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GOVERNOR BILL WALKER

Department of Fish and Game

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MEMORANDUM

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SUBJECT: Kenai River king salmon management targets and OEG

The purpose of this memorandum is to provide information to the Alaska Board of Fisheries (board) if they seek to adopt numeric values for Kenai River late-run king salmon management targets and the Kenai River early-run OEG range associated with the recommended large fish (75 cm or greater from mid-eye to fork) SEG range. This review applies the logic and empirical relationships that were used in developing the current inseason management targets and OEG, to the proposed large fish SEG ranges for king salmon.

Issues: Existing inseason management targets within the late-run Kenai River king salmon management plan were adopted as provisions into the management plan during the 2014 UCI board meeting for an SEG range based on king salmon of all sizes. The recommended SEG range for king salmon is based on large king salmon (large fish SEG). The existing targets are not associated with the recommended large fish SEG management objective for late-run king salmon. If the targets remain within the plan as provisions to achieve the recommended large fish SEG, the board may seek to develop new values associated with the recommended large fish SEG range.

The early-run OEG was developed at the 2005 UCI board meeting based on a department recommended BEG; however, the OEG was not changed in 2013 based on a recommended department SEG range.

Information: Management targets exist for the inriver run, as well as escapement. The current late run SEG range of 15,000–30,000 (king salmon of all sizes) is relative to board set inriver run and escapement level targets of 22,500 and 16,500 fish, respectively. A primary management objective for

the early-run stock is to achieve an OEG range of 5,300–9,000 fish of all sizes. The existing SEG range for the early-run is 3,800–8,500 fish of all sizes.

Targets and the OEG are difficult to reproduce without consideration of the intent the board used to develop the existing targets.

Below are various methods to convert the current management targets. Methods are also summarized to present values for an early-run OEG based on the recommended SEG range of 2,800–5,600 large early-run king salmon.

LATE RUN – Approaches to modify the current inriver run target (22,500):

The current late run, inriver run target of 22,500 was based on harvest in the Kenai River late-run king salmon sport fishery during years of unrestricted sport fishing regulations, yet low run sizes (2009–2011). Inriver sport harvests in those years ranged between approximately 7,000–8,000 king salmon. The current inriver run target was set at 22,500 fish, 7,500 fish above the lower bound of the 15,000–30,000 SEG range for all king salmon; 22,500 was also the mid-point of the current SEG range.

Approach A: The average harvest of large king salmon only during the years used to derive the current inriver run target (2009–2011) was approximately 6,192 large fish. If an inriver run target was adopted using the same method, but relative to the large fish SEG range, it would be 19,692 (6,192 + 13,500) (Table 1).

Approach B: If the number of fish represented by the inriver run target remained 7,500 fish above the lower bound of the SEG range and was applied to the recommended large fish SEG range, the new inriver run target would be 21,000 large fish.

Approach C: Consider that the inriver run target of 22,500 is the mid-point of the current SEG of 15,000 – 30,000. The midpoint of the recommended large fish SEG range (13,500–27,000) is 20,250 (Table 1).

Note the three approaches approximate either 20,000 or 21,000 as a modified management target to replace 22,500.

Table 1.–Kenai River late-run king salmon management plan inseason management target summary.

Current SEG 15,000-30,000 King Salmon of All Sizes				Recommended SEG 13,500-27,000 King Salmon ≥ 75 cm		
	Current Inriver Target			Approaches to Modify Inriver Target		
Approach	Lower Bound of SEG	Modifying Number of Fish	Target	Lower Bound of SEG	Modifying Number of Fish ≥ 75 cm	Target
(A) Large fish harvest	15,000	7,500	22,500	13,500	6,192	19,692
(B) All fish harvest					7,500	21,000
(C) Mid-point	15,000	7,500	22,500	13,500	6,750	20,250

LATE RUN – Approaches to modify the current escapement buffer target (16,500):

The current inseason escapement buffer target of 16,500 is 1,500 king salmon above the lower bound of the current SEG range of 15,000–30,000. The escapement target was established to buffer for any unforeseen error (of up to 10%) that might occur in inseason escapement projections, whereby the actual escapement fell below the lower bound of the SEG.

Approach A: A similar margin of error (~10%) for large king salmon escapement projections is 1,350 fish. The addition of a 10% buffer to the lower bound of the recommended large fish SEG range results in an escapement buffer target of 14,850 large king salmon (Table 2).

Approach B: If the number of fish used as a buffer remained 1,500, the escapement buffer target would be 15,000 large fish (Table 2).

Table 2.–Kenai River late-run king salmon management plan inseason escapement buffer target summary.

Current SEG 15,000-30,000 King Salmon of All Sizes				Recommended SEG 13,500–27,000 King Salmon ≥ 75 cm		
Current Escapement Buffer Target				Approaches to Modify the Escapement Buffer Target		
Approach	Lower Bound of SEG	Modifying Number of Fish	Target	Lower Bound of SEG	Modifying Number of Fish ≥ 75 cm	Target
A	15,000	1,500	1,650	13,500	1,350	14,850
B				13,500	1,500	15,000

EARLY RUN – Approaches to modify the OEG:

The current lower bound of the early run OEG of 5,300–9,000 king salmon of all sizes is 5,300. The reason for setting the lower bound at 5,300 was that at the time it was the lowest measured escapement on record that was considered sustainable. The OEG of 5,300–9,000 was not changed when the current SEG range of 3,800–8,500 king salmon of all sizes was recommended in 2013. There is no direct relation of the existing SEG to the board intent used to establish the OEG that was based on a different SEG. Therefore, only ratios will be reviewed for initial considerations of an OEG for large early run king salmon.

Approach A: As a different approach, Table 3 shows the current SEG range as a ratio of the current OEG. Applying that ratio to the recommended SEG range results in a new large fish OEG of 3,905–5,929.

Approach B: Historically, the upper bound of the OEG was 9,000, which was the same upper bound as the SEG range when it changed to 4,000–9,000 fish in 2005. When the SEG range changed in 2013, the upper bound of the OEG did not change. The ratio of the lower bound to the upper bound of the existing OEG is approximately 1.7. Applying this ratio to a large fish OEG lower bound reviewed above, to devise an upper bound, results in an early-run OEG of 3,905–6,632 large king salmon (Table 3).

Table 3–Kenai River early-run king salmon > 75 cm OEG summary.

	Existing SEG - OEG ratios & recommended > 75 cm fish SEG					Comparable early-run > 75 cm fish OEG	
Approach	Goal	Lower Bound	Ratio to OEG	Upper Bound	Ratio to OEG	Lower Bound	Upper Bound
A	OEG	5,300		9,000			
	SEG all fish	3,800	1.4	8,500	1.1		
	SEG ≥ 75 cm fish	2,800	1.4	5,600	1.1	3,905	5,929

	Existing OEG ratio & new large fish SEG					Comparable early-run > 75 cm fish OEG	
Approach	Goal	Lower Bound	Ratio to OEG	Upper Bound	Lower to Upper Bound Ratio	Lower Bound	Upper Bound
B	OEG	5,300		9,000	1.7		
	SEG ≥ 75 cm fish	3,905			1.7	3,905	6,632