The Effectiveness of Large Scale Side-channel Restoration on Coho Smolt Production in the Englishman Watershed

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Finnegan Wing Intake

Flow

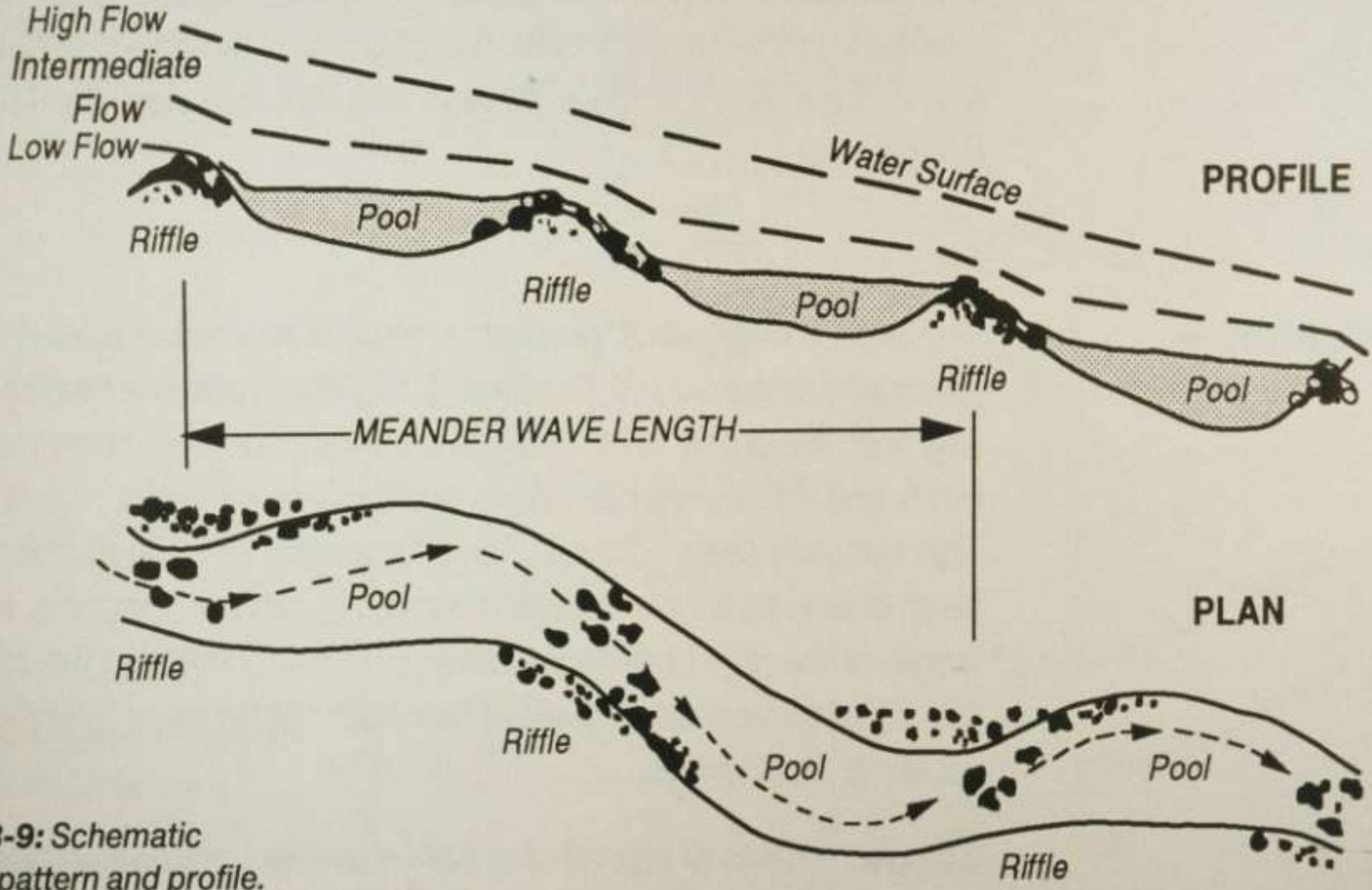
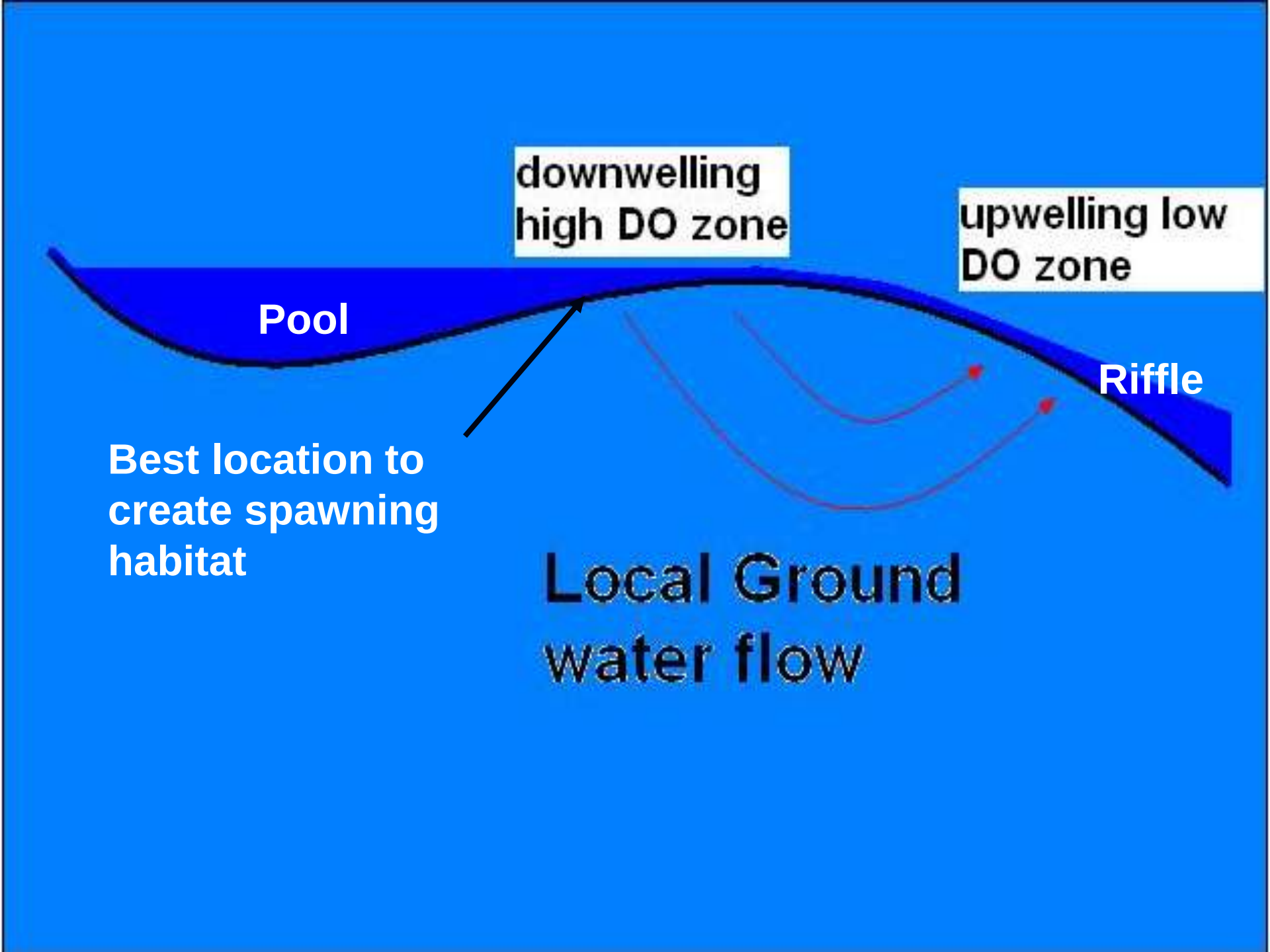
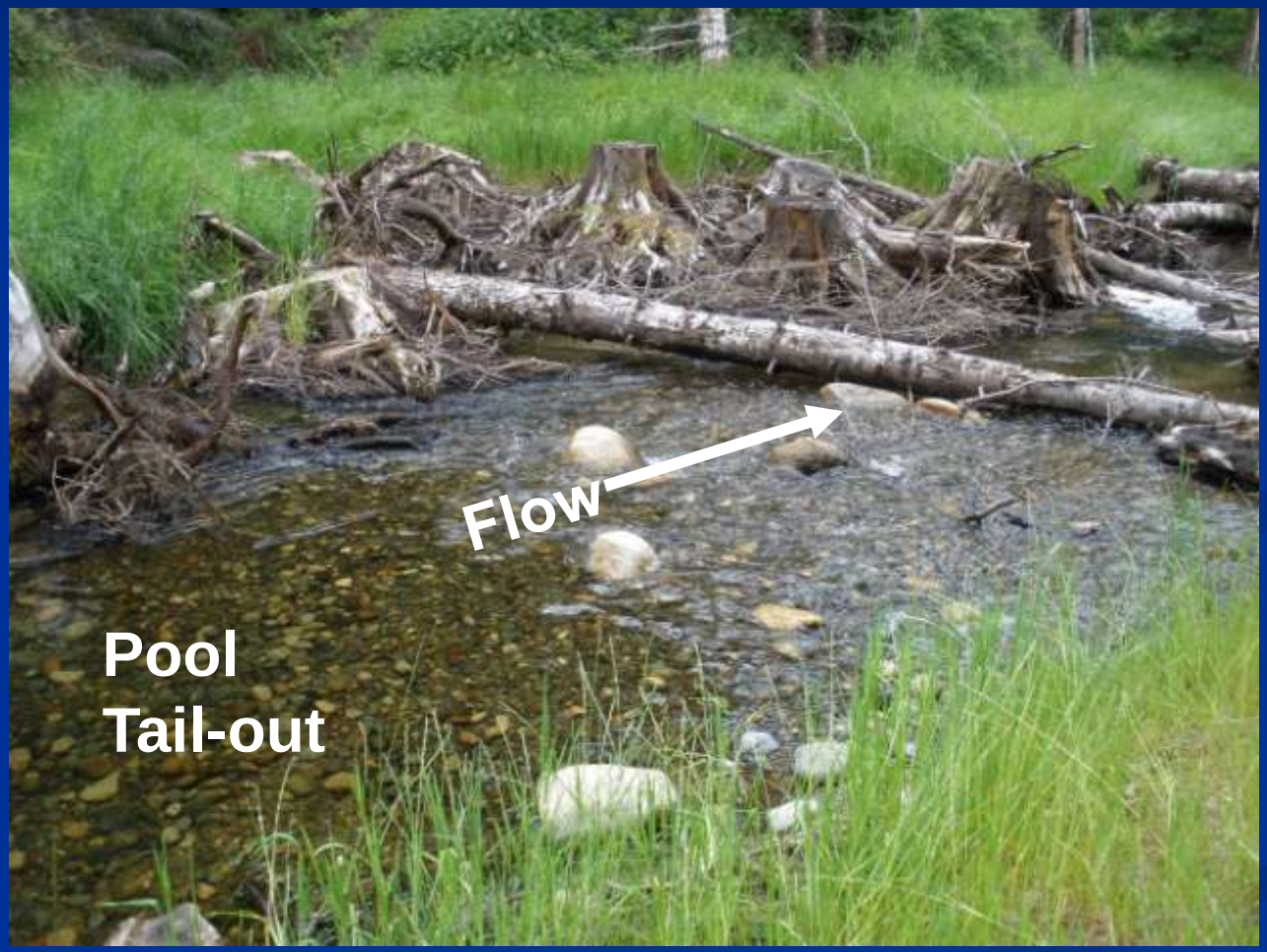


Figure 3-9: *Schematic channel pattern and profile.*


downwelling
high DO zone
upwelling low
DO zone
Pool
Riffle
Best location to
create spawning
habitat
Local Ground
water flow

Spawning Habitat Created at Pool Tail-out



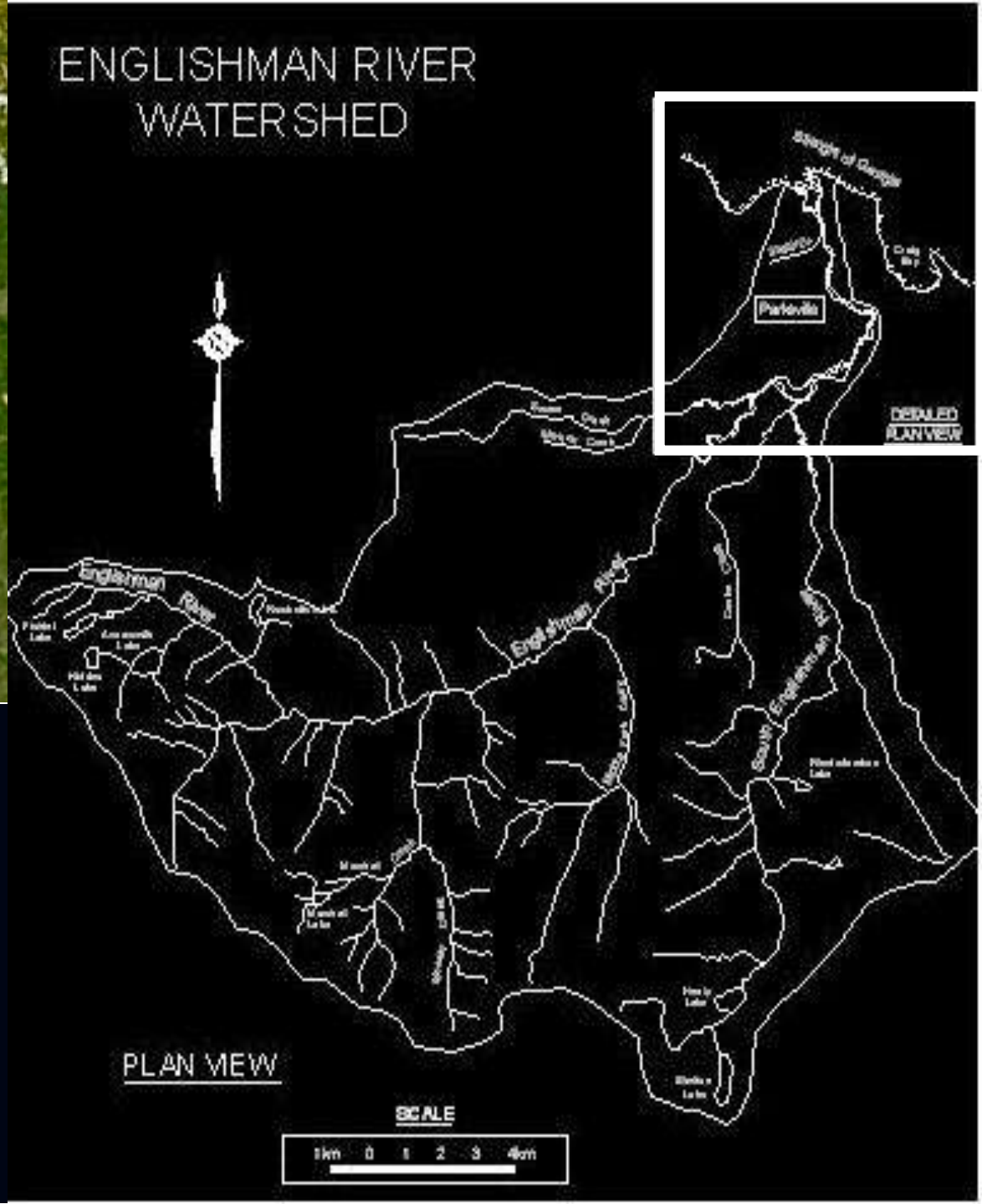
The base of the screened gravel layer is where the eggs and sediment layer deposits

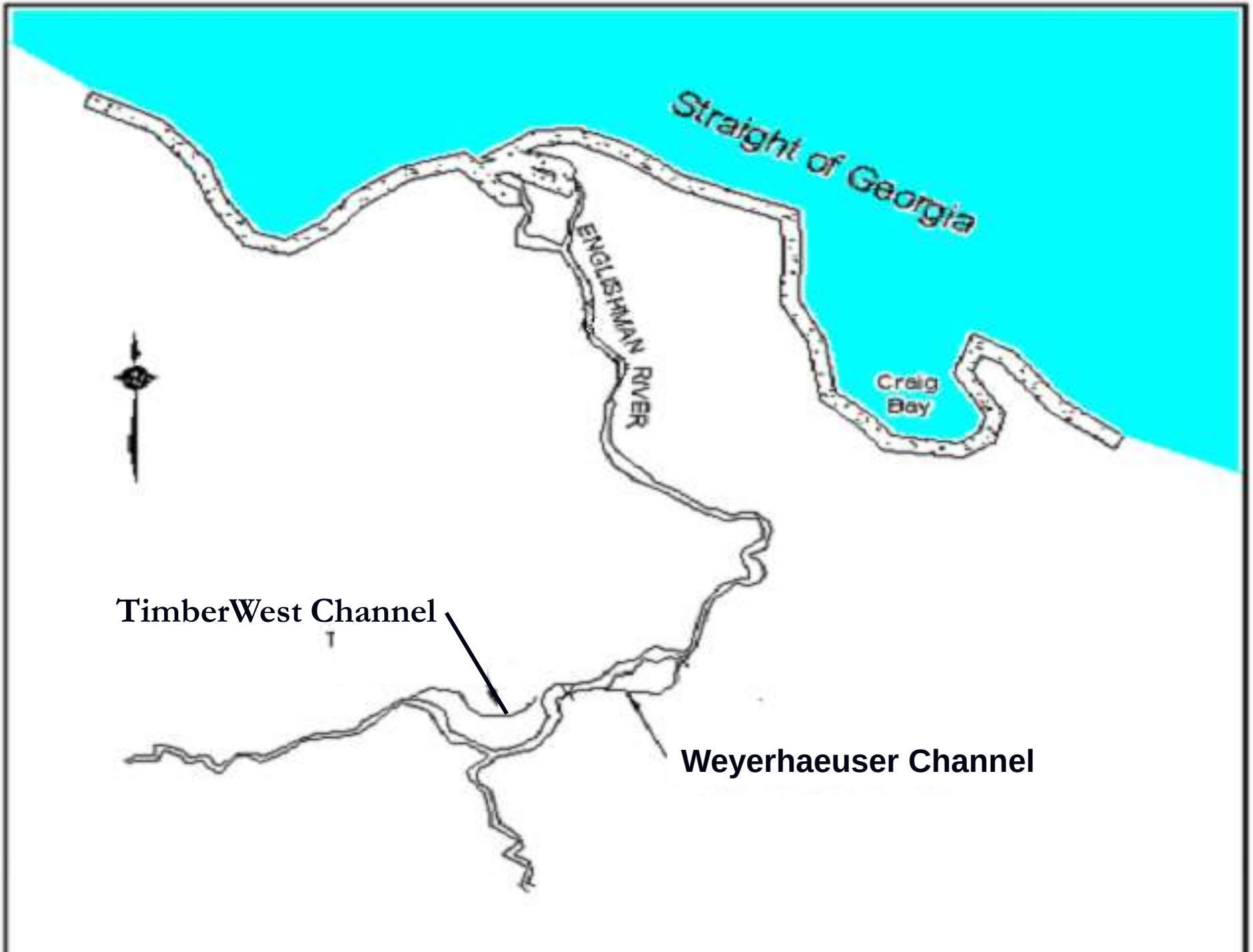
Watershed Area

=468 square Km

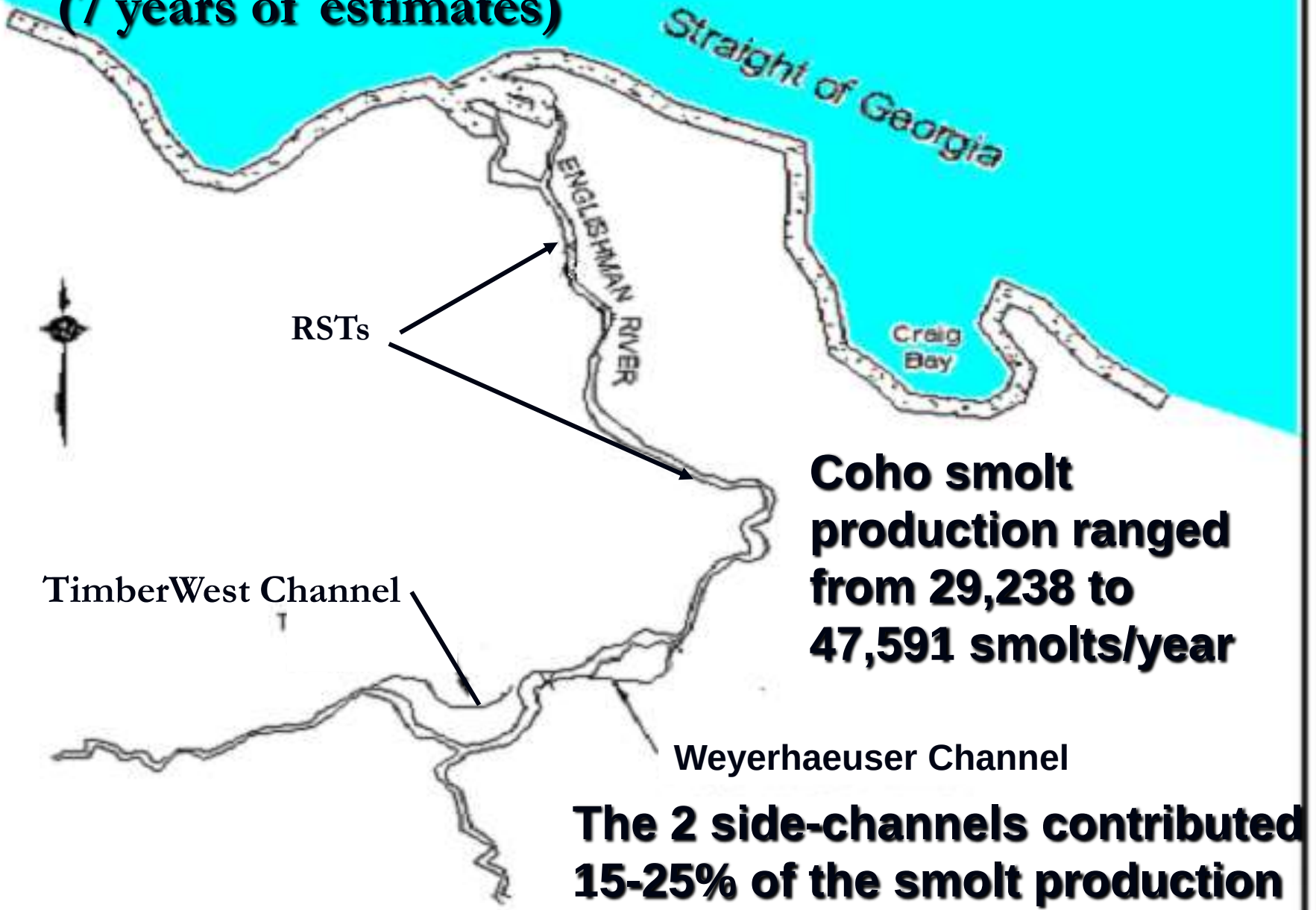
MAD = 13.9 CMS

Summer MAD =1.3cms



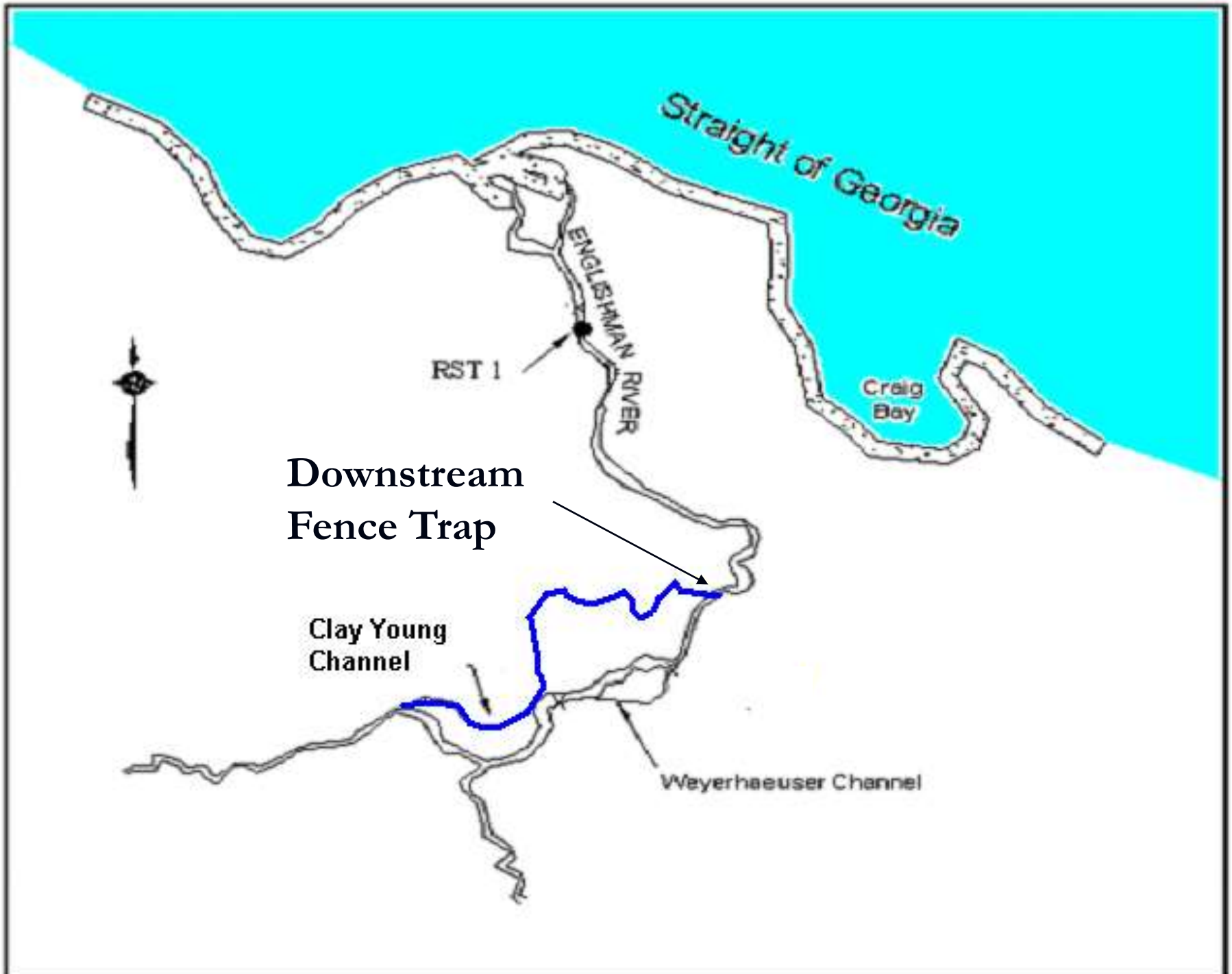

Straight of Georgia
ENGLISHMAN RIVER
Craig Bay
TimberWest Channel
Weyerhaeuser Channel

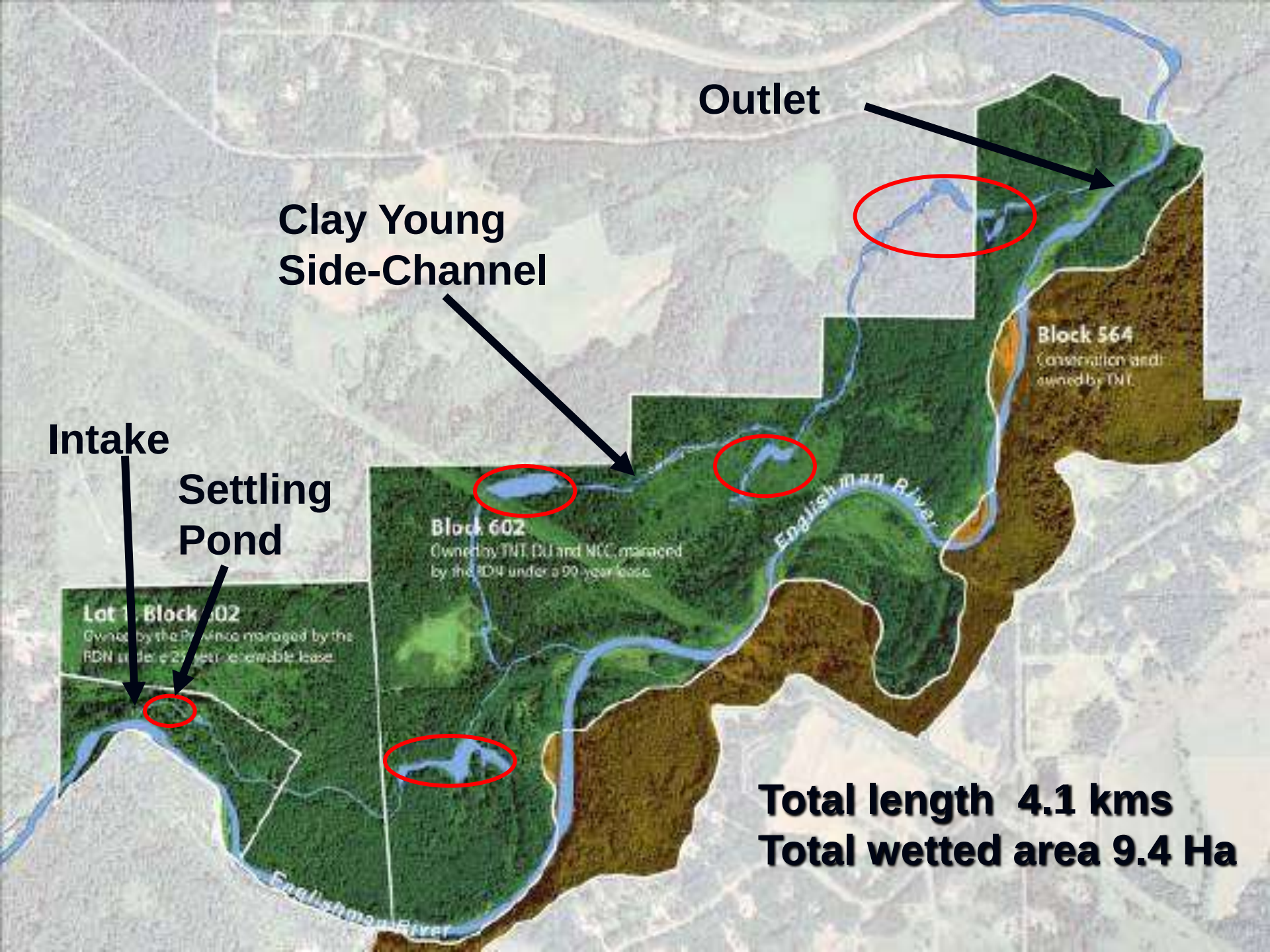
Coho Smolt Watershed Production 1998-2005
(7 years of estimates)



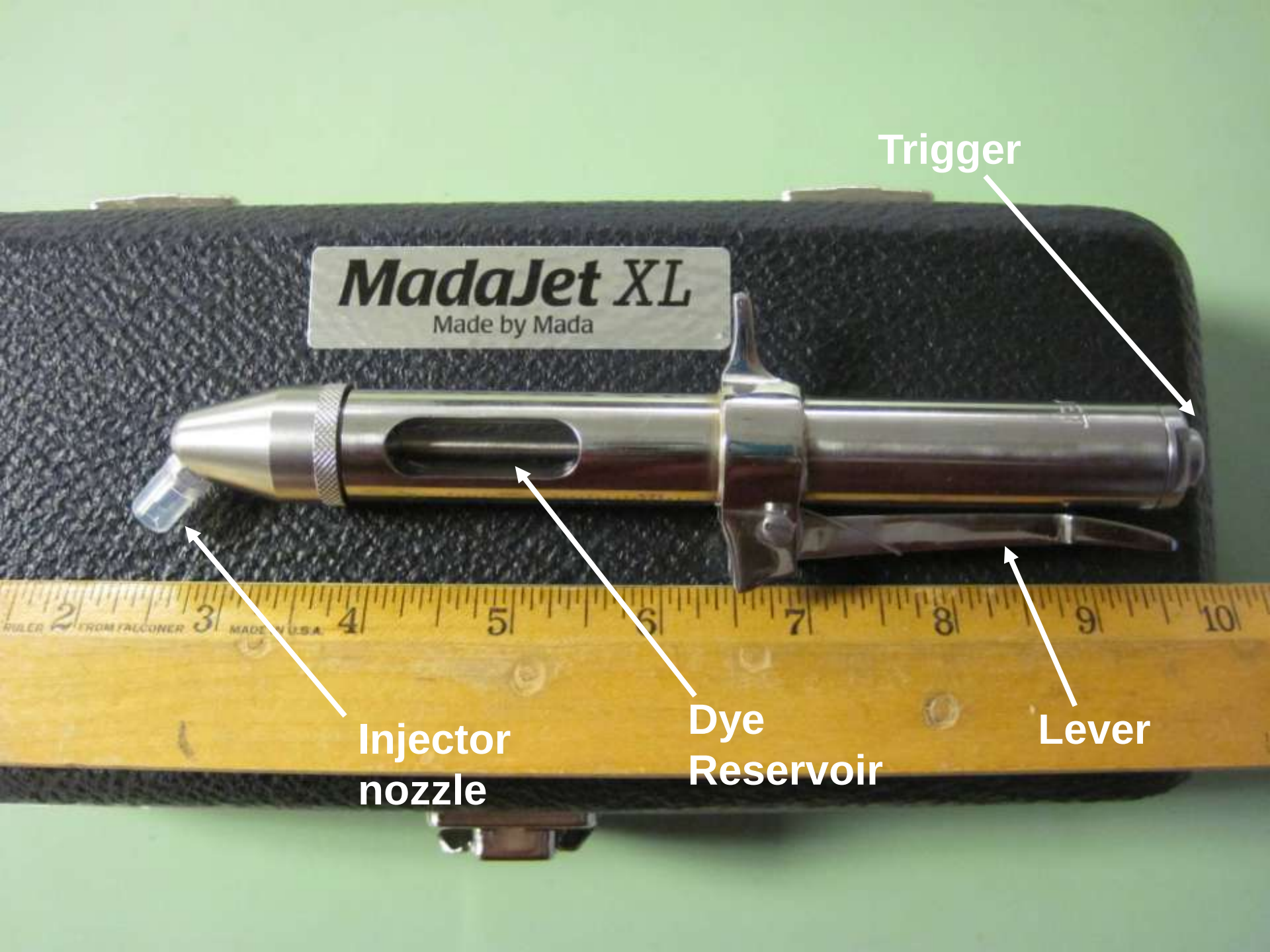
Coho smolt production ranged from 29,238 to 47,591 smolts/year

The 2 side-channels contributed 15-25% of the smolt production in the watershed

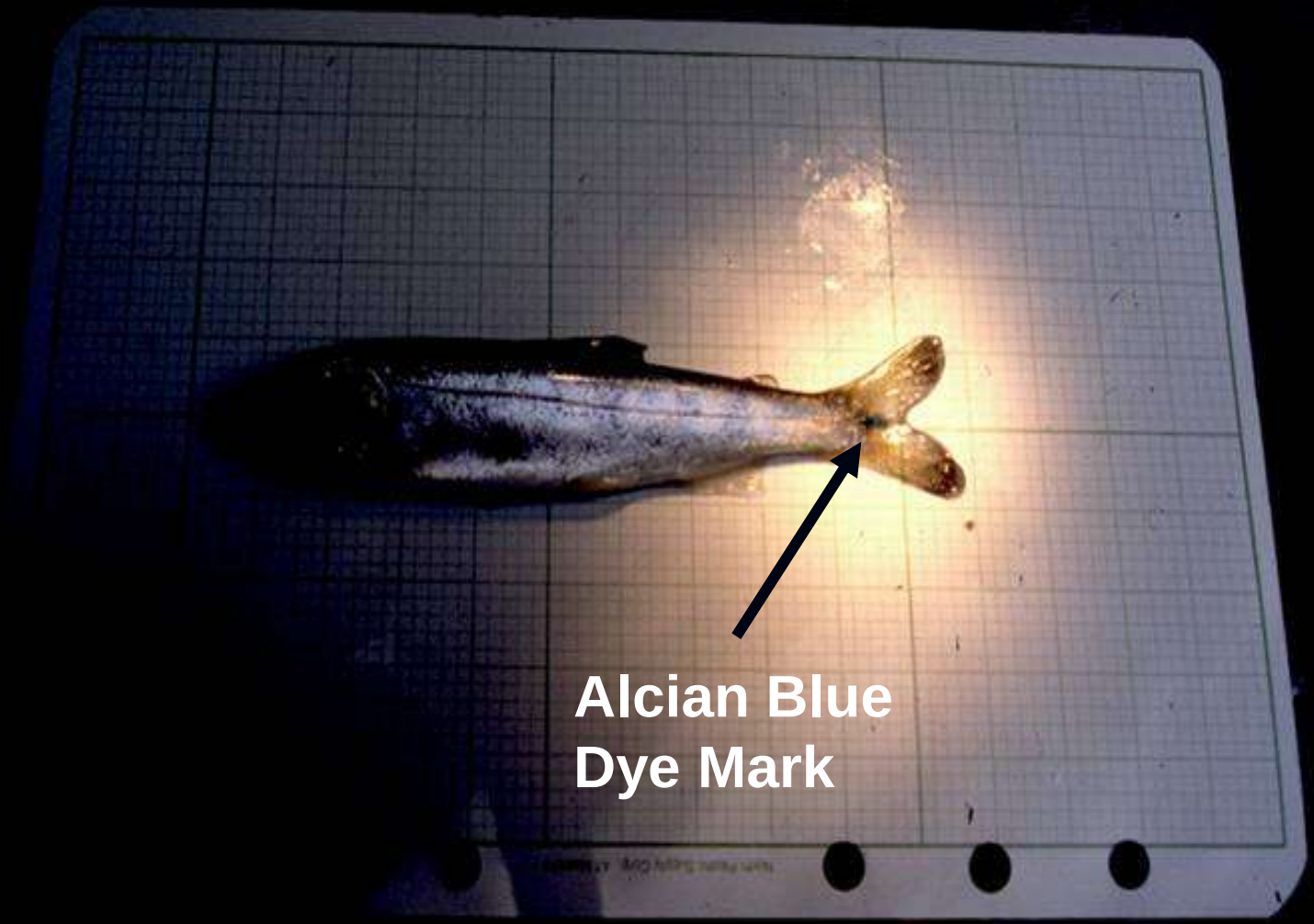

Straight of Georgia
ENGLISHMAN RIVER
RST 1
Craig Bay
Downstream Fence Trap
Clay Young Channel
Weyerhaeuser Channel


Outlet
Clay Young
Side-Channel
Intake
Settling
Pond
Block 564
Block 602
Owned by TNT, DU and NCC, managed
by the RDN under a 99 year lease.
English man River
Total length 4.1 kms
Total wetted area 9.4 Ha

Clay Young Downstream Fence

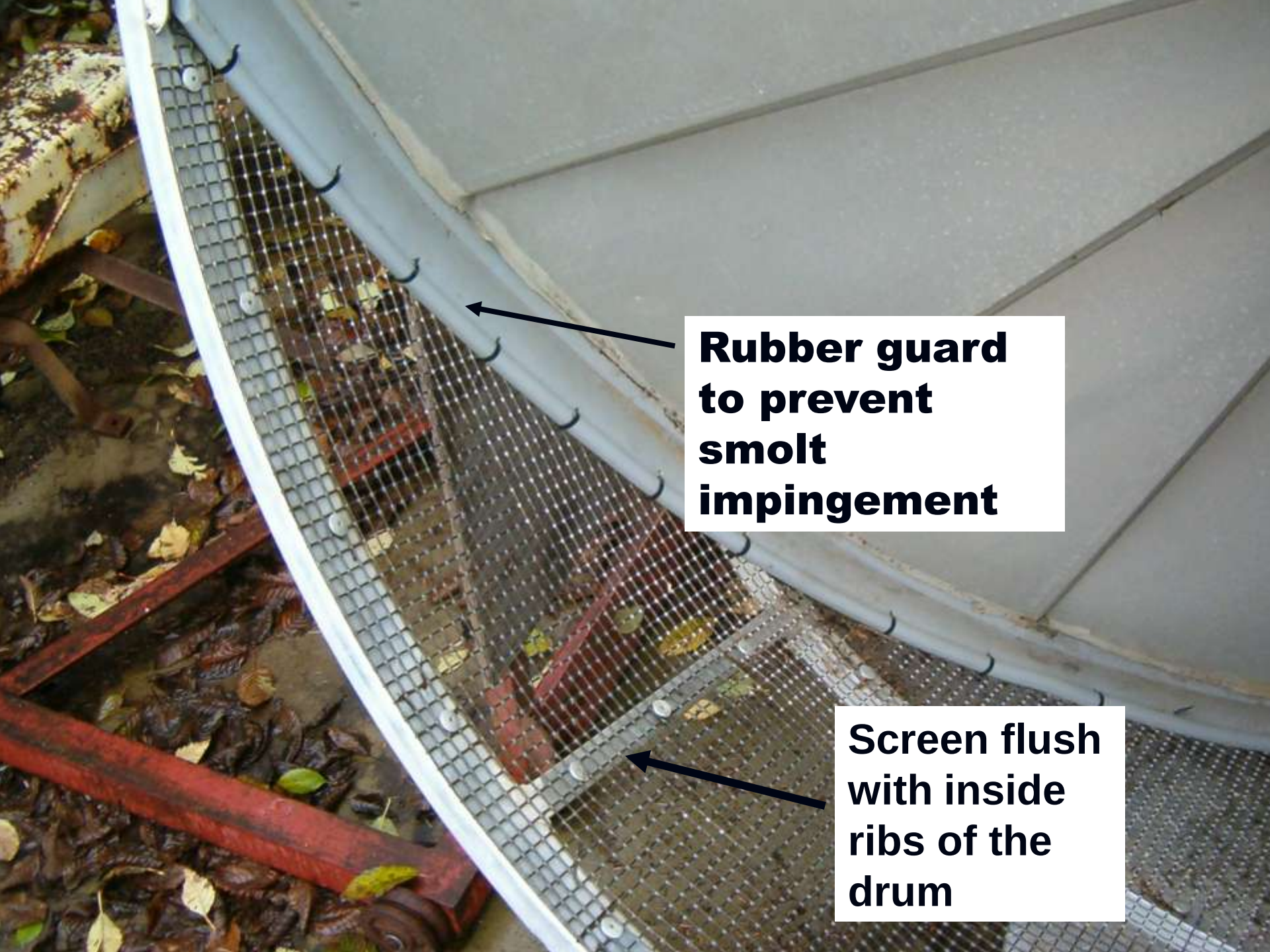

Trigger
MadaJet XL
Made by Mada
Injector nozzle
Dye Reservoir
Lever

Panjet Alcian Blue Dye Marking


Alcian Blue
Dye Mark

Bow wave in
front of trap

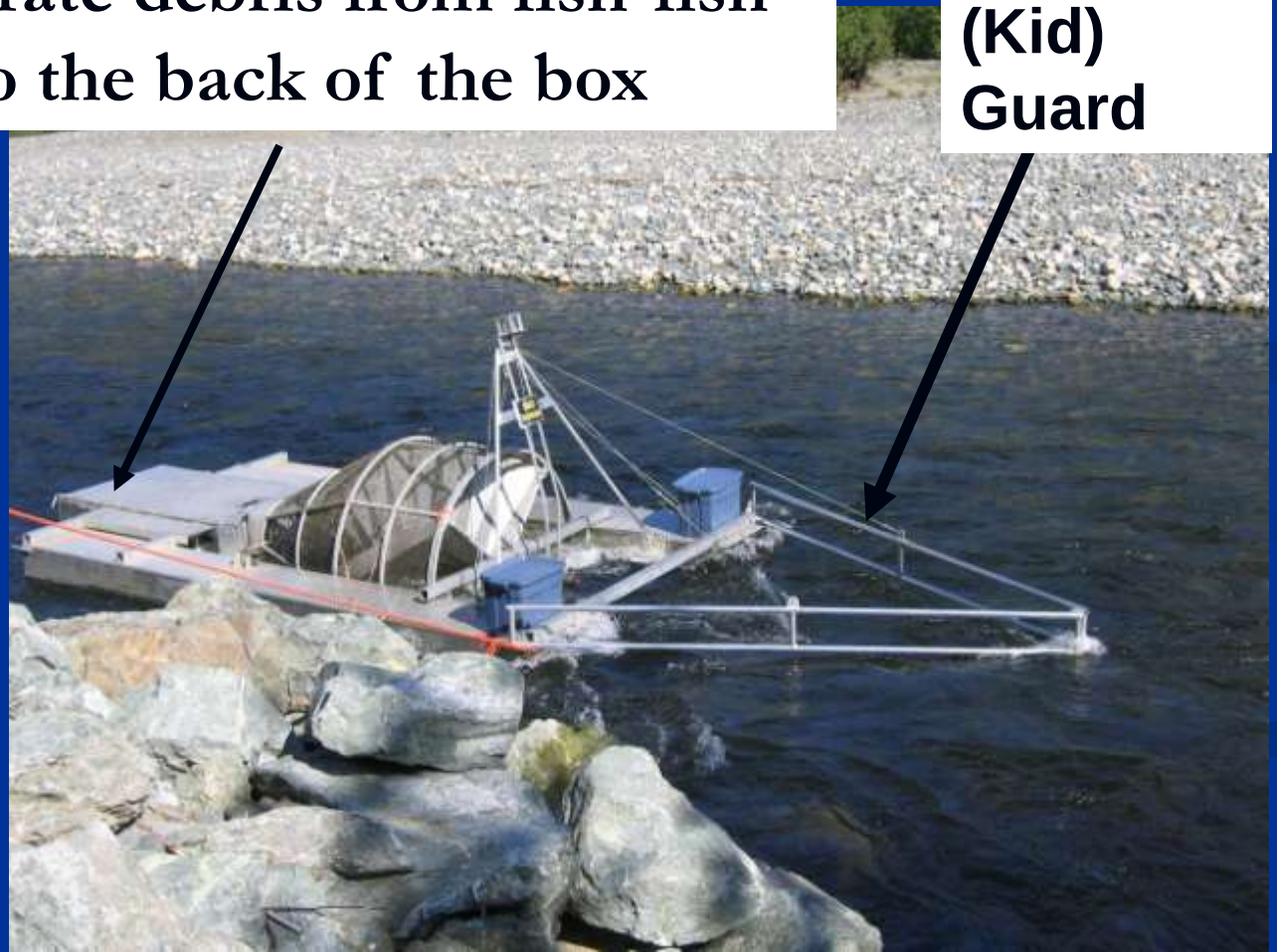
½” Wire Mesh Screen on outside of drum
Smolt impingement


Rubber guard to prevent smolt impingement
Screen flush with inside ribs of the drum

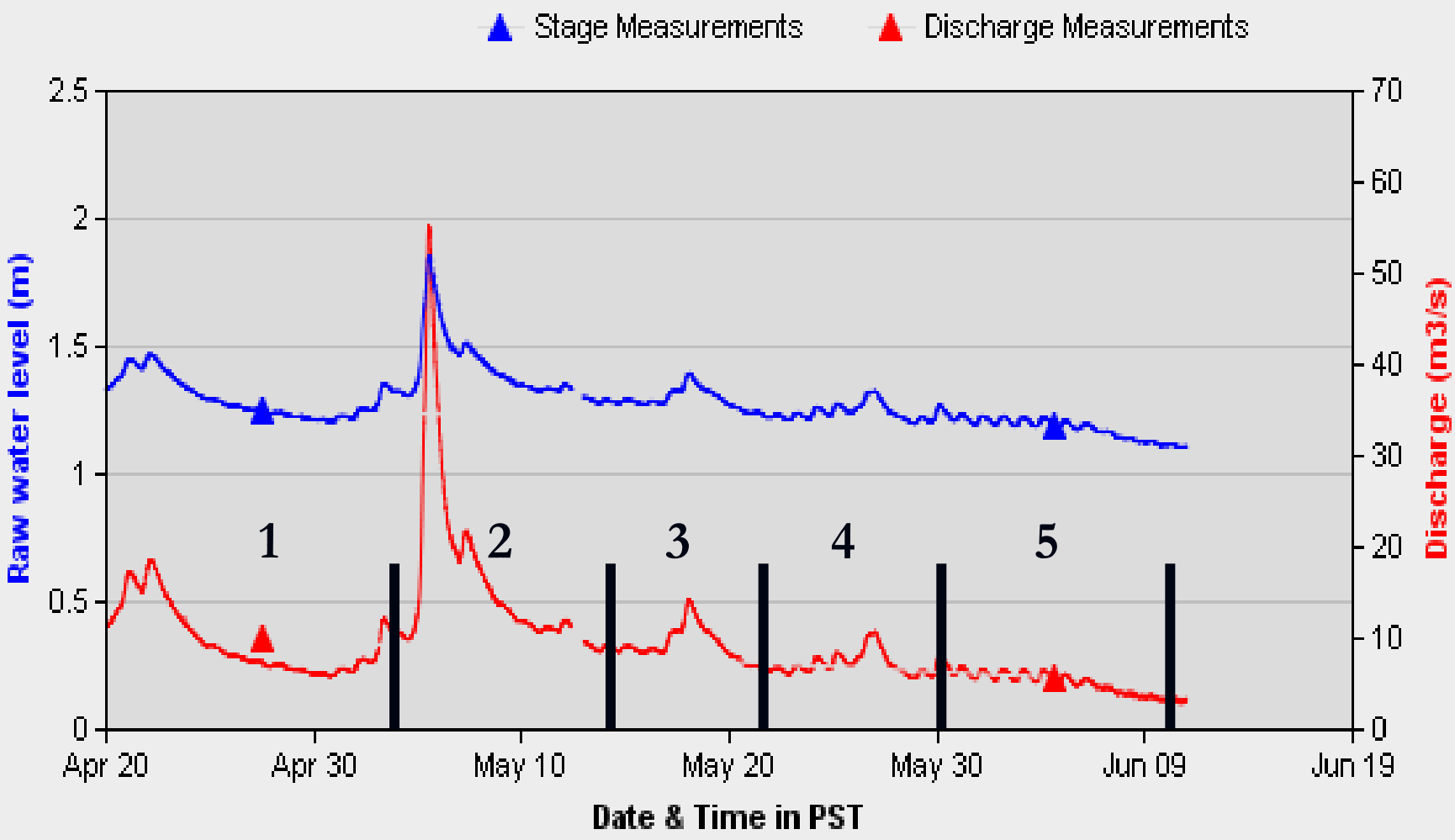
RST with Deflector

Extended Live Box with vertical grating in the middle of the box to separate debris from fish-fish swim to the back of the box

Cattle (Kid) Guard



Discharge During Study Period (black lines delineate a distinctive mark period)



Periodic Estimates of Population Size Derived From Recovery Sampling by the Rotary Screw Trap

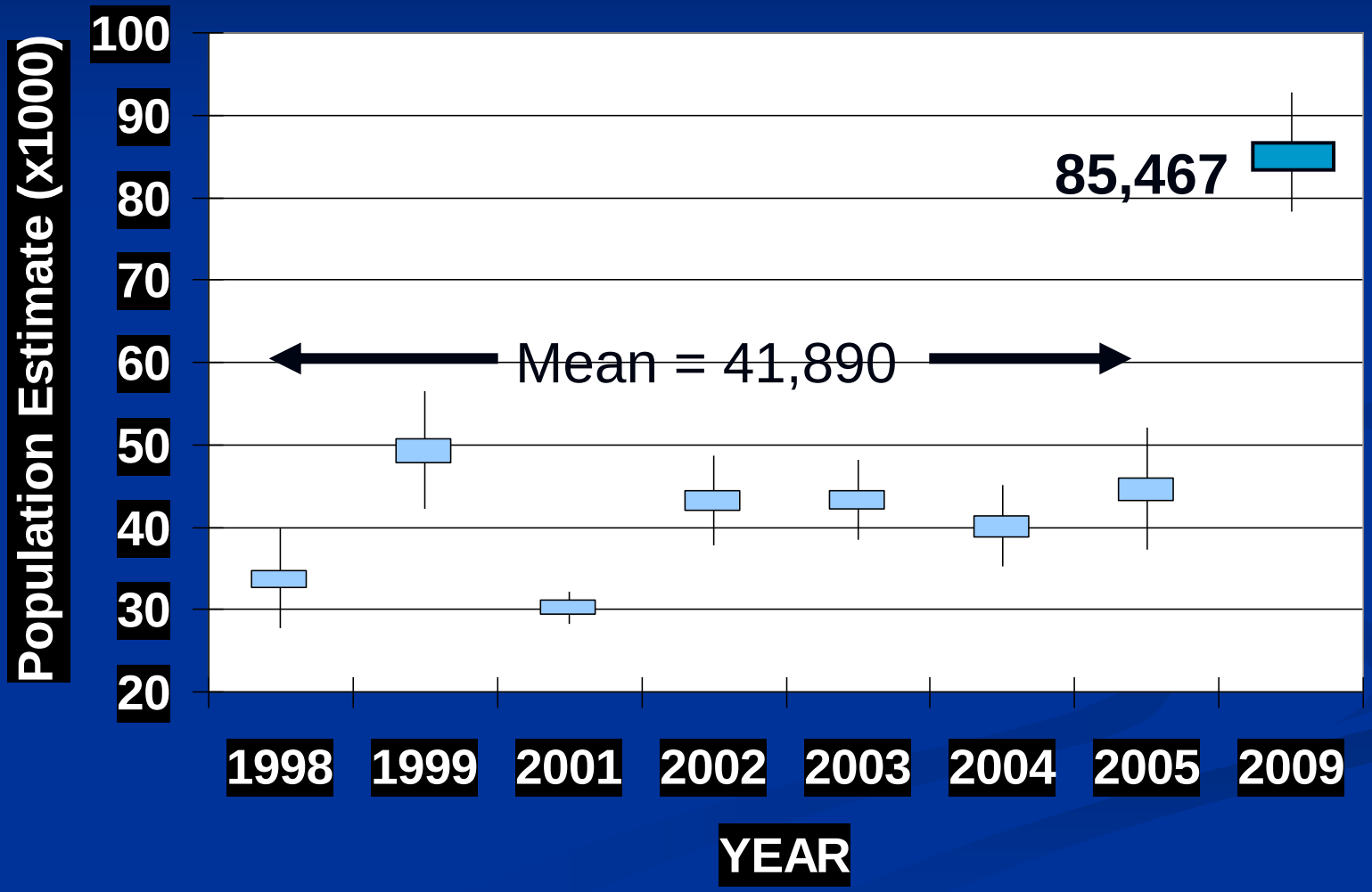
Mark Grps	Release End Date	Catch at RST	Marked Release	Recapture of marks	Pop. Est.	Capture Prob.
1	May 4	204	405	27	2973	6.7%
2	May 14	947	1633	98	15647	6.0%
3	May 22	1710	1501	94	27052	6.3%
4	May 30	2363	2000	192	24510	9.6%
5	Jun 11	740	2000	96	15286	4.8%
	Total	**5964**	**7539**	**507**	**85467**	**6.7%**

2009 Assessment Summary

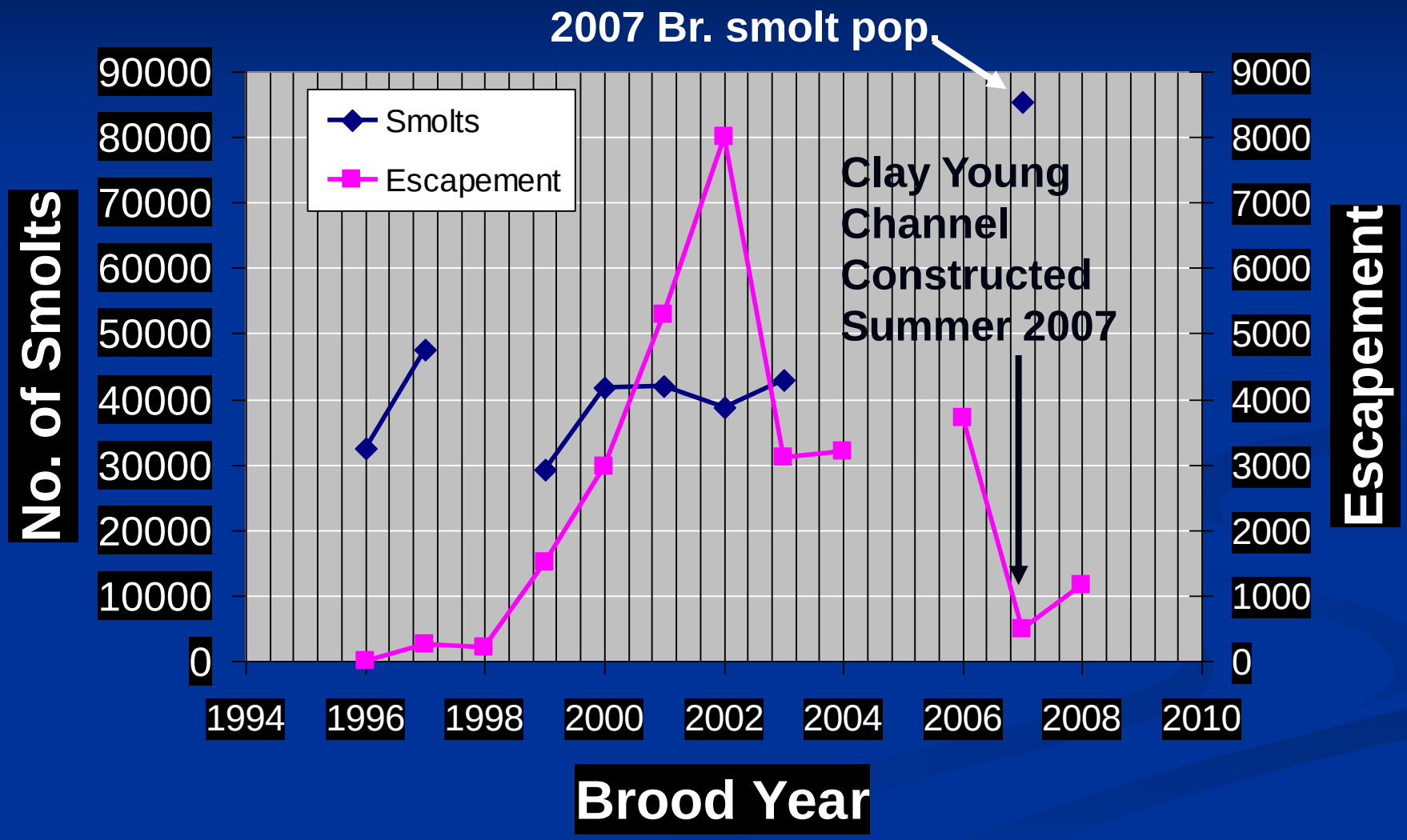
- The total production in the Clay Young side-channel was 35,900 smolts.

- The estimate of total smolt production in the watershed was 85,467 (95% CI 78,241- 92,692).

Englishman River Coho Smolt Estimates (outmigration year)



Englishman River Coho Escapement and Brood Year Smolt Production



Comparison Summary

- Between 15% (1999) and 25% (1998) of the smolt production in the watershed was produced from man-made side-channels for a 7 year period prior to construction of the large side-channel

- 42 % of the total smolt migration from the Englishman River was generated from the Clay Young Side-channel in 2009

Preliminary Conclusion

- Smolt production in the Englishman watershed increased from a 7 year average of 41,890 to 85,467 after the construction of the Clay Young side-channel in 2007
- Assessment will be repeated at least 2-3 more years to establish the new baseline