

STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
 DF-46 (REV 08/15)

Fiscal Year 2016-17	Business Unit 3600	Department Fish and Wildlife	Priority No. 11
Budget Request Name 3600-050-BCP-DP-2016-GB		Program 2590-BIODIVERSITY CONSERVATION	Subprogram N/A

Budget Request Description
 Greenhouse Gas Emissions Reductions Through Restoration

Budget Request Summary

The Department of Fish and Wildlife (Department) requests \$60 million Greenhouse Gas Reduction Fund in Fiscal Year 2016-17 to implement projects that provide important greenhouse gas reductions, including restoration of Delta and coastal wetlands, mountain meadows and desert ecosystems, and funding for 20.0 existing positions. In addition to meeting the goals of the California Global Warming Solutions Act of 2006 (AB 32), these types of projects are identified in the 2013 California Water Action Plan as integral to developing a more sustainable water management system statewide.

Requires Legislation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Code Section(s) to be Added/Amended/Repealed	
Does this BCP contain information technology (IT) components? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes, departmental Chief Information Officer must sign.</i>	Department CIO	Date
For IT requests, specify the date a Special Project Report (SPR) or Feasibility Study Report (FSR) was approved by the Department of Technology, or previously by the Department of Finance. <input type="checkbox"/> FSR <input type="checkbox"/> SPR Project No. Date:		

If proposal affects another department, does other department concur with proposal? Yes No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Department Director <i>[Signature]</i>	Date 12/18/15	Agency Secretary <i>[Signature]</i>	Date 12/18/15

Department of Finance Use Only

Additional Review: Capital Outlay ITCU FSCU OSAE CALSTARS Dept. of Technology

BCP Type: Policy Workload Budget per Government Code 13308.05

PPBA	Original Signed by Amanda Martin	Date submitted to the Legislature 1-8-16
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BCP Fiscal Detail Sheet

BCP Title: Greenhouse Gas Emissions Reduction Through Restoration

DP Name: 3600-050-BCP-DP-2016-GB

Budget Request Summary

	FY16					
	CY	BY	BY+1	BY+2	BY+3	BY+4
Salaries and Wages						
Earnings - Permanent	0	1,757	0	0	0	0
Total Salaries and Wages	\$0	\$1,757	\$0	\$0	\$0	\$0
Total Staff Benefits	0	863	0	0	0	0
Total Personal Services	\$0	\$2,620	\$0	\$0	\$0	\$0
Operating Expenses and Equipment						
5301 - General Expense	0	65	0	0	0	0
5302 - Printing	0	20	0	0	0	0
5304 - Communications	0	36	0	0	0	0
5306 - Postage	0	7	0	0	0	0
5320 - Travel: In-State	0	25	0	0	0	0
5322 - Training	0	60	0	0	0	0
5324 - Facilities Operation	0	120	0	0	0	0
5326 - Utilities	0	40	0	0	0	0
5340 - Consulting and Professional Services - External	0	250	0	0	0	0
5342 - Departmental Services	0	930	0	0	0	0
5344 - Consolidated Data Centers	0	12	0	0	0	0
5346 - Information Technology	0	15	0	0	0	0
539X - Other	0	48	0	0	0	0
54XX - Special Items of Expense	0	55,752	0	0	0	0
Total Operating Expenses and Equipment	\$0	\$57,380	\$0	\$0	\$0	\$0
Total Budget Request	\$0	\$60,000	\$0	\$0	\$0	\$0
Fund Summary						
Fund Source - State Operations						
3228 - Greenhouse Gas Reduction Fund	0	4,248	0	0	0	0
Total State Operations Expenditures	\$0	\$4,248	\$0	\$0	\$0	\$0
Fund Source - Local Assistance						
3228 - Greenhouse Gas Reduction Fund	0	55,752	0	0	0	0
Total Local Assistance Expenditures	\$0	\$55,752	\$0	\$0	\$0	\$0
Total All Funds	\$0	\$60,000	\$0	\$0	\$0	\$0

Program Summary

Program Funding

2590 - Biodiversity Conservation Program

Total All Programs

0	60,000	0	0	0	0
\$0	\$60,000	\$0	\$0	\$0	\$0

Personal Services Details

Salaries and Wages	CY	BY	BY+1	BY+2	BY+3	BY+4
0756 - Environmental Program Mgr I (Supvry)	0	248	0	0	0	0
0762 - Environmental Scientist	0	222	0	0	0	0
0764 - Sr Envirnal Scientist (Supvry)	0	322	0	0	0	0
0765 - Sr Envirnal Scientist (Spec)	0	226	0	0	0	0
3260 - Sr Hyd Engr	0	227	0	0	0	0
3751 - Sr Engring Geologist	0	113	0	0	0	0
5393 - Assoc Govtl Program Analyst	0	124	0	0	0	0
7419 - Research Program Spec II	0	150	0	0	0	0
7500 - - C.E.A. - A	0	125	0	0	0	0
Total Salaries and Wages	\$0	\$1,757	\$0	\$0	\$0	\$0
Staff Benefits						
5150350 - Health Insurance	0	261	0	0	0	0
5150450 - Medicare Taxation	0	25	0	0	0	0
5150500 - OASDI	0	109	0	0	0	0
5150600 - Retirement - General	0	442	0	0	0	0
5150800 - Workers' Compensation	0	26	0	0	0	0
Total Staff Benefits	\$0	\$863	\$0	\$0	\$0	\$0
Total Personal Services	\$0	\$2,620	\$0	\$0	\$0	\$0

Analysis of Problem

A. Budget Request Summary

The Department of Fish and Wildlife (Department) requests \$60 million Greenhouse Gas Reduction Fund in Fiscal Year (FY) 2016-17 to implement projects that provide important greenhouse gas reductions, including restoration of Delta and coastal wetlands, mountain meadows and desert ecosystems, and funding for 20.0 existing positions. In addition to meeting the goals of the California Global Warming Solutions Act of 2006 (AB 32), these types of projects are identified in the 2013 California Water Action Plan as integral to developing a more sustainable water management system statewide.

B. Background/History

The Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006 [AB 32, Nunez]), requires California to reduce statewide greenhouse gas (GHG) emissions to 1990 levels by 2020 and to maintain and continue reductions beyond 2020. The Air Resources Board has developed a market-based cap and trade Program as a key element of its overall GHG reduction strategy. The program establishes a statewide emissions limit on the sources responsible for 85 percent of GHGs and creates a financial incentive for investment in clean and efficient technologies. The backbone of the cap and trade regulation is the system of tradable permits to emit GHGs known as 'allowances.' Because a market to exchange these allowances exists between entities, including those covered by the regulation, these allowances have value. Under the program, a portion of the allowances required for compliance are being sold at auction. The first auction was held in November 2012, and auctions will be conducted quarterly through 2020. Proceeds from these auctions will be used to fund projects that support efforts to reduce GHG emissions.

Strategic investment of these auction proceeds will further the goals of AB 32 including support of long-term, transformative efforts to improve public health and develop a clean energy economy. Three bills signed into law by Governor Brown - AB 1532, SB 535, and SB 1018 (Statutes of 2012) - collectively establish the Greenhouse Gas Reduction Fund (GGRF) to receive these proceeds and provide a framework for how these funds will be administered and spent on projects to reduce GHG emissions. Specifically, SB 535 requires that at least 10 percent of the proceeds received by the state be invested within the most impacted and disadvantaged communities and at least 25 percent of the proceeds be invested to benefit these communities, and AB 1532 requires the development of a three-year investment plan for cap and trade auction proceeds. The final investment plan, released in May 2013, emphasizes investments in existing programs in sectors which have the greatest GHG emissions with proposed investments commensurate with relative emissions (i.e. transportation, energy, waste and natural resources). This proposal aligns with the priorities identified in the investment plan by supporting natural resources projects, such as restoration Delta and coastal wetlands and mountain meadow habitat.

Restoration as contemplated in this proposal will create a larger and efficient storehouse for atmospheric carbon, and will provide the co-benefits of protecting and improving water quality through filtration and pollution reduction; enhanced water storage through the replenishment of groundwater aquifers; and enhanced biodiversity by providing essential habitat for many species of fish and wildlife, some of which are endangered or threatened. These wetland values have been recognized through several federal and state laws to reduce further losses. Some of these are: the federal Clean Water Act and Rivers and Harbor Act; the Porter-Cologne Water Quality Control Act, several sections in the Fish and Game Code, the California Coastal Act, the McAteer-Petris Act, and the California Environmental Quality Act. California was one of the first states in the nation to set a "no-net loss" policy for wetlands in 1993. In addition, the Fish and Game Commission has adopted policies regarding the importance of water and wetlands to the fish and wildlife resources of the State.

Shallow water estuaries and wetlands are some of the most consumptive ecosystems of carbon, allowing for both effective and extensive carbon sequestration. Assembly Bill 1504 (Skinner; 2010) called for a commitment to sequestration, and along with 13 other bills since 2000 emphasize the significance of addressing climate change. Two primary drivers to implementing carbon sequestration are the State's commitment to reducing global GHGs, which is exemplified by Global Warming Solutions Act of 2006 (AB 32) and the Governor's Executive Order S-3-05.

Analysis of Problem

The Budget Act of 2014 included \$25 million from the GGRF for the Department to implement GHG reduction projects through a new grant program. With these funds, the Department awarded funding to 12 projects restoring 2,500 acres of wetlands and mountain meadows.

C. State Level Considerations

The requested resources will contribute to the goals of the Global Warming Solutions Act of 2013, as well as the California Water Action Plan, which includes restoring important wildlife habitat and species while helping the state's water systems and environment become resilient. Furthermore, highlighting the connection between climate, water, and ecosystem benefits to wildlife and humans, restoring and creating wetlands to guard against flood risks and to enhance water supplies and quality pre also identified as needed actions in the Safeguarding California: Reducing Climate Risk update to the 2009 California Climate Adaptation Strategy ([http://resources.ca.gov/climate_adaptation/docs/Safeguarding California Public Draft Dec-10.pdf](http://resources.ca.gov/climate_adaptation/docs/Safeguarding_California_Public_Draft_Dec-10.pdf)).

This proposal is consistent with the Department Strategic Plan. Specifically, this proposal works to fulfill Theme III (protecting large ecosystems), Goal 1 (emphasize multi-species planning); Goal 2 (maintain, enhance and restore communities on lands owned by the Department; and Goal 3 (ensure sufficient water quantity and quality for wildlife). Additionally, this proposal helps fulfill Theme II (working cooperatively with private landowners and other agencies), Goal 1 (collaborative partnerships to restore and protect habitats).

The Department will restore wetland ecosystems along the Delta, coast, mountains and deserts to enhance GHG reductions, improve water supply, storage, and quality; restore and protect habitat for important fisheries and wildlife; and better prepare for the environmental consequence of climate change. The Department will achieve these objectives through solutions based in science and in collaboration with federal, state, local, Tribal, fisheries, recreational, conservation, and academic partners.

D. Justification

To meet the goals of the Global Warming Solutions Act of 2006, the requested funding will restore wetlands at a larger scale and faster pace to sequester more carbon.

Restoring Delta and Coastal Wetlands

The requested resources will restore Sacramento-San Joaquin Delta estuary and river wetlands to provide increased GHG reduction. These projects will also protect water supply, improve water delivery, storing water off-channel for human use and drought conditions, and address three fundamental effects of climate change to the coast and coastal watersheds: increasing sea level, unpredictable annual precipitation and flooding, and increases in GHGs. This restoration will also achieve important objectives tied to protection and enhancement of anadromous fisheries and improve habitat connectivity and migration for salmon and steelhead, as well as wetland and estuary-dependent wildlife.

Restoration will address habitat, water, and climate issues as quickly as projects are prioritized, selected, and designed. The only effective means to reducing GHGs, while restoring and protecting habitat, enhancing fisheries and wildlife, and protecting water supply and delivery, is to carry out large-scale, comprehensive projects and projects that essentially establish broad, healthy wetlands, and floodplains and connect them to river, bay, and ocean ecosystems. Single or small scale restoration projects addressing wetland, estuary, or river attributes will not achieve enhanced carbon sequestration, better water management, or viable restoration.

County, federal, and Tribal federal governments are already part of the solution for these issues and will be a partner in addressing wetland restoration, water conservation, and habitat improvements. Counties and water districts are dealing with the need to conserve water and the effects of climate

Analysis of Problem

change and are responsible for community health and protection. The private sector has inherent investment in a predictable water supply, safe transportation corridors, and community infrastructure. They are also part of and subject to real and regulatory issues dealing with GHGs, reduced carbon emissions, and carbon cap and trade occurring in California. The proposed program will continue to collaborate with all these partners to achieve Delta and coastal restoration objectives.

Restoring Key Mountain Meadow Habitat

The requested resources will result in restoration mountain meadow habitat, which provide increased carbon sequestration benefits. In addition, these projects increase local water storage, provide more predictable and dependable stream flow, and provide water conservation buffering in drought years. On a per-acre basis, these habitats are considered the most valuable for wildlife in California mountain ranges.

Mountain meadows throughout California's high mountain ranges are in a state of degradation due to historical land management practices, hydrologic changes and water diversion for other purposes. As runoff patterns change due to climate change, restored meadows would act as natural aquifers, increasing water quality and providing for extended and more predictable stream flow throughout the dry summer season. This soil complex also stores large amounts of carbon, thereby retaining it in a form not available to the atmosphere thus contributing to carbon sequestration goals. Without restoration efforts, sensitive wet meadow habitat will continue to decline and habitat for over 100 sensitive species will deteriorate.

Currently, the Department does not have staff or expertise dedicated to restoration of mountain meadow habitat. Many potential projects have been identified but need pre-project planning, including engineering support, and funding for implementation.

Restoring Desert Ecosystems

Recent scientific studies highlight the importance of desert ecosystems in the global GHG cycle and suggest that undisturbed desert ecosystems have the ability to sequester substantial amounts of carbon and buffer rising atmospheric carbon dioxide (CO₂) levels. One study indicates that deserts worldwide have been gradually "greening" over the past 30 years or so because of rising atmospheric CO₂ levels, a so-called "CO₂-fertilization effect" (Donahue et al, 2013; Geophysical Research Letters, v. 40, p. 3031-3035). A subsequent study in the Mojave Desert (Evans et al, 2014, Nature Climate Change, v. 4, p. 394-397) found that the "greening" results in measurable increases in soil biomass at the root and rhizome level. The study results indicate that undisturbed desert ecosystems sequester carbon and could increase their CO₂ absorption enough to account for 4 to 8 percent of current global GHG emissions. Given that deserts have much lower biomass per unit area than other ecosystems (e.g., forests, coastal wetlands), this substantial CO₂-absorption effect relates to the fact that deserts worldwide make up a substantial portion of the earth's landmass. Similarly, deserts comprise a more than one fourth, of California's landmass. Disturbed desert lands are relatively unproductive and often lack natural vegetative cover compared with the surrounding undisturbed ecosystems. Additionally, disturbed desert ecosystems require a substantial amount of time to "naturally" revert back to functioning ecosystems. Restoration of disturbed desert lands to functioning ecosystems would provide additional GHG reduction benefits. Restoration projects at these sites must include site stabilization and revegetation to restore vegetative cover and healthy ecosystem functions. These activities will increase soil biomass and promote carbon sequestration.

E. Outcomes and Accountability

Measurable objectives include, but are not limited to:

Analysis of Problem

- Reduced GHGs through carbon uptake, measured in carbon per acre, by Delta and coastal wetland, mountain meadow and desert ecosystem vegetation and soils. (Estimates of carbon sequestration from the scientific literature will be applied to the acreage restored).
- Expansion of habitat, measured in acreage, species complexity, and soil health (reversing erosion).
- Decrease in localized floodplain and estuary flooding, measured in incidents, area flooded, financial loss, and injury to humans, into local communities.
- Increase in number and health of species using the affected habitats.
- Decrease in fish die-offs, measured in incidents and numbers of fishes.
- Decrease in migration blockage, measured in collapsed delta islands, dry stream back, rescue events, and strandings, to fish migration at in the Delta or mouths of rivers and creeks to ocean.

The Department will follow procedures established by the California Air Resources Board for reporting project information and expenditure of funds from the GGRF. The Department will also follow all internal policies and procedures for awarding grant projects and ensuring that funds are expended consistent with the statutes governing the use of the GGRF.

F. Analysis of All Feasible Alternatives

Alternative 1: Approve this proposal for \$60 million Greenhouse Gas Reduction Fund in FY 2016-17 to continue and enhance the Department's statewide habitat restoration program implemented in FY 2014-15 to achieve goals of the Global Warming Solutions Act of 2006, as well as the California Water Action Plan, and funding for 20.0 existing positions. Approval will result in decreases in GHGs through increased carbon sequestration, as well as the co-benefits of water conservation and supply improvements, fisheries and wildlife protection and enhancement, and increased preparedness for climate change.

Alternative 2: Scale down the program by reducing the number of projects for completion under one or more of the components. This will save the State cost, specifically associated with how much the program was scaled down. The goals of GHG reduction, water conservation, safety, fisheries and habitat restoration, and preparedness for changes in the climate would be impacted differentially, depending on the types or geographical reductions to the proposed program.

Alternative 3: Scale down the program by implementing only one or two of the three program components. This will save the State cost, specifically associated with how much the program was scaled down. The goals of reduced GHGs, water conservation; safety, fisheries and habitat restoration, and preparedness for changes in the climate would be impacted differentially, depending on the types or geographical reductions to the proposed program.

Alternative 4: The State could choose not to implement this program and allow existing State, county, and private programs address GHG reduction, water conservation, safety, fisheries and wetland habitat restoration, and preparedness for changes in the climate.

G. Implementation Plan

Implementation of this proposal would begin on July 1, 2016, and/or upon approval of the FY 2016-17 Budget.

H. Supplemental Information

N/A

I. Recommendation

Alternative 1 is the preferred alternative to achieve goals of the Global Warming Solutions Act of 2006 and the California Water Action Plan. Approval will result in decreases in GHGs, water conservation and supply improvements, increased preparedness for climate change, and valuable benefits to fisheries and wildlife protection and enhancement.

Provisions:

1. The amount appropriated in this item shall be available for encumbrance until June 30, 2019.