NOTES:

This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Back** process covering the **2012-2015** work window for Chinook.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	East Fork Salmon River	EFC1	EF Salmon River	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	90	90	90		94	95		No actions during the 2012-2015 period addressed this limiting factor, therefore there was no change. EWL 2/1/16
Snake River Spring/Summer Chinook	East Fork Salmon River	EFC1	EF Salmon River	2.3: Injury and Mortality: Mechanical Injury	10.00%	70	70	70		85	90		No actions during the 2012-2015 period addressed this limiting factor, therefore there was no change. EWL 2/1/16
Snake River Spring/Summer Chinook	East Fork Salmon River	EFC1	EF Salmon River	4.1: Riparian Condition: Riparian Vegetation	25.00%	60	60	60.03		60	90		East Fork Fence was 0.8 mi and improved function 3% (therefore the realized change was 0.024 miles). Used 92.7 streamnet Chinook miles as denominator therefore uplift = 0.03% (0.024/92.7). EWL 2/1/16
Snake River Spring/Summer Chinook	East Fork Salmon River	EFC1	EF Salmon River	6.1: Channel Structure and Form: Bed and Channel Form	25.00%	50	50	50		53	65		No actions during the 2012-2015 period addressed this limiting factor, therefore there was no change. EWL 2/1/16
Snake River Spring/Summer Chinook	East Fork Salmon River	EFC1	EF Salmon River	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	71	71	71		71	80	No known nutrient problem.	No actions during the 2012-2015 period addressed this limiting factor, therefore there was no change. EWL 2/1/16
Snake River Spring/Summer Chinook	East Fork Salmon River	EFC1	EF Salmon River	9.2: Water Quantity: Decreased Water Quantity	15.00%	70	70	70		71	80	cold water, 50 cfs diversions 1/3 of base flow	No actions during the 2012-2015 period addressed this limiting factor, therefore there was no change. EWL 2/1/16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	1.1: Habitat Quantity: Anthropogenic Barriers	15.00%	90	90	90		90	100		2012: high in drainage- no effect on chinook; effect on steelhead 2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	2.3: Injury and Mortality: Mechanical Injury	15.00%	50	50	50		50	80	stranding	2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60		60.5	80		2012: influenced by flow LF action 2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	60	60	60		60	80		2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	8.1: Water Quality: Temperature	10.00%	60	60	60		60.1	90		2012: influenced by flow LF action 2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	9.2: Water Quantity: Decreased Water Quantity	35.00%	22	22	22		23	30		2012: lower challis chinook rearing 2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC2	Iron Creek	4.1: Riparian Condition: Riparian Vegetation	50.00%	80	80	80		80	90		2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC2	Iron Creek	9.2: Water Quantity: Decreased Water Quantity	50.00%	70	70	70		70	90		2015: No actions during 2012-2015 period, therefore no benefit. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	4.1: Riparian Condition: Riparian Vegetation	30.00%	50	50	50.3		50	80		2012: Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012 2015: Miles of treatment were adjusted to consider the functional value of the project to date. For example, the two Cole Ranch projects: Riparian fencing 1.96 mi and 0.09 mi planting actions (protection and active treatment) were assessed differentially across the 2.05 miles of treatment: 20% for fencing; 3% for planting. Treatment miles were adjusted for functional improvement and those values were summed=0.3947 of currently functionally improved miles. Taken across the 145 Chinook miles in the Assessment Unit (NOAA Streamnet) there was a 0.3% uplift (0.3947/145*100). EWL 2/4/16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	40.00%	50	50	50		50	65		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012 2015: Expert Panel did not attribute any actions to uplift for this Limiting Factor. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	40	40	40.3		40	50		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012 2015: Expert Panel duplicated calculations from 4.1 (riparian vegetation) because they believe the extent of establishment of vegetation on the stream banks will stabilize them and reduce stream sedimentation. Miles of treatment were adjusted to consider the functional value of the project to date. For example, the two Cole Ranch projects: Riparian fencing 1.96 mi and 0.09 mi planting actions (protection and active treatment) were assessed differentially across the 2.05 miles of treatment: 20% for fencing; 3% for planting. Treatment miles were adjusted for functional improvement and those values were summed=0.3947 of currently functionally improved miles. Taken across the 145 Chinook miles in the Assessment Unit (NOAA Streamnet) there was a 0.3% uplift (0.3947/145*100). EWL 2/4/16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	8.1: Water Quality: Temperature	15.00%	50	50	50		50	80		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012 2015: No actions undertaken during 2012-2015 that could be attributed to this limiting factor. Therefore, there was no change from the Low bookend. EWL 1.16.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	1.1: Habitat Quantity: Anthropogenic Barriers	15.00%	60	60	60		60	100		2012: assess improvement in 2015 2015: No actions occurred during 2012-2015 period, therefore no uplift for this Limiting Factor. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	2.3: Injury and Mortality: Mechanical Injury	10.00%	50	50	50		50	80		2015: No actions occurred during 2012-2015 period, therefore no uplift for this Limiting Factor. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	58	58	58		58	70		2015: No actions occurred during 2012-2015 period, therefore no uplift for this Limiting Factor. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	60	60	60		60	75		2015: No actions occurred during 2012-2015 period, therefore no uplift for this Limiting Factor. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	8.1: Water Quality: Temperature	15.00%	60	60	62.2		60	90		2015: Expert Panel assumes that temperature improvements are a function of improvements to riparian vegetation (=0%) and instream flow (2.2%) the sum of which is 2.2%. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	9.2: Water Quantity: Decreased Water Quantity	30.00%	65	65	67.2		65	85		2015: Expert Panel checked flow amounts and both flow and benefit locations for projects, to take into account downstream benefits. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. For this assessment unit, all the leases during 2012-2015 were annual. To calculate the benefit to this Limiting Factor, the Panel assessed cfs of water leases for the 2012-2015 period (=1 cfs) relative to the summation of all water right diversions in the assessment unit = 44.8 cfs (from IDWR Morgan Case). = 2.2% uplift. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	4.1: Riparian Condition: Riparian Vegetation	20.00%	30	30	30		30	60		2015: no actions undertaken during 2012-2015, therefore no uplift. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	60	60	60		60	80		2015: no actions undertaken during 2012-2015, therefore no uplift. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	8.1: Water Quality: Temperature	20.00%	20	20	20		20	40		2015: no actions undertaken during 2012-2015, therefore no uplift. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	9.2: Water Quantity: Decreased Water Quantity	50.00%	20	20	20		20	50		2015: no actions undertaken during 2012-2015, therefore no uplift. EWL 1.15.16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	25	30	36.8		30	80		2015: Total Chinook miles in Streamnet = 53.3, which Expert Panel confirmed as the denominator. Expert Panel discussed each project, and assigned or confirmed distances based on miles made accessible. Poison Cr. 1.6 mi, Bayhorse 1 mi (steep, so use 1 mi Chinook extent only, prev # was 7 mi), Garden 1.2m Lyon 1.5 mi, Cow Cr 2/3 Diversion 1 mi (for Chinook). Total opened access= 6.3mi = 11.8 % uplift. EWL 1/15/16
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	2.3: Injury and Mortality: Mechanical Injury	20.00%	25	27.5	31.8		27.5	80	stranding	2012: rate cow ck in 2015 (completed in 7/12) 2015: Expert Panel used design flow of screens installed during 2012-2015 (=19.79 cfs) to calculate improvement relative to total diversions in the Assessment Unit (the denominator; from IDWR Morgan Chase= 291 cfs. Therefore, 19.79cfs/291cfs*100= 6.8% uplift. EWL 1/15/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	40	40	40.03		41	60		2015: Expert Panel calculated miles of improvement and adjusted treatment miles based on the % current function of each project in relation to Proper Functioning Condition. Expert panel assumed that both sides on Lyon were covered = 0.75 mi. 0.04% uplift. EWL 1.15.16 3.23.16 - 2018 updated modified by EWL based on input from Karma - EP. Changed from 40.04 to 40.03
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	50	50	50.04		50.2	65		2012: Influenced by riparian LF actions 2015: Expert Panel assumes riparian projects benefit this limiting factor as a result of bank stabilization resulting reduced stream bank erosion.. Miles of riparian treatment were adjusted to tak into account the lag time for vegetative growth and the current relative improvement from the vegetation projects. Therefore 0.0225 miles of treatment were assessed over 53.3 miles of stream used by Chinook (Streamnet) = 0.04% uplift. EWL 1.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	9.2: Water Quantity: Decreased Water Quantity	40.00%	20	20.5	25.1		20.5	45		2012: influenced by cow ck consolidation (screen LF) 2015: Expert Panel considered flow amounts and both flow and benefit locations for projects, to take into account downstream benefits. Didn't count fish screens. The improvements to this limiting factor (i.e., the numerator in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases (= 14.43 cfs). Assessed across all water right diversion in the Assessment Unit = 291 cfs (Morgan Case,IDWR, summation of diversions), improvements toward this limiting factor = 5.1%. EWL 1/15/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	20	30	54.4		30	50		2012: 56.9 mi of access-most actions improve access to next upstream barrier-not quite half way to 50% high bookend-Some projects high value, some slightly less value. Much more to 2015: Considered using Chinook Streamnet miles=32, but doesn't include Agency Creek used by Chinook, so instead used 56.9 (from 2012), rounded 60 to as denominator. Added SCC-03 project to Taurus, summed all Hawley and 18 mile projects as per Taurus (modified after the Lookback meeting, to reflect 7 projects not considered). Estimated tributary miles opened in 2012-2015 period= 29.53 mi. out of 60 mi=49% uplift. Expert Panel recognizes not all tributaries are equal habitat value. ISEMP sampling includes current distribution of juvenile Chinook, plus newly opened access. 2012 estimate used 56.9 mi of access, which might be similar to sum of intrinsic potential in the Assessment Unit, but does not include short lengths of lower section of many tributaries.. EWL 2/2/16. On 3.22.16, during the Expert Panel lookforward, they re-calculated the Chinook bearing stream miles in the assessment unit = 85.9 miles

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	2.3: Injury and Mortality: Mechanical Injury	15.00%	20	23	26.8		23	50		2012:need to treat many more unscreened diversion in Hawley, Big Timber, Freeman, Carmen, Fourth of July, Texas 18-mile. 2015: Two types of screen projects: replacements vs new installs. New screens have more benefit than replacements. Also should consider screen location. Because old screens probably never got credit, counted all the same and use cfs.Ten screening projects = 75.92 cfs, but then removed Bohannon because its not in the Assessment Unit. Therefore, 9 projects totaling 64.9 cfs were considered relative to the total tributary diversions, which is equal to the difference between total diversions on Lemhi (1500 cfs, Donato, 1998, page 11) and the mainstem tributaries (750 cfs), plus 200 cfs for Carmen Cr, Tower, and 4th of July Creeks, plus main Salmon River (=950 cfs). When flow data wasn't available in Donato 1998, used flow data from IDWR. Estimate was revised several times during the Lookback conversation. Uplift for this limiting factor = 64.9cfs/950 cfs=6.8%. EWL 2/2/16 .

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	4.1: Riparian Condition: Riparian Vegetation	5.00%	80	80.5	80.8		83	90	changed from 40/65% to reflect current function for entire AU, 8/8/12	2012: included value from the water quantity projects in 2018 estimate. 2015: Some tributary projects areas left water gaps in fence for now, so not effective yet, and Kenny Cr. trough projects should not be considered. Some work element details need to be added or checked. Fence projects expansion at Lower Little Springs should be applied to both LF 4.1 and 6.1 as work element = install fence (0.4 miles). Two Lee Cr projects (2013 Big Eight Mile 1.5 mi and SBT 1.5 mi. and Upper Little Springs Channel Complexity Trout Unlimited projects should be 1.2 miles of fence install. Expert Panel created an xls table with 4 actions= 4.6 miles treated out of 60 miles; and adjusted each project for % improvement over pre-projects conditions = 1.2% improvement. Pratt Creek Ranch TNC should be put on Lookforward list. EWL 2/2/16 During March 2016 look forward process, the panel modified the total Chinook bearing stream miles for this assessment unit. Therefore, the calculation for each limiting factor using total stream miles to calculate improvement changed. .7 miles treated over 85.9 Chinook bearing stream

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5.00%	75	75.2	76.6		75.5	80	areas in watershed lower in tribs are most productive to anadromous fish	2012: all riparian and flow projects are interrelated to floodplain condition and contribute to this LF. 2015: Added miles of treatment for two projects that were initially reported for other Limiting Factors (1.2 miles) relative to Chinook miles based on 2012 plan (60 miles). Therefore uplift = 2.3%. EWL 2/2/16 During March 2016 look forward process, the panel modified the total Chinook bearing stream miles for this assessment unit. Therefore, the calculation for each limiting factor using total stream miles to calculate improvement changed. 1.4 miles treated over 85.9 Chinook bearing stream miles = 1.6% improvement for this limiting factor. EWW 6.15.16
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	75	75.3	78		75.5	80	areas in watershed lower in tribs are most productive to anadromous fish	2012:~2.5 mi improvement in important areas; incorporates delayed benefits from riparian, floodplain projects. Understanding of this LF will evolve w/ greater recognition of dynamics and experience on effects of treatments. 2015: Three projects considered for improvement for this limiting factor for a total of 2.6 miles treated relative to 60 miles in the Assessment Unit for a 4.3 % uplift. EWL 2/2/16 During March 2016 look forward process, the panel modified the total Chinook bearing stream miles for this assessment unit. Therefore, the calculation for each limiting factor using total stream miles to calculate improvement changed. 2.6 miles treated over 85.9 Chinook bearing stream miles = 3.0% improvement for this limiting factor. EWW 6.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	6.2: Channel Structure and Form: Instream Structural Complexity	5.00%	75	75.3	78		75.5	80	areas in watershed lower in tribs are most productive to anadromous fish	2012: closely related to 6.1 2015: Three actions treated 2.6 miles relative to the 60 miles in the Assessment Unit for a 4.3% uplift. EWL 2/2/16. During March 2016 look forward process, the panel modified the total Chinook bearing stream miles for this assessment unit. Therefore, the calculation for each limiting factor using total stream miles to calculate improvement changed. 2.6 miles treated over 85.9 Chinook bearing stream miles =3.0% improvement for this limiting factor. EWW 6.15.16
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50.5	50.8		51	60	2015: Expert Panel suggest this limiting factor weight of 5% is too low. To be discussed further at lookforward. EWL 2/2/16	2012: riparian and bed & channel form projects contribute to estimate. 2015: Kenny Trough was removed from consideration. Expert Panel used the four riparian fencing actions from LF 4.1, as they benefited sediment variables. The miles treated was adjusted for % improvement since installation (as per limiting factor 4.1). Therefore, the uplift of 1.2% considered miles of treatment-adjusted for % improvement-relative to total miles in the Assessment Unit. EWL 2/2/16 During March 2016 look forward process, the panel modified the total Chinook bearing stream miles for this assessment unit. Therefore, the calculation for each limiting factor using total stream miles to calculate improvement changed. 0.7 miles treated over 85.9 Chinook bearing stream miles = 0.8% improvement for this limiting factor. EWW 6.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	8.1: Water Quality: Temperature	5.00%	70	70.5	73.7		71	80		2012: Estimate considers riparian, bed/channel form and flow projects 2015: Estimate is the sum of 4.1 riparian improvement and 9.2 flow improvement. (0.8%+2.9%=4.1%). Expert Panel recognizes the difficulty quantifying a direct linkage between flow and temperature, and chose to use riparian % change, recognizing the influence on temperature improvement, while considering the amount of riparian vegetation improvement that has occurred to date. EWL 2/2/16
Snake River Spring/Summer Chinook	Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	9.2: Water Quantity: Decreased Water Quantity	35.00%	22.5	23.5	25.4		23.5	40		2012: about 15.3 cfs & 2.1 mi (not counting the shaping project which tempers high flows)- acquisition highly influcenced by water year, runoff, and similar factors... Flow projects affect lower reaches where needed most. [also considers Hawley/upper Kauer (6 cfs), Lee Ck (2 cfs), another big 8-mile (2 cfs)-these projects are described and considered in other limiting factors. be sure to "true up" look back project list in 2015). 2015: Flow projects were separated by annual versus permanent lease year cfs. Pratt will be considered Lookforward.SCC-12 Fish Screen and other screen projects originally listed for this Limiting Factor were not be counted (work element #69) because flow benefits were already considered. Thus, there are 11 leases totally 27.74 cfs (the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases). To calculate the uplift, the Expert Panel estimated total tributary diversions as the difference between total diversions (1500 cfs, Donato, 1998) and the mainstem (750 cfs), plus 200 cfs for Carmen, Tower, and 4th of July Creeks, plus main Salmon

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	85	85.25	85.25		85.25	90	stranding changed from 51/60, 8/8/12	2012: evaluated only on L-1 project PLUS l-63, L-54, and L58a (described under LF 9.2). 2015:Barrier projects do not always address anthropogenic barrier, and Expert Panel understands the need to consider if they are partial/seasonal barrier to upstream migration during irrigation. They considered Beeler around L-50, which received BPA funding within 2012-2015 period (in the database under AU LRC1), but decided against further consideration because it did not affect mainstem passage. Expert Panel was sensitive to actions that might have occurred in other locations, but impact another Assessment Unit. Because the L-1 barrier project was a partial barrier, the Panel believed miles was not the appropriate relative metric to calculate uplift. Rather, they decided uplift is approximately 0.25 % based on the number of available barriers remaining in Assessment Unit. Looked at GIS map of barriers in basin, but none were shown. projects: Basin Cr. culvert. L-63 is still in place. L-1 improvement: improves passage only at certain (low) flows, but

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	1.3: Habitat Quantity: HQ-Competition	2.00%	50	50	50		50	50		2015: Expert Panel discussed this Limiting Factor at length, and even though there were no projects attributed to it, 1.3 is associated with other Limiting Factors. Understanding of this Limiting Factor has/is evolving. E.g.: Don't know the extent of hatchery effects to natives in the Lemhi. No effect to Chinook? Is Brook trout in mainstem an issue? Discussed side channel improvement projects because it results in improvement to previously limited physical space. Do side channel projects reduce competition? Not necessarily, due to habitat use segregation by species. After much conversation the Expert Panel concluded there was no measurable improvement to this Limiting Factor. EWL 2/2/16
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	2.3: Injury and Mortality: Mechanical Injury	5.00%	90	91	91.25		91	95	lowbookend changed from 90, 8/8/12	2012:10 replacements assumed to maintain current functionality- no additional LF change 2015:LHC-08 screen project was an upgrade, so the benefit was estimated by the Expert Panel. Also included L-1 under this Limiting Factor as elimination of diversion and screen. L-1 benefit was considered in context of # of screens in Assessment Unit (~100 screens as denominator). Expert Panel agreed to assess a 1% for L-1 uplift and 0.25 for LHC-8 = 1.25% total improvement. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	35	35	35.1		38	40	changed from 20/35, 8/8/12	2012:18.65 mi 2015:Expert Panel discussed of riparian metric options: acres, length, conversions based on X width/side: considered simple calculation of total miles treated relative to stream miles in the Assessment Unit= 24.32/80.3 (using Streamnet). Discussed protected (fenced) vs planted; and lag time in functional improvement considering plant growth. They decided to give no credit for protection. E.g. Tyler projects, Pine Cr easement protection (fencing vs. planting). They estimated % improvement for each project and relativized the miles treated accordingly. Therefore, the uplift was calculated as the total change that was related to % improvement of each project and equaled 0.10%. EWL 2/2/16
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	20	20.5	21		21	30		2012:3.22 mi- Riparian projects also contribute to this LF 2015: In addition to the 1 action in database assigned to this Limiting Factor, the Expert Panel added side channel and bedform projects (6.1 & 6.2). All reconstructed channels were included in consideration of improvements for this Limiting Factor. Added 6.1 - Upper Lemhi channel Snyder (use length of channel portion of projects), Amonson, Mabey Lane, Pine Cr. Four projects totaled 0.77 mi of treatment relative to 80.3mi (from Streamnet) = 0.96%. This was rounded up to a 1% uplift. EWL 2/2/16
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	6.1: Channel Structure and Form: Bed and Channel Form	8.00%	40	41	41		42	60		2012:riparian and floodplain condition LF actions contribute also 2015: Same actions as for 5.2, plus Sager Bank and Lower Lemhi. . These 6 projects total 0.91 mi of 80.3 mi = .01%, but the Expert Panel chose to round up to 1% uplift. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	7.2: Sediment Conditions: Increased Sediment Quantity	8.00%	30	30	30.1		31	35		2012: riparian, floodplain condition, and bed and channel form contribute also. 2015: Expert Panel discussed linkages between this limiting factor and riparian 4.1. Two actions were in database, including Tyler easement. Tyler was excluded, but they added projects that addressed bank erosion (see 6.1 projects). The Expert Panel discussed how LRC1 tributary projects affect LRC2 (7.2 and 8.1). On 11/19/2015, the Expert Panel revisited LRC2 after LRC1 was assessed. The revised calculations on the xls table, adding % improvements per projects, = .0.08 rounded up to 0.1% improvement in sediment conditions. EWL 2/2/16
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	8.1: Water Quality: Temperature	10.00%	28	29	35.5		30	45		2012:riparian, floodplain condition, flow, and bed&channel form LF projects contribute 2015:Expert Panel discussed how LRC1 tributary projects affected LRC2 Limiting Factors 7.2 and 8.1, and also the connection to 9.2. On 11/19/2015, the Expert Panel revised their initial assessment after consideration of 9.2 activities were accounted for, and used LRC1 Limiting Factor 8.1 calculation method (adding uplift for 4.1=0.1% and 9.2=7.4%) = 7.5% uplift. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	9.2: Water Quantity: Decreased Water Quantity	40.00%	23.5	24.5	30.9		24.5	30		2012:LRC1 flow actions(23.6 cfs) affect flow in mainstem 2015: Tyler Ranch should be included here due to water savings (12.7 cfs). Big Springs minimum flow was added. Verified and modified reported flow. Expert Panel considered the question:Is credit for flow tied to how/when it's paid for? And how to account for temporary flow benefit? Does lowbookend get adjusted down if the water goes away? The Expert Panel was careful to consider that the same flow benefit is not added again and again in future years. Incorporate these considerations into next lookforward. And in lookback, adjust for rights that anticipated, but not yet secured. Should benefits be prorated to account for portion of time period with benefit? Discussed spatial aspect of water flow- how far downstream is the effect? E.g., water added to L1 is less beneficial than elsewhere. This can/has been modeled. This Limiting Factor is important. The Expert Panel discussion on what denominator to use included: total adjudicated water rights?, base flow? diverted cfs vs. non diverted cfs? 750 cfs (half of 1500) was used from the Lembi

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	40	45	54		45	60		2012:17.2 mi total- (30 mi from hatchery ladder projct already included in in other completed projects; hatchery project affects juvenile and other different life history stages) Falls Ck/Little Morgan not considered in this estimate. 2015: The Expert Panel verified and evaluated miles of access opened as a result of barrier removal projects (8.7 miles). For the Sulfur removal of 2 illegal barriers (1.2 miles), the number of barriers were removed from consideration, but not miles, because mileage is counted as part of BOR Lower Sulfur Bridge project. But the 2014 TNC Sulfur action was deleted to avoid double counting miles with Lower Sulfur Creek project. Trout Unlimited, Mill Creek project should have been in Assessment Unit PRC2 so was removed from consideration here. 2014 P13 irrigation diversion SWCD is not a barrier project, so was removed from this Limiting Factor project list. To evaluate the relative improvement for this limiting factor, the Expert Panel considered using Streamnet Chinook mileage (26.8 mi), but determined it is too short - perhaps it does not include some major tributaries
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	1.3: Habitat Quantity: HQ-Competition	5.00%	50	50	50		50	50		2015: No actions were undertaken during the 2012-2015 to address this limiting factor, therefore there is no change in the low bookend. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	2.3: Injury and Mortality: Mechanical Injury	10.00%	65	65.25	73		75	100		2015: Expert Panel verified the design flow for each action and summed the cfs for treatment improvement valude. The Expert Panel explained that all diversions are screened, so they considered the screened agreement value of 291 cfs as the best way to measure total flow (cumulative screened flow) for the Assessment Unit (mainstem portion+ AU tributaries). This was the denominator in the calculation of uplift. Thus for the four actions:23.24/291 = 8% uplift. EWL 2/3/16
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	50	50	52.1		55	70		2012: 14.5 mi riparian enhancement -be sure to include P-13 in 2015 look back 2015:Miles of treatment were adjusted to consider the functional value of the project to date. Expert Panel discussed the Trout Creek Ranch Conservation Easement and the value of the exclusion fencing value. They decided to keep that project in (2.5 mi). Some projects reported values for both sides of the stream (e.g., 2013 Sulfur). For those projects the Expert Panel decided to divide the reported number by 2 because the uplift is relative to total stream length not riparian fence length. Fencing was considered beneficial unless it was installed so recently that benefits could not be realized at all. Hoffman projects were redundant with Stockwater SWCD/TNC (.64 mi), so Hoffman was removed from calculation. The Expert Panel included riparian benefits from a project near edge of Assessment Unit (i.e., O' Neal Easement: 0.25 mi), and it was subsequently removed from the PRC2 Assessment Unit. Total miles =14.28 . Total miles treated was adjusted for current function based on vegetative growth. Nice growth at Trout Creek

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	50.5	52.9	55	55	60	established 8/9/12- most gain from Fury Ln to P-12 + Sulfer Ck to be done thru 2018; much to do in tribs	2012: Influenced by flow and riparian LF projects by natural processes - projects from Fury Lane to P-12 2015:Two actions were considered totaling 1.8 miles of treatment. Considered over all Chinook miles in the assessment unit (62 miles), which was derived from summing stream miles in the Pahsimeroi mainstem, Big Springs Creek and associated tributaries (but not the disconnected tributaries), 1.8/62*100=2.% improvement. EWL 2/3/16
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	20	20.5	21.5		21	50		2012: influenced by all riparian LF actions Upstream effects from PRC2 influence sediment loading into PRC1 (flow projects planned for PRC2 won't affect sediment much...) 2015: Expert Panel used same rationale as riparian vegetation to estimate improvements to sediment. Carried forward, established vegetation improves stream bank stabilization, reduces erosion potential thus stream sedimentation. Miles of riparian vegetation (limiting factor 4.1) projects (verified by the Panel) were adjusted to account for current functionality (recognizing that vegetative growth takes time). Trout Creek Ranch received a zero improvement value because it is already in excellent condition. Two projects were later added: Big Creek Conservation Easement-TNC and Page Mill Creek. After adjustment for % function, treatment miles were summed for a total of 0.9545 miles over the total stream miles in the Assessment Unit, which was derived from summing stream miles in the Pahsimeroi mainstem, Big Springs Creek and associated tributaries (but not the disconnected tributaries). Therefore

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	8.1: Water Quality: Temperature	10.00%	40	40.5	55.3		41	60		2012: Influenced by flow and riparian LF actions- most benefit from Sulphur Ck influencing main Pahsimeroi. Conservative estimate- response from Big Spgs/cross ditch configuration tbd 2015:The Expert Panel evaluated project benefits toward this limiting factor (temperature) by summing the realized uplift from riparian vegetation (4.1) projects =2.1% and flow (9.2) projects=13.2%. Therefore, the uplift for Limiting Factor 8.1=15.3%. EWL 2/3/16
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	9.2: Water Quantity: Decreased Water Quantity	25.00%	30	32	43.2		32	50	MAKE SURE SPREADSHEET BREAKS IS BIG CREEK (NOT Big Springs Ck)	2012: 5-20 cfs that affects 6 mi; net gains in flow from P-13 and Sulfer; saving water from Furey Lanes; moving water at cross ditch; location of available flow more important than net flow change 2015:Expert Panel did not consider screen project because they do not believer there is a flow benefit from them. They verified flow in cfs and determined if the lease is permanent or annual. In this Assessment Unit, all leases are permanent and the cfs were simply summed=38.37cfs. Improvement for this limiting factor was determined relative to total flow 291 cfs; IDFG Cumulative Screened Flow Value). Therefore, 38.37/291*100=13.2% uplift. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	20	20	20		20	35	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	2012: 26.2-30.2 mi access Pahsimeroi sinks area- Natural runoff/flow regime significantly influences available water and access in any given year; need these projects to improve conditions when there is available seasonal flow; more value for other native spp. Mainstem Pahsimeroi up to Goldberg confluence Influenced by flow actions THESE PROJECT ARE IN UPPER REACHES AFFECTING STEELHEAD, NOT CHINOOK 2015: Chinook are not in this Assessment Unit, but benefits to intrinsic potential must still be documented. Water from this assessment unit does not reach Chinook in other assessment units. There was no change to the low bookend. EWL 2/3/16
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	2.3: Injury and Mortality: Mechanical Injury	10.00%	20	20	20		20	75	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	2012: THIS PROJECT DOES NOT AFFECT CHINOOK COPY FROM PRC2 TO PRS3 2015: Chinook are not in this Assessment Unit, but benefits to intrinsic potential must still be documented. Water from this assessment unit does not reach Chinook in other assessment units. There were no projects undertaken during 2012-2015 to address this limiting factor in this assessment unit, therefore, there was no change to the low bookend. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	4.1: Riparian Condition: Riparian Vegetation	10.00%	20	20	20.2		26	60	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	2012: influenced by flow LF actions in Big Ck 2015: Improvements from two projects were considered. The miles of treated riparian habitat was adjusted to account for the current function of the improvements, recognizing that vegetation needs time to establish and meet the ultimate goal of the action. Once adjusted, the treatment miles were summed (0.08) and divided by the total length of stream miles in the Assessment Unit (33 miles; Measured approximate distance of high intrinsic potential of Chinook streams - NOAA). Therefore, 0.8/33*100=0.2% uplift. EWL 2/3/16
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	20	20	20.2		21	50	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	2012: Affected by flow LF actions in Big Ck 2015: Expert Panel used same rationale as riparian vegetation to estimate improvements to sediment. Carried forward, established vegetation improves stream bank stabilization, reduces erosion potential thus stream sedimentation. Improvements from two projects were considered. The miles of treated riparian habitat was adjusted to account for the current function of the improvements, recognizing that vegetation needs time to establish and meet the ultimate goal of the action. Once adjusted, the treatment miles were summed (0.08) and divided by the total length of stream miles in the Assessment Unit (33 miles; Measured approximate distance of high intrinsic potential of Chinook streams - NOAA). Therefore, 0.8/33*100=0.2% uplift. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	9.2: Water Quantity: Decreased Water Quantity	50.00%	20	25	25.3		30	40	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	2012: 12 cfs from Big Ck; Hamilton ditch closure adds another 11 cfs to Big Ck- 23 cfs total (part of Fury Ln/P16 suite of .projcts) 2015:Expert Panel verified flow in cfs and determined if the lease is permanent or annual. In this Assessment Unit, all leases are permanent and the cfs were simply summed=17cfs. Improvement for this limiting factor was determined relative to total flow 319cfs; Morgan Case IDFG Cumulative Screened Flow Value). Therefore, 17cfs/319cfs*100=5.3% uplift. EWL 2/3/16 Flow increase in 2033 anticipated from rewatering/sealing of streambed
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	55	63	65.9		63	95		2012: pole ck large part of barrier issue 2015:. Expert Panel assigned distance metrics based on miles made accessible by removing the barrier. The total value of newly accessed upstream miles was evaluated relative to the total number of Chinook-used miles in the Assessment Unit (Streamnet) = 91.6 miles. Therefore, 10/91.6*100 = 10.9% uplift. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	1.3: Habitat Quantity: HQ-Competition	5.00%	50	50	50		50	50		2015: Removed road 2.5 miles where it was in/on channel, which reduced sediment loads downstream. Brook trout are dominant in system. Note that upper reaches are intermittent. Expert Panel determined there should be no actions for this Limiting Factor in this Assessment Unit, therefore no change to the Low Bookend. Discuss weighting during lookforward. EWL 2/4/16
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	4.1: Riparian Condition: Riparian Vegetation	20.00%	40	40	40.6		50	70		2015: Expert Panel noted duplicate miles in database, and ensured consistent counting of fencing re: miles per stream bank, so some database miles were divided by 2 for consistency. Pole Cr diversion project was removed from this Limiting Factor, but address under flow. Total treatment miles were calculated = 4.25 miles and multiplied by % improvement of that project. Multipliers ranged from 5-20%. The resultant products were summed to provide total realized treatment miles. This value was made relative to the total number of Chinook miles in the Assessment Unit (Streamnet)=91.7 mi. Therefore 0.5625/91.6*100= 0.6% uplift. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	51	51	51.6		51	75		2015: Expert Panel used same rationale as Limiting Factor 4.1 to express benefits of actions toward limiting factor 7.2.Total treatment miles were calculated = 4.25 miles and multiplied by % improvement of that project. Multipliers ranged from 5-20%. The resultant products were summed to provide total realized treatment miles. This value was made relative to the total number of Chinook miles in the Assessment Unit (Streamnet)=91.7 mi. Therefore 0.5625/91.6*100= 0.6% uplift. EWL 2/3/16
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	8.1: Water Quality: Temperature	15.00%	51	60	63.2		60	80		2015: The Expert Panel evaluated project benefits toward this limiting factor (temperature) by summing the realized uplift from riparian vegetation (4.1) projects =0.61% and flow (9.2) projects=11.54%. Therefore, the uplift for Limiting Factor 8.1=12.2%. EWL 4.1.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	9.2: Water Quantity: Decreased Water Quantity	35.00%	70.5	75	82		75	90		2015:Expert Panel verified reported flow amounts (cfs), lease years, and locations - taking into account downstream benefits. Cfs/Lease was calculated as follows: sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases= 22.15 cfs. The relative benefit of these leases were assessed by dividing the sum of leased cfs by the sum of diversions (in cfs) across the Assessment Unit (Morgan Case IDWR) =/192; Therefore, the Expert Panel assessed the uplift for this limiting factor as 11.5% increase. EWL 2/3/16
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	20	20	20		20	100		2015: No actions were executed during the 2012-2015 that address this limiting factor in this assessment unit. Therefore, there was no change from the low bookend. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	1.3: Habitat Quantity: HQ-Competition	5.00%	50	50	50		50	50		2015: No actions were executed during the 2012-2015 that address this limiting factor in this assessment unit. Therefore, there was no change from the low bookend. EWL 2/3/16
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	2.3: Injury and Mortality: Mechanical Injury	10.00%	80	80	80		80	100	stranding	2015: No actions were executed during the 2012-2015 that address this limiting factor in this assessment unit. Therefore, there was no change from the low bookend. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	4.1: Riparian Condition: Riparian Vegetation	20.00%	40	40	40		40	70		2015: No actions were executed during the 2012-2015 that address this limiting factor in this assessment unit. Therefore, there was no change from the low bookend. EWL 2/3/16
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	50	50	50		50.1	75		2015: No actions were executed during the 2012-2015 that address this limiting factor in this assessment unit. Therefore, there was no change from the low bookend. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	9.2: Water Quantity: Decreased Water Quantity	40.00%	25	25	25		25	80		2012: improvements captured in earlier workshop 2015: No actions were executed during the 2012-2015 that address this limiting factor in this assessment unit. Therefore, there was no change from the low bookend. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	1.1: Habitat Quantity: Anthropogenic Barriers	15.00%	75	75	75		75	90	low bookend raised owing to Goat & Iron Ck and federal Hwy 21 projects	2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	1.3: Habitat Quantity: HQ-Competition	10.00%	20	20	20		20	25	Brook trout	2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	2.3: Injury and Mortality: Mechanical Injury	15.00%	60	60	60		80	100	stranding	2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	22.5	22.5	22.5		22.5	90		2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	6.2: Channel Structure and Form: Instream Structural Complexity	5.00%	80	80	80		80	90	loss of habitat	2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	77.5	77.5	77.5		77.5	90		2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	8.1: Water Quality: Temperature	5.00%	75	75	75		75	90		2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Valley Creek	VCC1	Valley Creek	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30		32	90		2015: No actions were executed during the 2012-2015 period for this limiting factor in this assessment unit, therefore there was not change from the low bookend value. EWL 2/3/16
Snake River Spring/Summer Chinook	Yankee Fork	YFC2	West Fork Yankee Fork	5.2: Peripheral and Transitional Habitats: Floodplain Condition	40.00%	95	95	95		96	98	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend; Most of Ass Unit is "wilderness" with very little area disturbed that can be restored	2015: There were no actions undertaken to address this limiting factor during 2012-2015, therefore there is no change in the Low bookend. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Yankee Fork	YFC2	West Fork Yankee Fork	6.1: Channel Structure and Form: Bed and Channel Form	40.00%	95	95	95		96	98	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend; Most of Ass Unit is "wilderness" with very little area disturbed that can be restored	2015: There were no actions undertaken to address this limiting factor during 2012-2015, therefore there is no change in the Low bookend. EWL 2/2/16
Snake River Spring/Summer Chinook	Yankee Fork	YFC2	West Fork Yankee Fork	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	95	95	95		96	98	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Switched Riparian condition for LWD Recruitment; Historical info suggest that riparian habitat was was not extensive in the mainstem Yankee Fork. Adjusted low bookend down to 35	2015: There were no actions undertaken to address this limiting factor during 2012-2015, therefore there is no change in the Low bookend. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Yankee Fork	YFC3	Yankee Fork	4.2: Riparian Condition: LWD Recruitment	20.00%	35	35	35.1		55	65	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 45 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts	2012:Treat 5.3 of roughly 18 miles with large wood. The site is anticipated to change more as a function of wood retention over time. Projects proposed in the most highlly impacted area (approx. 1/3 of the area). Improving 80% of dredge reach by 50%. The 2033 value estimates an increase as the channel evolves to retain more wood (e.g., LWD recruitment and quantity expected to increase). 2015: Expert Panel considered four projects, their miles of treatment, and the % improvement realized for each. Expert Panel considered using Streamnet Chinook miles to calculate relative improvement to riparian condition in this Assessment Unit = 57.2 mi. but they also discussed using NOAA's Intrisic Potential "green line" and "yellow line" segment mapping: approximately 19.5 miles using measuring tool - plus adding 5 mi for tributaries; they decided to use the intrinsic potential calculation and rounded up to 25 mi as denominator. The Expert Panel discussed that 4.1 is not a limiting factor for this assessment unit, defined and contrasted the limiting factors and

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Yankee Fork	YFC3	Yankee Fork	5.2: Peripheral and Transitional Habitats: Floodplain Condition	25.00%	45	60	71.5		65	80	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 45 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts	2012: Anticipate improved floodplain condition as a function of LWD recruitment and retention. However, because extensive dredge spoils overlie the floodplain the benefit of large wood needs to be rightfully considered relative to other treatments (e.g., how much of the floodplain will become activated as a function of large wood recruitment). Within context of conditions in the Yankee Fork floodplain condition will be restored by virtue of other related actions (e.g., road improvements). 2015:Expert Panel used miles rather than acres as a metric or this limiting factor (acres were reported in database). They considered four projects, adjusted for current functional % improvement status (ranged from 5% to 90%). Structural changes are realized now, and vegetative growth will continue. A total of 8.9 mi were treated - adjusted for function over the 25 stream miles in the assessment unit (based on NOAA's Intrinsic Potential - mapped "green line" and "yellow line" segments) results in a 26.5% uplift. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Yankee Fork	YFC3	Yankee Fork	6.1: Channel Structure and Form: Bed and Channel Form	20.00%	45	60	76.4		65	80	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 45 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts	2012: Treat 5.3 of roughly 18 miles with large wood. The site is anticipated to change as a function of wood retention over time that affects flow, scour, and sediment deposition. Projects proposed in the most highlly impacted area (approx. 1/3 of the area). The 2033 value estimates an increase as the channel evolves to retain more wood and recruit gravels, contributing to channel migration. 2015: Duplicated rationale to Limiting Factor 5.2. 8.9 miles were treated in 4 projects over 25 miles (NOAA's intrinsic potential for the denominator). However, current realized functional benefits may be different. Wood structures function soon after construction, but stream channel form continues to change. Percentages range from 70% to 90% function; Thus, the improvement to this Limiting Factor is 31.4%. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Yankee Fork	YFC3	Yankee Fork	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	45	65	78		70	85	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 45 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts	2012:Treat 5.3 of roughly 18 miles with large wood. The site is anticipated to change more as a function of wood retention over time. Projects proposed in the most highlly impacted area (approx. 1/3 of the area). The 2033 value estimates an increase as the channel evolves to retain more wood (e.g., LWD recruitment and quantity expected to increase). 2015: Expert Panel considered four projects that were pro-rated based on current realized functional benefits. Structural modifications function soon after construction, but stream complexity will continue to change. Denominator was based on NOAAs intrinsic potential = 25 mi. Percentages range from 80% to 95% function; Thus, the improvement to this Limiting Factor =33%. EWL 2/2/16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Spring/Summer Chinook	Yankee Fork	YFC3	Yankee Fork	7.1: Sediment Conditions: Decreased Sediment Quantity	5.00%	45	55	71.7		60	70	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 45 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts; Changed LF 7.2 to 7.1 due to much	2012:Treat 5.3 of roughly 18 miles with large wood. Sediment quantity is anticiapted to as a function of wood retention over time that affects flow, scour, and sediment recruitment in the main and side channels. Projects proposed in the most highlly impacted area (approx. 1/3 of the area). 2015:Expert Panel considered four projects that were adjusted for current functional benefits Discussed dredge mining effects on Limiting Factor. Instream LWD and rock projects improve reach's ability to capture and retain (recruit) spawning gravel, as well as direct improvement of substrate by adding gravels. Project functional % ranged from 20% to 80% and 8.9 mi treated. The Expert Panel used NOAA's Intrinsic Potential for the Denominator =25. Thus, improvements to this Limiting Factor is estimated at 26.7 %. EWL 2/2/16