. Panel discussed merits of adjusting proration/weightings for each project using percentage of total assessment unit stream mileage benefiting from these flows (location of point of diversion re: SH usable area and portion of AU), water right seniority, and "instream dates." However, panel decided to weigh at 100% due to point of diversion location in assessment unit. Full diversion data set is not ready to use as it is not yet QA/QC'd. Total average was 0.84 cfs. Used 30 cfs as baseflow denominator. Total uplift after weighting = 2.8%. Note: CC44 flow benefits will need to be included in Look Forward, but on-farm water conservation conversion on Smith property does not result in official instream water right benefit, so it is difficult to track fish benefit from water left in stream.			Filled in water lease information in calculations table for 2016-2018 durations, then decided to move these years to the Look Fwd. Panel determined 2.8% uplift for 2018 and 2033.				0	1.6	1.6	Same project calculation and proration structure as for Look Back: Calculations table lists flow lease projects, which includes applicable upstream AU projects. Accounts for lease years and permanent water acquisitions. Prorated based primarily on location of point of diversion. Yields 1.6% uplift.			Cannot predict to 2033 at this point.	50		50	50	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)
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%			45			45	0	No Chinook actions in this assessment unit.	45			45			45	45	0	No actions.	#REF!	0	No actions.	45		50	45	70		
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	4.2: Riparian Condition: LWD Recruitment	5.00%			45			45	0	No Chinook actions in this assessment unit.	45			45			45	45	0	No actions.	#REF!	0	No actions.	45		50	45	70		
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%			45			45	0	No Chinook actions in this assessment unit.	45			45			45	45	0	No actions.	#REF!	0	No actions.	45		65	45	70		
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%			60			60	0	No Chinook actions in this assessment unit.	60			60			60	60	0	No actions.	#REF!	0	No actions.	60		65	60	70		
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	8.1: Water Quality: Temperature	15.00%			50			50	0	No Chinook actions in this assessment unit.	50			50			50	50	0	No actions.	#REF!	0	No actions.	50		52	50	60		
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%			40			40	0	No Chinook actions in this assessment unit.	40			40			40	40	0	No actions.	#REF!	0	No actions.	40		41	40	41	minimal withdrawals on L. Cath (timber harvest, grazing)	
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			95			98.4	3.4	See equivalent steelhead assessment unit notes, adjusted for Chinook domain. Not much spawing seen in upstream areas. Rearing is limited in this assessment unit. Use 2 miles as benefit from North Fork Catherine Creek Ford, Densomiator is 14.7 miles, resulting in 3.4% uplift.							0	25	25	Benefit from downstream Adult Weir project.		25	Same as for 2018.	100		100	100	100		Estimate assumes 2 miles improved access from N FK Catherine Ck Ford Project; last remaining barrier for Chinook
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	4.1: Riparian Condition: Riparian Vegetation	10.00%			80			80	0	Too soon to see functional uplift. No change in percentage.			No adjustment.		7.5	Using 20% proration for 2033 results in 7.5% uplift.	0	0	0	No actions.		0	No actions.	80		90	80	95		Not enough info about USFS Project to estimate benefits at 2012 EP Workshop
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	4.2: Riparian Condition: LWD Recruitment	10.00%			80			80	0	Too soon to see functional uplift. No change in percentage.			No adjustment.		3.7	Using 10% proration for 2033 results in 3.7% uplift.	0	0	0	No actions.		0	No actions.	80		90	80	95		
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%			80			89.2	9.2	See equivalent steelhead assessment unit notes, adjusted for Chinook domain. No Chinook use in Corrall Creek, so this project was removed for Chinook. Uplift determined to be 9.2%.							0	0	0	No actions.		0	No actions.	80		90	80	95		
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%			70			85.3	15.3	See equivalent steelhead assessment unit notes, adjusted for Chinook domain. Add 4.5 mile South Fork Catherine Creek road decommision action to Chinook for limiting factor 7.2. This is an important area compared to rest of the assessment unit stream miles, one of the few unconfined reaches per River Styles valley assessment. The Collins Cek diversion is still a major sediment problem (greater than 15% issue). Therefore proration was determined to be 50% of the 4.5 miles, resulting in a 15.3% total uplift. Note: Need to adjust bookend downward in next Look Forward.			No adjustment		18.4	For 2033, added 10% proration, resulting in 18.4% uplift.	0	0	0	No actions.		0	No actions.	70		85	70	95		NOT ENOUGH PROJECT INFO TO ESTIMATE BENEFITS AT 2012 WORKSHOP
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	8.1: Water Quality: Temperature	10.00%			80			80	0	No action; no change. Temperatures are at Properly Functioning Condition now.							0	0	0	No actions.		0	No actions.	80		90	80	95		
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	9.2: Water Quantity: Decreased Water Quantity	10.00%			85			85	0	No action; no change. Hope to address inter-basin transfers in future.							0	0	0	No actions.		0	No actions.	85		90	85	90		NOT ENOUGH PROJECT INFO TO ESTIMATE BENEFITS AT 2012 WORKSHOP