



State of Alaska
Department of Fish and Game
Sportfish Division

Nomination Form
Anadromous Waters Catalog

M E

Region Southeastern USGS Quad(s) SITKA D-4

Anadromous Waters Catalog Number of Waterway 112-42-10080

Name of Waterway Indian River USGS Name Local Name

Addition Deletion Correction Backup Information

For Office Use

Nomination #	<u>14-727</u>	<u>James J. Hasbrouck</u>	<u>10/3/2014</u>
		Fisheries Scientist	Date
Revision Year:	<u>2015</u>	<u>Michael J. A.</u>	<u>10/3/14</u>
		Habitat Operations Manager	Date
Revision to:	Atlas	<u>9/26/14</u>	<u>9/26/14</u>
	Both <u>X</u>	AWC Project Biologist	Date
Revision Code:	<u>A-1, B-1, B-2</u>	<u>TR</u>	<u>10/7/14</u>
		Cartographer	Date

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
coho salmon	08/29/2012		✓		✓
Dolly Varden	08/29/2012		✓		

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Ref numbers
14-728
14-729
14-730

Comments:

This is the furthest upstream coho capture on the main stem. Future investigation of the entire system should be conducted.
Coordinates (Lat,Long): Upper(57.8650,-135.32) Lower(57.7800,-135.184)

Extend reach of existing creek w/ coho salmon rearing / present

Name of Observer (please print): Greg Albrecht
Signature: 10.7.168.31 (Web Nomination) Date: 09/25/2014
Agency: _____
Address: PO Box 110024
Juneau, AK 99811

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Anadromous Waters Catalog.

Signature of Area Biologist: _____ Date: _____ Revision 02/08
Name of Area Biologist (please print): _____

Waypoint	Latitude	Longitude	Notes	Sample Effort	Sample Results
2	57.8416	-135.2900	Site 6, 30 minnow traps set between this location and mainstem. 8/2014	MT	28 CO, 142 DV
4	57.8650	-135.3200	Site 8, 2 coho at this location, other traps in area caught Dolly Varden char. 8/2012	MT	2 CO, 248 DV
3	57.8575	-135.3068	Site 7, 30 minnow traps set between this location and mainstem. 8/2014	MT	129 CO, 34 DV
1	57.8284	-135.2610	Site 4, 30 traps set between this location and mainstem. 8/2014	MT	9 CO, 220 DV

MEMORANDUM

State of Alaska Department of Fish and Game Division of Habitat

TO: Jackie Timothy
Southeast Region Supervisor

DATE: 10/1/2012

THRU:

FILE NO: 1973

SUBJECT: Indian River Coho Fry Index
Trapping Report
8/28 – 8/30/2012

FROM: Greg Albrecht
Habitat Biologist

PHONE NO: (907) 465-6384

Background

The US Forest Service (USFS) Sitka Ranger District has conducted salmon enhancement activities on the Indian River (ADF&G Stream no. 112-42-10080; CHp, COp, Pp) beginning in the late 1990s. Following the installation two fish passes in 1999 and modification to a partial barrier falls in 2005, over 140,000 coho fry were transported during 2001 to 2005 into the upper reaches of the Indian River (Miller 2010). Beginning in 2002, the USFS established eight index fry trapping locations in a variety of upstream habitats to monitor coho numbers.

In 2011, ADF&G Habitat issued a Fish Habitat Permit (FH12-I-0125) to the City of Tenakee for a run-of-the-river hydroelectric project to be installed near the fish pass at falls number four on Indian River (Fig 1). The USFS has not conducted fry monitoring since 2010; however, ADF&G Habitat has a shared interest in monitoring the drainage to assess potential impacts from the hydroelectric project and is seeking to continue monitoring through a cooperative effort involving both USFS and the City of Tenakee.

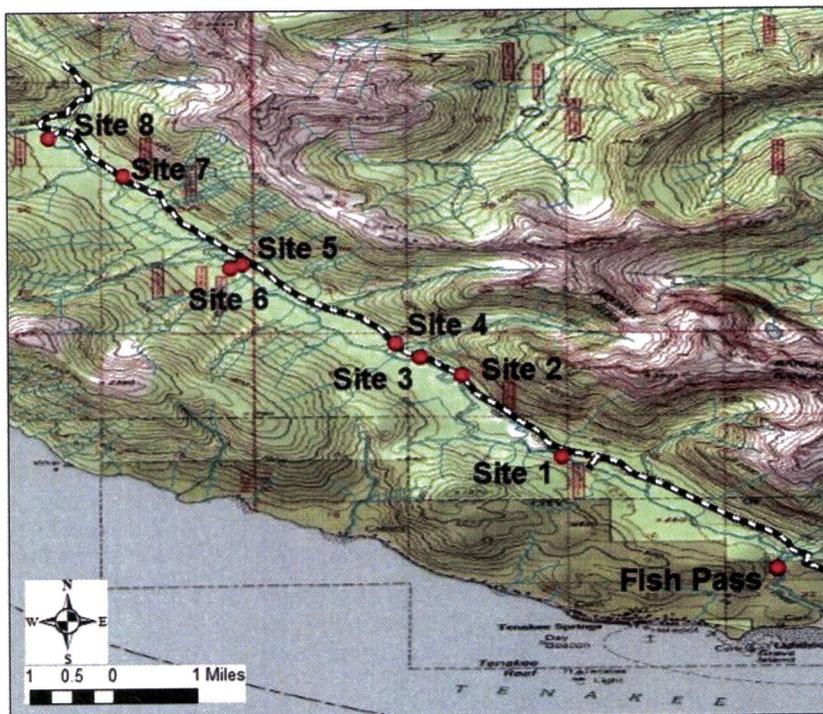


Figure 1 Map of Indian River showing index trapping site and fish pass locations

Methods

We followed methods from Miller (2010) which include soaking 30 1/8" Gee minnow traps, baited with freshly punctured Whirl-paks® of salmon eggs at each of the eight sites for approximately 2 hours. All traps were set in the best available habitat, including woody debris, cut banks, and pools. We did not take all the metrics described in Miller (2010), but only recording Fork Length (FL) measurements for individual coho captures and a FL range for all Dolly Varden (DV) char captured at one site. Additionally, only 25 traps were set at site four and were allowed to soak for 6.5 hours to accommodate our need to survey the proposed hydro bypass reach in our allotted field time. A per-trap-average, calculated from the site, was used to supplement totals to reflect a 30 trap effort. Swales (1987) showed that fish captures in low density areas continue to increase after 2 hours; however, for the rate at which this occurs, the number of fish captured, and the scope of the project, this was not adjusted for. Deployment and recovery of traps at all other sites was between two and four hours.

Results

A total of 291 coho (80 coho < 70 mm and 211 coho ≥70 mm) and 1635 Dolly Varden were captured (Tables 1-8; Fig 2). A size frequency analysis of coho captured indicates fish <70 mm are likely age 0 and that fish ≥70 mm are at least one year old (Fig 3). Totals were combined with previous data to show trends over time (Tables 9 & 10; Fig 3).

Table 1 Site 1 results

Date	8/28/2012	Traps	30
Crew	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1115-1315
Flow	~ 24 inches below OHW, moderately low	Coho ≤65 mm	2
Weather	Rain, Heavy at times	Coho ≥70 mm	2
Notes	Slow section of river 3-5 feet deep in Thalweg. 15 traps placed < 500 feet upstream and downstream of flagged tree. Waypoint S1 – Walk upstream on river left for about 10-15 minutes to access site. Downed tree with flagging. 57.8083, -135.2246	Total Dolly Varden	41 (40-120 mm)
		Pictures	1189-1190

Table 2 Site 2 results

Date	8/28/2012	Traps	30
Crew	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1500-1700
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	51
Weather	Rain, Heavy at times	Coho ≥70 mm	62
Notes	Large bend in stream with lots of LWD. 15 traps placed upstream and 16 placed downstream within 300 feet of gravel bar at bend. Waypoint S2 – Directly off road, staged on gravel bars. 57.8232, -135.2492	Total Dolly Varden	521 (50-140 MM)
		Pictures	1194-1196

Table 3 Site 3 results

Date:	8/28/2012	Traps (adjusted)	29 (30)
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1535-1810
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	24
Weather	Rain, Heavy at times	Coho ≥70 mm	87
Notes	Large bend with nice gravel bar and good habitat containing LWD. 10 traps were place downstream within 300 feet of site entry and 20 were placed within 400 feet upstream. One bait package was unpunctured and this trap did not fish. One per-trap average (3 CO, 15 DV) was added to the total. Waypoint S3 – Directly off road, staged on gravel bars. 57.8261, -135.2558	Total Dolly Varden	453 (40-155mm)
		Pictures	1198, 1200

Table 4 Site 4 results

Date:	8/30/2012	Traps (adjusted)	25 (30)
Crew:	G. Albrecht and J. Zutz	Soak Time	1000-1430
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	1
Notes	Beaver pond area. Only 25 traps were set around the road side perimeter of the pond, due to limited resources. Five per-trap averages (2.5 DV) added. Waypoint S4 – Left side of road about 100 feet through grass meadow. 57.8284, -135.2601	Total Dolly Varden	77 (80-1500mm)
		Pictures	1240-1241

Table 5 Site 5 results

Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	0920-1120
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	3
Weather	Hot, sunny, and clear	Coho ≥70 mm	16
Notes	Good rearing habitat in mainstem stretch of river. 15 traps were set within 300 feet upstream and 400 feet downstream (around the bend) of the collapsed LSB. Waypoint S5 – 300 feet down spur road on left side of road. 57.8423, -135.2866	Total Dolly Varden	143 (60-160mm)
		Pictures	1206, 1207, 1209

Table 6 Site 6 results

Site # 6			
Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1220-1620
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	5
Notes	Good rearing habitat through meadow side channel. 15 traps were set within 250 feet up and downstream of bridge. Waypoint S6 – continue down spur road past failing LSB about 300 feet. 57.8415, -135.2886	Total Dolly Varden	127 (50-140mm)
		Pictures	1220,1222

Table 7 Site 7 Results

Site # 7			
Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1030-1240
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	36
Notes	Beaver ponds on both sides of road. Right side appears to have no fish access. 10 traps were set on the upstream side of the beaver dam; however, no fish captured. 15 were set on the downstream and 5 near the confluences with the mainstem. Waypoint S7 – Adjacent to road with large fence post stuck in tree stump. 57.8577, -135.3070	Total Dolly Varden	25 (50-110mm)
		Pictures	1217-1218

Table 8 Site 8 results

Site # 8			
Date:	8/29/2012	Traps	30
Crew:	G. Albrecht, A. Bloom, J. Zutz	Soak Time	1330-1530
Flows	~ 24 inches below OHW, moderately low	Coho ≤65 mm	0
Weather	Hot, sunny, and clear	Coho ≥70 mm	2
Notes	Primarily spawning habitat here, rearing habitat was more spread out. 14 traps were placed within 500 feet upstream of the bridge and 16 were placed within 500 feet downstream of the bridge. Waypoint S8 – Walk down alder choked spur road about 200 feet to failing LSB. 57.8642, -135.3200	Total Dolly Varden	248 (25-120mm)
		Pictures	1223, 1224, 1227

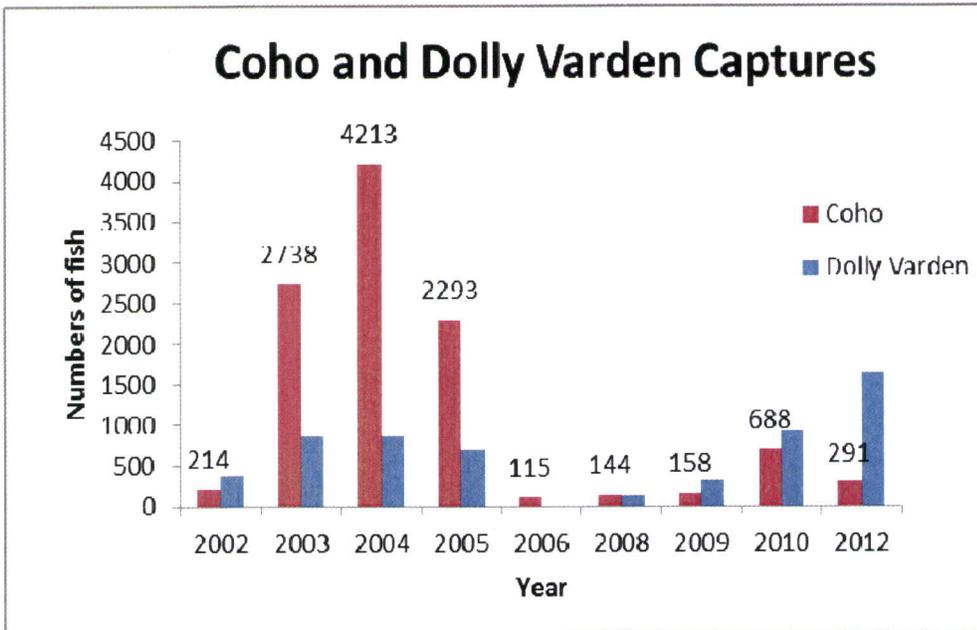


Figure 2 Total juvenile coho salmon (red) and Dolly Varden char (blue) captured during index trapping efforts from 2002 to 2012. Data from Miller (2010), 2006 Dolly Varden information unavailable.

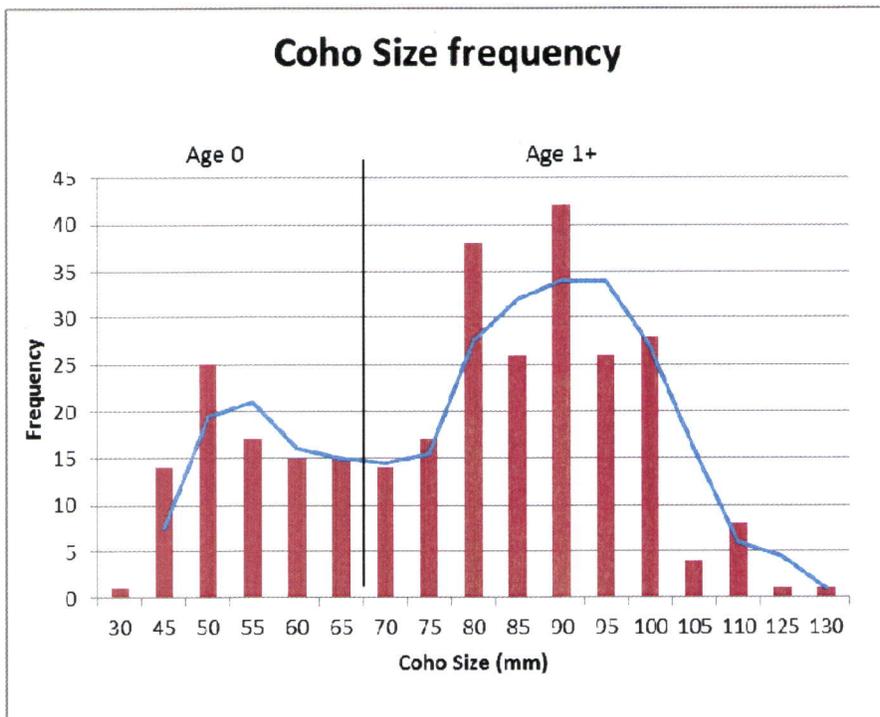


Figure 3 Length frequency distribution for all coho captures to determine approximate sizes for age class 0 and 1+ individuals.

Table 9 Annual coho fry captures at each index site. Data from Miller (2010).

	2002	2003	2004	2005	2008	2009	2010	2012
Site 1	0	6	53	23	0	0	4	4
Site 2	9	885	751	321	4	1	140	113
Site 3	120	333	1009	333	15	4	284	111
Site 4	1	135	85	53	0	2	4	1
Site 5	38	640	1165	409	38	130	221	19
Site 6	3	236	254	437	26	21	7	5
Site 7	3	110	359	373	18	0	28	36
Site 8	40	393	486	344	22	0	0	2
TOTAL	214	2738	4162	2293	123	158	688	291

Table 10 Annual Dolly Varden captures at each index site. Data from Miller (2010).

	2002	2003	2004	2005	2008	2009	2010	2012
Site 1	34	70	76	202	1	15	62	41
Site 2	76	203	265	111	5	66	208	521
Site 3	39	156	109	58	20	60	192	453
Site 4	92	323	140	111	15	70	116	77
Site 5	21	24	106	45	10	11	122	143
Site 6	41	26	21	43	50	49	75	127
Site 7	7	9	18	25	0	7	30	25
Site 8	74	55	121	88	15	50	128	248
TOTALS	384	866	856	683	116	328	933	1635

Discussion

Previous index trapping results were combined with results from this effort and show that coho juvenile numbers are holding at relatively low and consistent numbers. Coho captures from 2003 to 2005 were large due to juvenile transplants made to the river from 2001 to 2005. Stocked coho can be identified by a clipped adipose fin; however, adipose fin clipped individuals have not been captured since 2006. The overall trend since 2006 is still positive and demonstrates that adult fish can navigate the falls; however, this year's total is lower than 2010 and the magnitude of juvenile coho is still relatively low.

In our survey we trapped approximately 5,800 linear feet of river. The USFS estimates there are 34 stream miles available for habitat on the Indian River. If we assuming the 8 index sites represent a subsample of the 34 miles of habitat and juvenile coho densities therein, the total number of juvenile coho would be somewhere in the neighborhood of 9,000, 2500 of which would be age 0. Bradford (2000) estimates average fry production for one female coho to be 413, indicating that about 6 coho pair successfully spawned last fall. A simple estimate based on historical stocking and trapping results provides similar results, where the number of coho trapped during 2002 – 2006 efforts (9,787) represents about 15% of the total stocked during 2001 – 2005 (140,000). Therefore, a capture of 291 would indicate a population of 1,940 juvenile coho in the entire system.

Coho and Dolly Varden captures at each site followed trends from previous years, with the exception of site five, where fewer coho were captured than in previous years (Table 9). Dolly Varden captures have continued to increase in recent years and appear to track with coho numbers. Although Dolly Varden are predators of coho fry, research shows that coho are a small portion of their diet. Therefore, the correlation between Dolly Varden and coho captures is only partly explained by predation and may be more indicative of river conditions affecting both species.

Literature Cited

- Bradford, MJ, Myers, RA, & Irvine, JR. 2000. Reference points for coho salmon (*Onchorhynchus kisutch*) harvest rates and escapement goals based on freshwater production. *Can. J. Fish. Aquat. Sci.* 57:677-686.
- Miller, RJ. 2010. Indian River Fry Monitoring 2010. US Forest Service Report.

Appendix A



1189



1195



1190



1196



1194



1198



1200



1209



1206



1217



1207



1218



1220



1223



1222



1224



1227



1240

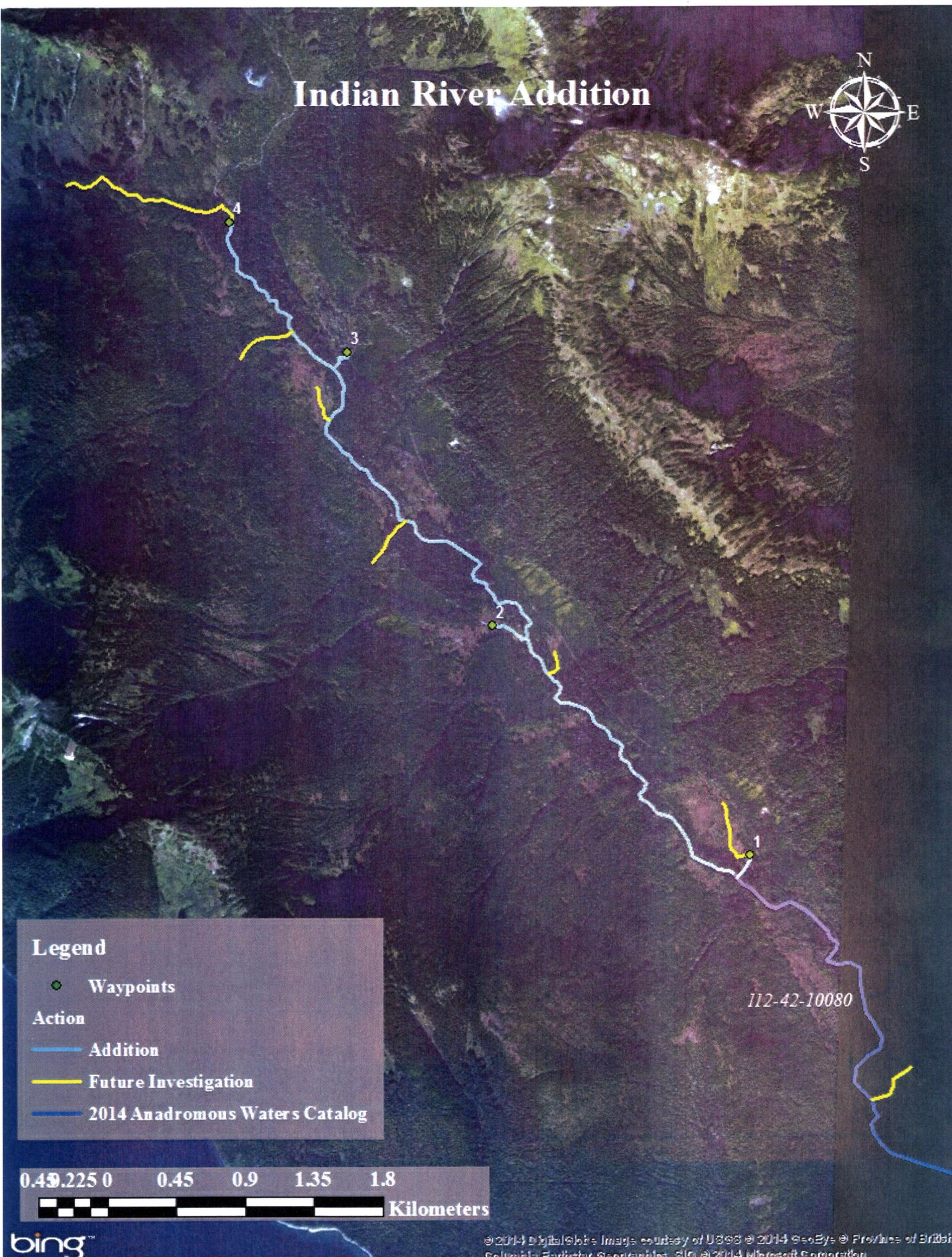


1241

cc:

Al Ott, ADF&G Habitat, Fairbanks
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Ryan Scott, ADF&G/WC, Juneau
All, Douglas Habitat staff
Steve Brockmann, USFWS, Juneau
Randy Vigil, USACE, Juneau
Rob Miller, USFS, Sitka
Art Bloom, City of Tenakee

Indian River Addition



Legend

◆ Waypoints

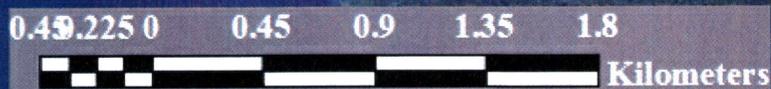
Action

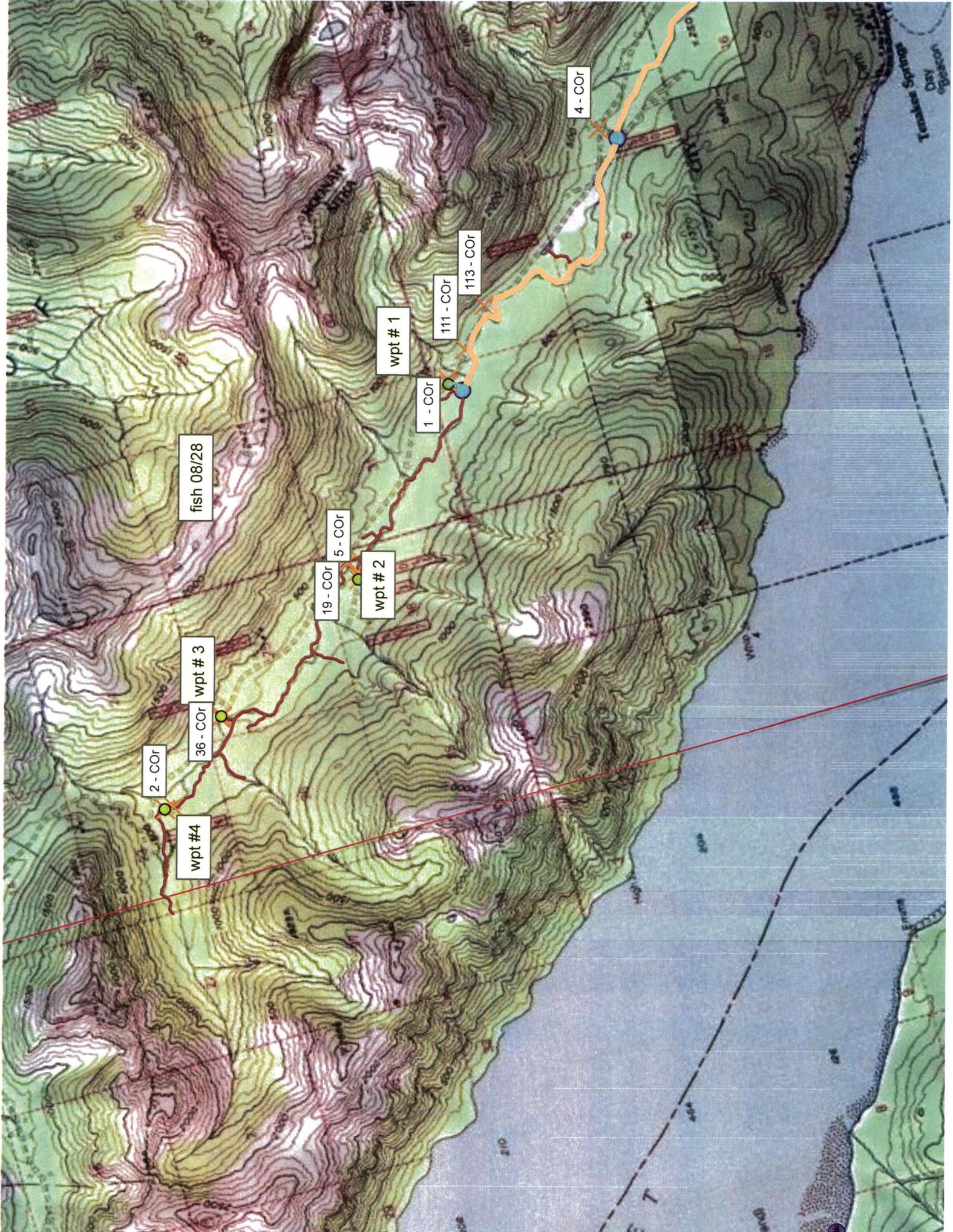
— Addition

— Future Investigation

— 2014 Anadromous Waters Catalog

112-42-10080





fish 08/28

wpt # 1

wpt # 2

wpt # 3

wpt # 4

1 - COR

5 - COR

2 - COR

36 - COR

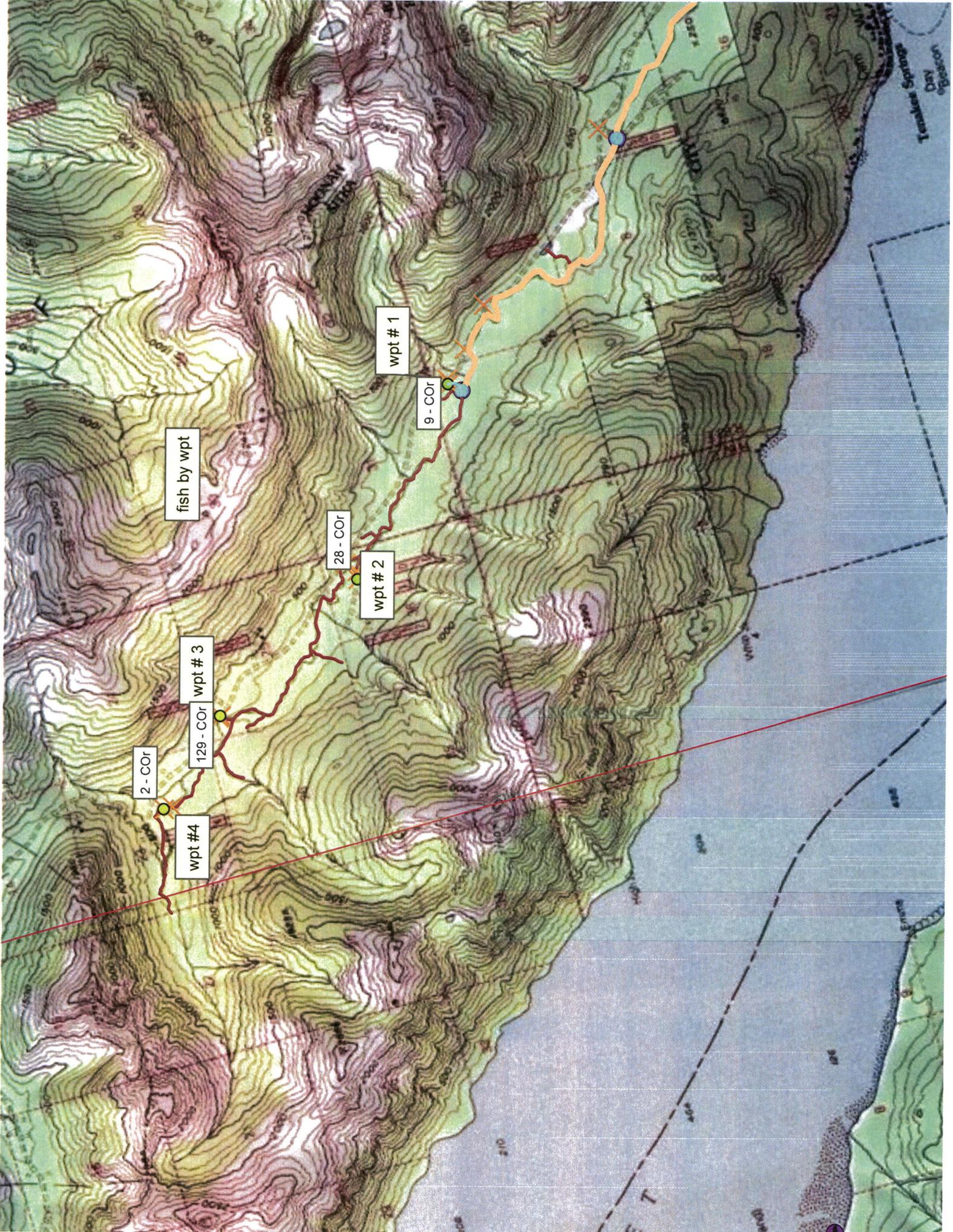
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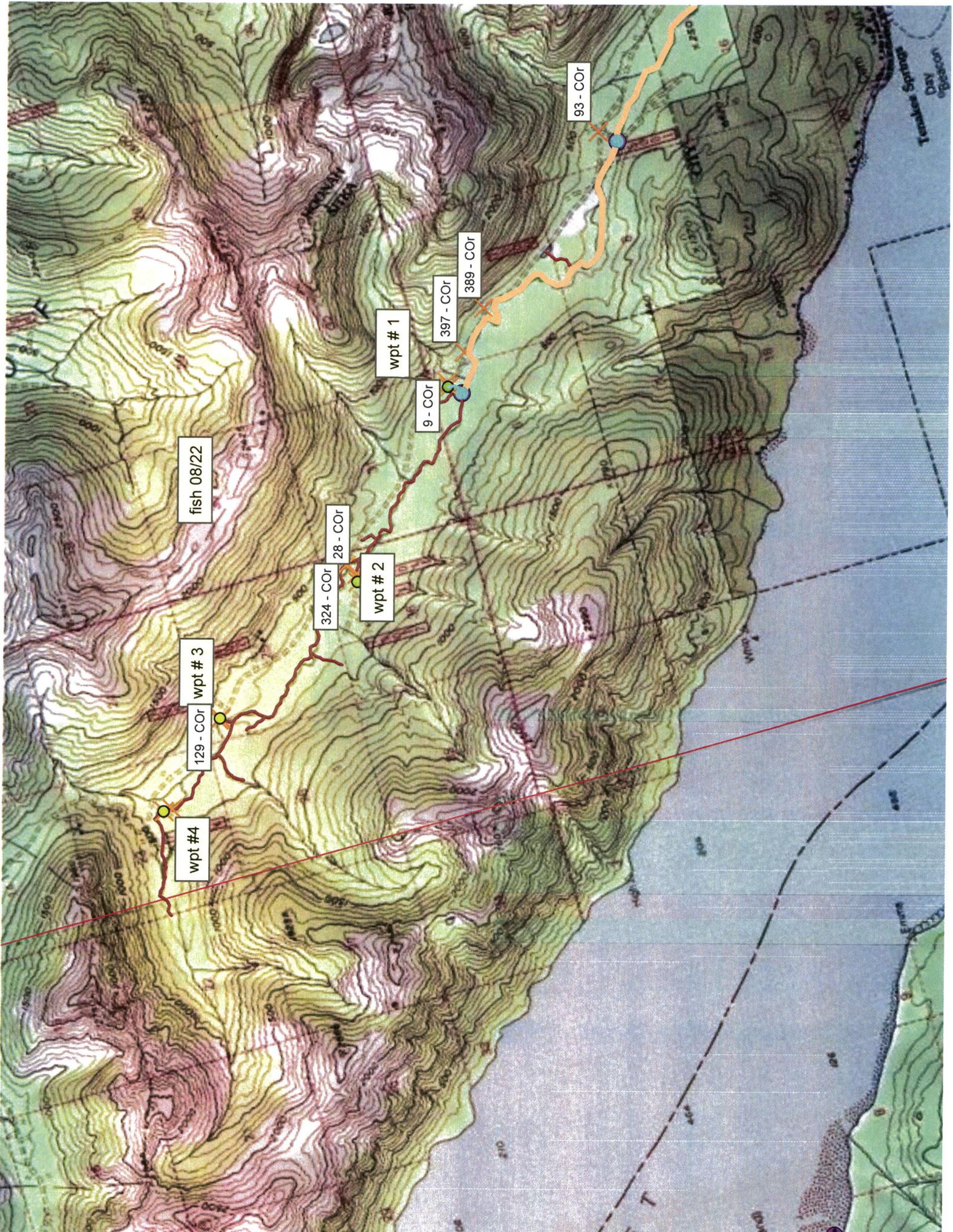
113 - COR

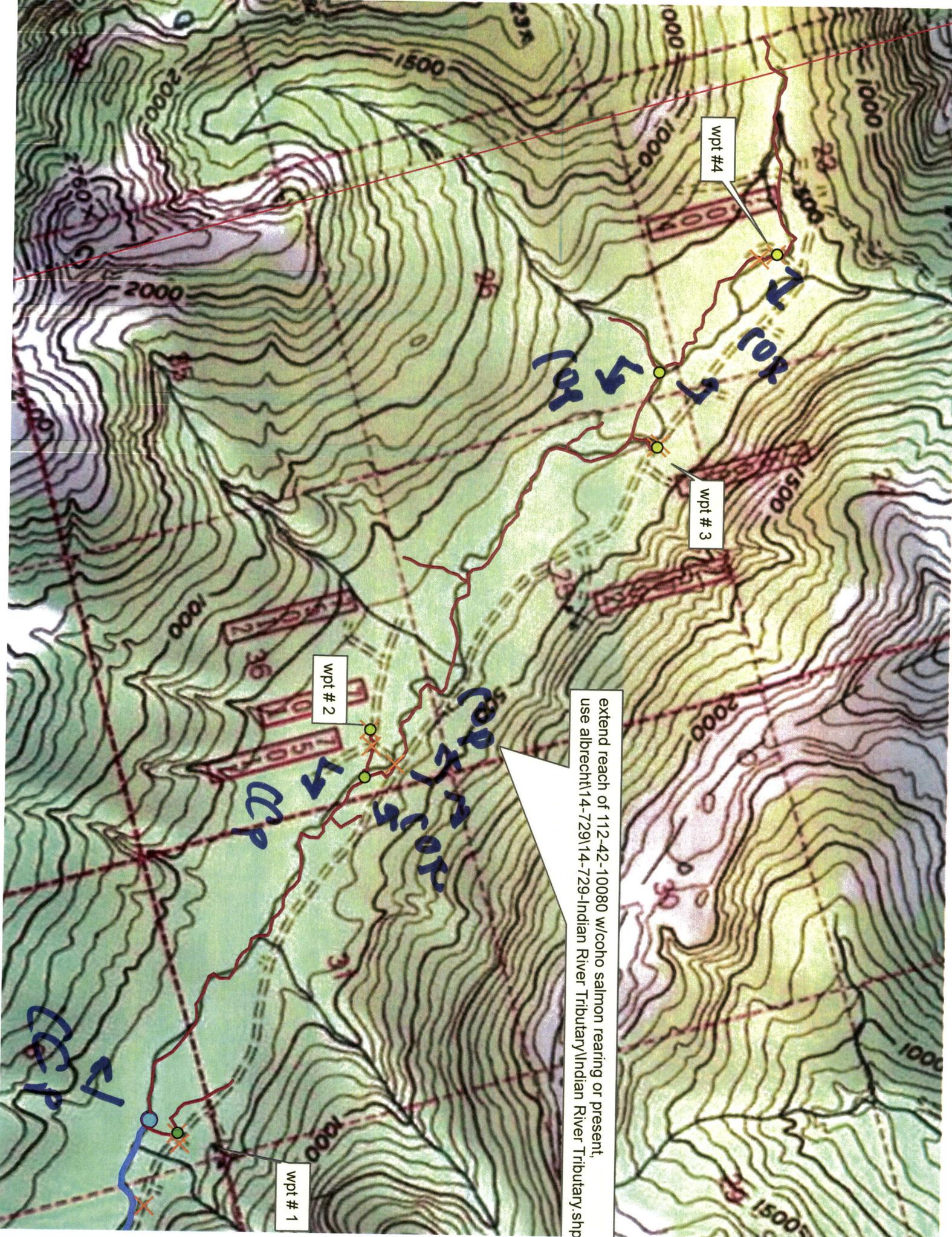
4 - COR

Dry Express

101







extend reach of 112-42-10080 w/coho salmon rearing or present;
use albrecht\14-729\14-729-Indian River Tributary\Indian River Tributary.shp

wpt # 2

wpt # 3

wpt #4

wpt # 1