NOTES:
This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Forward** process covering the **2016-2018** work window for 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	Big Creek	BCC1A	Lower Big Creek	7.2: Sediment Conditions: Increased Sediment Quantity	100.00%	95	95	95	96	95	96	LOC rating of 4) Lower Big Creek is completely encompassed within the Frank Church Wilderness area. Sediment sources for this area would be limited to trails, private in holdings and historic mine sites. The lower BC AU is as close to pristine as you can get in the lower 48 states. Restoration work occurring upstream in the Upper BC AU could have positive impacts in the lower BC. There are no current restoration plans for this AU.	Minor trails and old mines in mostly pristine condition. 2016: No actions anticipated, therefore, no change from 2016 low bookend
Snake River Spring/Summer Chinook	Big Creek	BCC1B	Upper Big Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	85	85	85	89	87	89	LOC Rating of 3) There are 18 identified fish (CH and ST) passage barriers in this watershed. We have three AOP projects proposed in the look forward before 2018.	Barriers are not as important to Chinook as they are steelhead. 2016: No actions anticipated, therefore, no change from 2016 low bookend
Snake River Spring/Summer Chinook	Big Creek	BCC1B	Upper Big Creek	7.2: Sediment Conditions: Increased Sediment Quantity	85.00%	65.3	65.3	66.3	85	72	87	LOC Rating of 3)The bulk of the sediment effecting Big Creek watershed is coming from roads followed by mining activities. There are roughly 57 miles of known (keep in mind ongoing surveys can increase this number) nonsystem roads in this watershed. Forty percent of these roads are in Riparian Conservation areas meaning they are close to rivers. There are many obstacles including a current lawsuit that could slow road obliteration in this watershed. Mining habitat restoration will occur in this watershed but due to the large scale size of the mining sites it will take quite some time to fully complete. FS has numerous years of sediment data for this watershed and despite the remote nature of this area is still has unacceptable levels of fines at spawning areas.	Low bookend lower than Secesh based on FS monitoring data. 2016: Three projects anticipated to occur to 2018, treating 0.848 stream miles over total 82.7 Chinook bearing stream miles in the assessment unit. Therefore a 1% improvement for this limiting factor is anticipated (0.848/82.7*100)
Snake River Spring/Summer Chinook	Big Creek	BCC1B	Upper Big Creek	8.7: Water Quality: Toxic Contaminants	10.00%	85	85	85	87	86	89	LOC rating or 4)There are several historic mines and one mine site that is currently conducting test pit drilling (Golden Hand) in this watershed. We are looking to do some mine rehabilitation at the Thunder Mountain site to reduce this.	Benefits from Dewey mine and Sunnyside Pit restorations. 2016: No actions anticipated, therefore, no change from 2016 low bookend
Snake River Spring/Summer Chinook	Secesh River	SEC1	Secesh River	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	90	90	90.5	95	92	95	LOC ranking of 3)There has been five culverts and one diversion on Zena Creek have been identified for inadequate fish passage potential in this watershed. In 2012 we are replacing Burgdorf Culvert with an AOP structure. In 2017 Jeneatte Creek is slated to be replaced with an AOP structure. AOP culvert engineering designs work have already been completed in Three Mile Creek, Jeanette Creek, Willow Creek and Burgdorf Creek.	Barriers more important in tribs for steelhead than Chinook. Burgdorf, Jeneatte, Willow, and Threemile cks. Five culverts and one diversion (on Zena) have been identified but only two will be resolved. Zena Creek Reservoir? 2016: Jeannete Creek culvert is a juvenile barrier only, so the project value was prorated 50% for effectiveness. (0.4 stream miles treated/152.1 Chinook bearing stream miles in the assessment unit = 0.5% improvement

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Snake River Spring/Summer Chinook	Secesh River	SEC1	Secesh River	7.2: Sediment Conditions: Increased Sediment Quantity	90.00%	76.1	76.1	78.63	87	77	88	LOC ranking of 3)Roughly 140 miles of nonsystem roads have been identified in this watershed. Roughly 20 miles are slated for full obliteration, 10 miles in Lake Creek road decomossioning project in 2015 and 10 miles in the Secesh Face project area in 2018.	Same as for SES1 steelhead. 20 of the 140 miles of non system roads slated for decommissioning 2016: Secesh Face Road decommissioning of 13 miles of road will affect 2.48 stream miles. This is in a landslide-prone area. Panel considered this percent change to be an underestimate because the method relied on GRAPE model, which is focused on chronic road erosion, but does not quantify sediment contributions from episodic events such as road-related landslides, which are expected to be reduced by the road obliteration projects. This is an issue in all assessment units, but particularly in Secesh due to landscape position of roads. Anticipated improvement from this project, while an underestimate, is calculated as 2.53% (2.48 stream miles treated/78.3 Chinook bearing stream miles in the assessment unit). Comments updated RM 8/8/2016 per input from Nez Perce Tribe.
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1A	EFSF Salmon and Tribs	1.1: Habitat Quantity: Anthropogenic Barriers	30.00%	65	65	65	65	65	65	LOC rating of 3) There are some large scale fish passage barriers in this watershed. The Glory Hole is a large scale fish passage barrier occuring at the Golden Meadows mine site. It is a waterfall feature created from mining activities that blocks passage to the bulk of the spawning grounds. There are several additional fish passage barriers in this watershed. Due to current mining activities we do not have any work planned in this watershed prior to 2018. Once the mining activities cease numerous restoration projects will need to be implemented in this watershed.	Estimates stay the same due to no restoration performed due to current mining activity 2016: No actions anticipated, therefore no change from low bookend
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1A	EFSF Salmon and Tribs	7.2: Sediment Conditions: Increased Sediment Quantity	60.00%	60	60	65.9	63	60	63	LOC rating of 3)170 miles of unauthorized (non-system roads)have been identified in this watershed. Because the system road runs along the edge of this river road resurfacing could have a large impact in sediment reduction. Mining activities have produced large area of non-vegetated landscape contributing to this sedimentation. In the past millions of dollars have been spent for mine restoration work in this site resulting in an increase in returning adult Chinook and Steelhead. It has currently been given a lower priority due to ongoing mining activities. Once the mining ceases this watershed has great potential to respond to restoration activities.	Estimates stay the same due to no restoration performed due to current mining activity. If mining activity ceases this watershed has great potential to respond to watershed restoration activities. 2016: Future actions include construction of East Fork South road improvements in 2016 (5.5 miles, all of which is within riparian zone) used BPA-funded staff to plan projects. Road improvements projects were prorated (40%) based on Forest Service monitoring data. The Ford and area downstream was prorated to 100% for full prevention of sedimentation on-site. Therefore, 3.032 stream miles treated over 51 Chinook-bearing stream miles in the assessment unit yields a 5.9% anticipated improvement
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1A	EFSF Salmon and Tribs	8.1: Water Quality: Temperature	5.00%	80	80	80	81	80	83	LOC rating of 3)In the upper EFSR due to mining activities there is very little riparian vegetation due channel modification. Due to this lack of riparian vegetation water temperatures are increased. Reports have shown that some of the tributaries to the upper EFSF are above 16C (daily average) in temperature. This is the temperature where fish and amphibians become stressed.	Estimates stay the same due to no restoration performed due to current mining activity. If mining activity ceases this watershed has great potential to respond to watershed restoration activities. 2016: no actions anticipated, therefore no change in estimate

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Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1A	EFSF Salmon and Tribs	8.7: Water Quality: Toxic Contaminants	5.00%	65	65	65.5	66	65	67	LOC rating of 3)This watershed was listed in 1998 as having impaired waterbodies under Section 303(d) of the clean water act. The pollutions of concern are heavy metals associated with mining activities. Restoration activities geared toward reducing these contaminants will resume once the mining activities cease.	Estimates stay the same due to no restoration performed due to current mining activity. If mining activity ceases this watershed has great potential to respond to watershed restoration activities. 2016:Cinnabar Mine Rehabilitation Project (2016): Old mercury mine is a methyl mercury source into Sugar Creek and into mainstem- the River moves through tailings pile. Project will terrace and lay back banks, and phytoremediation in riparian zone; EPA is doing the rest. Risk assessment work is ongoing to assess food web and human health risks. Benefits were calculated by assessing stream miles of reduced toxic conditions = stream miles from mine site down through Sugar Creek = 5.5 miles (based on water sample results); Panel prorated to 5% to account for effect of this part of project, which will not stop all mercury from entering the creek. Midas Gold affects East Fork. Therefore 5% of 5.5 stream miles=0.275. Over all Chinook bearing stream miles in the assessment unit, there will be a 0.5% improvement for this limiting factor.
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1B	Johnson Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	85	85	85.6	88	85	88	LOC rating of 3)Roughly 14 culverts have been identified as barriers to fish passage in the Johnson Creek Watershed. Four AOP projects are planned in this watershed two culverts on Cox Creek and one in (Landmark Creek 2016) and Sheep Creek (2018). There are natural barriers that need to be evaluated in the future. 2016: New information (eDNA) reveals that Chinook are above this culvert, therefore, barriers are somewhat of an issue impacting Chinook. Thus limiting factor 1.1 was given a 10% weight overall for the assessment unit, and the low bookend remained at 85.	No known barriers left for Chinook 2016: New information reveals barriers are a limiting factor for Chinook, so weighting was modified during 2016 panel. Credit for 2 culverts replaced pre 2015 was given here. 0.4 stream miles opened (there are redds there now) over 63.3 Chinook bearing stream miles in the assessment unit = 0.6% improvement
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1B	Johnson Creek	7.2: Sediment Conditions: Increased Sediment Quantity	80.00%	70.7	73	75.9	83	74	87	LOC rating of 3)There are roughly 30 miles of unauthorized (closed system roads) in the Johnson Creek watershed. Because this area was not logged as heavily as surrounding watersheds there are less unauthorized roads. We are scheduled to decommission 10 miles of roads in the Burntlog area in 2012. In order to reduce sediment further we would need to consider road resurfacing along Johnson Creek road after 2018. 2016: Because additive limiting factor weights must = 100%, and limiting factor 1.1 was given 10% weighting, needed to "borrow" 10%weighting from another limiting factor. Since most of the weight was in 7.2, it was taken from here.	Sedimentation LF weight was raised to 90% to better reflect its impacts 2016:One project is anticipated to improve 3.32 stream miles over a total of 63.3 Chinook bearing stream miles in the assessment unit = 5.2% improvement

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Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC1B	Johnson Creek	8.1: Water Quality: Temperature	10.00%	75.3	75.3	75.34	76	75.5	78	LOC rating of 3)This watershed is listed as an impaired waterbodies under the 2010 Section 303(d) of the clean water act for exceeding temperature standards. Riparian planting can make small temperature changes to tributaries to Johnson Creek. Changes to water temperature in the mainstem Johnson Creek can take years to bring about. 2016: Limiting factor weighting remained at 10%	Small increase reflects the planting work completed. Temperature is an issue in Johnson Creek but it is very hard to reduce temperature. LF weight was reduced to 10% 2016: Two projects will treat 0.026 stream miles over 63.3 Chinook bearing stream miles in the assessment unit = 0.04% improvement
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC2	Upper SF Salmon Tribs above EFSF Salmon (High Idaho Batholith Tribs - from the headwaters to the mouth of EFSF Salmon)	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	85	85	85	89	85	89	LOC rating of 3) Roughly 4 (PNF) and 13 (BNF) culverts have been identified as barriers to fish passage in the Upper SF. There are ongoing culvert surveys so this number represents a low estimate . A bridge is proposed for 2013 in this watershed.	Actions benefit Steelhead but not Chinook. No barriers left for Chinook; no action benefits for chinook. 2016: no actions, therefore no change in estimate
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC2	Upper SF Salmon Tribs above EFSF Salmon (High Idaho Batholith Tribs - from the headwaters to the mouth of EFSF Salmon)	7.2: Sediment Conditions: Increased Sediment Quantity	100.00%	35	35	53.2	85	80	87	LOC rating of 3)There are roughly 226 known unauthorized (closed system roads) in the upper SF. Due to intensive past logging activities road densities are high in this area. We are looking to actively decommission 60 and resurface 15 miles between work done on the Boise and Payette before 2018. There are numerous system roads contributing to the sedimentation of this system. 2016: Limiting factor weight was considered way too high (was 75%) given all the work that still needs to be done to address sedimentation in this assessment unit. The panel revised the low bookend during the 2016 look forward to 35%	Actions benefit Steelhead, Chinook and Bull trout. There are numerous system roads contributing to the sedimentation of the this system. 2016: Two projects from Look Back were carried to the Look Forward due to excessively high low-bookend in the Look Back and no way to credit. Panel took into account road mileage as well as number and connectivity of drain points, topography, road network topology, landslide locations (not automatically quantified in GRAPE, but manually measured and considered). Inventory data show a strong correlation between road network density and number of landslides. USFS Payette Forest landslide study in 1990s identified non-road landslide-prone areas, but since then, road-related slides are seen just as commonly in all areas. Many of the road-related slides are in the RCAs. Chronic road sedimentation (annual rates) can easily be overshadowed by landslide episodes, which contribute large amounts of sediment during the event, and in subsequent seasons. Anticipated projects total 12.33 stream miles treated over 54.2 Chinook bearing stream miles across the assessment unit = 18.2% improvement
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC3	Lower SF Salmon Tribs below EFSF Salmon (Hot Dry Canyon Tribs - from mouth of EFSF Salmon to mouth of SF Salmon)	7.2: Sediment Conditions: Increased Sediment Quantity	100.00%	80	80	80	83	82	85	LOC rating of 3)There are roughly 40 miles of unauthorized (closed system roads) in the Lower SF. 10 miles of road to trail conversion on the Davis Ranch Road are planned in this watershed in 2014.	Actions benefit Steelhead, Chinook and Bull trout. 2016: Projects waiting on National Environmental Policy Act review and do not expect any actions before 2018.
Snake River Spring/Summer Chinook	South Fork Salmon River mainstem	SSC4	Mainstem SF Salmon	7.2: Sediment Conditions: Increased Sediment Quantity	100.00%	72.3	72.3	72.7	78	74	80	LOC rating of 3)The cumulative effect of decommissioning roads on tributaries to the SFSR will help reduce sediment to the Mainstem SF. Projects like the projected Hamilton Bar road to trail (2014) can reduce sediment from flowing directly into the mainstem SF. Road resurfacing project can also reduce the amount of sediment entering into the SFSR.	After reviewing the work we will performing in this AU we felt the % increase should be slightly higher 2016: = One project that effectively treats 0.3787 stream miles across 84.9 Chinook- bearing stream miles in the assessment unit yields 0.4%.improvement