



Fish Response to Restoration in Walker & Lagunitas Creeks

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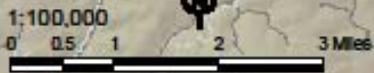
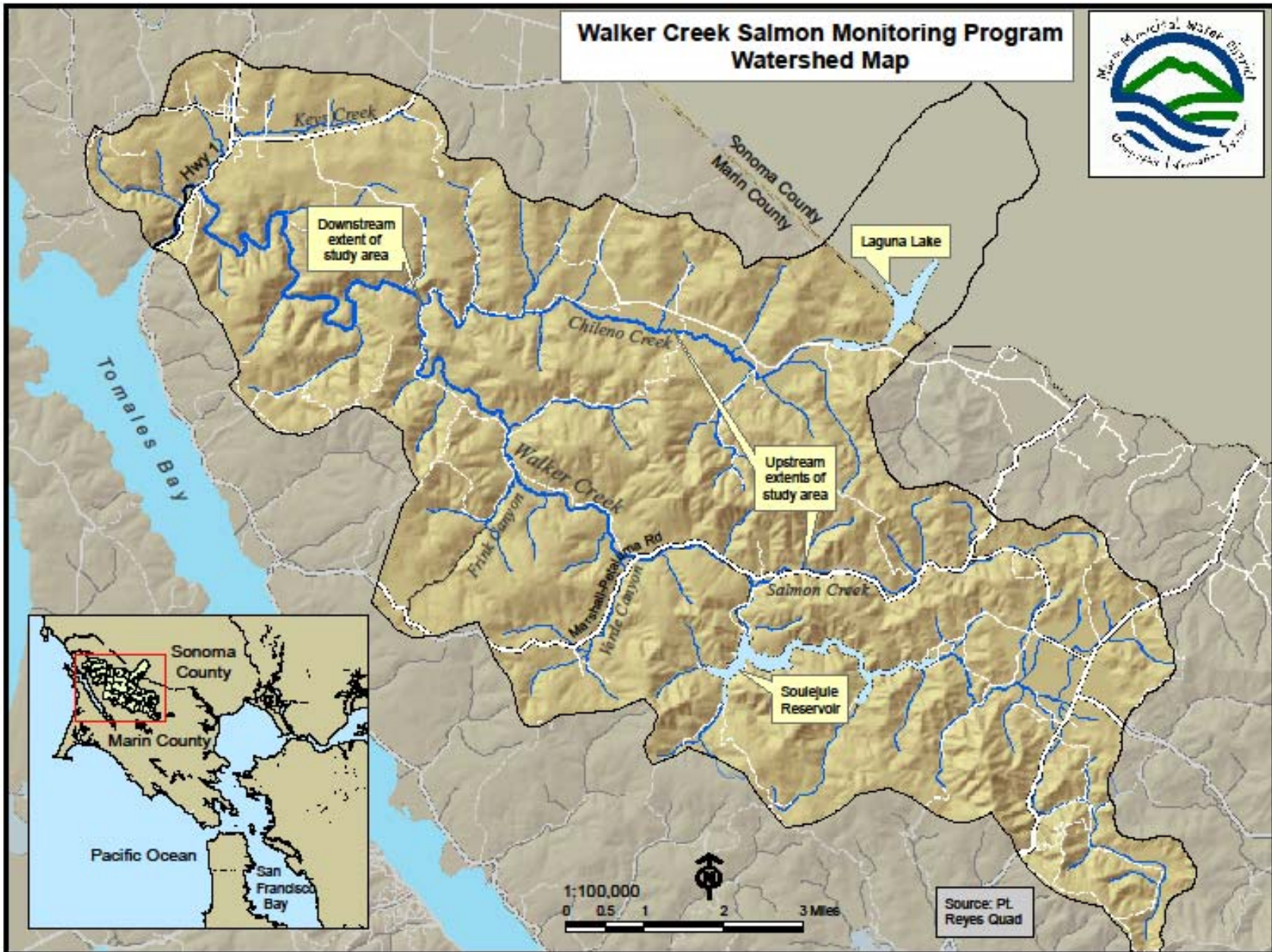


Walker Creek Coho Recovery



- DFG planted 264 adult coho, 2003 – 2008.
- 3,400 coho smolts planted in 2007; 500 fingerlings in 2008
- Monitoring surveys : juveniles and spawners
- DFG grant-funded monitoring program

Walker Creek Salmon Monitoring Program Watershed Map



Source: Pt. Reyes Quad

Walker Creek Juvenile Coho



- 80 Adults planted 2003/04
- 87 Adults planted 2004/05
- 40 Adults planted 2005/06
- 7 Coho redds 2006/07
- 57 Adults planted 2007/08
- 65 Juveniles observed 2004
- 176 Juveniles observed 2005
- 0 Juveniles observed 2006
- 193 Juveniles observed 2007
- 19 Juveniles observed 2008

Walker Creek Coho Spawning



2006/07:

- 4 Adults
- 7 Redds

2007/08:

- 4 Redds

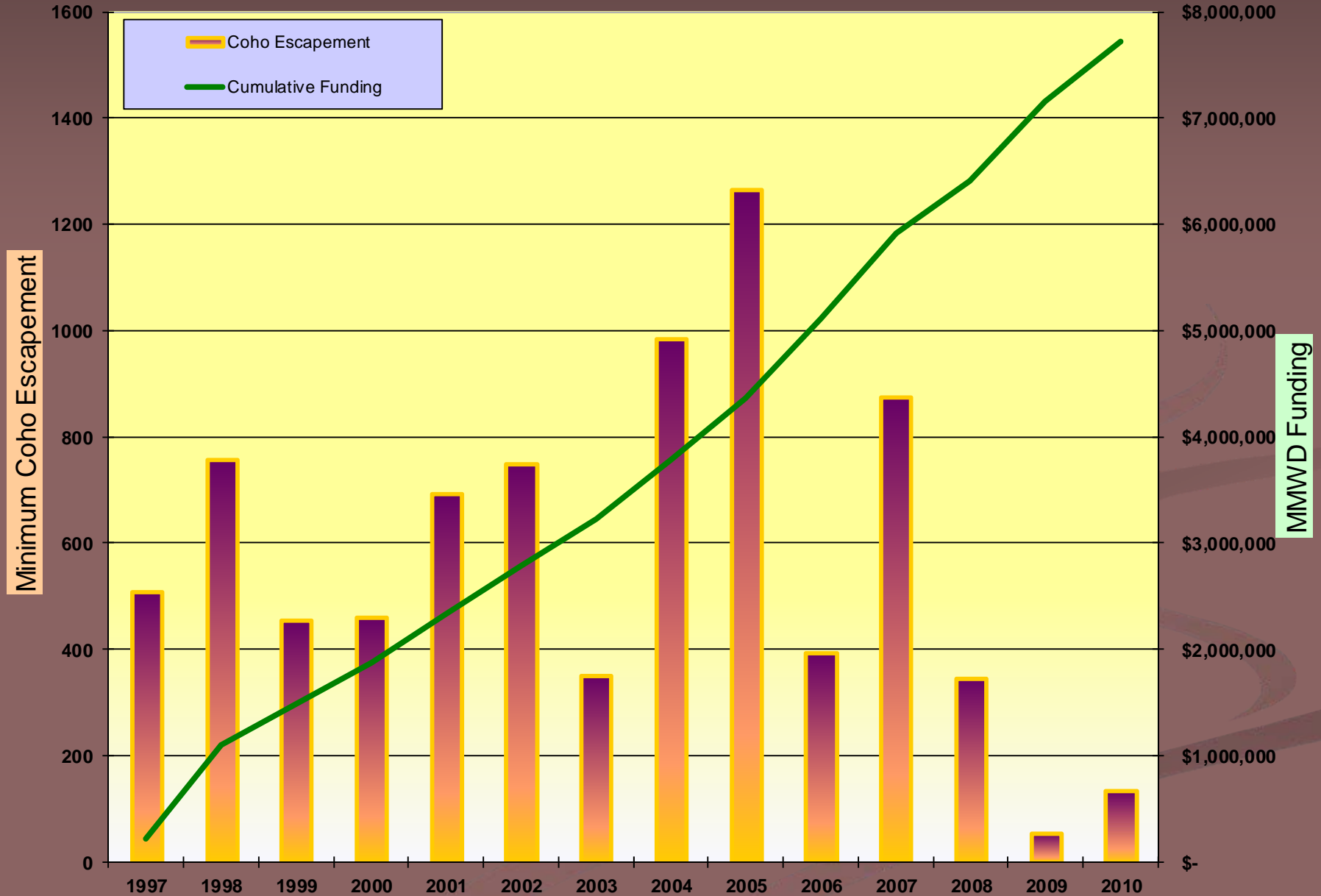
2008/09:

- 1 Redd

Lagunitas Creek



Coho vs. Ca\$h Escapement, 1997 - 2010



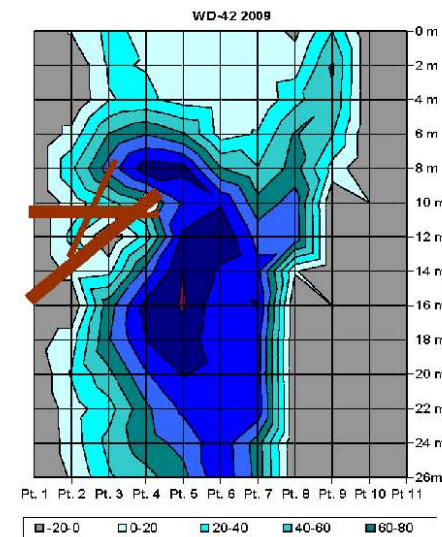
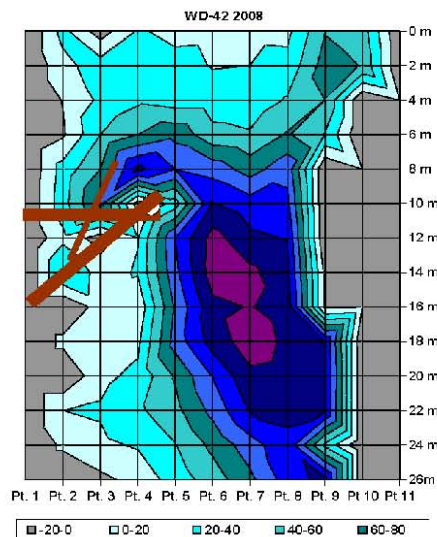
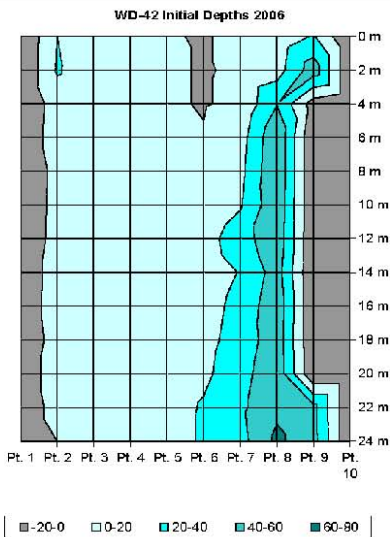
Large Woody Debris (LWD) Enhancement







Habitat Enhancement with LWD



Project Effectiveness Monitoring: Stream Depths and Photography
Lagunitas Creek Woody Debris Enhancement Project

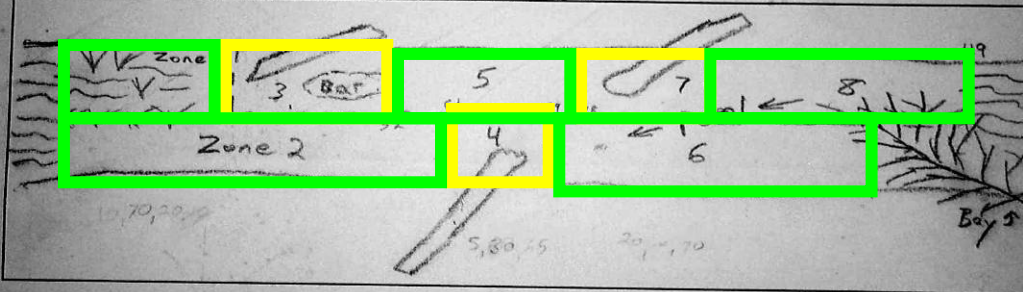
Snorkel Surveys



- Compare pre- and post-enhancement fish densities.
- Compare fish densities between enhancement and reference sites.
- Quantify coho and steelhead in enhancement and non-enhancement zones.

Root Mass: 1 Undercut Bank: 1 Boulders: 3 Bedrock Ledges: 2 Bubble Curtain: 0 % Shade: 50
 % Exposed Substrate: 5 Substrate: %Bedrock: 1 %Boulder: 2 %Cobble: 10 %Gravel: 40 %Sand/Silt: 47

Sketch of creek showing woody debris structure(s) and snorkeling zones.

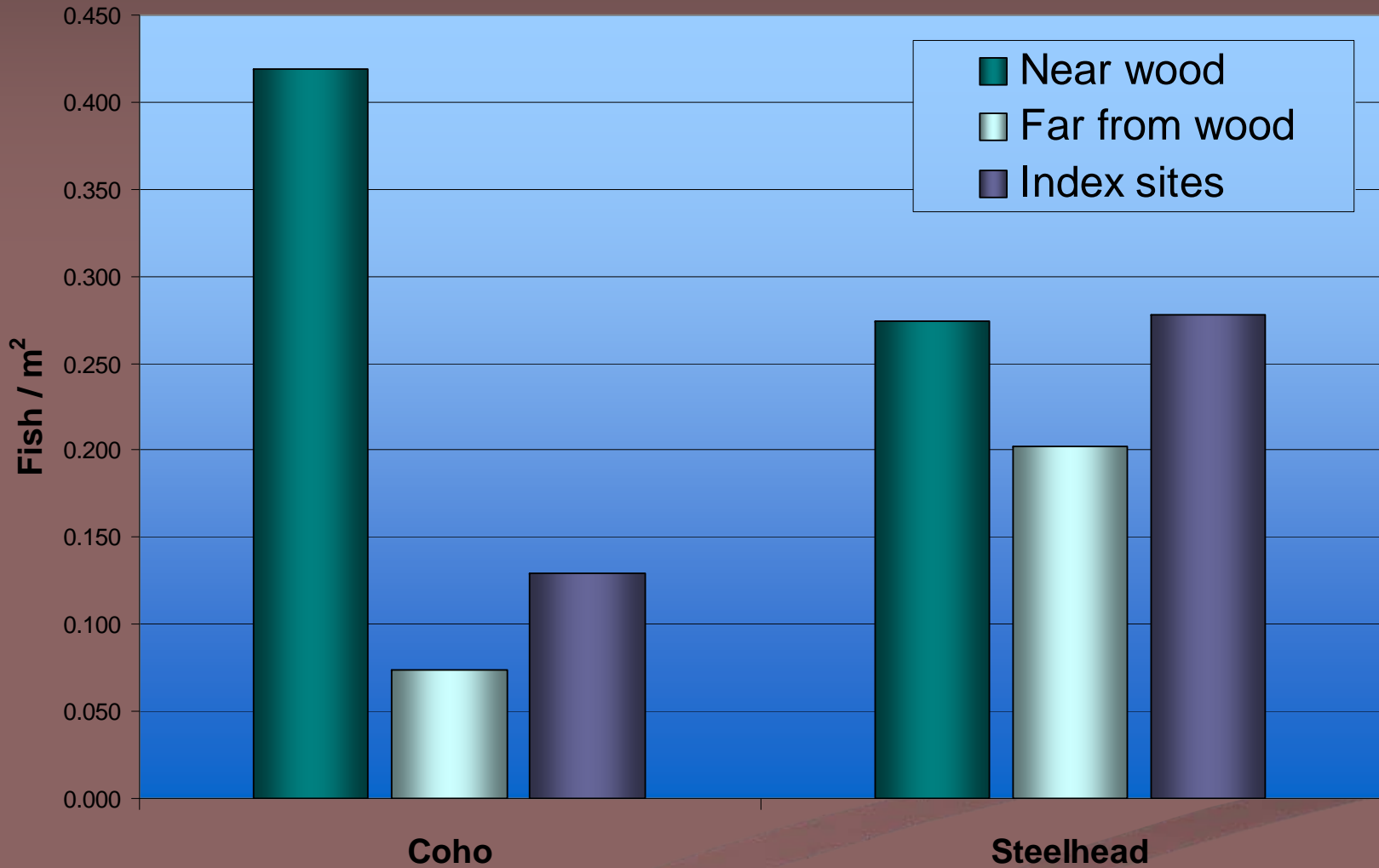


Describe zones to be snorkeled by each diver and record fish observed. Use unused lines for comments.

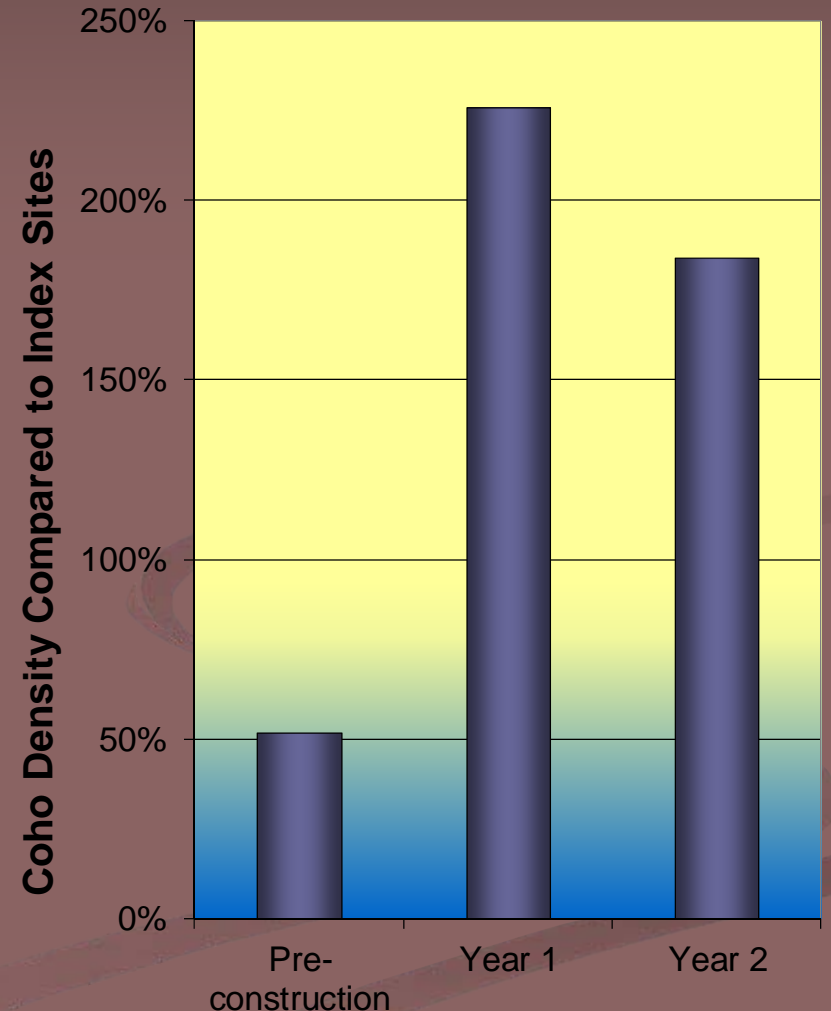
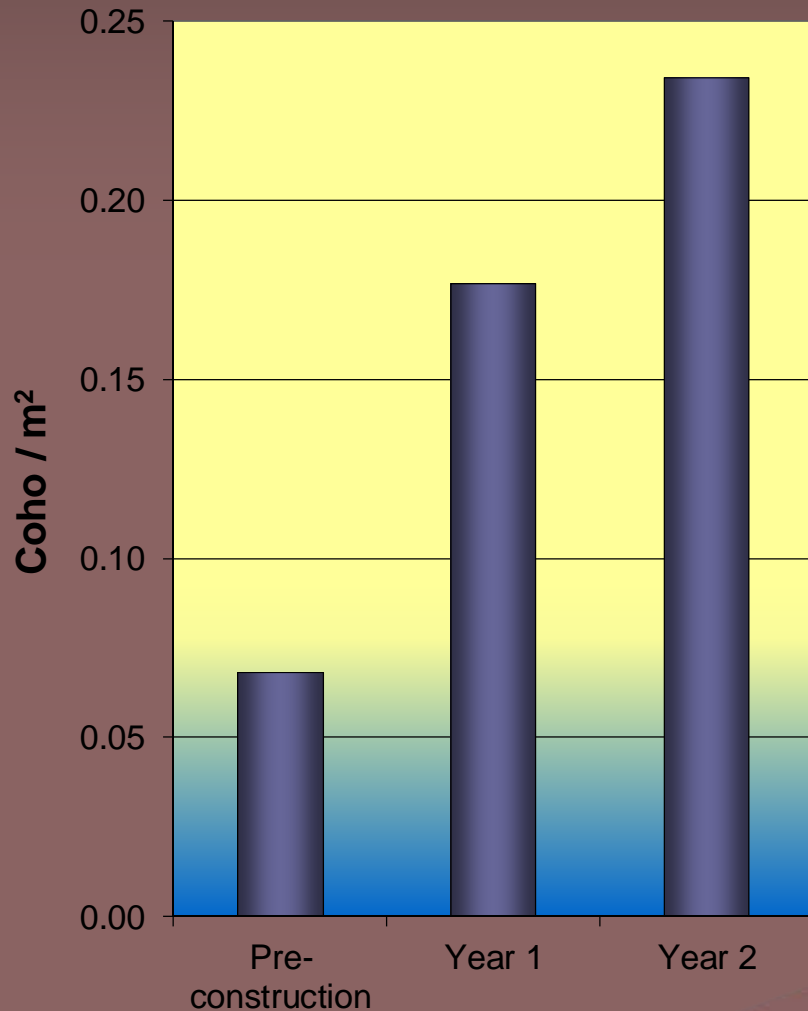
Zone	Habitat Enhancement (Y/N)	Length (m)	Width (m)	Mean Depth (cm)	Max Depth (cm)	Diver	Pass 1		Pass 2		Pass 3		Average	
							Coho	Sthd	Coho	Sthd	Coho	Sthd	Coho	Sthd
1	N	38	9	12	18	EE	0	20	0	30	—	0	25	
2	N	61	8	15	25	NS	0	39	0	35	—	0	34	

2003-1-24 14:24

Fish Use of Wood Structures



Pre- and Post-Enhancement Coho Densities



Sediment Reduction



Salmon vs. Sediment Dynamics

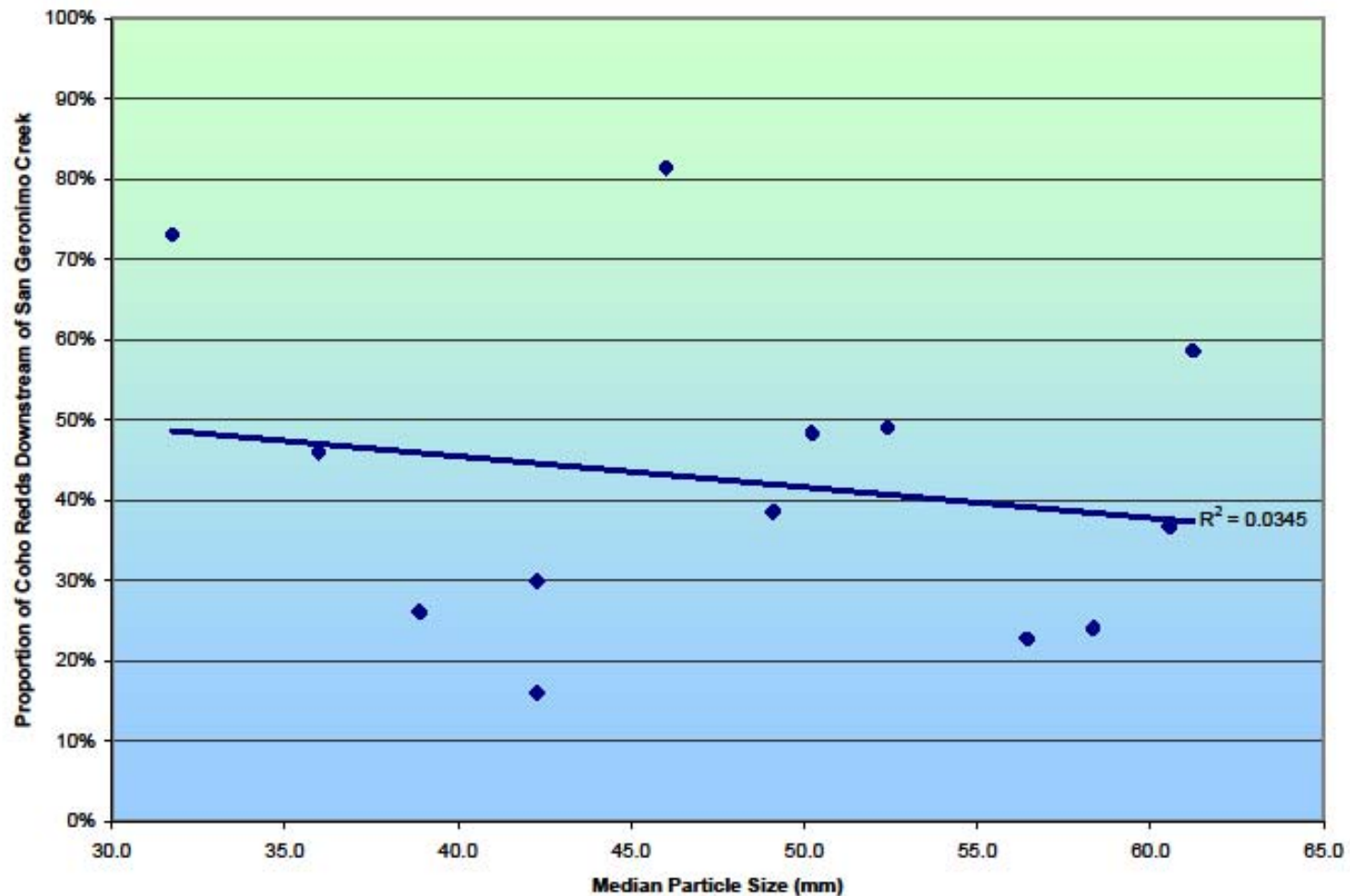


Figure 29. Median particle size in Lagunitas Creek riffles and the proportion of coho redds observed downstream of San Geronimo Creek, 1995-2008.

Salmon vs. Sediment Dynamics

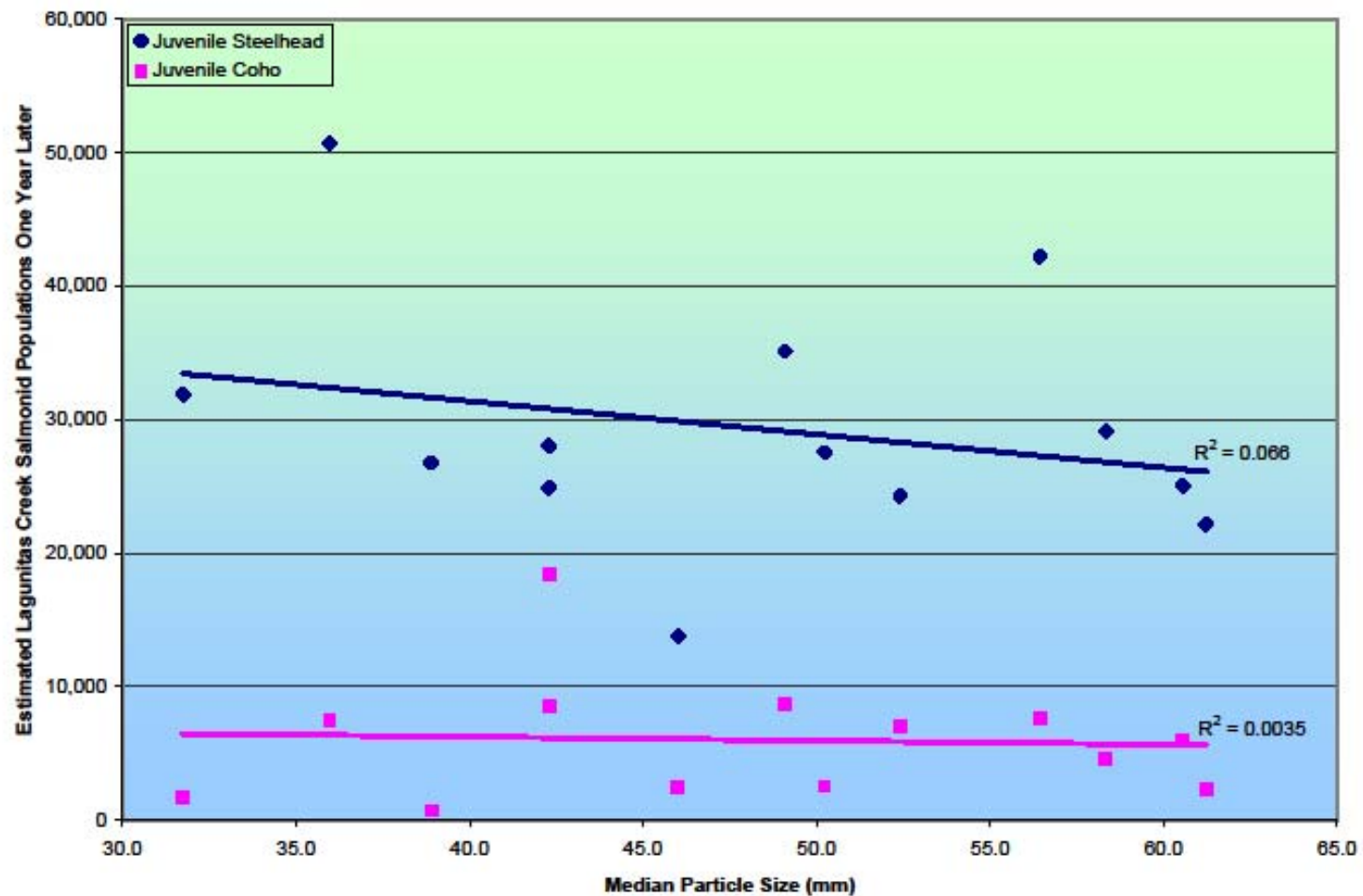


Figure 31. Median particle size in Lagunitas Creek riffles and juvenile salmonid populations one year later, 1996-2009.

Salmon vs. Sediment Dynamics

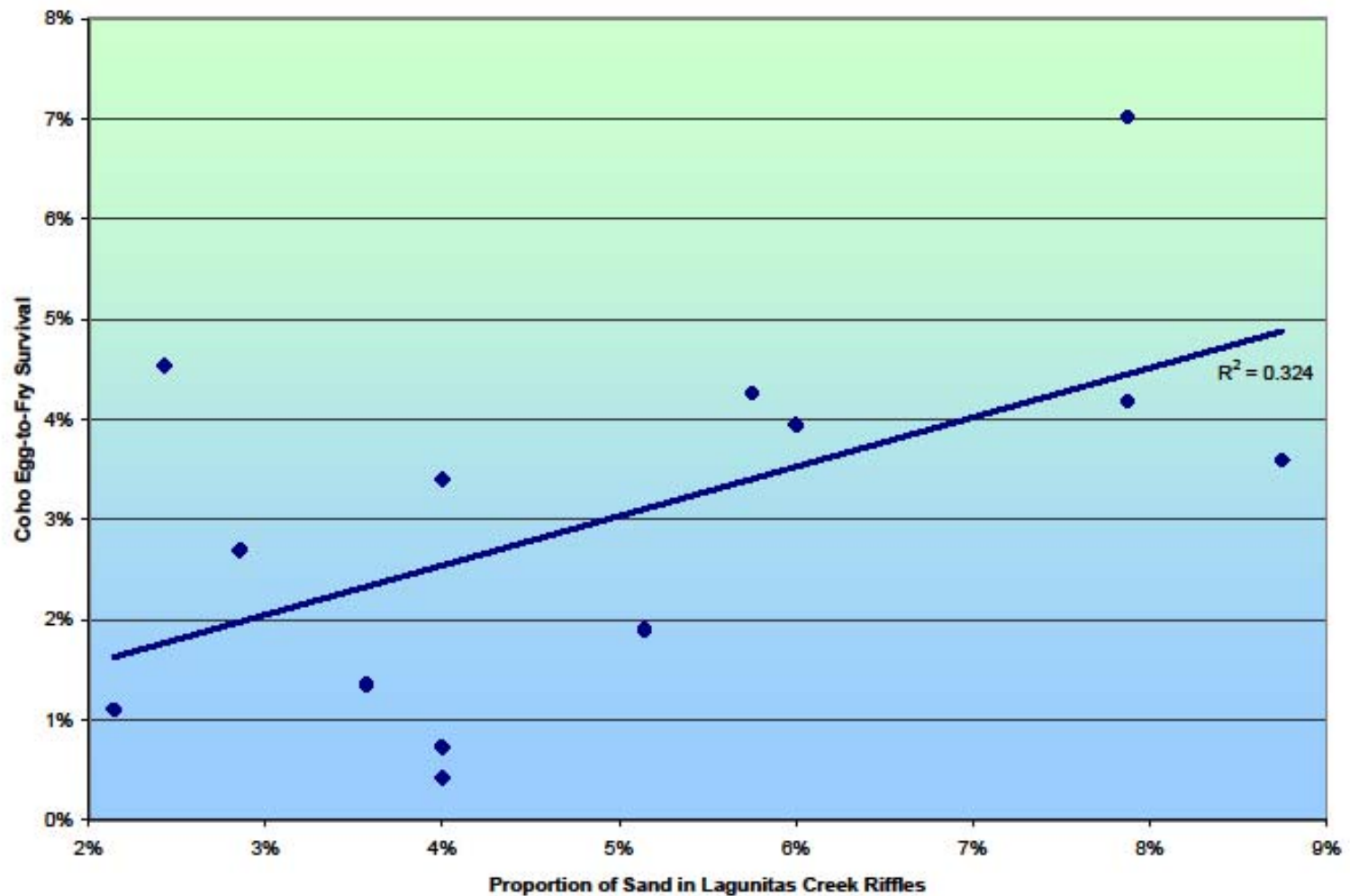
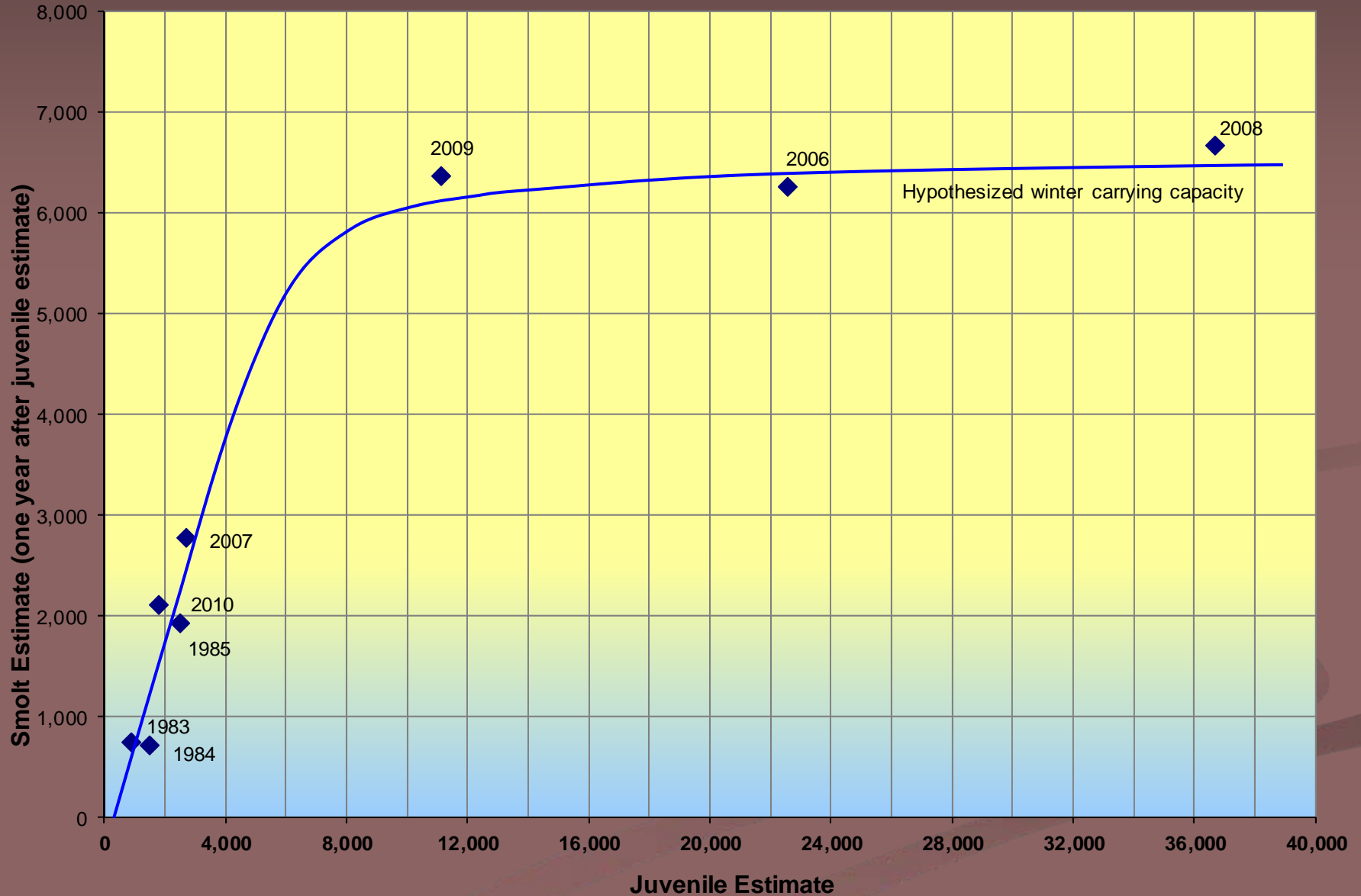


Figure 32. Proportion of sand in Lagunitas Creek riffles and the subsequent survival rate of coho eggs to fry, 1996-2009.

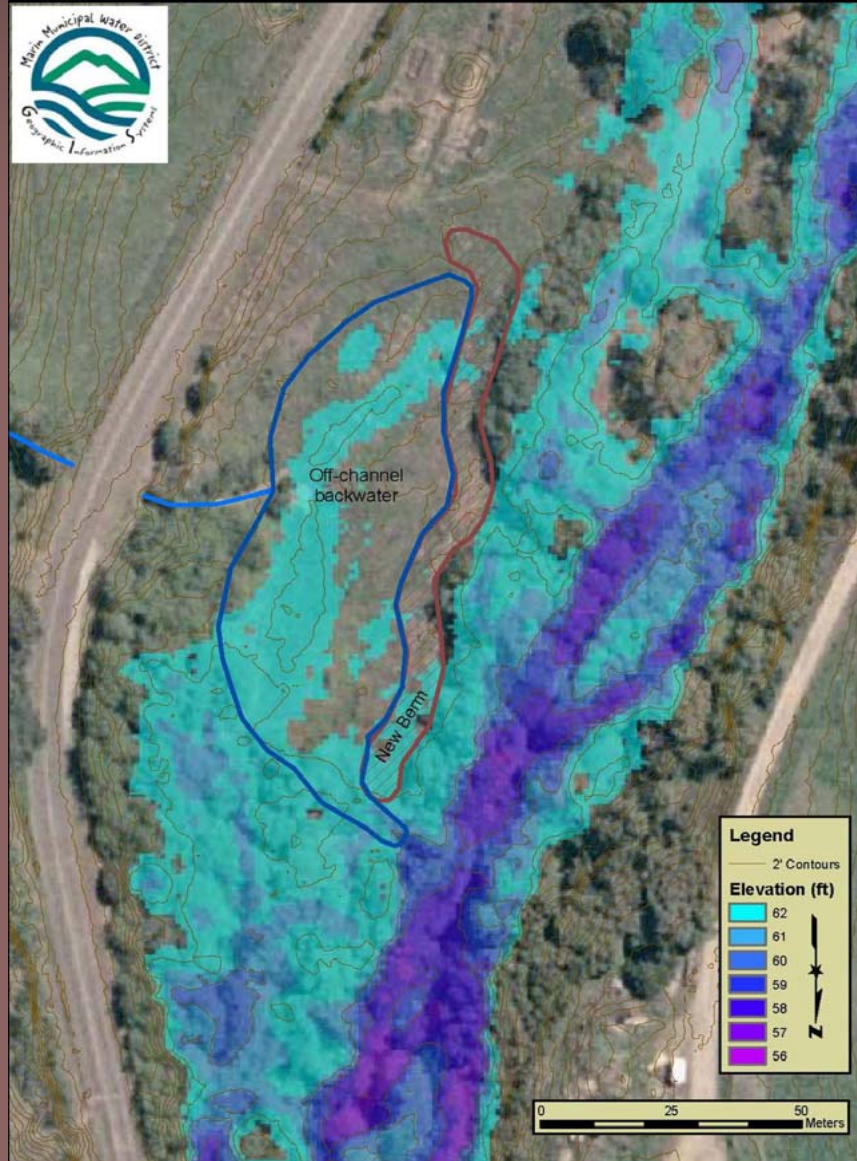
Aquatic Resource Monitoring



Lagunitas Coho Carrying Capacity?



Winter Habitat Enhancement Tocaloma Backwater Floodplain



The Future – Estuary Enhancement Giacomini Wetland Restoration



The Future – Estuary Enhancement Giacomini Wetland Restoration





Thank you