California Regional Water Quality Control Board
San Francisco Bay Region

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FROM: Shin-Roei Lee, Andree Greenberg, Paula White
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DATE: December 22, 2009

SUBJECT: Web-Based Wetland Tracker Update

Introduction

Since August 2006, the San Francisco Bay Water Board (Water Board) has required submittal of the Wetland Tracker form as a condition in many water quality certifications to improve tracking losses and gains of wetlands and streams[1]. This second annual report summarizes impacts and mitigation to wetlands and streams for projects certified in 2008. The first annual report presented at the December 2008 Water Board meeting discussed Wetland Tracker projects from the pilot year (2006-2007)[2].

Project Status

In 2008, 55[3] projects were certified that included the Wetland Tracker form submittal condition. As of April 30, 2009, 48 forms had been submitted. Progressive enforcement actions will be taken where appropriate to ensure that all projects comply with the Wetland Tracker form submittal condition. All graphs and tables discussed below include data from the 48 projects received by April 30, 2009, or from previously published data from 2006-07. The seven remaining projects will be analyzed in future status and trends reports.

Project Types

In 2008, three main project types were identified: compensatory mitigation, restoration, and stream repair/maintenance, listed in Table 1 below.

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[1] Streams include permanent, intermittent, or ephemeral fresh water flow through stream channels. Streams may flow through natural, restored, or man-made channels such as culverts or concrete trapezoidal channels. The term "stream" also includes riparian areas in and around stream channels. In this report, the terms "stream" and "riparian habitat" are used synonymously.

[2] http://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2008/december/8/Final_Staff_Report.pdf

[3] Two large restoration projects were not included in the discussion of these 48 projects and are described separately at the end of this report.

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Table 1. Overview of Wetland Tracker Projects (2008)

Certifications requiring the Wetland Tracker Form	55			
Completed as of April 30, 2009[1]	48			
	Number of Projects	**Impacts to wetlands**	**Impacts to streams**	**Total impacts to all habitats**
Compensatory Mitigation	25	22	15	37
Restoration	4	2	2	4
Stream Repair and Maintenance	19	N/A	19	19
Total	**48**	**24**	**36**	**60**

[1] As of August 5, four more projects had submitted the wetland tracker form. However, these data were not incorporated into the tables and figures used in this report. These data and other updates are included in the appendices.

1. Compensatory Mitigation Projects

Water Board policy is to avoid, minimize, and, as a last resort, mitigate for adverse impacts to wetlands and streams. The Wetland Tracker database was developed to accurately track losses and gains of wetlands and streams from certified projects. 25 projects that required compensatory mitigation in 2008 were entered in the Wetland Tracker system to facilitate compliance evaluation and determination (see www.wetlandtracker.org). Such projects are usually required to be monitored for five to ten years to ensure mitigation success. These projects will be discussed in greater detail below.

2. Restoration Projects

Four restoration projects were permitted in 2008. Restoration projects are intended to return wetland or stream functions to areas where they existed historically. As with compensatory mitigation projects, the Wetland Tracker system facilitates monitoring restoration projects to ensure that success criteria are met, since not all restoration projects are successful and some habitat losses occur during construction of the restored habitat.

3. Stream repair and maintenance projects

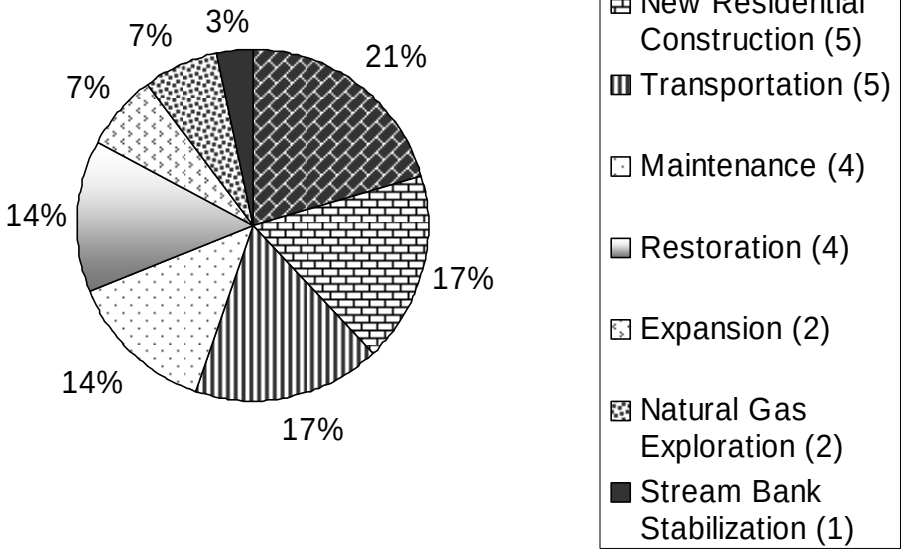
The stream repair and maintenance project category was added in 2008 to cover those projects that do not require compensatory mitigation, because they do not increase the footprint of the original project. With proper project design to improve existing conditions and with implementation of best management practices during construction, these projects might cause temporary impacts but achieve long-term benefits (e.g., reduced bed and bank erosion and subsequent sedimentation, improved riparian vegetation). As such, we typically do not require additional compensatory mitigation provided that projects are constructed as approved. Although there is no change of use or footprint associated with these projects, and consequently no long-term habitat gain or loss, monitoring is still required to ensure that the project improves existing conditions and does not cause unintended consequences up or downstream of the project. Tracking and mapping stream repairs and routine maintenance activities on the Wetland Tracker system can inform future needs on reach- or watershed-scale improvements or restoration that might be more cost-effective than on a project by project basis.

Project Characteristics

I. Compensatory Mitigation and Restoration Projects

Figure 1 groups compensatory mitigation and restoration projects by the type of activity that altered the wetlands or streams. Numbers following activity types are the total number of projects for that type.

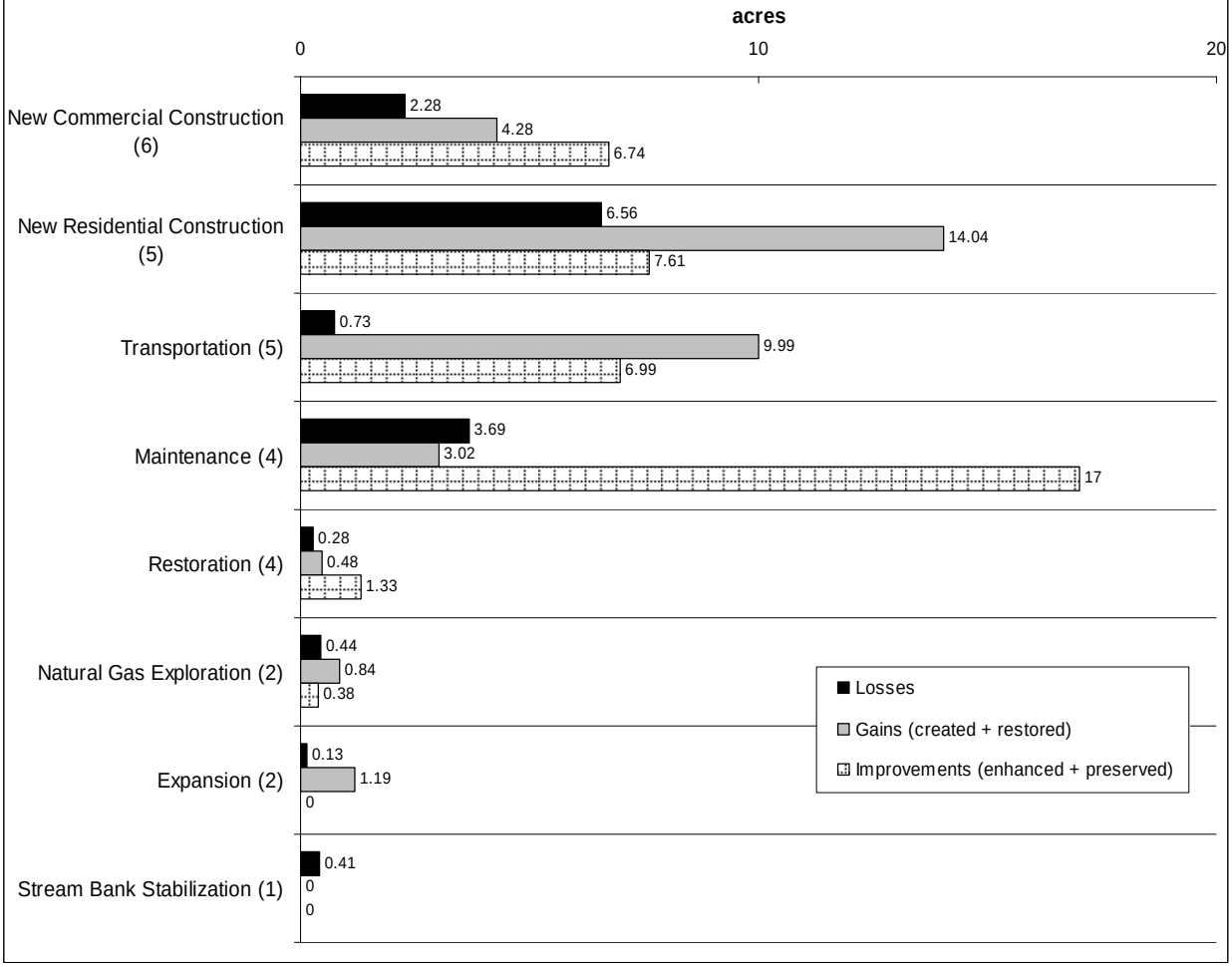
Figure 1. Compensatory mitigation and restoration projects by impact type in 2008 (Total=29)



In 2008, new commercial construction projects slightly outnumbered new residential construction and transportation projects. This contrasts with 2006-07, when there were ten new residential construction projects and only three commercial construction projects. The economic recession can explain the reduction in new residential construction but not necessarily the expansion of new commercial construction.

The five transportation projects comprise bridge replacement and highway improvement projects, which include construction of a new on-ramp and bike lane. Maintenance activities in 2008 include infrastructure improvements by water utilities and routine sediment removal activities by flood control districts. The category of expansion includes water supply pipeline extension and access improvements to sanitary facilities. Complete project information for compensatory mitigation and restoration projects can be found in Appendix 1. Figure 2 shows habitat gains and losses by project activity type.

Figure 2. Losses, gains, and improvements by impact type for 29 compensatory mitigation and restoration projects (2008)



This graph illustrates the overall successful compliance in our region with the “no net loss” policy. One should not interpret the “gains” shown for new residential construction projects as justification for issuing certifications for this project type over others, because this category also had greater losses, 6.56 acres, than any other category. Since there is temporal loss until the mitigation projects are fully functional, and mitigation success is not always certain, avoiding impacts is still the cornerstone of our region’s approach when issuing certifications.

Table 2 shows impacts by county and habitat.

Table 2. Net gains[1] by habitat and County for 29 compensatory mitigation and restoration projects (2008)[2]

	Riparian			Estuarine		Depressional		Seeps and Springs		Vernal Pool		Lacustrine		Other (palustrine)[3]		**All habitats**	
	Net gain shown in acres and linear feet (riparian only) = sum of restored and created habitats subtracted from loss.[4]																
	# (%)[5]	**ac**	**lf**	**# (%)**	**ac**	**# (%)**	**ac**	**# (%)**	**ac**	**# (%)**	**ac**	**# (%)**	**ac**	**# (%)**	**ac**	**# (%)**	**ac**
Alameda	6 (35)	4.20	-831	2 (22)	0.02	1 (25)	0.06	0	0	0	0	0	0	0	0	9 (23)	4.28
Contra Costa	6 (35)	4.83	1,624	0	0	3 (75)	0.30	3 (75)	-0.04	0	0	0	0	0	0	12 (31)	5.09
Marin	0	0	0	2 (22)	1.01	0	0	0	0	0	0	0	0	1 (100)	0.41	3 (8)	1.42
Napa	1 (6)	0	450	1 (11)	0.09	0	0	0	0	1 (33)	0	0	0	0	0	3 (8)	0.09
San Francisco	1 (6)	0.30	25	0	0	0	0	0	0	0.00	0	0	0	0	0	1 (3)	0.30
San Mateo	2 (12)	-0.35	0	2 (22)	7.52	0	0	0	0	0.00	0	1 (100)	0.24	0	0	5 (13)	7.41
Santa Clara	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solano	1 (6)	-0.01	-300	2 (22)	0.66	0	0	1 (25)	-0.13	2 (67)	1.01	0	0	0	0	6 (15)	1.53
Sonoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**17 (100)**	**8.97**	**968**	**9 (100)**	**9.29**	**4 (100)**	**0.36**	**4 (100)**	**-0.17**	**3 (100)**	**1.01**	**1 (100)**	**0.24**	**1 (100)**	**0.41**	**39[6] (100)**	**20.11**
Mean (streams)		0.528	108														Mean (

[1]Gains include creation and restoration projects.

[2]Impacts and mitigation on buffer areas and unknown habitats omitted.

[3]Habitat type of palustrine written in by permittee.

[4]Improvements, consisting of **enhanced** or **preserved areas,** are not calculated as gains and have been omitted. Two projects enhanced or preserved depressional habitats but had no impacts or gains to this habitat type.

[5]Percentages are calculated within each habitat type.

[6]The total of 39 projects is greater than 29 since some projects had impacts to more than one habitat type.

In 2008, there were 22 project impacts to wetlands and seventeen project impacts to streams resulting in the following net habitat gain:

Habitat	Gain (acres)	Gain (linear feet)
Wetlands	11.14	N/A
Streams	8.97	968

Impacts to riparian habitats outnumber impacts to any single wetland habitat type. Impacts to riparian and estuarine habitats were distributed more evenly across counties than other habitats. Overall there were habitat gains, and no county had a net loss of habitat. However, seeps and springs habitat was lost in two counties, Contra Costa and Solano. San Mateo's disproportionate habitat gain is the result of a single project that created over 11 acres of estuarine habitat to mitigate for a loss of 5.7 acres. The mean gain per wetland project (total = 22) is 0.51 acres with a mean project impact size also of 0.51 acres, ranging from 0.006 acres to 5.7 acres. The mean gain per stream project is 0.53 acres, with a mean project impact size of 0.21 acres ranging from 0.002 acres to 1.0 acre. Because only nine out of the seventeen stream projects reported losses in linear feet and only eight reported gains in linear feet, summary data for this unit are not provided.

II. Riparian repair and maintenance projects

The nineteen projects in this category all have temporary impacts to streams and do not require compensatory mitigation. They are analyzed separately in this report. The numbers following impact categories in Figures 3 and 4 denote number of projects, impacted acreage, and impacted linear feet. Figure 4 shows similar information to Figure 3 but uses linear feet instead of acreage. Project certifications require that impacts caused by repair and maintenance activities be mitigated on-site by replacing any removed vegetation with native plants.

Figure 3. Project size in acres for 19 stream repair and maintenance projects (2008). Percentages indicate each project type's share of the total impacted acreage.

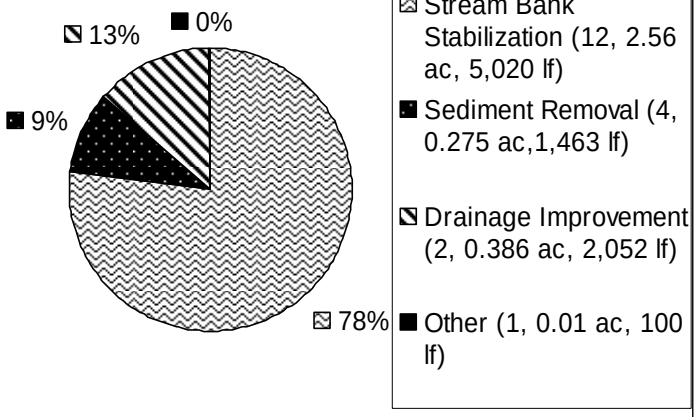
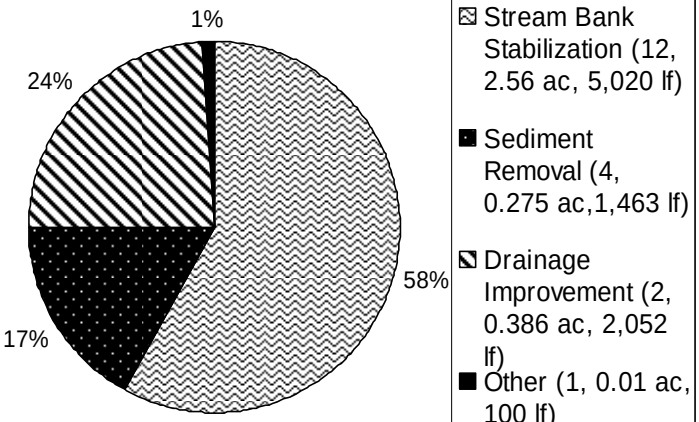


Figure 4. Project size in linear feet for 19 stream repair and maintenance projects (2008).



Stream bank stabilization (SBS) projects comprise the majority of repair and maintenance projects. Many SBS project certifications are issued to private homeowners who are repairing eroded stream banks adjacent to their property. Some SBS projects are undertaken by flood control districts or other public agencies. Sediment removal projects are undertaken by flood control districts or other public works agencies to maintain flood flow conveyance in stream channels. These projects are often recurring, as sediment builds up over time. Drainage improvement projects encompass activities that result in improved stream flow and are performed by flood control districts and other agencies such as Caltrans. Examples of drainage improvement projects include the replacement of structures such as culverts and outfalls and the removal of barriers to fish passage. In almost all cases, the certification requires replanting

of disturbed vegetation with native plants. This requires monitoring, usually five years, and for projects requiring replanting of trees, ten years. Monitoring may be limited to annual submission of photographs but can also include monitoring reports with numerical success criteria. Detailed project information for stream repair and maintenance projects can be found in Appendix 2.

Table 3. Impacts (temporary losses) and improvements to streams by county for 19 stream repair and maintenance projects (2008)

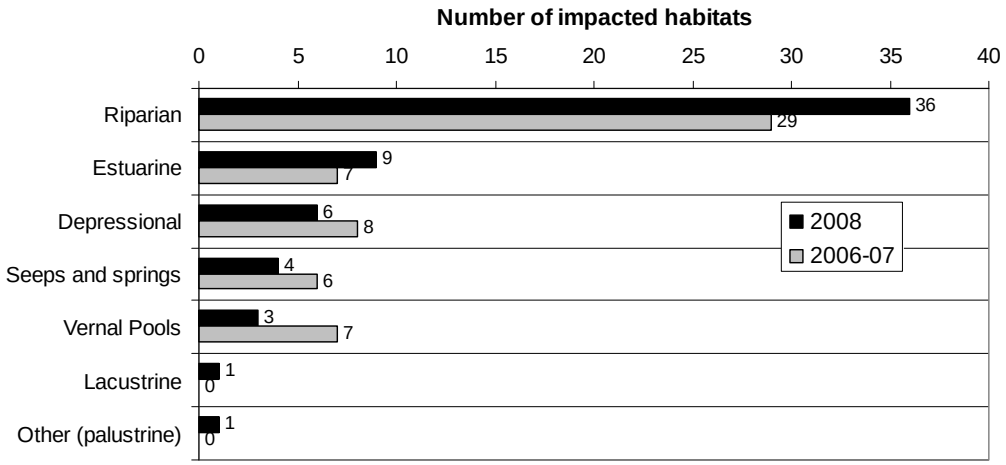
		[1]Impacted area		Total enhancement		[2]Additional enhancement (Total minus impacted area)	
	# of projects (%)	ac	lf	ac	lf	ac	lf
Alameda	3 (16)	0.32	850	0.92	1,300	0.6	450
Contra Costa	5 (26)	0.13	365	0.46	865	0.32	500
Marin	4 (21)	0.55	3,032	1.90	3,518	1.35	486
Napa	2 (11)	1.67	3,680	1.68	3,800	0.01	120
San Francisco	0	0	0	0	0	0	0
San Mateo	4 (21)	0.17	511	0.17	545	0	34
Santa Clara	0	0	0	0	0	0	0
Solano	0	0	0	0	0	0	0
Sonoma	1 (5)	0.09	197	0.15	197	0.06	0
Totals	**19**	**2.93**	**8,635**	**5.27**	**10,225**	**2.34**	**1,590**

[1]Project certifications state that impacts due to repairs and maintenance performed on streams are self-mitigating, meaning that the amount of habitat impacted is equal to or less than the amount of habitat enhanced and there is no planned permanent loss of riparian habitat.

[2]Enhancements that exceeded the required 1:1 habitat replacement are shown in the additional enhancement column.

Figure 5 compares impacted habitats recorded in the Wetland Tracker for 2008 with 2006-07 projects. Note that all three project types (compensatory mitigation, restoration, and stream repair and maintenance) are shown for 2008. 2006-07 data included compensatory mitigation and restoration but there was no separate category for stream repair and maintenance projects.

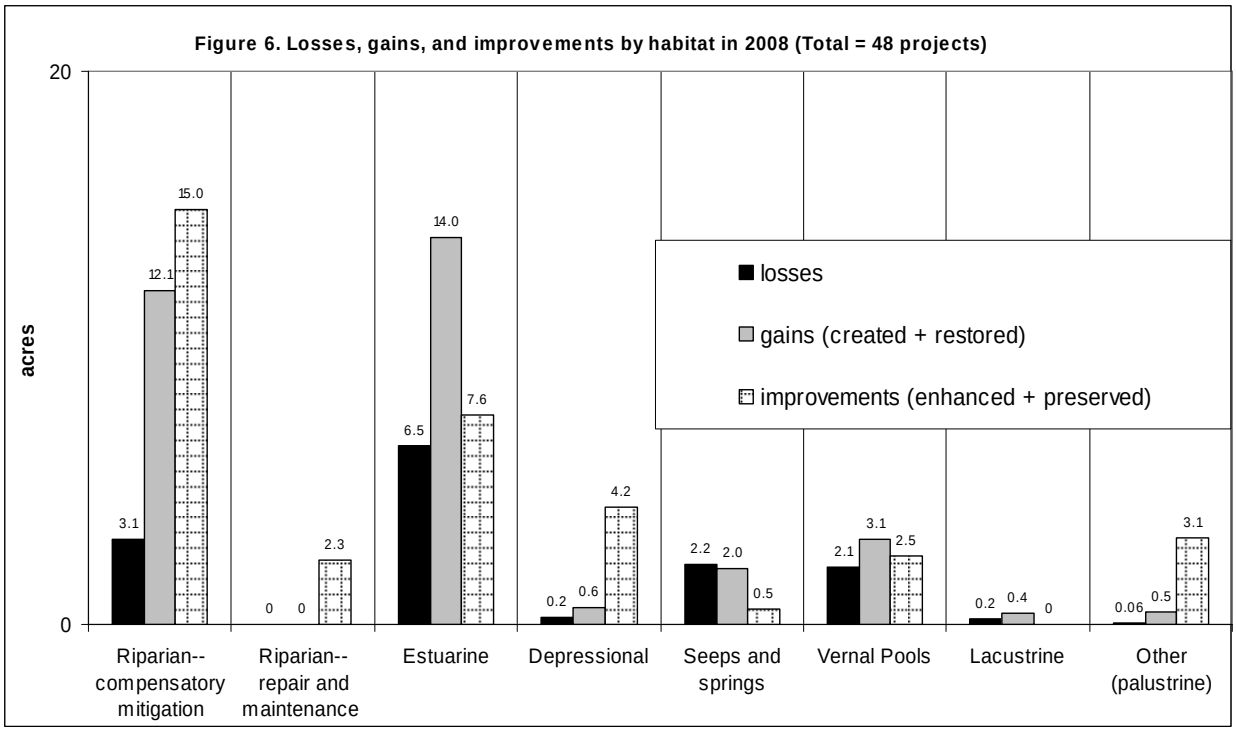
Figure 5. Distribution of Impacted Habitats in 2008 (48 projects) and 2006-07 (45 projects)[1]



[1]Total impacted habitats are 60 in 2008 and 57 in 2006-07 because some projects impact more than one habitat.

Riparian habitats continue to be impacted the most in 2008. The 36 riparian projects include the nineteen stream repair and maintenance projects, which should not, theoretically, result in habitat loss but rather in habitat improvements. Depressional, seeps and springs, and vernal pools have fewer impacts in 2008 than in 2006-07, while estuarine, lacustrine and other habitats have more impacts in 2008 than in 2006-07.

Figure 6 shows losses, gains, and improvements by habitat in 2008.



Estuarine habitats had the greatest losses and gains, followed by riparian. There was a net loss of seeps and springs habitat[4]. Riparian repair and maintenance projects have zeros recorded for losses and gains, since losses are temporary and consequently no compensatory mitigation is required.

Table 4 shows similar information to Figure 6 in tabular form and includes mitigation ratios. Net gains are determined by mitigation ratios that represent the sum of acres gained (except for the riparian analysis in linear feet) by adding restoration and creation, and dividing the sum by the acres lost. Column 8 shows both net gain in area and mitigation ratios. Mitigation ratios enable more meaningful comparisons across habitats than raw gains in area as the number of projects varies across habitats. The mitigation ratio shown in column 9 gives credit for enhancement and preservation. While enhancement does not contribute to net gains of wetlands or riparian systems on an acre-per-acre basis, it can improve functions such as pollutant filtration, flood peak attenuation, groundwater recharge, and crucial habitat for special status and for all biological species to feed, rest, breed, and hide from predators. Preservation alone does not compensate for net loss, but can protect and preserve habitats from permanent loss and provide opportunities for future restoration. Restoration and creation are usually required as mitigation, but credit can sometimes be given to enhancement and preservation as part of the overall compensatory mitigation if critical ecological, hydrological, or water quality benefits are expected to result in the watershed.

[4] According to Xavier Fernandez of the San Francisco Estuary Partnership, seeps and springs wetlands cannot be successfully created. Out of kind mitigation for this and other wetland and riparian types that cannot be adequately replicated should not, therefore, be permitted.

Table 4: Gains and Losses by Habitat Type for 48 Projects (2008)[1]

1	2	3	4	5	6	7	8	9
			Total Gains		Additional Improvements		Net Gain and Improvement	
Habitat Type[2]	Number of impacted habitat areas[3]	Total lost[3]	Restoration Total[5]	Creation Total	Enhancement Total	Preservation Total	Net gain--includes Cols. 4 & 5, minus loss	Additional improvements--includes Cols. 6 & 7[6]
		A	c	r	e	s	Mitigation ratio (col 4 + 5) /col 3	Mitigation ratio (col 6+7) /col 3
Estuarine	9 (19%)	6.46	1.15	12.83	0.16	6.44	**7.52**	6.60
	Mitigation ratio						**2.16**	1.02
Depressional	6 (13%)	0.24	0.10	0.50	0.10	4.14	**0.36**	4.24
	Mitigation ratio						**2.47**	17.45
Vernal pools	3 (6%)	2.09	1.60	1.50	0	2.48	**1.01**	2.48
	Mitigation ratio						**1.48**	1.19
Seeps and springs	4 (8%)	2.17	0	2.00	0.54	0	**-0.17**	0.54
	Mitigation ratio						**0.92**	0.25
Lacustrine	1 (2%)	0.19	0	0.43	0	0	**0.24**	0
	Mitigation ratio						**2.24**	0
Other (Palustrine)	1 (2%)	0.06	0.35	0.12	0	3.18	**0.41**	3.18
	Mitigation ratio						**7.83**	53
Riparian	35 (73%)	3.11	2.15	9.93	19.10	1.18	**8.97**	20.28
	Mitigation ratio						**3.89**	6.53
		L	i	n	e	a	r	Feet
Riparian (linear feet lf)[4]	31 (65%)	4,489	2,207	3,250	16,751	3,117	**968**	19,868
	Mitigation ratio						**1.22**	4.43
*TOTALS (Acres)	59 (123%)	A 14.32	c 5.35	r 27.30	e 19.90	s 17.42	**18.33**	37.32

[1]The 48 projects impact 58 habitat areas because some projects impact more than one habitat type resulting in a percentage that exceeds 100%. The total of 58 includes the 35 Riparian projects reported in acres. Two large restoration projects with a net gain of 3,035 acres of estuarine habitat are not included in this table.

[2] Most habitat impacts are reported in acres. Riparian project impacts are normally stated in linear feet and acres.

[3]Temporary impacts caused by 19 riparian repair and maintenance projects do not result in permanent habitat loss. These impacts are recorded in column 2 (impacts) but not column 3 (lost).

[4]Six out of 36 Riparian projects did not report impacts in both units. One project did not report in acres and five projects did not report in linear feet resulting in a lower number of impacted habitat areas for Riparian (linear feet) than Riparian (acres).

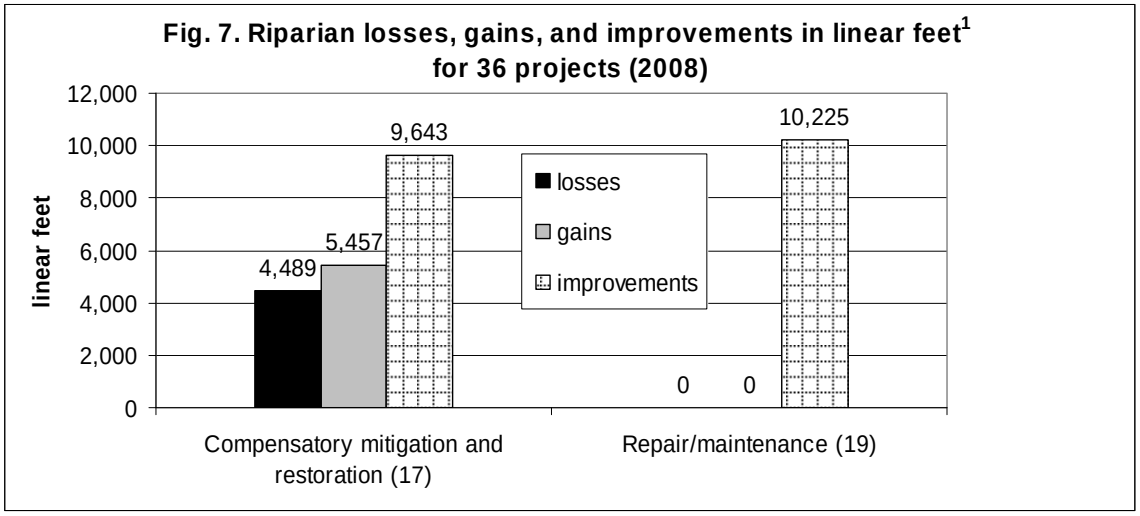
[5]Restoration and creation are considered gains; while enhancement and preservation are desirable, they do not add more wetlands to the existing watershed system.

[6] Note that when net gain has already accounted for the loss by subtracting it from restoration and creation, the loss is not subtracted again here. However, in those rare instances when preservation and enhancement are used for mitigation without restoration or creation, care should be taken to subtract the loss from enhancement or preservation to determine appropriate mitigation ratios.

In 2008, overall net gain from restoration and creation was approximately eighteen acres after losses are subtracted, with an additional 37 acres of improvements from enhancement and preservation. The 2008 mitigation ratios varied considerably across habitats and, in the case of riparian projects, between linear feet and acres.

The single San Mateo project mentioned earlier that restored 11.4 acres of estuarine habitat, explains the high gain for that habitat. Because many habitats in 2008 were impacted by only a few or just one project, results are not statistically significant and should be interpreted as suggestive rather than conclusive. With this caveat in mind, most habitat types have mitigation ratios that exceed 2:1, meaning 2 acres were replaced for every acre lost. Vernal pools and seeps and springs both have mitigation ratios less than that, 1.48 and 0.92 respectively, indicating a clear net loss for seeps and springs and a probable loss for vernal pools given the time and difficulty of creating or restoring these habitat types.

Figure 7 shows riparian compensatory mitigation and riparian stream repair and maintenance project impacts, gains, and improvements in linear feet.



With proper project design and BMP implementation during construction, impacts by riparian repair/maintenance projects are typically temporary and do not require additional compensatory mitigation. Thus, both losses and gains for this group are zero. Improvements to streams are made at roughly the same rate for both project types. Gains are greater than losses, though at less than the desired 2:1 ratio. In conclusion, avoidance of impacts is particularly critical to adequately protect springs and seeps, vernal pools and riparian habitats.

The following figures compare overall gains, losses, and improvements for 2008 with 2006-07 in acres (Figure 8) and linear feet (Figure 9).

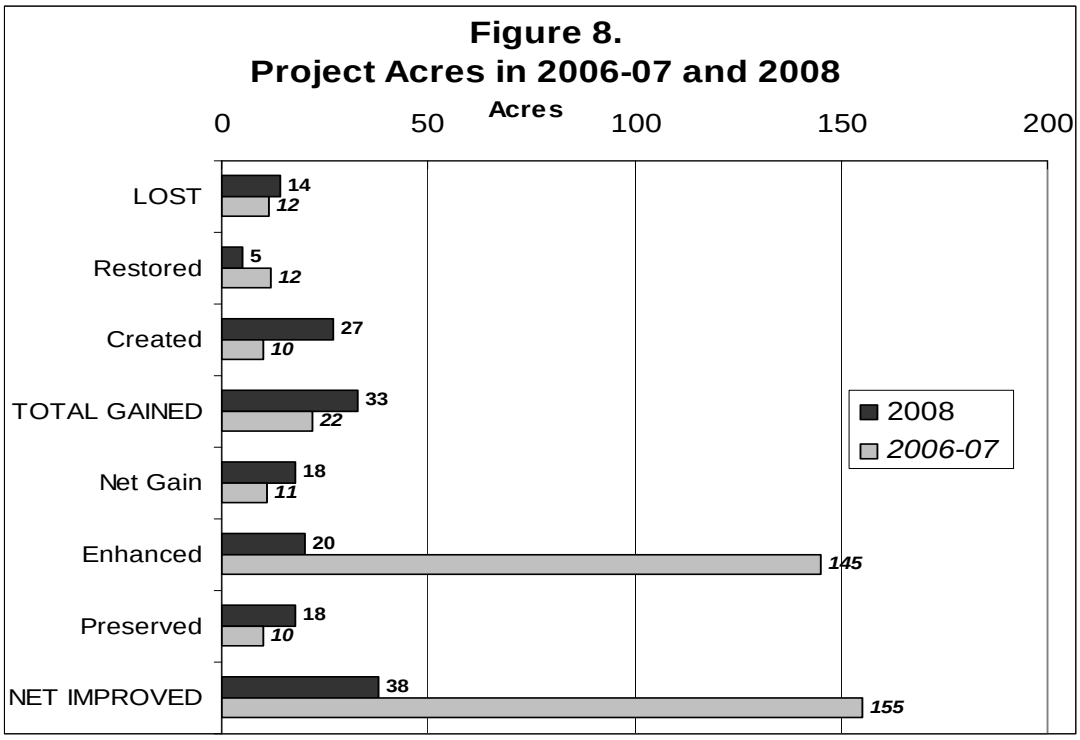


Figure 8.
Project Acres in 2006-07 and 2008
Acres
0
50
100
150
200
LOST
Restored
Created
TOTAL GAINED
Net Gain
Enhanced
Preserved
NET IMPROVED
14
12
5
12
27
10
33
22
18
11
20
145
18
10
38
155
2008
2006-07

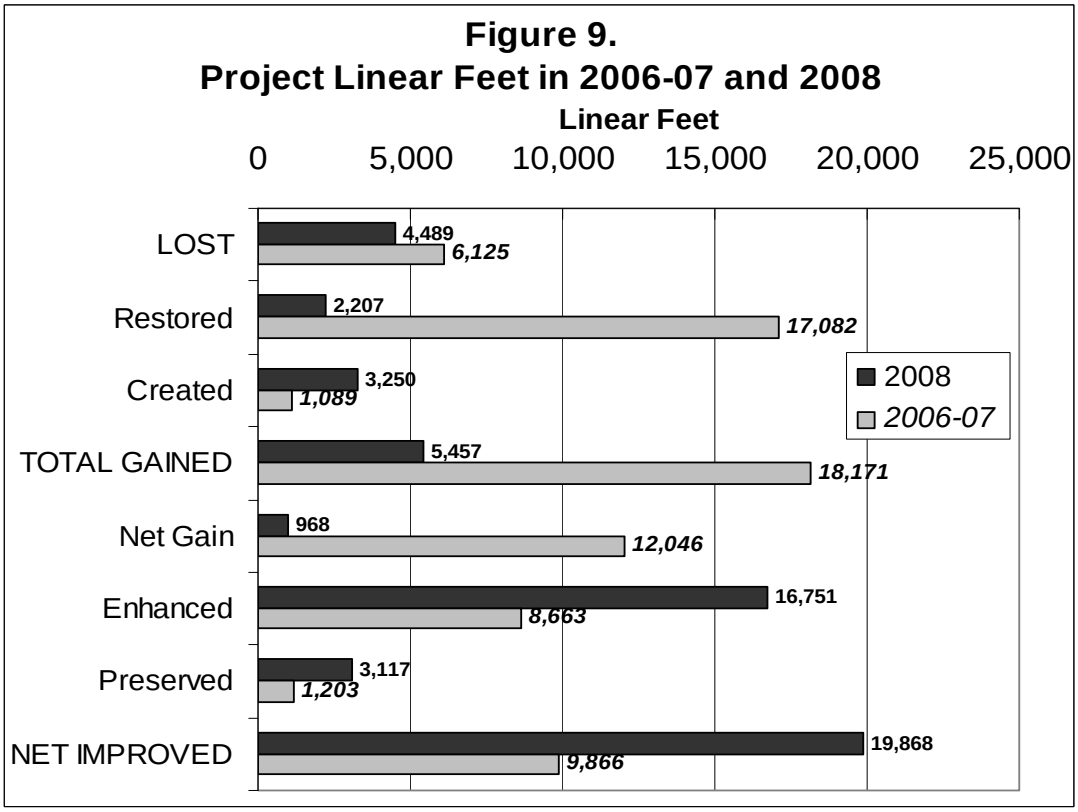


Figure 9.
Project Linear Feet in 2006-07 and 2008
Linear Feet
0
5,000
10,000
15,000
20,000
25,000
LOST
Restored
Created
TOTAL GAINED
Net Gain
Enhanced
Preserved
NET IMPROVED
4,489
6,125
2,207
17,082
3,250
1,089
5,457
18,171
968
12,046
16,751
8,663
3,117
1,203
19,868
9,866
2008
2006-07

The 48 projects certified in 2008 replaced wetland and riparian areas—though not necessarily their functions—in the following ways:

- Riparian habitats gained the most acreage, followed by estuarine.
- Riparian mitigation ratios differ depending on the unit of measurement. Riparian habitats gained at a rate of 3.9:1 when measured in acres but only 1.2:1 when measured in linear feet.
- Seeps and springs lost habitat, and vernal pools gained at a lower ratio than other habitats, 1.48. This is an improvement for vernal pools over 2006-07 when this habitat type lost acreage.
- Depressional habitats gained acreage at a moderate rate, 2.47.
- Two other habitat types showed gains but with only one project of each type, no conclusions can be drawn.

Compared to 2006-07, there were greater overall habitat gains in 2008, 33 acres in 2008, 22 acres in 2006-07. There were fewer gains in riparian areas measured in linear feet, 5,457 in 2008 and 18,171 in 2006-07. Conversely, improvements to riparian areas measured in linear feet in 2008 were greater than in 2006-07, 19,868 and 9,866 respectively. 75% of all projects certified in 2008 were riparian; about 2/3 of projects certified in 2006-07 were riparian. About three more acres were lost in 2008 than in 2006-07 for all habitats. On the other hand, linear feet losses were greater in 2006-07 than in 2008, 6,125 and 4,489 respectively.

Large Restoration Projects

In 2008, two large restoration projects were certified by Region 2. These projects were not included in the preceding analysis for several reasons:

1) Habitat types listed in project descriptions did not match those used on the wetland tracker form
2) The complexity of the projects led to uncertainty as to final figures for net losses and gains
3) Postponement of grant funding delayed work on the projects

These two restoration projects totaling 3,035 acres of net gain will be briefly discussed below. Please note that estimates of losses and gains are preliminary and may change. The final numbers for these projects will be included in the 2009 Tracker report.

Bair Island Restoration Project

This joint project of the California Dept. of Fish and Game and the U.S. Fish and Wildlife Service will restore a variety of estuarine habitats. Three islands will be involved, Inner, Middle, and Outer Bair Islands. The restored/improved acreage is estimated at 1,385 acres of tidal marsh habitat for a total net gain of 222 acres of new wetlands.

South Bay Salt Ponds Restoration Project (Phase I)

This multi-phase project is also jointly administered by the California Dept. of Fish and Game and the U.S. Fish and Wildlife Service. Phase 1 of the project will restore 3,069 acres of former salt ponds to tidal marsh (estuarine) habitat and re-configured managed ponds for birds, a net gain of 2,813 acres of wetlands and specially designed bird ponds. The remaining 10,151 acres of existing salt ponds will continue to be managed in accordance with the Basin Plan's water quality objectives for Region 2.

Discussion

Several conclusions emerge from the review of 2008 Wetland Tracker projects:

1. The proportion of riparian projects increased in 2008 compared with 2006-07. The majority of riparian projects permitted in 2008 are repair and maintenance projects that do not result in permanent losses of habitat and do not require compensatory mitigation. However, because they require long term monitoring, on average five years, they should be followed using the Wetland Tracker. Based on comments from staff and permittees, a custom riparian repair and maintenance Wetland Tracker form has been developed to streamline the permitting and monitoring of this subset of Wetland Tracker projects. In partnership with SFEI, we are developing mapping standards for these projects, the majority of which are less than one tenth of an acre.

2. The net gain increased from 10.5 acres in 2006-07 to 18 acres in 2008 excluding the two large restoration projects which will be added to the 2009 Wetland Tracker report.

3. The number of compensatory mitigation projects was lower in 2008 (29), compared to 2006-07 (36), particularly new residential construction projects. This is likely to continue throughout the economic recession. Nevertheless, the total acreage lost in 2008 was greater than in 2006-07, though the **net** gain of habitat was greater in 2008 than in 2006-07. A net loss to seeps and springs occurred, since losses to this habitat type were typically mitigated for out-of-kind through the creation or restoration of a different habitat type.

4. The number of projects that used mitigation bank credits to mitigate for impacts decreased slightly. Four projects purchased mitigation bank credits in 2006-07, while only three purchased them in 2008. This could be related to the economic recession and the decline in new residential construction in outlying areas where land prices are lower and where most mitigation banks and “Greenfield” developments are located. There are only two approved mitigation banks serving our region. Moreover, the use of mitigation bank credits to mitigate for wetland impacts is generally reserved for small impacts. For larger projects, on-site mitigation is usually preferred unless the site cannot restore or create the habitats due to soil, hydrology or lack of buffer zone. This differs from the US Army Corps of Engineers’ preference for the use of mitigation bank credits as the preferred alternative for wetland mitigation. Finally, approving new mitigation banks in Region 2 has not been successful due to high land prices and opposition from environmentalists. Although mitigation banks cannot sell mitigation credits until performance criteria have been met, a recent regional review of mitigation banks by Raffini (2008) suggests that the majority of mitigation banks have not been successful, primarily due to hydrological conditions that do not enable wetland creation.

Next Steps

In partnership with SFEI, an online application tool is being developed, which will be integrated with Wetland Tracker where applicable. This tool will allow avoided impacts to be tracked. Other upcoming enhancements to the Wetland Tracker online database include:

- enabling permittees to upload monitoring reports directly to Wetland Tracker
- automatic e-mails sent both to permittees and the Water Board project manager when reports are due or uploaded
- improved online mapping tool that will be integrated with the Wetland Tracker form
- tracking of mitigation banks

Reference:

Raffini, E. 2008. Review of Wetland Compensatory Mitigation in California, February –June 2008. Powerpoint presentation given at the February 2009 meeting of the San Francisco Bay Region Water Board.