FISH PASSAGE FEASIBILITY STUDY
BRAINSTORM WORKSHOP
SEPTEMBER 9-11, 2014

HANDOUT: SUMMARY OF BIOLOGICAL INFORMATION

2013 Information Package

Biological Information Items	
B1	Target Fish Species for Passage
B2	Other Species Potentially Accessible to Any Passage Facilities
B3	Life Stage Specific Periodicity
B4	Migratory Characteristics
B5	Number and Size of Target Fish Species
B6	Life Stage Specific Passage Information
B8	Location of Spawning and Rearing Habitats
B9	Predation
B10	Existing Environmental Conditions
B11	Biological Performance Tool
B12	*Summary of Biological Information (New Item)*

Table 5.1-1. Fish Distribution in the Upper Susitna River 2012 & 2013 and select historical records. (From ISR 9.05 – June 2014)

Location	Poject River Mile	Drainage Basin Size (km^2)	Chinook salmon (juvenile)	Arctic grayling	Burbot	Dolly Varden	Lake trout	Longnose sucker	Sculpin	Whitefish, humpback	Whitefish, round	Whitefish, unspecified
Susita River Devils Canyon to Watana Dam 2013	166.1-187.1		X	X	X	X		X	X		X	X
Proposed Watana Dam Location	187.1	---	---	---	---	---	---	---	---	---	---	---
Susitna River UR-6	187.1-203.4			X	X			X	X	X	X	
Susitna River UR-5	203.4-208.1			X	X			X	X		X	
Susitna River UR-4	208.1-224.9			X	X			X	X		X	
Susitna River UR-3	224.9-234.5			X	X			X	X		X	
Watana Reservoir at Full Pool	232.5	---	---	---	---	---	---	---	---	---	---	---
Susitna River above Oshetna	>234.5			X								
Aerial Mainstem - Dam site to Oshetna	N/A			X				X				
Deadman Creek	189.4	453.5		X, □	□	□		□	X			
Unnamed Tributary 194.8	194.8	321.2		X		X			X			
Watana Creek	196.9	452.7		X, O	□	X, O		X, □	X, O		X, O	
Watana Creek Tributary: Unnamed L1	N/A			X					X			
Watana Creek Tributary: Unnamed L3	N/A								X			
Watana Creek Tributary: Unnamed R3	N/A			X					X			
Watana Creek Tributary: Unnamed R5	N/A			X			X		X		X	
Unnamed Tributary 197.7	197.7	<80.3		X					X			
Unnamed Tributary 198.4	198.4					X						
Unnamed Tributary 203.4	203.4			X					X			
Unnamed Tributary 206.3	206.3	<80.3							X			
Kosina Creek	209.1	1036.5	X, O	X	X, □	X, O		X, □	X, O	X, O	X	X
Kosina Creek Tributary: Tsisi Creek	N/A			X					X		X	X
Kosina Creek Tributary: Gilbert Creek	N/A			X					X, O			
Kosina Creek Tributary: Unnamed	N/A								X			
Jay Creek	211	106.1		X, O	X, □	X, □		□	X		□	
Goose Creek	232.8	269.1		X, O	□			X	X, O		X	
Oshetna River	235.1	1424.5	X, O	X, O	X			X	X	X	X	X
Oshetna River Tributary: Black River	N/A		X	X	X, □	O		X, O	X, O		X, O	
Tyone River	247.3							X				
Clearwater Creek	266.6			X								
Deadman Basin Lake: Deadman Lake	N/A			□	□	□	X, □			□	□	
Deadman Basin Lake: Unnamed Lake	N/A						X					
Watana Basin Lake: Sally Lake	196.9			X, □			X, □		X, □			
Kosina Basin Lake: Tsisi Lake	N/A			X								

X: Fish Distribution and Abudance 2012-2013

□: ADF&G 1981, 1983a, 1984

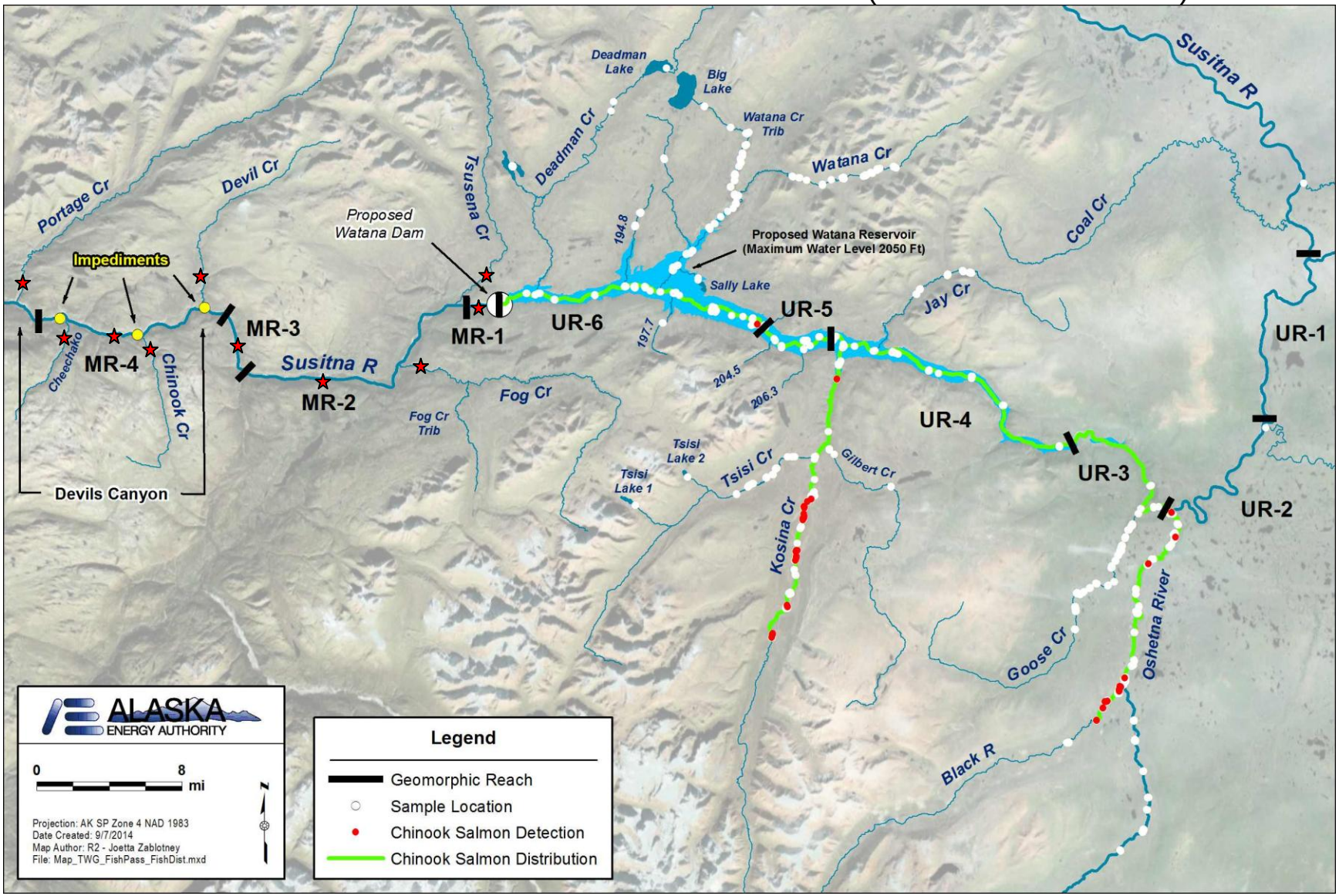
O: Buckwalter 2011

Table 5.2-1. Upper Susitna River rotary screw trap catch by species and life stage, 2013. (From ISR 9.05 – June 2014)

Rotary screw trap location		Kosina Creek	Oshetna River	
Geomorphic reach		UR-4	UR-2	
	Project River Mile	209.1	235.1	Grand
Species	Life stage			Total
Chinook salmon	Parr	1		1
	Smolt	9	1	10
	Adult	1		1
Arctic grayling	Juvenile	91	233	324
	Juvenile/Adult	22	335	357
	Adult	4	38	42
Burbot	Juvenile		3	3
	Juvenile/Adult		1	1
Dolly Varden	Juvenile/Adult	2		2
Longnose sucker	Juvenile		97	97
	Juvenile/Adult	1	42	43
	Adult		46	46
Sculpin	Juvenile	5	11	16
	Juvenile/Adult		21	21
	Adult	3	38	41
Whitefish, humpback	Juvenile		5	5
	Juvenile/Adult	2	5	7
Whitefish, undifferentiated	Juvenile	1	12	13
	Juvenile/Adult	7	33	40
Whitefish, round	Juvenile		34	34
	Juvenile/Adult	4	39	43
	Adult		7	7
Grand Total		153	1,001	1,154

Note: Catch data are provisional and subject to revision based on ongoing QA/QC

CHINOOK SALMON DISTRIBUTION IN UPPER RIVER (2012-2013 – ISR DATA)



Note: Red stars (★) indicate Middle River reaches or tributaries where species has been documented (through collection or telemetry) and do not indicate specific locations.

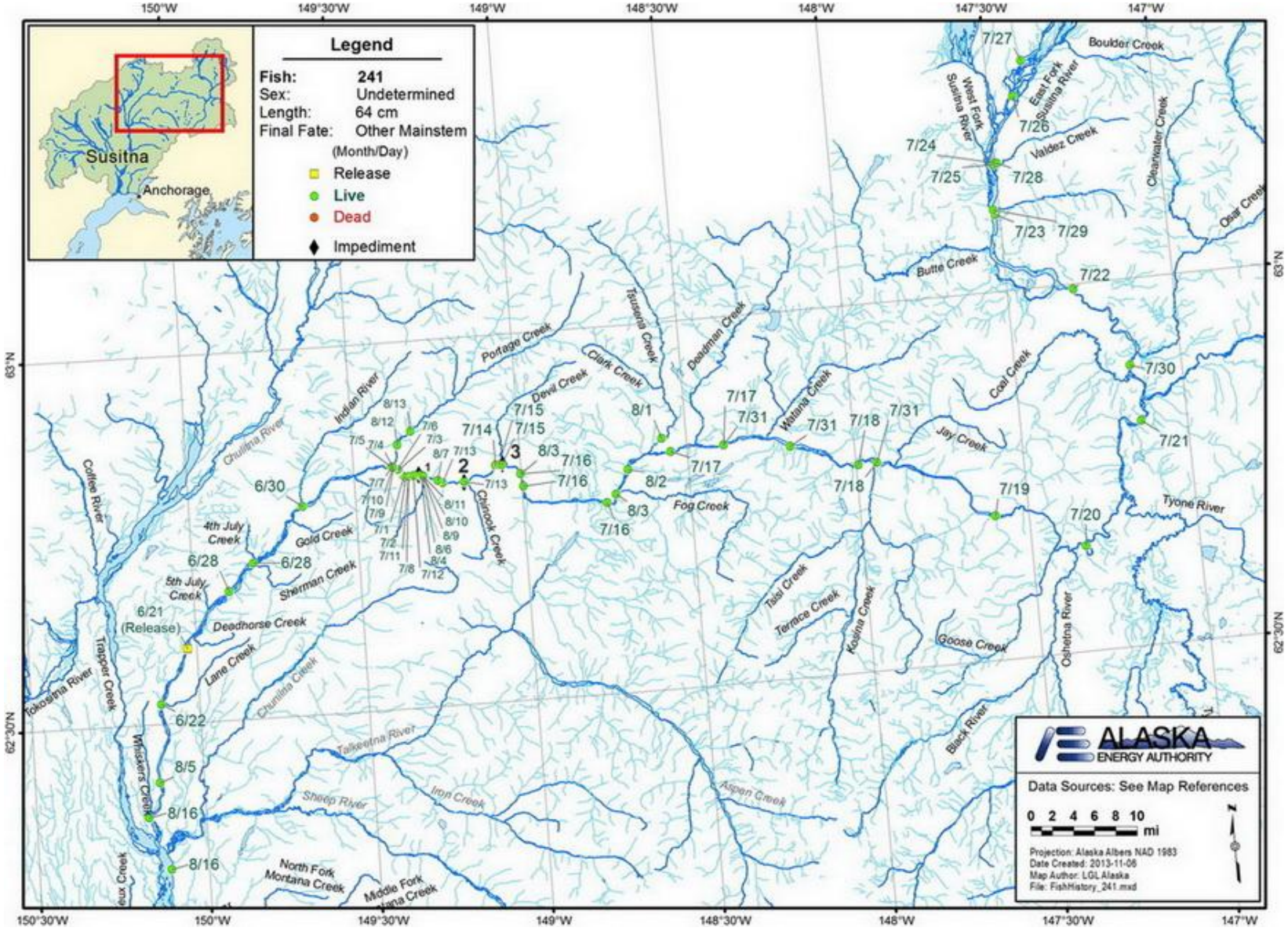


Figure F-1. Tracking history of a radio-tagged Chinook salmon (tag #241) that was detected above Impediment 3, 2013. (From ISR 9.07 – June 2014)

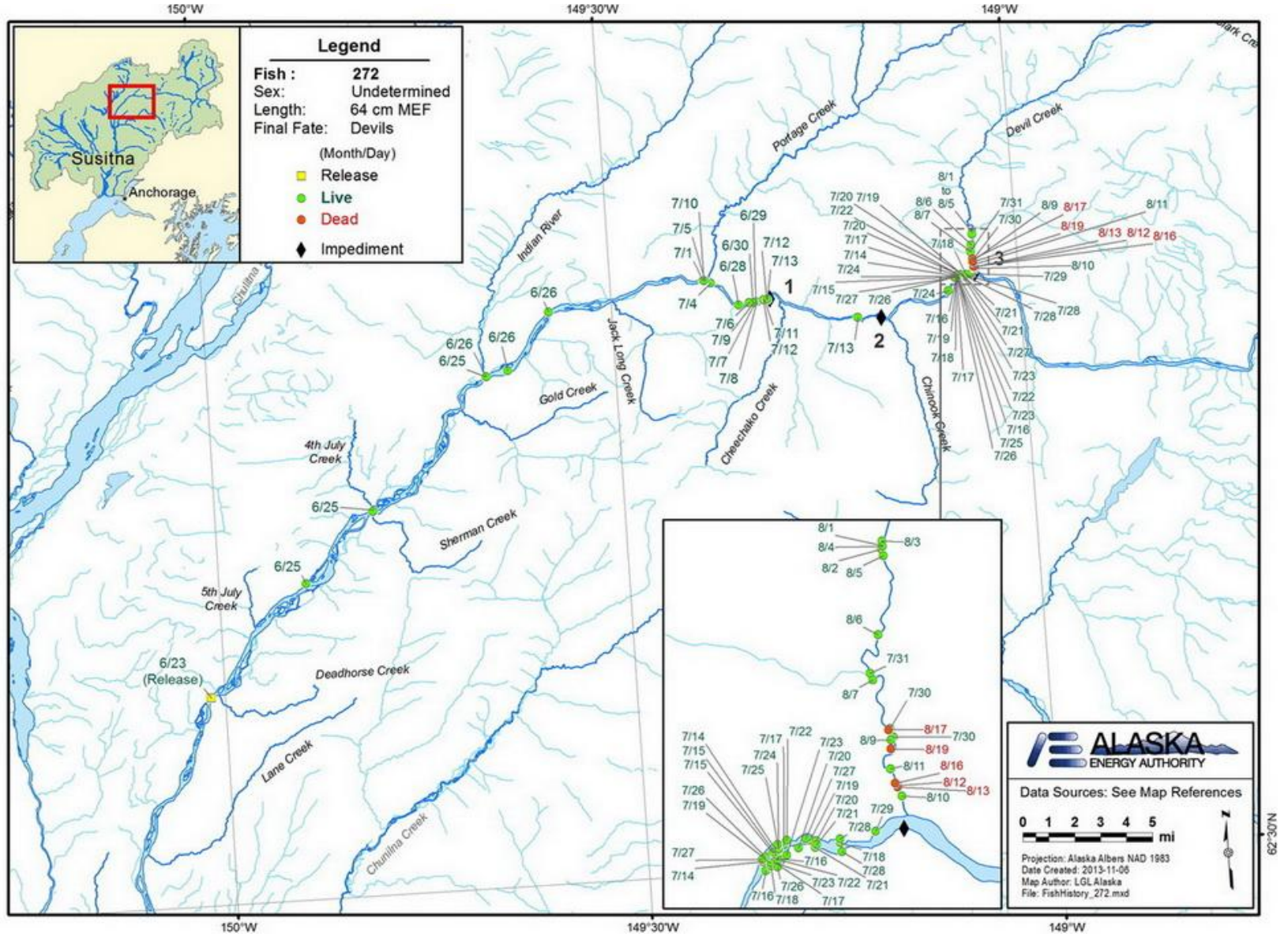


Figure F-2. Tracking history of a radio-tagged Chinook salmon (tag #272) that was detected above Impediment 3, 2013. (From ISR 9.07 – June 2014)

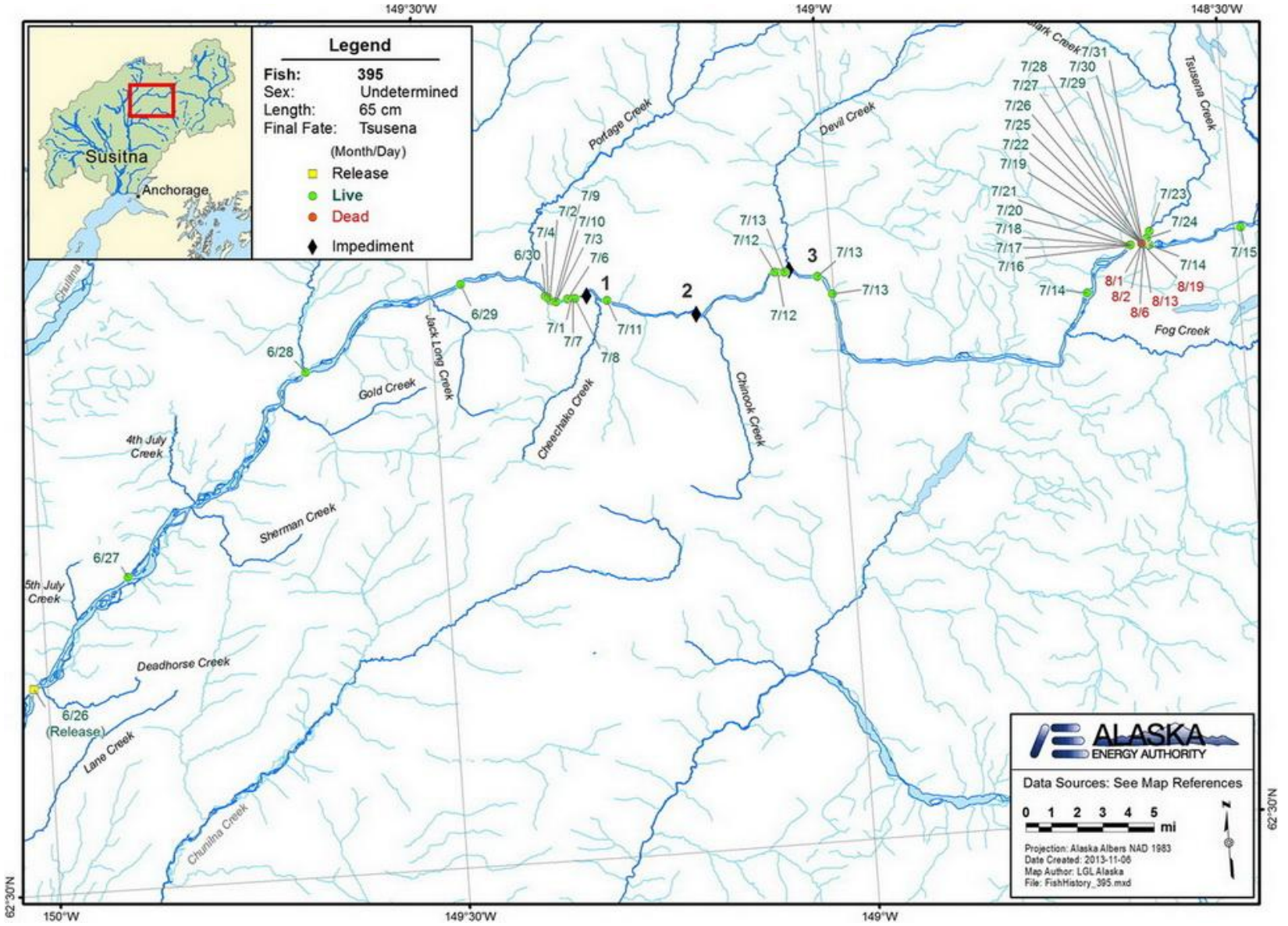
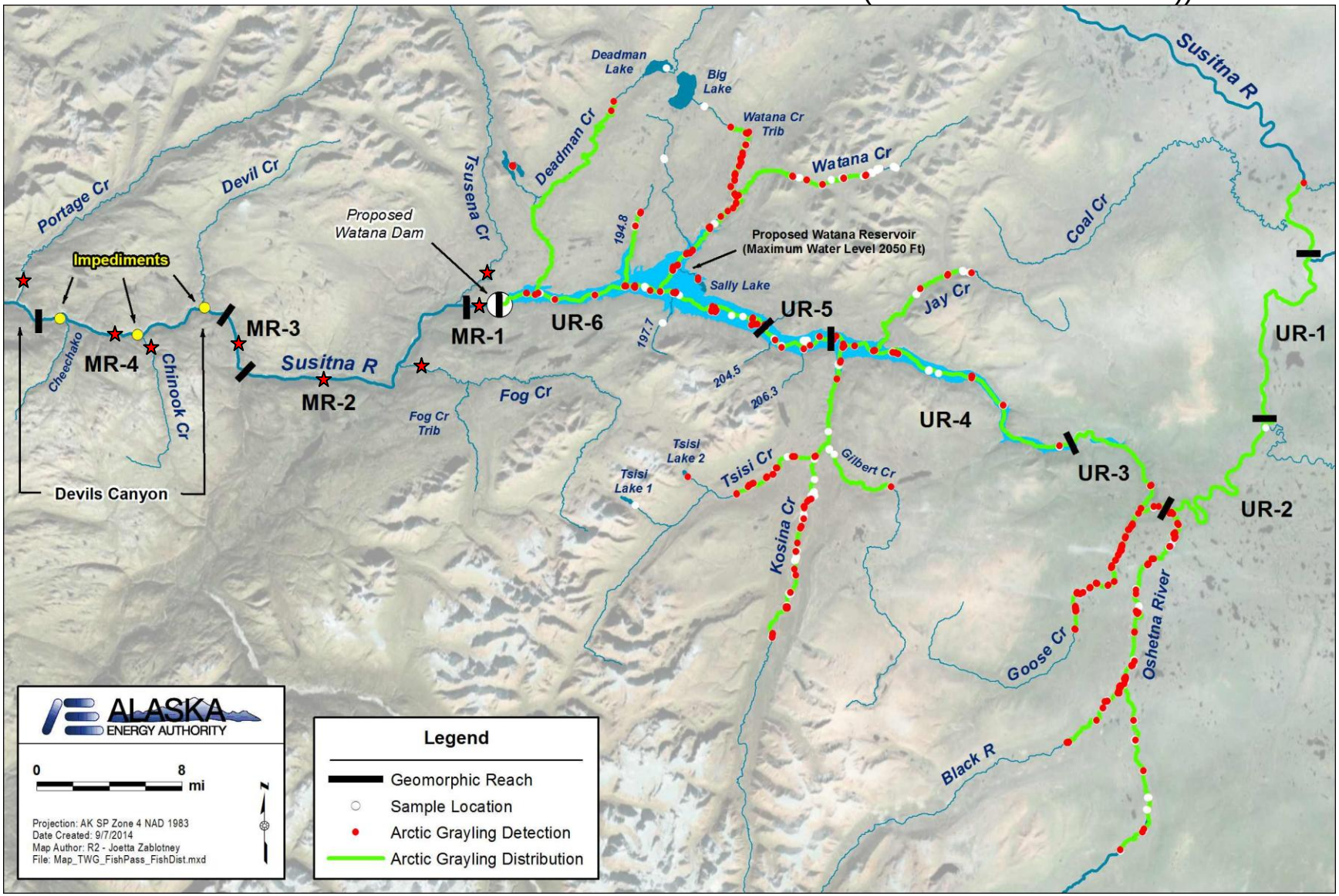


Figure F-3. Tracking history of a radio-tagged Chinook salmon (tag #395) that was detected above Impediment 3, 2013. (From ISR 9.07 – June 2014)

ARCTIC GRAYLING DISTRIBUTION IN UPPER RIVER (2012-2013 – ISR DATA))



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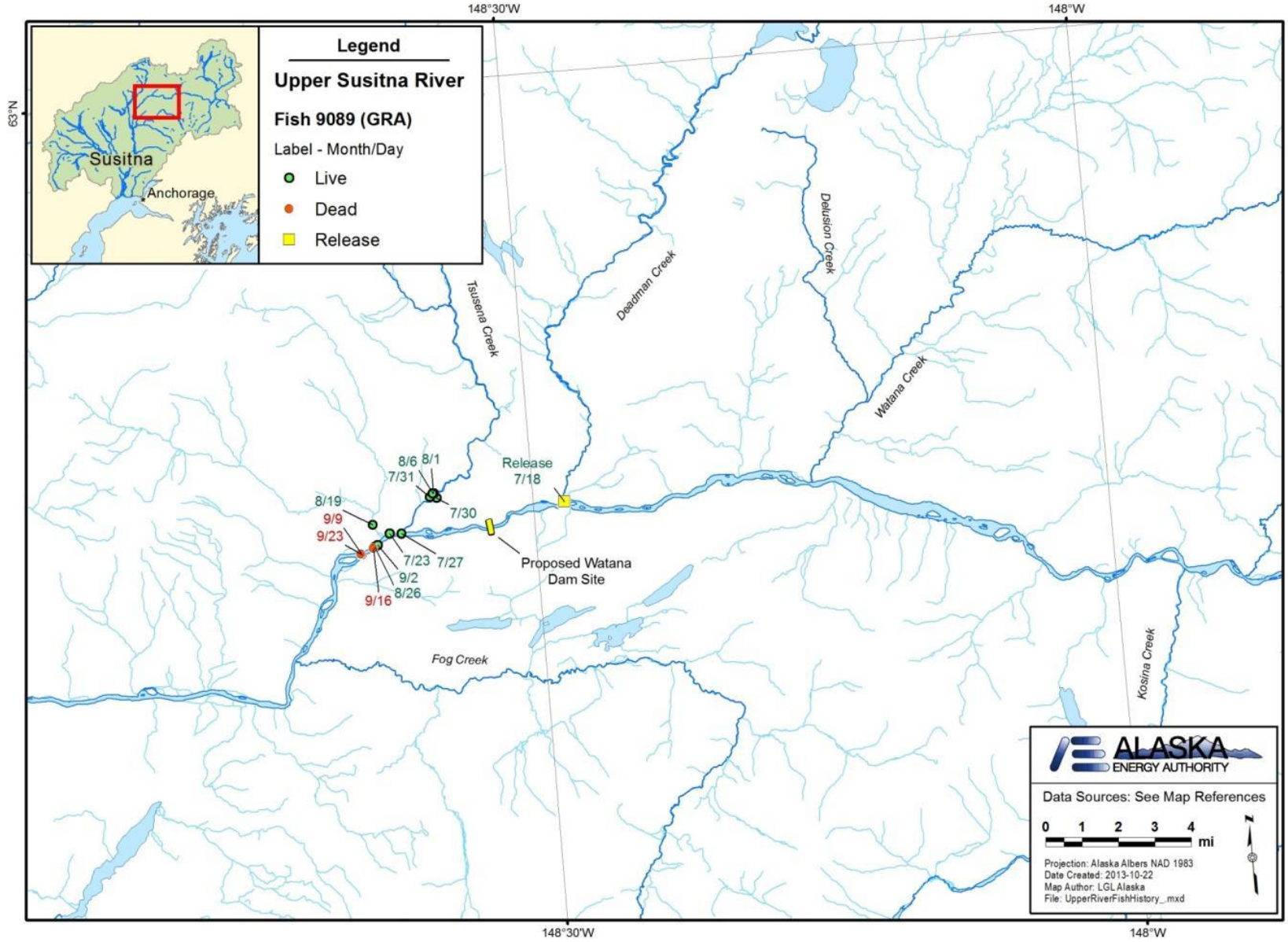


Figure A7. Movements of Upper River Arctic grayling tag ID 9089 through September, 2013. (From ISR 9.05 – June 2014)

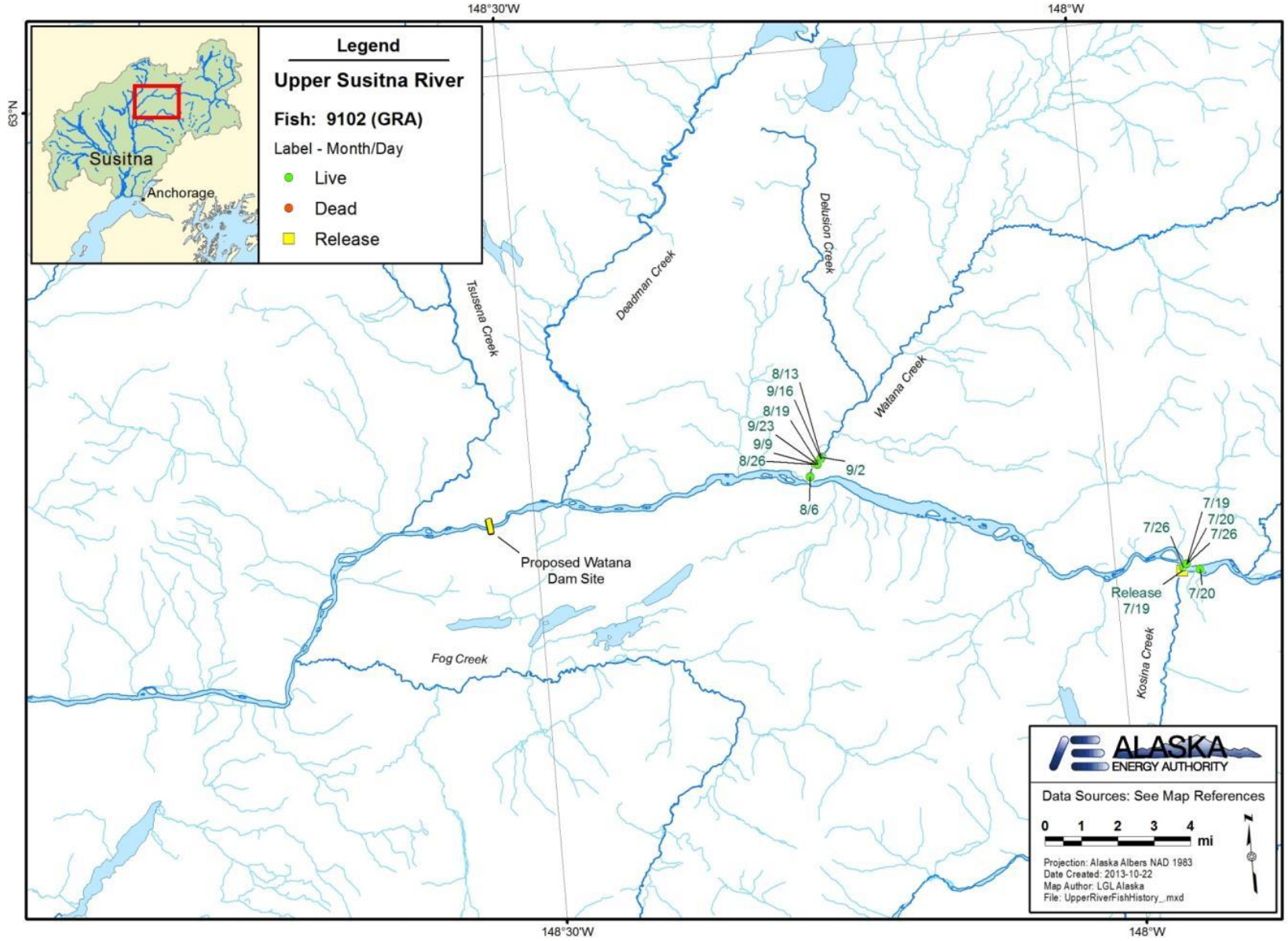


Figure A8. Movements of Upper River Arctic grayling tag ID 9102 through September, 2013. (From ISR 9.05 – June 2014)

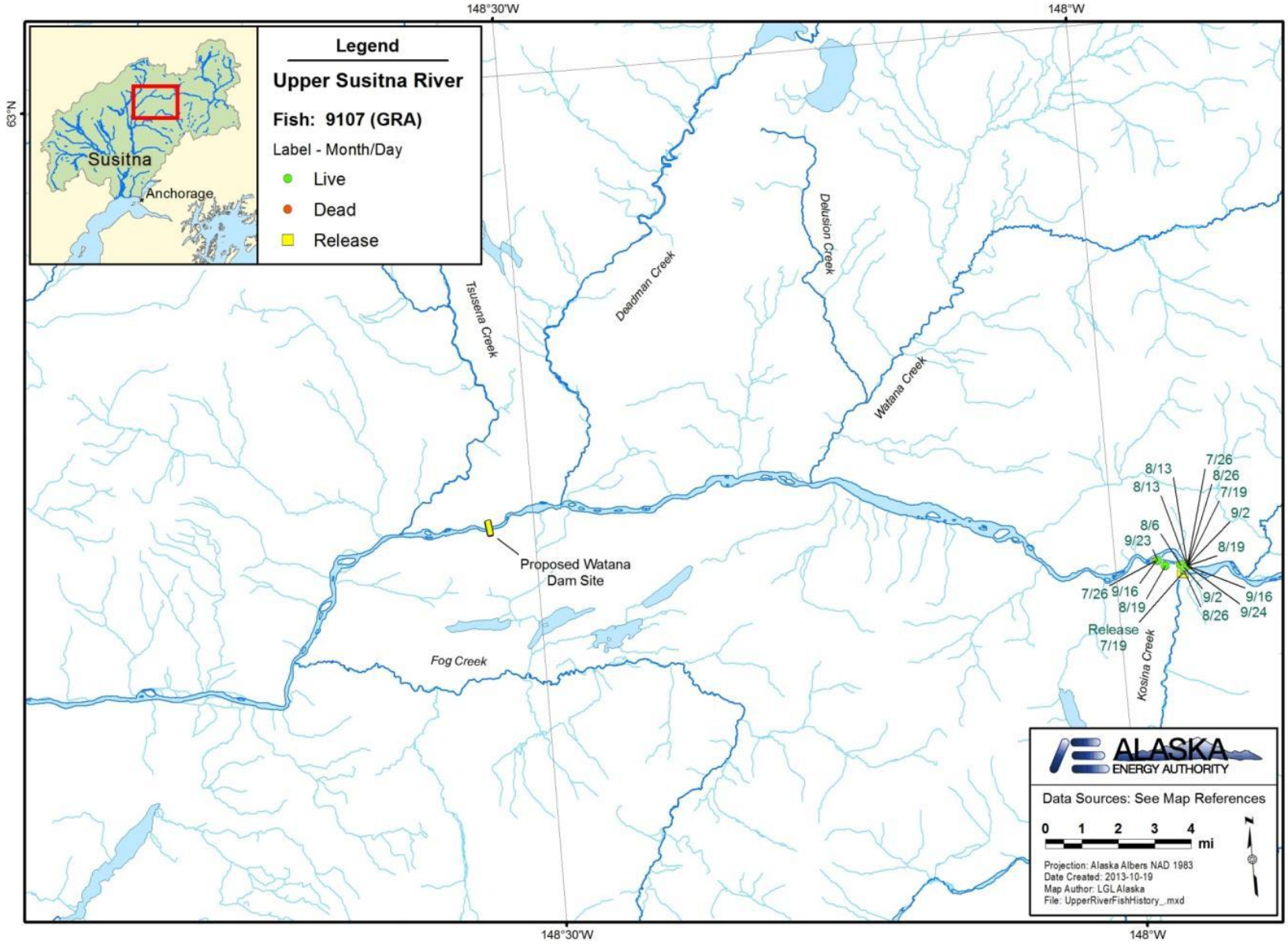


Figure A9. Movements of Upper River Arctic grayling tag ID 9107 through September, 2013. (From ISR 9.05 – June 2014)

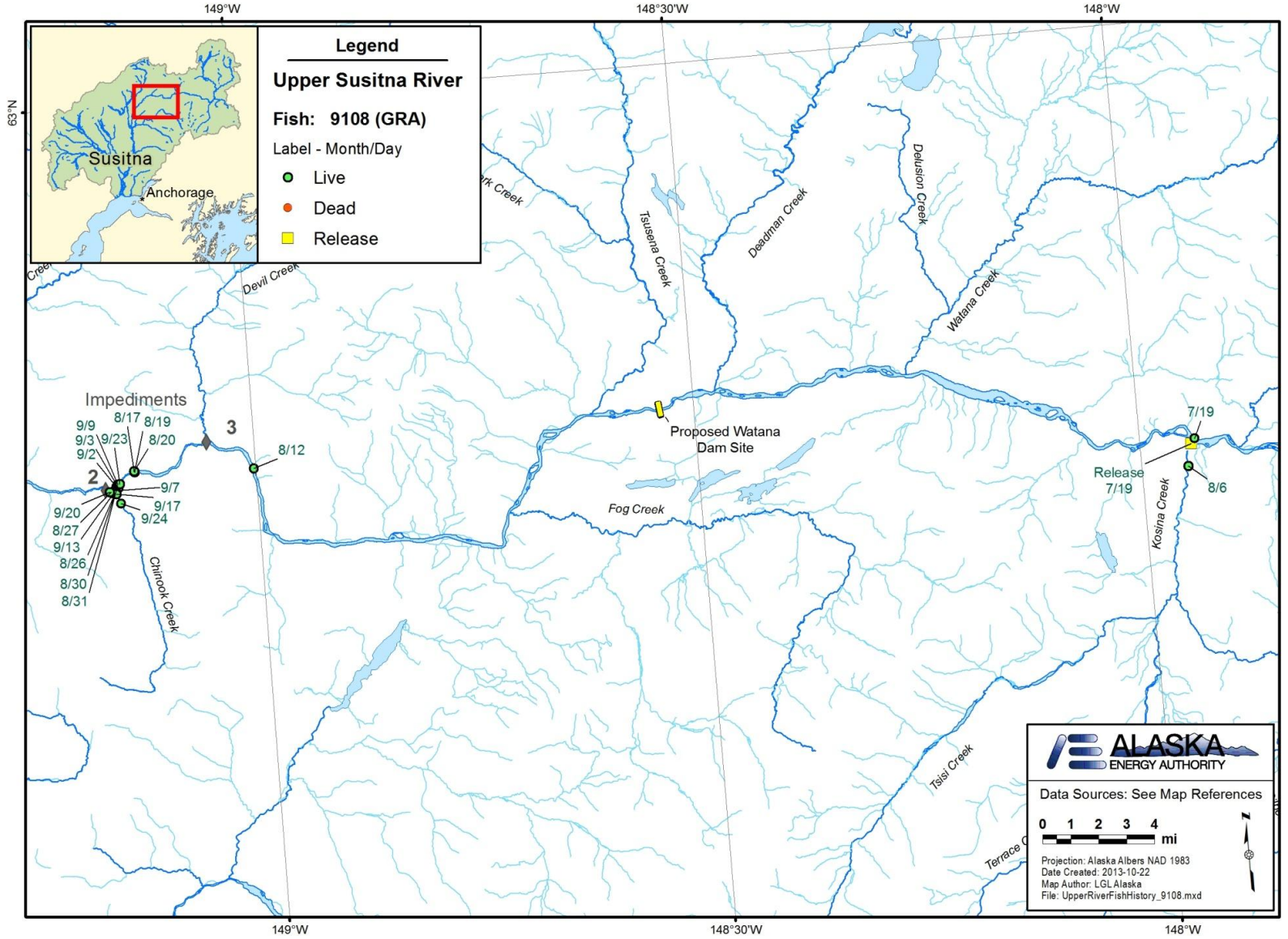
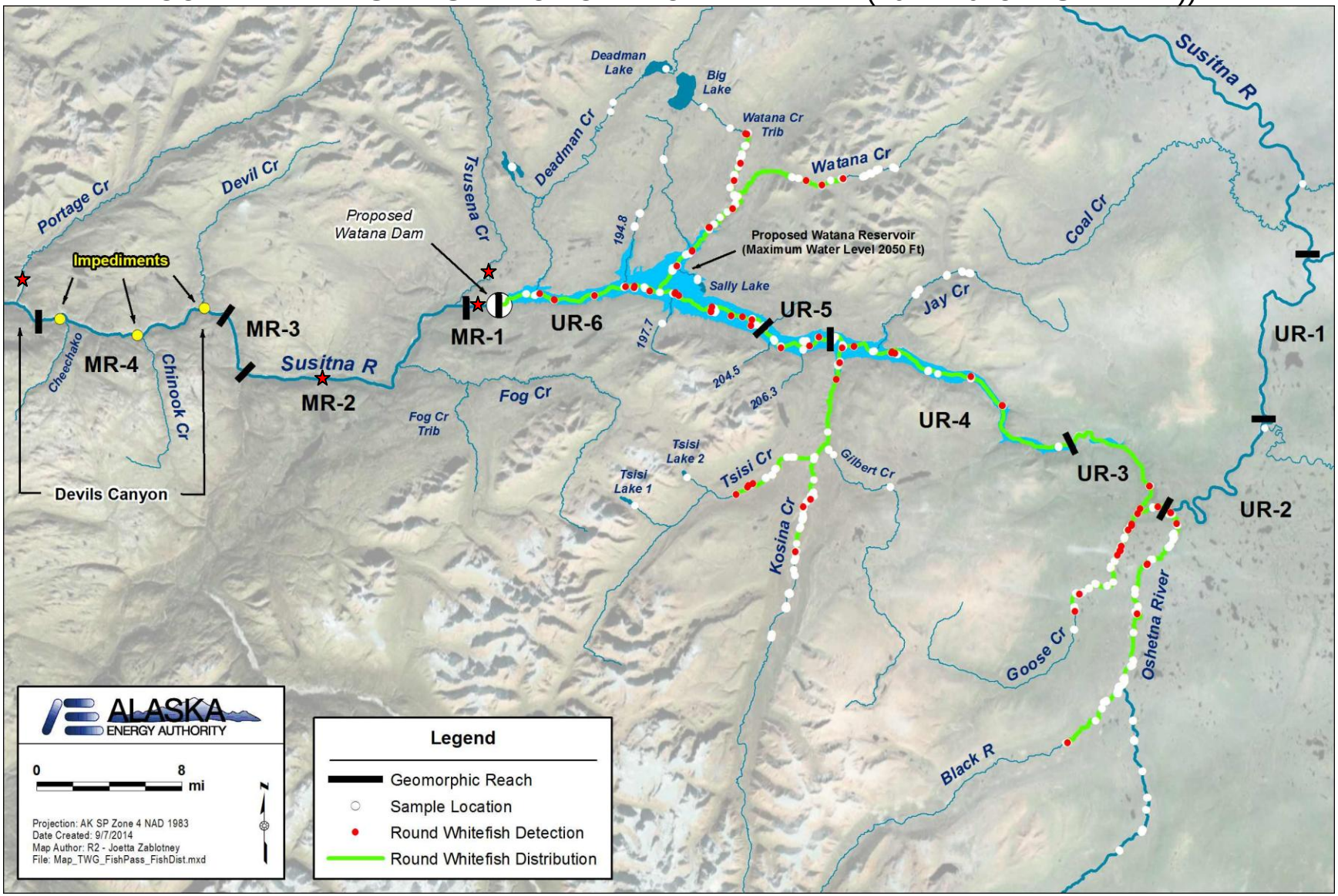


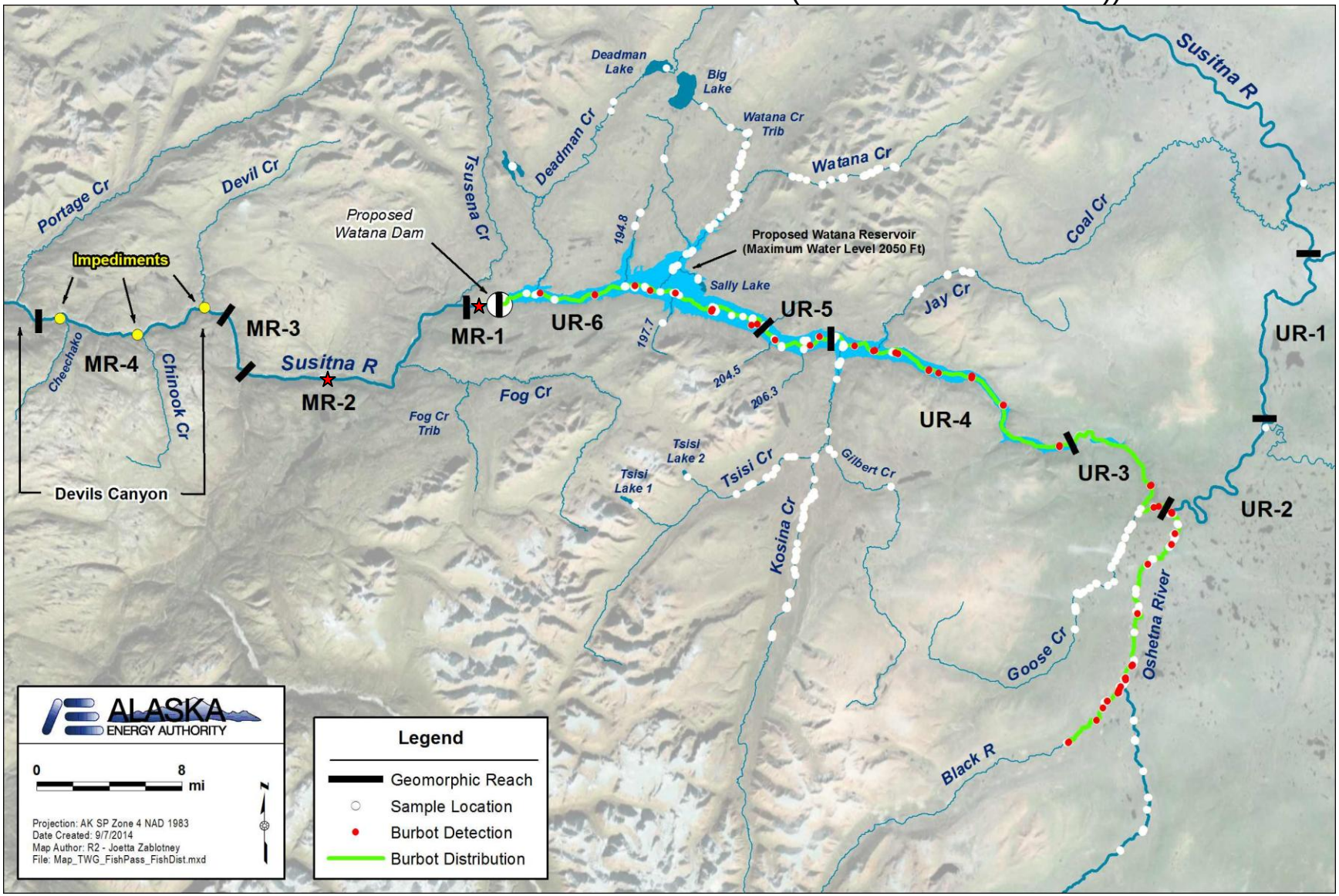
Figure A10. Movements of Upper River Arctic grayling tag ID 9108 through September, 2013. (From ISR 9.05 – June 2014)

ROUND WHITEFISH DISTRIBUTION IN UPPER RIVER (2012-2013 – ISR DATA))



Note: Red stars (★) indicate Middle River reaches or tributaries where species has been documented (through collection or telemetry) and do not indicate specific locations.

BURBOT DISTRIBUTION IN UPPER RIVER (2012-2013 – ISR DATA))



Note: Red stars (★) indicate Middle River reaches or tributaries where species has been documented (through collection or telemetry) and do not indicate specific locations.

Post-ISR Movement Data Summary

Fish Passage Feasibility Brainstorm Workshop

September 9 -11, 2014

Note: All data is preliminary and subject to change after QAQC

Downstream Movement

Chinook Salmon

Juveniles move out of (tributaries Kosina/Oshetna) in May – mid-July (some in August + Sept 2013). Smolt captures in mainstem lateral habitats/ along stream margins through end of July.

Artic Grayling (Round Whitefish, Longnose Sucker)

Radiotelemetry showed 10 grayling (3 longnose sucker) moved downstream of the dam site from July 23, 2013 through November 16, 2013. Twenty four tagged grayling (5 longnose sucker) also moved downstream out of Upper River tributaries into the mainstem during this same time period. During the winter study, grayling continued to move from out of UR tributaries and also showed downstream movements in the mainstem, from the reach downstream of Kosina Creek to reach downstream of dam site and upstream of Devils Island for overwintering. (Whitefish showed similar movements for overwintering in December).

Upstream Movement

Chinook Salmon

Radiotelemetry showed 2 salmon upstream of Impediment 3. One turned back downstream immediately without any upstream progression (consistent across years) and second fish move into Kosina (7/2-7/7) up to mouth of Oshetna and then back Kosina (8/12 to 8/18) subsequently detected drifting downstream below Indian River.

Sonar operated from July 6 to August 22 and estimated a net upstream movement of 24 adult Chinook salmon passed the dam site with 2 others moving upstream and then back down during that time period. Two adults move on river left and 24 on river right (92% on right bank). Most days only one fish passed. Peak passage was 8 fish moved during July 31 to August 3 period. Peak day was August 1 with 3 fish.

Resident Fishes

Sonar estimate is that 1257 resident fishes passed upstream at the dam site from July 7 – August 22. Greater than 99% of these fish passed on the right bank. Approximately 83% were less than 39 cm total length. Daily counts fairly consistent over time, 10 – 55 most days, two days less than 10. Peak day was July 9 with a count of 55 fish.

Seventeen radiotagged grayling also moved from the mainstem into Upper River tributaries during this same time period.

Burbot moved both up and down in winter and out of tributaries into mainstem in MR. In UR moved upstream in mainstem during winter. They did not pass dam site; but there were no tagged fish downstream of dam and upstream of DC (5 out of 7 total burbot tags active during winter period).