



Agriculture and Environmental Protection in the Pacific Southwest Region

Region 9 Agriculture Operating Plan

FY2006



May 2006

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Executive Summary

The Pacific Southwest Regional office of the U.S. Environmental Protection Agency works to address agricultural practices that pose problems for human health and the environment in the Pacific southwest. Several organizational units contribute to these efforts, notably the Air Division, the Water Division, and the Pesticides Program in the Communities and Ecosystems Division. This Operating Plan:

- Summarizes the organizational context in which the Region operates
- Reviews the Region’s strategies for addressing environmental effects of agriculture and describes the activities the Region undertakes under each strategy
- Describes the issues the Region’s plans to address under the U.S. EPA’s strategic goals applicable to agriculture

Organizational Context

Work on agriculture in the Pacific Southwest Region is informed by a vision of an agriculture sector that supports farming systems that are integrated with the local ecology and the local community. The Region’s mission is to facilitate measurable improvements in the environmental effects of agriculture in the Pacific Southwest region, as mandated by Congress through EPA’s authorizing statutes and as directed by EPA policy, primarily in the Agency and Regional strategic plans. Staff and managers in several divisions and offices in the Region comprise an informal Regional agriculture team that works to fulfill this mission. The small staff of the Agriculture Program in the Communities and Ecosystems Division coordinates agriculture-related activities in the Region as well as among the many collaborating agencies and external stakeholders.

Strategies and Activities

The Region employs three basic strategies, and activities characteristic of each strategy, to carry out its mission on agriculture. This plan describes these programmatic activities and associated output measures.

| Collaboration and Funding | Regulation and Policy Development | Communication and Information Management |
|----------------------------------|--|---|
| Funding | Leadership | Media relations |
| Technical assistance | Drafting and commenting | Programmatic reporting |
| Internal coordination | Compliance and enforcement support | Web site content |
| Inter-agency coordination | | Data management |
| On-the-ground collaboration | | Technology transfer |

Goals and Issues

The Region addresses agricultural issues primarily under four of EPA’s strategic goals and across multiple goals. This plan describes these issues and associated outcome measures.

| Goal 1: Clean Air | Goal 2: Clean and Safe Water | Goal 4: Communities and Ecosystems | Goal 5: Compliance and Stewardship | Cross-Goal Issues |
|--|---|---|---|---|
| Volatile organic compounds (VOCs) and ground-level ozone | Agriculture-related TMDLs | Protection of workers from pesticide exposure | Market-based incentives for sustainable agriculture | Multi-media effects of dairies and dairy manure |
| Nox | Non-point source pollution | Integrated pest management | | |
| Particulate matter | Permitting for Concentrated Animal Feeding Operations | Biotechnology | | |
| Diesel engine emissions | NPDES permit for pesticides used near water | | | |
| Pesticide drift | | | | |

The appendices to this plan provide more detail on the Region’s internal and external collaboration partners, grant programs, and specific projects on agriculture.

Agriculture, Environment, and EPA

Agriculture occupies a quarter of the land area of the Pacific Southwest region of the United States, pumping billions of dollars into the economy. The agriculture sector provides the livelihoods of thousands of farm workers and produces an abundance of the commodities that feed and clothe us. However, for all their benefits, agricultural activities can affect human health and ecosystems, including the natural processes that make agriculture possible. The Pacific Southwest Region of the U.S. Environmental Protection Agency attempts to address the negative human health and environmental effects of agricultural practices while enhancing the long-term viability of the agriculture sector. (See U.S. EPA Region 9, *Agriculture in the Pacific Southwest Region: Region 9 Agriculture Strategic Plan, 2003-2008*, for a discussion of the environmental context of agriculture.)

Organizational Context

Nearly every office in the U.S. Environmental Protection Agency's Pacific Southwest Region works on issues affecting agriculture at some point. The Region's informal agriculture team draws on staff and managers primarily from the Air Division, the Water Division, and the Pesticides Program in the Communities and Ecosystems Division (CED). The Air and Water Divisions address agricultural sources of air and water pollution, while the Pesticides Program provides on-the-ground oversight of pesticide regulations affecting agriculture. The Agriculture Program staff in CED monitors and coordinates the Region's efforts on agriculture, including:

- *establishing* a coherent program regarding agriculture in the Pacific Southwest region, including agriculture's effects on air, water, communities, and ecosystems
- *overseeing* the Region's efforts affecting agriculture and *communicate* the results to stakeholders
- *providing* the Region's expertise and leadership to the development of national *policies, strategies, and eco-regional plans* and the promotion of sustainable agriculture to all of EPA's regions
- *influencing* environmental policy in other government agencies that regulate or provide *technical and financial assistance* to agriculture, through funding and participation in inter-agency coordination efforts

U.S. EPA Pacific Southwest Region

States

Arizona
California
Hawaii
Nevada

Tribes

146 federally recognized tribes

Pacific Islands

Commonwealth of the Northern Marianas
Other U.S. islands and freely associated island groups

Pacific Southwest Agriculture: Facts and Figures

Region

Acres in agriculture: 247 million
Percentage of land area in agriculture: 25

California

Percentage of largest US dairies: 36.7
Percentage of US produce: 64
Percentage of US farm workers: 27
Commodities: More than 350
Value of agricultural production: \$30 B
Percentage of U.S. farm exports: 12
Value of farm exports: \$7.2 B

Arizona

Percentage of land area in agriculture: 37
Commodities: cotton, lemons, lettuce, cantaloupe

Hawaii

Commodities: pineapple, sugarcane, seeds, coffee, macadamia nuts, papayas, bananas

Nevada

Percentage of land area as rangeland: 82
Commodities: beef, hay

- *promoting* “on-the-ground” sustainable agriculture by working with the agriculture community including commodity groups and growers.

Mission and Objectives

The Pacific Southwest Region’s mission with respect to agriculture is to generate measurable improvements in the environmental effects of agriculture. In keeping with the Pacific Southwest Region’s Strategic Plan, the Region will concentrate effort and resources on the significant environmental problems of the San Joaquin Valley, while supporting all our regulatory partners throughout the region. *The Region will continue to work with state, federal and local agencies to implement statutory environmental programs such as those under the Clean Water Act for nonpoint source pollution, CAFO regulations, TMDLs, wetlands 404 enforcement, etc.*

The Region’s strategic objectives for agriculture, consistent with its mission and the Agency and Region strategic plans, are to:

Clean Air: Reduce agriculture’s contribution to non-attainment of Clean Air Act standards for particulate matter and ammonia, and for volatile organic compounds and nitrogen oxides that are precursors to ground-level ozone pollution

Clean Water: Reduce the impairment of water bodies due to agriculture

Healthy Communities: Reduce the health effects of pesticides and pollutants on farm workers and rural communities

Healthy Ecosystems: Reduce the environmental effects of agricultural inputs and practices and to encourage the use of the most environmentally sound alternatives

Performance Measures

The Region will report on three categories of performance measures for agriculture.

Output measures: Measures of EPA activities that produce intermediate and long-term outcomes. Examples: projects funded or supported by EPA; improved partnerships and collaboration with federal and state agencies through MOUs or other mechanisms, EPA development and participation in workgroup meetings, outreach events, presentations and briefings.

Intermediate outcome measures: Measures of changes in knowledge and behavior attributable to EPA activities. Examples: stakeholder attendance at outreach events; reductions in agricultural use of the most toxic pesticides and adoption of less toxic pesticides and integrated pest management and other best management practices. Data showing direct effects of program activities on environmental conditions are generally scarce and expensive to collect. Behavior change data may serve as surrogates for environmental results measures and may even support estimates of changes in environmental conditions resulting from the changed behavior.

Environmental results measures: Broad measures of long-term changes in the environmental conditions targeted by EPA projects or programs. Examples: attainment of standards, reductions of emissions to air of priority air pollutants including volatile organic compounds and other ozone precursors, and particulates; of sediment, pesticides, and salts in impaired surface water bodies; of nitrates in

groundwater and drinking water sources.

In this Operating Plan, the Strategies and Activities section includes measures of the Program's activities, or outputs, while the Goals and Issues section provides outcome measures. The Region's strategic plan for agriculture describes environmental results measures that projects are designed to affect. The annual report on the status of Region 9's efforts on agriculture will include results on the performance measures for which data is available.

Strategies and Activities

To carry out its mission, the Region employs these basic strategies:

Collaboration and funding: coordinating resources, including EPA funding, of federal, state, and private collaborators to focus on priority environmental problems related to agriculture;

Regulation and policy: supporting EPA's air, water, and pesticides programs in developing and implementing appropriate regulatory controls and sound environmental policy under statutory mandates applicable to agriculture; and

Communication and information: providing timely information on ag-environmental issues to Congress, EPA management, stakeholders, and the public through public conferences and stakeholder meetings, and teleconferences, print and electronic publications, and the news media.

This section of the Operating Plan describes the activities the Region will conduct under these strategies. Performance measures for these activities are output rather than outcome measures. See the Goals and Issues section for proposed outcome measures.

Strategy One: Collaborating and Leveraging Funding

EPA's Pacific Southwest Region understands that no one agency can effectively address the many environmental effects of agriculture and recognizes the value of establishing new partnerships and enhancing established partnerships to better protect human health and the environment. The Region will continue to work with federal, state, and local governments as well as commodity, environmental, and conservation groups, to prioritize and address the most significant environmental effects of agriculture, to implement watershed and other community-based approaches, and to focus resources and coordinate efforts across programs and partners.

Key Activities

The Region will conduct the following activities to carry out its collaboration strategy:

1. **Funding.** Award grants for projects that address priorities of the media programs and promote long-term economic viability, social equity, and environmental health of agriculture (see Appendix C)

Output measures: number, dollar amounts, and expected outcomes of grants awarded from EPA funding and in collaboration with federal, state and local partners (e.g., U.S. Department of Agriculture, California Department of Food and Agriculture, California Department of Pesticide Regulation)

2. **Technical assistance.** Provide technical assistance to the agricultural community to promote sustainable agricultural practices including integrated pest management, conservation tillage, and nutrient management

Output measures: number of outreach events and commodity organization meetings attended, number of field visits made

3. **Internal coordination.** Coordinate EPA air, water, and pesticide program priorities at the Regional level, and with the national EPA Strategic Agriculture Initiative and Pesticide Environmental Stewardship Program on pest management funding priorities.

Output measures: numbers of workgroup meetings, number and substance of completed action items

4. **Interagency coordination.** Collaborate on grant proposal reviews with key external partners (e.g. USDA, the Western IPM Center, the California State Water Resources Control Board, and the University of California's IPM Grants program--see Appendix B for details) to influence funding decisions towards environmental issues in the San Joaquin air basin and the San Joaquin/Tulare and Imperial watersheds. Financial resources include proposition bond funds, CWA 319 grants, etc through a consolidated grants guidelines and RFP process. Convene quarterly meetings of the Interagency Agriculture Work Group (NRCS, EPA, SWRCB, DPR, CARB, CARCD, CalEPA).

Output measures: number of EPA funding allocation processes with partner-agency participation; number and dollar amount of partner-agency funding allocation processes with EPA participation

5. **On-the-ground collaboration.** Work with commodity groups, non-profit organizations, and growers to promote and reward adoption of environmentally preferable practices (e.g., eco-labeling, bio-intensive IPM, conservation tillage, dairy waste management technologies) to protect air and water quality. Targeted commodities are dairy, stone fruit, walnuts, processing tomatoes, and strawberries. (Appendices D and E describe two such projects).

Output measures: numbers of workgroup meetings attended; number and types of completed outreach products to support environmental stewardship

Strategy Two: Regulation and Policy Development

The Region conducts activities to implement the Clean Air Act, Clean Water Act, and Federal Insecticide, Fungicide, and Rodenticide Act as they apply to agriculture. While Regional staff and managers are not directly responsible for setting national policy, they actively contribute to the development and implementation of agriculture policy and regulation at the Regional and national levels and track relevant State efforts.

Key Activities

The Region will conduct the following activities to carry out its regulatory strategy:

1. **Providing expertise and leadership.** Convene stakeholder groups to provide perspective and advice to the EPA on policy and regulation development, and provide Regional perspective, technical assistance, and leadership to national policy development and rule-making processes

Participate in SIP development, state and local rulemaking early in the process. Conduct rulemaking to act on state SIP submittals.

Output measures: groups convened; meetings held, rules acted on, SIP measures approved

2. **Drafting and commenting.** Draft and/or review policy and regulatory language on draft document to support policy and rule development and to transmit stakeholder and Regional perspectives

Output measures: drafts and comments submitted, rules and policies improved through regional involvement

3. **Supporting compliance and enforcement.** Provide guidance and technical support to achieve regulatory program goals, including compliance assistance, inspections and enforcement actions.

Output measures: number of compliance activities, inspections, and enforcement actions involving agriculture.

Strategy Three: Communication Strategy for Media and Web Information Management

Pressing environmental, regulatory, and legal challenges facing agriculture often draw significant media attention. The Region is working towards a consistent communications strategy for agriculture issues that will engage, motivate and inform the agricultural community about environmental regulations and to increase voluntary and cooperative efforts to protect human and environmental health in the agricultural sector.

Key Activities

The Region will conduct the following activities to carry out its communication strategy:

1. **Establish media relations.** Work with Regional press liaison office to disseminate information about Program activities and accomplishments. During FY06, we anticipate the following media notifications and/or events:

- Announcement of PESP awards and Strategic Agriculture Initiative grants
- Announcement of West Coast Diesel Collaborative funding
- Announcement of a national EPA Sustainable Agriculture grant program

Announcement of partnership and collaboration milestones including USDA contributions to environmental efforts, new collaborative projects launched, and

**U.S. EPA's
Strategic Goals**

Goal 1

Clean Air and
Global Climate
Change

Goal 2

Clean and Safe
Water

Goal 3

Land Preservation
and Restoration

Goal 4

Healthy
Communities and
Ecosystems

Goal 5

Compliance and
Stewardship

visits by high-ranking Agency officials to California pilot of upcoming events, such as regulatory decision points, grant awards, enforcement actions, and public appearances, maintained.

2. **Report on program activities and results.** Keep *senior* management informed of Regional plans, projects, and results involving agriculture. This effort includes working internally and on HQ-sponsored workgroups to develop program performance measures.

Output measures: program planning and performance reports produced and management briefings conducted; performance measures developed and in use

3. **Provide web content.** Work with Regional web site managers to publish and maintain/update agriculture-related content on the R9 web site.

Output measures: currency and relevance of Agriculture content

4. **Manage data.** Provide subject-matter and business-process expertise to national database development efforts, notably the SAI Toolbox (see Appendix F) and a national IPM reporting system (see Appendix B), and maintain Regional components of national databases

Output measures: number of participating agencies; incorporation of databases into business practices; currency, timeliness, and accuracy of Regional data input

Goals and Issues

The Region conducts its efforts on agriculture in an organizational environment of Congressional mandates and Agency and Regional strategic plans. Projects undertaken must align with the Agency's long-term goals that reflect Congress' mandates for protecting air and water quality (see sidebar) and with the strategic objectives for reaching the goals. And they must reflect the priorities in the Regional strategy, including a focus on the San Joaquin Valley, where agriculture is a large part of the economy and where air and water quality are compromised. This section describes the projects that address priority environmental issues and, where feasible, the outcome measures that the Region will use to report the results of these projects.

Key Issues: Goal 1 -- Clean Air

Agricultural practices produce several types of emissions to air that contribute to ground-level ozone, a major cause of respiratory distress, as well as coarse- and fine-particle pollution and toxic air contaminants.

1. **Ozone.** Air Division staff will coordinate state and local research on dairy emissions with national research under the Air Consent Agreement for animal feeding operations. The Region will promote opportunities for agriculture stakeholders to minimize emissions of volatile organic compounds (VOCs) from fumigant and other pesticide applications, supporting Cal/EPA's plans to reduce VOC emissions from pesticides in the San Joaquin Valley. The Region will also work with the EPA's Office of Pesticide Program's Special Review and

Objective 1.1:
Healthier Outdoor
Air
Sub-objective 1.1.1:
More People
Breathing Cleaner
Air

Reregistration Division to incorporate important issues in the West (EPA Regions 9 and 10) into regulatory decisions, and collaborate with the University of California and other interests to identify support for needed research on fumigant impact mitigation.

Outcome measures: coordinated VOC research plan; establishment of San Joaquin Valley air basin ozone attainment implementation plan; dissemination of results of Region-funded dairy research; more streamlined registration process for low-VOC pesticides

- 2. **Particulate matter.** The Air Division will support the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the California Air Resource Board in developing rules for agricultural technologies, including confined animal facilities and agricultural engines. Air Division and Agriculture Program staff will support multi-stakeholder collaborative efforts, such as the Dairy Manure Collaborative, the West Coast Diesel Collaborative and the Conservation Tillage Working Group, to promote strategies for reduction of particulate matter from dairy production and soil management practices.

Outcome measures: SJVAPCD Rules 4570, Confined Animal Facilities, 4702, Agricultural Internal-Combustion Engines, 4694, Wine Tanks, and 4565, Composting, reviewed and comments provided; conference track on Conservation Tillage established at 2006 Ag-Environment Conference in Sacramento

- 3. **Diesel emission reduction.** The Air Division will convene the agriculture workgroup of the West Coast Collaborative to reduce emissions from diesel engines through the promotion of technologies, use of bio-fuels, and the development of infrastructure

Outcome measures: grant dollars disseminated, amount of funding leveraged, number of workgroup meetings, amount of emission reductions and number of agricultural engines retrofitted, upgraded, or electrified; resulting reductions in estimated emissions to air

- 4. **Pesticide drift.** The Agriculture Program will represent the Region’s position on pesticide contamination of ambient air. Staff will monitor policy issues and coordinate comments from all regions to contribute to the Office of Pesticide Programs’ development of regulatory policy on pesticide drift. Agriculture and Pesticides Program staff will also review OPP’s reregistration and registration decisions for consistency and enforceability, coordinate Regional communication on these issues, and provide public outreach as requested. In addition, staff will monitor State regulatory development.

Outcome measures: degree of consensus on policy and regulatory language among Regions and OPP; levels of pesticides in ambient air

Sub-objective 1.1.2:
Reduced Risk from
Toxic Air
Contaminants

Key Issues: Goal 2 – Clean and Safe Water

- 1. **Ag-Related Total Maximum Daily Load development and implementation.** The Water Division will continue to monitor the States’ efforts to develop TMDLs for waters impaired by agricultural activities. In California, several TMDLs to be completed in 2006 were originally expected in 2005. The Central Valley Regional Water Quality Control Board (RB5) adopted the San Joaquin River TMDLs for

Objective 2.2:
Protect Water
Quality
Subobjective
2.2.1: Improve
Water Quality on a
Watershed Basis

diazinon and chlorpyrifos in October 2005. The State Water Resources Control Board and EPA are expected to approve the TMDLs in early 2006. We expect RB5 to adopt the San Joaquin River salinity, boron, and dissolved oxygen TMDLs in 2006. The State Board will submit their 2004/05 303(d) list of impaired waters and a separate 305(b) report by May 2006. A list of California TMDLs with an agriculture component is included in Appendix G. These are TMDLs the State has committed to adopting in the State's fiscal year 2006, ending June 30.

2. **Non-point-source (NPS) pollution reduction** Region 9 states consider polluted runoff to be the main cause of water quality impairments attributed to urban and agricultural runoff. These diffuse sources account for many waterbodies listed on the states' section 303(d) lists. In FY06, Region 9 will award to the states and territories approximately \$18.8M of Section 319 funds to implement EPA-approved state NPS programs by funding state staff and the implementation of TMDLs and watershed-based plans. Our shared objective is to achieve water quality improvements by implementing best management practices on a watershed basis, particularly for those watersheds with completed TMDLs. A priority for FY06 includes improving collaboration with the states, USDA-NRCS, conservation districts, and coastal zone management agencies, to promote and encourage the complementary use of Section 319 and Farm Bill conservation program funds toward mutual priorities (e.g., to implement TMDLs with EQIP funds). In FY06, we will update and expand a 1994 Memorandum of Understanding (MOU) among EPA, NRCS, Hawaii Department of Health, and the Hawaii Association of Conservation Districts to include new program priorities (TMDLs, coastal zone management, watershed-based plans) and new collaborators (Department of Land and Natural Resources and Coastal Zone Management Agency) into this MOU.
3. **Concentrated Animal Feeding Operations (CAFOs):** The recent Second Circuit Court's *Waterkeeper* decision has reduced the number of CAFO permits to be issued by Region 9 and its states from approximately 1,800 to an estimated 400. EPA has proposed to extend the CAFO Rule deadlines for permit application/coverage and nutrient management plan development and implementation to July 2007 (Federal Register Notice, February, 2006). Thus, in FY06 we will continue our work with state regulators, agriculture industry organizations, environmental groups, and other federal and state agencies to ensure effective program development and implementation and to provide compliance assistance to CAFO producers. We will coordinate with our state and federal partners to direct and leverage technical and financial assistance to producers for compliance with regulatory requirements, with a particular focus on the development and implementation of nutrient management plans in California's Central Valley.

We will continue to support and partner with the California Dairy Quality Assurance Program (DQAP), which plays a key role in educating dairy producers about state and federal regulatory requirements and effective nutrient management techniques. Specifically, we will keep DQAP partners informed of EPA's rulemaking in response to the Second Circuit Court's decision. We will confer with DQAP as they prepare comments on the RB5 permit through the public review process. In addition, we will provide support and guidance as DQAP coordinates with the RB5's staff to develop an effective permitting process for nutrient management to complement DQAP's outreach.

Outcome measure: By 2007, States will have permit coverage of CAFOs subject to the EPA CAFO rule.

4. CA Irrigated Lands Conditional Waiver Program: Water Division staff will provide support and assistance primarily to the Central Valley Regional Water Quality Control Board and the State Water Resources Control Board by providing extensive outreach and coordination efforts to the agricultural community (e.g., watershed coalitions, resource conservation districts, ag commissioners, NRCS, etc.) and the environmental community (e.g., NRDC, Sustainable Conservation, DeltaKeeper, etc.). Specifically, staff of the nonpoint source office are working with the State Water Board to support the irrigated ag waiver program by providing technical and financial assistance (319 grants): to develop a high priority web-based enrollment system for the newly adopted irrigated ag waiver in the Central Coast, and require all funded agricultural water quality improvement projects that propose pollution load reductions. In FY06, we will continue to emphasize ag water quality as a priority for CA's nonpoint source program with similar activities as well as assist the regional boards with outreach, facilitation, and coordination with other state, local, and federal agencies.

Key Issues: Goal 4 – Communities and Ecosystems

The Pesticide Program will continue its work to prevent pesticide poisonings and exposure among agricultural workers. The Agriculture Program will continue to support the Pesticides Program's work on issues of regional and national significance for agriculture, including integrated pest management implementation and biotechnology (e.g., plant-incorporated protectants) regulation.

1. **Protection of agricultural workers.** The Pesticides Program will work with California's Department of Pesticide Regulation to improve the response to violations of pesticide use regulations, especially high-level episodes involving five or more people, a majority of which result from airborne drift. This work will include monitoring the State's communication and enforcement regarding high-level pesticide poisoning episodes. The Pesticides Program will also evaluate compliance with the Worker Protection Standard among nurseries, in order to address a commonly used loophole in the standard.

Outcome measures: number of reported pesticide poisonings; rate of compliance with Worker Protection Standard by commodity

2. **Integrated Pest Management implementation.** The Region's representative to EPA's national Strategic Agriculture Initiative Program (SAI) works both regionally and nationally to identify opportunities to further integrated pest management implementation and to strengthen the ability of this national program to better serve commodity groups and growers locally. This effort includes:
 - developing a web-based "toolbox" to provide grantees with specific IPM resources to help them better manage SAI grants,
 - developing an SAI database to capture all SAI integrated pest management projects,

Objective 4.1:
Chemical,
Organism, and
Pesticide Risks

Sub-objective
4.1.1: Reduce
Exposure to
Toxic Pesticides

- standardizing the Food Quality Protection Act Grants process across the Regions,
- administering a sustainable agriculture grants program initiated by EPA headquarters for minor and specialty crops' critical pest issues,
- developing SAI program measures, and
- developing a five-year business plan for the national SAI Program to better achieve EPA's environmental goals and increase integrated pest management adoption by the agricultural community.

Outcome measures: number of grantees using SAI toolbox, number of Regional grants in SAI database, standard request-for-proposal language completed and used, SAI program measures completed and in use, SAI 5-year plan developed and in use. Also, number of acres in IPM transition, reported reduction in use of high-risk pesticides, and progress on the IPM transition index

Sub-objective
4.1.3: Reduce
Chemical and
Biological Risks

3. **Biotechnology.** The Agriculture Program will continue to contribute to the national dialogue on agricultural biotechnology, including monitoring, participating in, and advising, as appropriate, the OPPTS regional sub-lead for biotechnology in Region 6, the Section 7 workgroup, the senior management workgroup for biotech, the Division Directors' Biotech Working Group, and OPP. We anticipate a lower level of effort in FY2006 compared to FY2005.

Objective 5.2:
...Innovation
Sub-objective
5.2.4:
Environmental
Policy Innovation

Key Issues: Goal 5 -- Compliance and Environmental Stewardship

Market-based incentives. The Agriculture Program will continue working with Protected Harvest, a non-profit organization, to bring innovative market-based incentives for environmental performance to commodity groups and growers. Protected Harvest develops standards and certification mechanisms for environmental performance across a range of agriculture management practices including soil, water, tillage, nutrient, and pest management practices.

Outcome measures: Number of growers certified under the Protected Harvest program; number of commodities for which certification standards are developed.

Cross-Goal
Issues:
Agriculture

Key Issues: Cross-Goal

Dairy Manure Collaborative. The Agriculture Program will continue to lead the San Joaquin Valley Dairy Manure Collaborative, initiated in 2003 to address comprehensively the Valley's dairy manure issues. The goal is to manage manure as a resource for improving the quality of soil and providing nutrients and renewable energy; while creating jobs and developing technological solutions to the regulatory challenges of reducing emissions of pollutants to air and water. In 2005 and 2006, the Agriculture Program will co-chair the Dairy Manure Technology Feasibility Assessment Panel.

Outcome measures: Understanding among stakeholders of the potential and limitations of technologies for managing dairy manure; progress on siting and building pilot-scale manure treatment demonstration projects

Appendix A: Internal Coordination Mechanisms

Many EPA programs address issues in agriculture, and several workgroups exist for the purpose of coordination of staff and managers between and among programs.

Region 9 Coordination Groups

CAFO Team

Hosted by Water Division, and inclusive of all media and issues pertaining to CAFOs; meets monthly. Contact: John Ungvarsky, Water Division.

Associates for Agriculture

The Associate Directors for Agriculture in the Water, Air, and Communities and Ecosystems Divisions meet for strategic planning quarterly and on an as-needed basis. Contact: Katherine Taylor, Advisor on Agriculture to the Regional Administrator.

EPA-wide Coordination Groups

Strategic Agriculture Initiative Workgroup

The Strategic Agriculture Initiative (SAI) workgroup includes representatives from each Region who carry out FQPA implementation activities, with workgroup coordination anchored in OPP-BPPD. The workgroup meets monthly by phone and more often as circumstances and special projects/efforts require. Region 9 is a recognized leader in the group, both through staff initiative and the leadership of our management on key issues. Contact: Cindy Wire.

Pesticide Drift Workgroup

The Pesticide Drift workgroup, led by the Regional lead for Pesticide Drift designated by OPP approximately 9 years ago, responds intermittently on specific emerging issues according to the need at the national level or by request of the Regional lead. Contact: Karen Heisler.

CWA-FIFRA Workgroups

The interface of the Clean Water Act and the Federal Insecticide Fungicide and Rodenticide Act has spawned numerous working groups. The Agriculture Program currently participates to some degree in three:

1. Workgroup specific to the development of the NPDES pesticide rule, anticipated to be promulgated at the end of the 2006 calendar year. Contact: Karen Heisler

2. Risk assessment and management comparison working group, which is developing one or two white papers on this topic. Contact: Karen Heisler
3. Ad-hoc workgroup initiated by OPP Division Directors with Region 9 Agriculture, Pesticides, and Water staff to develop SOPs for integration of pesticide-water field data into OPP registration review. Contact: Karen Heisler

Monthly Biotech Users Group (MBUG)

MBUG is a monthly dialogue group including all Regions, OPP, OPPTS, OECA, and ORD, and is coordinated by the Regional sub-lead for the topic (currently Region 6). Region 9 contributes significant leadership. Contact: Karen Heisler

Division Directors' Biotech Workgroup

The Division Directors' Biotech Workgroup was initiated by OPP to provide guidance to the MBUG. Kathy Taylor is the Region 9 representative. Contact: Karen Heisler

Ag Sector Contacts

The Ag Sector Contacts Workgroup is hosted by the OECA Agriculture Compliance Assistance Center and includes staff and managers from each Region and headquarters office. Monthly calls often include participants from state, local, or other federal agencies. In-person meetings are held one or two times a year at different locations across the country. Contact: Don Hodge

Ag-Air Quality Workgroup

Western-Midwestern States Ag-Air Quality workgroup meets quarterly by conference call, with hosting responsibility rotating among Regions. The calls include some state/local or other federal partners. Contact: Jamie Liebman

West Coast Diesel Emissions Reduction Collaborative

Lynn Kuo in the Air Division leads the agriculture sector workgroup of this effort. The Agriculture Program participates and provides perspective on ag-related issues (e.g., growing crops for bio-diesel, diesel agricultural pump efficiency, and conservation tillage to reduce on-farm diesel emissions), including reviewing grant proposals. Contact: James Liebman

EPA OPP Strategic Ag Initiative/Pesticide Environmental Stewardship Program Measures Workgroup

Region 6 is leading an effort to develop program measures for both the Strategic Ag Initiative (SAI) and Pesticide Environmental Stewardship Program Measures (PESP) programs. Beginning in the summer of 2005, representatives from OPP, the SAI program and state lead agencies met weekly to develop logic models and program measures that will illustrate the effectiveness of each program. The measures will be finalized by the end of the year. Contact: Cindy Wire

EPA OPP FQPA Measures Workgroup

OPP headquarters is leading a parallel effort to develop outcome measures for the goal of protecting human health from the effects of pesticides. Contact: Don Hodge

Appendix B: A Sample of External Collaboration Partners

Many governmental and non-governmental agencies address issues in agriculture. The Region participates in several ongoing bilateral discussions and multilateral committees on these issues, contributing an environmental focus to these efforts.

Federal Government

USDA Natural Resource Conservation Service

Region 9 will meet periodically with the State Conservationist for California in 2006 to continue discussions regarding inter-agency priorities and allocation of resources to San Joaquin Valley, Klamath River basin, and Imperial Valley, all high priority areas for California. The first meeting in December 2004 centered on resource issues in the Klamath basin and included representatives from the state and regional water quality control boards. Region 9 meets quarterly with each of the state conservationists in our region to explore collaborative efforts, shared priorities leverage resources, and share information and ideas. These meetings often include the state ag department staff, conservation districts leadership, and the state environmental agency. We also attend the State Technical Advisory Committee meetings convened by the state conservationists to discuss Farm Bill and conservation priorities.

Western Integrated Pest Management Center

Region 9 sits with representatives from the environmental and agricultural communities as well as Headquarters on the WIPMC advisory committee to assist the Center in priority-setting, focusing on environmental outcomes. The Agriculture Program and WIPMC also collaborate on reviewing applications for WIPMC and FQPA grants. In 2005, Region 9 reviewed grant proposals competing for \$600,000 in IPM Center funds. In addition, Region 9 provided significant support in planning the Center's first Integrated Pest Management Conference held in Portland, Oregon, at the end of August 2005. In 2006, Region 9 will continue to participate on the on the WIPMC advisory committee, and will once again assist with the review of IPM grant proposals competing for \$260,000.

National IPM Indicators Workgroup

EPA's national Strategic Agricultural Initiative Program (SAI) staff continued its collaboration efforts with USDA and the national Integrated Pest Management (IPM) Center program leaders at a meeting in August 2005. The collaboration of the group known as the "indicators workgroup" was established at an October 2004 workshop to explore mutual EPA/USDA goals in measuring success, and to create a long-term strategy for cooperation in IPM performance measurement and outcome reporting. The cross-Agency group is focused on creating a common federal database of funded IPM grant results; identifying target outcomes for human

health, the environment and economics; and expanding possibilities for a closer working relationship with USDA's Natural Resources Conservation Service. The third meeting of the Indicators Workgroup is scheduled for August 2006.

Unified IPM Reporting Workgroup

Borne out of the October 2004 workshop to explore mutual EPA/USDA goals in measuring success, and to create a long-term strategy for cooperation in IPM performance measurement and outcome reporting, the Unified IPM Reporting Workgroup is working to develop a national IPM reporting system. Workgroup members include Regional Strategic Agriculture Initiative, CSREES, SARE, NCRS, and the national IPM centers staff. In 2005, the group developed key reporting elements for integrated pest management projects that participating agencies commit to collecting and incorporating into their databases. In 2006, the group will explore the option of creating a central framework that would draw key information from the different agency databases, allowing participants to access and view each other's IPM projects. USDA has committed to funding the construction of this framework. Regions 1 and 9 as well as the Southeast IPM Center have provided significant input on this effort.

State Government

Arizona CAFO Interagency Group

Arizona's Department of Environmental Quality and Department of Agriculture and the Arizona Association of Conservation Districts meet quarterly with EPA Region 9 and the USDA's Natural Resources Conservation Service to coordinate on concentrated animal feeding operations activities such as outreach and compliance assistance to producers, developing and implementing nutrient management plans, permit development, and air quality impacts from these operations. In addition, the group shares information and seek opportunities to leverage and coordinate shared Clean Water Act priorities and Farm Bill resources.

California Interagency Agriculture Coordinating Team (IACT)

Core members include California Department of Food and Agriculture, California Department of Pesticides Regulation, CalEPA, California Air Resources Board, the State Water Resources Control Board, UC Davis, and the California Association of Resource Conservation Districts, as well as EPA Region 9 and the USDA's Natural Resources Conservation Service. The IACT mission statement is: "To assist California's agricultural community in achieving environmental and conservation goals in an efficient and cost effective manner by maximizing, leveraging and coordinating the delivery of technical and financial assistance." The IACT meets quarterly to share information, coordinate activities, problem solve and collaborate on priorities.

Hawaii Technical Committee on Nonpoint Source Pollution

The Hawaii Association of Conservation Districts sponsors this committee with assistance from the State of Hawaii's Department of Health and the USDA's Natural Resources Conservation Service. Participating agencies include the University of

Hawaii Cooperative Extension Service, the State's Departments of Land and Natural Resources and Hawaiian Home Lands and the Farm Services Agency, as well as EPA Region 9. The Committee is presently working to update and expand a dated Memorandum of Understanding to address agriculture-polluted runoff and watershed health. It is a known forum for interagency collaboration to address agriculture, water quality, and conservation issues.

Nevada Agriculture and Water Quality Work Group

Members include Nevada's Department of Environmental Protection and the Nevada Association of Conservation Districts and Conservation Commission as well as EPA Region 9 and the USDA's Natural Resources Conservation Service. The work group meets quarterly to communicate and coordinate on water and ag issues. The work group seeks opportunities to leverage Farm Bill and Clean Water Act funding to address agricultural and water quality issues on a watershed basis.

California Department of Food and Agriculture

Region 9 meets with California's Secretary of Agriculture at least annually to discuss general priorities for agriculture. The most recent meeting was in November 2005, when dairy issues topped the agenda.

California Department of Pesticide Regulation

Region 9 meets quarterly with the Department of Pesticide to support the Pesticide Program, to anticipate conflicts between federal and State programs and help to align regulatory priorities and to share resources for the two agencies' registration work. Fumigant regulation, VOC planning, biotech (PIP) regulation, aquatic applications, and pesticide TMDLs are anticipated subjects. On issues related to water quality, we will coordinate communication among Region 9's Water and Pesticides programs and the larger agriculture interest group.

California Water Resources Control Board

In 2005, the California Water Resources Control Board dedicated \$47 million dollars in grants to "reduce the effects of discharge and runoff from irrigated agricultural land to the State's water bodies." The total amount for their Ag Water Quality Grants Program included state Proposition 40 and 50 funds, as well as \$6.4 million in federal Clean Water Act 319 funds. More than 70 proposals were submitted and reviewed by nineteen state and federal agencies including EPA. Staff from Region 9's Water Division and Agriculture Program assisted in reviewing 30 proposals. In 2006, the California Water Resources Control Board plans to send out another solicitation for agriculture-related proposals and will be asking Region 9 staff to participate once again in the review process.

California Air Resources Board

The California Air Resources Board co-chairs with Region 9 the San Joaquin Valley Dairy Manure Technology Feasibility Assessment Panel and works closely with the Region on attainment plans for ozone and particulate matter under California's State Implementation Plan for air quality.

The University of California Agriculture Programs

Region 9 is expanding its relationship with the University of California beyond the historical alliance with the Sustainable Agriculture Research and Education Program, to include UC's Integrated Pest Management program and the Center for Integrated Farming Systems (now the Agricultural Sustainability Institute), as well as UC Davis' College of Agriculture and Environmental Science. These entities' interest is attributable to the quest for organizational and financial stability in a volatile period. With UC IPM, the Region is exploring collaboration on emerging regulatory issues, for example pesticides as VOC contributors. With UC Davis, the Region has begun a dialogue on pressing environmental and regulatory issues, in order to focus research on priority regulatory needs.

Commodity Groups, Environmental* and Agriculture Stakeholders

California Minor Crops Council

Following up on a two-year project funded by the FQPA grants program to develop ten comprehensive Pest Management Strategic Plans (PMSPs) for California commodities, the Agriculture Program continues to meet with several commodity organizations affiliated with the California Minor Crops Council to discuss how to address pest management priorities identified in the PMSPs as well as EPA's general priorities, concerns, and funding opportunities. In addition, the Agriculture Program plans to continue working with agricultural stakeholders to pioneer innovative incentive programs that complement regulatory approaches.

San Joaquin Valley Dairy Manure Collaborative

The Agriculture Program will continue to lead the San Joaquin Valley Dairy Manure Collaborative, initiated in 2003 to address comprehensively the Valley's dairy manure issues. The goal is to manage manure as a resource, to improve the quality of soil and provide nutrients and renewable energy; while creating jobs and developing technological solutions to the regulatory challenges of reducing emissions of pollutants to air and water. Appendix D provides a detailed status of this project.

Protected Harvest and Market-Incentive Partnerships

Drawing on several funding channels (FQPA, PESP, RGI, and discretionary OPPTS funding), the Region has supported Protected Harvest, Inc., a non-profit organization, in developing and applying commodity-specific programs that provide market-based incentive to growers to adopt bio-intensive IPM and other stewardship practices that protect air and water quality. These programs generally include the development of standards for ecologically sound production, sometimes formatted as a self-assessment workbook, as well as certification standards. Targeted commodities are stone fruit (peaches, nectarines, and plums), processing tomatoes, and strawberries. See Appendix E provides for details.

California Roundtable on Agriculture and the Environment

The Region participates in an agriculture and environment “roundtable” which includes representatives from the agriculture and environmental communities as well as state and federal agency staff. The purpose of the group is to develop an alliance of California’s agricultural, environmental, and public-agency leaders seeking to promote an agriculture that is economically viable, environmentally sound, and socially responsible. Roundtable participants strive to learn from each other about agricultural, environmental, and regulatory issues, identify common interests, and advocate in support of the group’s common goals and principles. The Roundtable members have voiced support to members of Congress and the State legislature for increased Farm Bill conservation program funding for California. Members include: AgraQuest Inc., Agricultural Council of California, American Farmland Trust, California Association of Resource Conservation Districts, California Association of Winegrape Growers, California Cattlemen, Great Valley Center, California Coalition for Food and Farming, California Farm Bureau Federation, Defenders of Wildlife, Environmental Defense, Natural Resources Defense Council, The Nature Conservancy, San Joaquin County Resource Conservation District, Sustainable Conservation, Western Growers Association, and Western United Dairywomen. Agency members who play an advisory role include EPA, California Departments of Food and Agriculture and of Pesticide Regulation, CalEPA, and UC Davis.

California Working Lands Stewardship Advisory Council

The Secretaries of the California Department of Food and Agriculture and the California Resources Agency recommend the creation of a “Working Lands Stewardship Advisory Council.” The purpose of the proposed Council, a statewide stakeholder body, will be to advise the Secretaries on policies that advance the protection and stewardship of California’s working farms, forests, and range lands statewide. Efforts are underway to vet this proposal among various stakeholders, including EPA. The Council will likely become active in early 2006.

California Dairy Quality Assurance Partnership

A 1998 partnership agreement established a cooperative agreement between the CDAQP, the University of California Cooperative Extension (UCCE), the California Department of Food & Agriculture, the California Environmental Protection Agency and the State Water Resources Control Board, the California Resources Agency and the Department of Fish & Game, and three organizations within the USDA: Animal Plant Health Inspection Service, the NRCS, FSA ,and USEPA.

The purpose of the agreement is to support the Environmental Stewardship component of CDQAP as a voluntary, cooperative government and industry education/facility evaluation program. The program’s objective is to assist California dairy producers in meeting all federal, state, regional and local requirements relating to manure and nutrient management and air quality. The program’s ultimate goal is to help ensure a healthful environment for the people and wildlife of the state of California. The program core components include continuing education workshops for producers, the creation of Environmental Stewardship Farm Management Plans tailored to each dairy, and on-site evaluation by a third party. Industry organizations include: California Dairy Research Foundation, California Farm Bureau Federation,

California Manufacturing Milk Advisory Board, California Milk Advisory Board, Milk Producers Council, and Western United Dairymen.

Appendix C: Financial Assistance

In addition to coordinating and participating in multi-party collaborative efforts, the Region awards and manages grants to educational and organizations. These grants help fund projects to improve the economic, social, and environmental performance of agriculture. In addition to evaluating FY2005 and FY2006 applications for funding and making awards, the Region will manage grants awarded in prior fiscal years during 2006.

Food Quality Protection Act Grants (FQPA) Program

Regional representatives of the national Strategic Agriculture Initiative Program administer FQPA grants to help growers learn to farm using less toxic pesticides and more integrated pest management practices. Funded projects are designed to reduce use of organophosphates, carbamates, and other pesticides in minor and specialty crops in California, and promote integrated pest management strategies. This in turn supports Clean Water and Clean Air Act mandates by reducing the movement of pesticides off target into water and air.

For 2005, three grants were awarded totaling \$352,000 and are described in the table below. The national Strategic Agriculture Initiative Program funding for 2005 decreased 25%, and may decrease again 2006.

Table 1. FQPA Grants Initiated in 2005

| Grant Title | Recipient | Amount | Outcomes |
|--|--|---------------|--|
| Biologically Integrated Farming Systems (BIFS) for Table Grapes in the Southern San Joaquin Valley | UC Sustainable Ag., Research and Education Program | \$200,000 | 30 percent reduction of high risk pesticides by first year following completion of project |
| Eco-labeling as a Means for Pesticide Risk Reduction for California Strawberries | Protected Harvest | \$60,000 | Reduce pesticide use and increase grower standards through implementation of a certification program |
| Field Level Implementation of IPM in Stone Fruit Orchards in the San Joaquin Valley, CA | California Dept. of Pesticide Regulation | \$92,000 | Decrease use of 5 FQPA pesticides by 20% among 53 targeted growers near waterways in project area. |

The 2006 Request for Proposals for the Food Quality Protection Act Grant Program will be sent out in December of this year. New awards will be made in April 2006.

Pesticide Environmental Stewardship Program Grants

The Region 9 Agriculture Program also administers the Pesticides Environmental Stewardship Program (PESP) grants to address agriculture-related environmental concerns. This grant program provides up to \$50,000 in support for research, public education, training, monitoring, demonstrations and studies that reduce the risks and use of pesticides in agricultural and non-agricultural settings. Resources have declined so that only one grant is funded per year in each Region.

Table 2. Active Pesticide Environmental Stewardship Program Grants

| | Recipient | Amount | Expected Impacts |
|---|---|---------------|---|
| Almond Pest Management Alliance | California Department of Pesticide Regulation | \$40,000 | Assist growers in understanding TMDLs & dormant spray regs. Use PUR data in 3 regions to identify at risk watersheds, and provide outreach. |
| Improved Management of the Egyptian Alfalfa Weevil in California Alfalfa to Protect Environmental Quality | Regents of UC, Davis | \$40,000 | Evaluate biological control of alfalfa weevil and existing economic thresholds used as basis for pest management decisions. Outreach to growers should yield reductions in use of organophosphate and carbamate insecticides. |
| Pesticide Environmental Stewardship: Pesticide Safety Training for Korean Farming Community | Hawaii Agri-business Development Corporation / Hawaii Dept of Agriculture | \$38,969 | Improved pesticide stewardship and reduction in pesticide exposure and associated human health impacts. |

Discretionary Grants

The Region has allocated funding for specific projects on agriculture in the San Joaquin Valley from its discretionary funds for priority geographic areas. Two such projects were designed to create market-based incentives for growers to transition to the use of lower-risk pesticides and other more sustainable pest management practices in the San Joaquin Valley.

Table 3. Active Regional Geographic Initiative Grants for Agriculture

| | Recipient | Amount | Expected Impacts |
|--|-------------------|---|--|
| Eco-Labeling | Protected Harvest | \$75,000 plus \$100,000 augmentation from OPPTS | Production standards pertaining to pest management practices and all ag activities impacting air, soil, and water quality management in two to four commodities, certification, and incentives for their adoption; leveraging of USDA-NRCS funding for same purpose. |
| Pilot Project: Pesticide Risk Reduction and Improved Environmental Performance for California's Fresh Stone Fruit Industry | Protected Harvest | \$75,000 | Develop a customized certification program for developed production standards, and a water quality component for these standards. |

Appendix D: Dairy Manure Collaborative Activities

In FY 2004 and 2005 the Dairy Manure Collaborative focused on

- forming the group;
- generating buy-in from critical participants;
- agreeing on the statement of the problem and on goals;
- identifying potential funding sources; and
- creating a San Joaquin Valley Dairy Manure Technology Feasibility Assessment Panel to assess existing technologies for their expected environmental and economic performance.

In FY 2006 our efforts will be focused on selecting sites for pilot projects to comprehensively treat dairy manure. Attributes of these pilot projects will include:

- Construction and operation at full-scale commercial dairies
- Comprehensive environmental monitoring (i.e., Does the technology reduce emissions to air of NH₃, VOCs, and CH₄, and to water of nutrients and salts?)
- Economic analysis (i.e., Is the technology economically viable for a typical California dairy?)
- Education and outreach to dairy industry to achieve broad scale adoption in the San Joaquin Valley
- Collaboration with dairy industry, technology providers, UC Cooperative Extension, regulatory agencies, environmental organizations, and communities

We will need to assemble a package of technologies (identified and assessed by the Dairy Manure Technology Feasibility Assessment Panel), locations (identified by the dairy industry and a GIS mapping project), participants (members of the DMC), and funding, as described below:

- 1. Evaluating technologies to treat dairy manure.** A great many technologies have been proposed to treat dairy manure. Few have been evaluated, and fewer have been evaluated comprehensively for their environmental and economic performance under California conditions. The Agriculture Program led the effort to create the Dairy Manure Technology Feasibility Assessment Panel in February 2005 and is currently co-chairing the evaluation process. The Panel intends to issue a draft report in September 2005 that will evaluate the first 45 technologies submitted to the Panel. We anticipate that significant amounts of time will be needed to respond to the press and to the technology providers when the draft report is released. In addition, the Panel has a great deal more work to do (some three dozen more technologies have already been submitted for review). We see a great opportunity here, but also the need for considerable staff time and monetary resources.

2. Identifying locations for demonstration and implementation projects.

Working with the Region 9 GIS Center, the Ag Program began in mid-September 2004 to identify the areas in the San Joaquin Valley with the highest density of dairy cows. These are the places most likely to support regional treatment facilities for manure, and the areas most likely to need treatment to reduce environmental impacts from manure. The Program is mapping dairy location and herd size; surface and ground waters impaired by dairies; and biomass power plants, compost facilities, wastewater treatment facilities, and other features that may be useful in finding the most desirable locations for manure treatment facilities. We have completed the first draft of the maps, and we are now working to improve data quality to ensure we have accurately identified the areas with the highest densities of cows.

The Program intends to distribute the results of this work to the Dairy Manure Collaborative members, with updates when additional elements are added. However, we face two potential roadblocks. First, we anticipate that both the dairy industry and CDFA may oppose dissemination of these data. Second, EPA's Office of Homeland Security (which we contacted at the request of Regional Administrator Wayne Nastri) has requested that we share only printed copies of the maps, not the electronic files or underlying data tables, which reduces the value of the maps.

The Agriculture Program engaged the dairy industry and private sector technology providers in a discussion of locations for pilot projects beginning in early 2005, and more detailed discussions of sites and facilities are planned for FY 2006. Specifically, we are funding the Local Government Commission to hold a workshop in January 2006 to engage a diversity of local government organizations, technology experts and the dairy industry in pursuing options (technologies, locations, funding) for treating dairy manure in the San Joaquin Valley. In addition, several companies are eager to generate hydrogen fuel from manure, or to build combustion/gasification biomass power plants to generate electricity from manure, and they have asked for help identifying locations with the highest density of manure.

- 3. Assembling lists of potential funding sources.** The Agriculture Program will continue to evaluate and disseminate information about grants, contracts, incentive programs such as USDA's Environmental Quality Improvement Program grants, tax breaks, and other funding sources for applicability to the Dairy Manure Collaborative-
- 4. Expanding the list of stakeholders.** The Dairy Manure Collaborative already includes participants from federal and state agencies, the dairy industry, University of California researchers and Cooperative Extension, and environmental groups. In 2006 we will expand efforts to share information and perspectives with local government, including electric utilities and irrigation districts (Lodi, Woodland, Merced, Turlock), and with private companies that manufacture or provide manure treatment technology and services.
- 5. Establishing policy to support methane digesters.** Digesters convert organic matter in manure to methane gas, which can be used to generate electricity. The technology reduces emissions of methane, a potent greenhouse gas, and also generates electricity that helps California keep the lights on and helps dairies stay economically viable. This technology is economically viable in large

part because of legislation that created net metering and market incentives. These California programs expire at the end of 2006. The dairy industry and the California Energy Commission are eager for the programs to continue and would like assistance from EPA in educating legislators and garnering support from the environmental community. This effort could involve significant work in 2006.

6. Aligning research with policy and regulatory needs for animal feeding operations. The Region provides input to several programs that focus on research needs associated with animal feeding operations.

EPA's Office of Research and Development is developing a broad, long-term research plan to characterize environmental problems associated with animal feeding operations. Region 9 staff are working with ORD to include attention to the environmental and regulatory needs of Region 9, where conditions, especially in the San Joaquin Valley, are distinct from those in other parts of the country. The Region continues to advocate for additional research and monitoring on the impacts of dairies on contamination of ground water with salts and nitrates; on emissions to air of ozone and particulate matter precursors; and applied research on the environmental and economic performance of various manure treatment technologies. The Agriculture Program met extensively with ORD in spring and summer 2004, and presented Region 9 issues to a joint EPA/USDA conference in December 2004. As follow-up, ORD asked the R9 Ag Program in summer 2005 to provide additional input into defining EPA research agendas related to animal feeding operations, with particular emphasis on regional needs; the scope and timeline for this work has not yet been determined. It is unclear how much additional input ORD will want and whether the Region will be able to continue influencing research agendas affecting California's dairies and environmental quality.

State Research on Dairy Emissions. The Region participates in monthly telephone conference calls and occasional in-person meetings with two groups that set research policy at the state level:

- Ag Technical Committee and Dairy Sub-Committee of the San Joaquin Valley Air Pollution Control District
- Ag Research Priorities Sub-Committee of the Central California Ozone Study's Policy Committee.

Over the past several years these two groups have provide or influenced several tens of millions of dollars for research related to air pollution from agriculture, especially for emissions from dairy-related sources.

7. Reviewing grant proposals. The Region reviews applications to several other state and federal programs for funding relevant to dairy issues, including the following:

- Small Business Innovation Research grants. Separate programs are run by EPA, USDA, and DOE. The Region reviewed two proposals to EPA in 2005 for technologies to treat dairy manure. Since we are advertising this grant program through the DMC, we anticipate having more proposals to review in the coming years.
- Cal-Fed. The Region is asked to review Cal-Fed proposals each year, and

we participate when the topic areas are relevant to our work. We will participate again if any proposals are received related to dairy manure.

- State Water Resources Control Board's Ag Water Quality grants. The SWRCB awarded \$40 million in 2004, covering all agriculture including dairy. In fall of 2005, staff from the Region's Agriculture Program and Water Division helped review an additional set of proposals for \$5 million in funding specifically to address dairy issues; awards are expected in winter 2005/2006.

Appendix E: Market-Based Incentives

Over the years, the Region has supported several mechanisms for using the market to encourage environmentally sound practices in agriculture. These included funding eco-labeling efforts in wine grapes and stone fruits and supporting apparel manufacturers' efforts to increase use of organic cotton. More recently, the Region has supported Protected Harvest, Inc., a non-profit organization, in developing and applying comprehensive commodity-specific certification programs that provide market-based incentives to growers for adopting bio-intensive IPM and other stewardship practices that protect air and water quality. These programs generally include the development of standards for ecologically sound production, sometimes formatted as a self-assessment workbook, as well as certification standards. Targeted commodities are stone fruit (peaches, nectarines, and plums), processing tomatoes, and strawberries. Specific examples include:

- ✓ The California Tree Fruit Agreement will implement a certification program based on the recently completed standards, using funding allocated by the Regional pilot to leverage USDA funds.
- ✓ Protected Harvest will provide on-the-ground support for growers' modification of orchards and practices. USDA-NRCS will contribute substantial for this outcome during FY05.
- ✓ The California Processing Tomato Collaborative will engage the major processors and growers in the two prominent processing tomato growing regions in California, the Sacramento and San Joaquin Valleys. The Collaborative will:
 - Receive support from EPA Region 9, OPPTS, and, the CA State Water Resources Control Board
 - Develop a production practices workbook, a set of certifiable production standards, and industry planning and outreach infrastructure
 - Develop processing tomato production standards due to be completed in the third quarter of FY06.

Appendix F: Strategic Agriculture Initiative

The Strategic Agricultural Initiative (SAI) is EPA's outreach program to help growers transition away from the use of high-risk pesticides. The program helps develop integrated pest management practices and products that are safe, effective, and consistent with the Food Quality Protection Act (FQPA), working on the national, regional, and local levels to help growers adopt these practices.

Mission

The Strategic Agriculture Initiative's mission is to "support and promote environmentally sound agricultural and pest management practices across the United States that are economically viable and socially responsible." SAI fills a unique niche within EPA's regulatory framework by providing on-the-ground support for growers interested in incorporating farming practices that are more environmentally sound.

Program Components

Performance Measures. In 2005, the national SAI group developed performance measures to measure the likelihood of funded projects achieving predicted environmental results, and producing on-the-ground, quantifiable environmental change. These measures can be "direct" or "surrogate" measures. Direct measures identify actual environmental change to air, land or water, while surrogate measures identify changes in strategies or behavior that should lead to environmental changes. As of 2005, all SAI projects are required to select performance measures from the SAI "toolbox" located on the web at: www.aftresearch.org/sai.

SAI Toolbox. The SAI "toolbox" was also developed over the last year to assist SAI Regional representatives with grants management, and to provide grantees and grant applicants with specific IPM resources. The SAI Toolbox will also be home to the SAI database which is currently being created.

SAI database. The SAI database is being developed with the help from American Farmland Trust. This user-friendly database will allow both SAI specialists and the public to view all SAI funded projects in each EPA region, and will be searchable by region, pesticide, pest and commodity. This database will allow the national SAI program to showcase completed projects and captures the most relevant information for each project in a concise two-page format. This database is scheduled to be fully operational in 2006.

Five-Year business plan. The SAI program has an ambitious schedule for 2006 including administering a one-time sustainable agriculture grants program initiated by EPA headquarters for minor and specialty crops critical pest issues, finalizing SAI program measures, standardizing the Food Quality Protection Act grants process, and developing a five-year business plan. The goal of the five-year business plan is

to evolve the SAI program from an “initiative” to a recognized permanent program within EPA.

Appendix G: California FY2006 TMDL Adoption Commitments for 303(d) Listed Waters with an Agriculture Component

North Coast Region

- Lower Lost River: nutrients, temperature
- Scott River: sediment, temperature
- *Shasta River*: nutrients, temperature

San Francisco Bay Region

- Sonoma Creek: pathogens (possibly from agricultural sources)

Central Coast Region

- Chorro Creek: nutrients
- Pajaro River: siltation, nutrients
- Watsonville Slough: pathogens (possibly from agricultural sources)

Central Valley Region

- Clear Lake: nutrients
- Sacramento-San Joaquin River Delta: diazinon, chlorpyrifos
- San Joaquin River: diazinon, chlorpyrifos

Colorado River Basin Region

- Coachella Storm Channel: pathogens
- New River: dissolved oxygen (possibly from agricultural sources)
- Palo Verde Outfall: pathogens

Santa Ana Region

- Prado Area Streams: pathogens

Appendix H: Project Selection

Informed by knowledge of global socio-environmental issues (see U.S. EPA Region 9, *Agriculture in the Pacific Southwest: Region 9 Agriculture Strategic Plan FY2003-FY2008*) but *constrained by our organizational context, (What does this mean?)* the Region works where its authorities and its concerns regarding agriculture coincide -- in the area of agri-environmental issues. To choose specific projects to address these issues, the Region evaluates several factors, including

- the contribution of agricultural practices to urgent human health and environmental issues
- the intensity of agricultural activity by geographic area
- the intensity of agricultural activity by crop
- the receptivity of stakeholders to change, and hence the likelihood of projects to succeed

Agri-Environmental Issues with Significant Agricultural Sources

Agriculture contributes to a number of significant environmental problems. The key environmental issues identified by the Region 9 programs include:

Air

- **Particulate matter** California's San Joaquin Valley is a non-attainment area for particulate matter under the Clean Air Act. Similarly, the South Coast of California and the Maricopa Valley outside Phoenix, Arizona, both have serious problems with particulate matter from agricultural sources. Agricultural burning, bare fallowing, plowing, harvesting, and diesel engines are major contributors to dust formation in rural areas. In the San Joaquin Valley, agricultural sources accounted for over 58% of the 1994 PM₁₀ and 53% of the PM_{2.5} emissions inventories.
- **Ground-level ozone:** Volatile organic compounds (VOCs) from agricultural pesticides and dairies, and nitrogen oxides (NOx) from farm machinery exhaust, are major contributors to ozone formation. In the San Joaquin Valley, pesticides account for 9 percent and dairies 16 percent of the reactive organic gases that contribute to ozone formation, while agricultural burning adds another 3 percent.¹
- **Stratospheric ozone depletion:** The soil fumigant pesticide methyl bromide is responsible for 5 to 10% of the reduction in Earth's stratospheric ozone, and California agriculture is the world's largest user of methyl bromide.² Most nations of the world, including the United States, have agreed to phase out this chemical, but "critical use" exemptions have kept it in use on strawberries and other crops.

Water

- **Surface water pollution:** Agriculture is the nation's leading source of pollution for ground, surface, and coastal waters.³ Pollutants include pesticides, fertilizers, *sediment*, *nutrients*, and salts in irrigation drainage. In California, agriculture is responsible for 69% of the river miles with nonpoint source water quality impairments, and for 37% of all (point and nonpoint source) impaired river miles.⁴ Agriculture is the leading contributor to non-point source pollution in four of the state's nine water basins⁵ and a major contributor in four of the remaining five basins. Concentrations of pesticides, especially diazinon, regularly exceed Clean Water Act standards in all major rivers of California's Central Valley.⁶
- **Water supply allocation:** Agriculture also consumes large amounts of water. In California, farming uses 85% of the state's water. *The Bay Delta is in decline from decades of competing demands, no longer functioning as a healthy ecosystem or as a reliable water supply. EPA is part of a collaborative effort known as CALFED Bay-Delta program with 23 other state and federal agencies to improve water supplies in CA and the health of the Bay Delta watershed.*
- **Wetlands:** Vineyard conversion and ag land conversion to urban/residential development have resulted in the loss of wetlands

Pesticides

- **Total pesticide use:** California is the leading state for pesticide use and uses 20% of the nation's pesticides.⁷ More than 200 million pounds of active ingredient⁸ are applied each year. Fresno County alone receives 40 million pounds – 40 pounds per capita – each year.
- **Use of high-risk pesticides:** Use of the most toxic materials is also rising. Between 1991 and 1998, the total volume of pesticide use rose 40%, intensity of pesticide use (pounds applied/acre) rose 51%, use of the most toxic materials rose by 27%, and use of carcinogens rose 127%. And agriculture releases three times as many reproductive and developmental toxins as industry.⁹
- **Farm worker health:** Such heavy use of highly toxic materials creates significant human health concerns. Pesticides cause acute illness in an estimated 7.5% of the agricultural labor force each year.¹⁰
- **Farm community health:** Numerous communities, including MacFarland, Lompoc, and Watsonville, have raised concerns to the Regional office about pesticide drift into communities and schools. Environmental assessments of these communities indicate high incidences of illness and the potential for chronic exposure to pesticides. Existing regulatory programs do not effectively address community impacts nor do they provide adequate incentives for growers to move beyond compliance to a more proactive stewardship role.
- **Pesticide drift into surface water**, which has the potential to harm aquatic ecosystems, including endangered species

Intensity of Agriculture by Geographic Area

California is the leading farm state, with \$25 billion in farm gate sales accounting for 12% of the nation's total farm economy. Eight of the US's top 10 agricultural counties are in California, each producing over \$1 billion annually in farm gate receipts. California produces more than one-half of the nation's fruits and vegetables; leads the nation in production of 85 commodities, including dairy, produce, eggs, and nursery crops; and is the world's most diverse agricultural economy, with over 350 crop and livestock commodities, many not grown elsewhere. California's Central Valley is the most ethnically diverse rural area in the world, and California employs 25% of the total US hired agricultural labor force, far more than any other state.¹¹ California alone accounts for 20% of all US farm exports.¹²

Within California, the San Joaquin Valley leads the state in economic value of agriculture, in farm acreage, and in employment of farmworkers. The eight counties of the San Joaquin Valley include six of the seven leading agricultural counties in the state (Table 1). As a result, the Region concentrates its efforts on the San Joaquin Valley.

Table 1. California's Counties with the Most Valuable Agricultural Production (counties in the San Joaquin Valley are shown in **bold**)

| County | Value of Agricultural Production (\$1000s) |
|--------------------|--|
| Fresno | 4,052,767 |
| Tulare | 3,294,660 |
| Monterey | 3,288,468 |
| Kern | 2,477,526 |
| Merced | 1,918,230 |
| San Joaquin | 1,494,693 |
| Stanislaus | 1,454,928 |
| San Diego | 1,351,059 |
| Kings | 1,136,966 |
| Ventura | 1,117,567 |
| Imperial | 1,073,472 |
| Riverside | 1,067,367 |
| Santa Barbara | 858,071 |
| Madera | 760,246 |
| San Bernardino | 645,885 |

Source: California Agricultural Statistics 2003. California Department of Food and Agriculture. Sacramento, CA, October 2004, <http://www.nass.usda.gov/pub/nass/ca/AgStats/2003cas-all.pdf>

Intensity of Agriculture by Commodity

Commercial agricultural production, research, processing, distribution, marketing, and politics are organized by crop. More than 350 crops are grown in Region 9. Since it is not possible to work simultaneously on such a large number, we identified priority crops based on economic value (Table 2) and acreage (Table 3). In recent years the Region has worked on and funded projects in eleven of the twenty most valuable agricultural commodities in the state, covering plants and animals; tree and row crops; and food, feed and fiber crops

Table 2: California's Most Valuable Agricultural Crops and Commodities
(crops the Region has worked on in recent years are indicated in **bold**)

| Rank | Crop / Commodity | Economic Value (\$1,000,000) |
|------|--|------------------------------|
| 1 | milk and cream | 4,029 |
| 2 | Nursery | 2,437 |
| 3 | Grapes, all | 2,298 |
| 4 | Lettuce, all | 1,734 |
| 5 | almonds | 1,600 |
| 6 | cattle and calves | 1,556 |
| 7 | strawberries | 1,119 |
| 8 | Flowers | 985 |
| 9 | tomatoes, all | 901 |
| 10 | hay, all | 842 |
| 11 | cotton, all (lint and seed) | 761 |
| 12 | Broccoli | 603 |
| 13 | chickens, all | 537 |
| 14 | oranges, all | 483 |
| 15 | carrots, all | 468 |
| 16 | stone fruits (peach, plum, nectarine) | 455 |
| 17 | Rice | 373 |
| 18 | avocados | 316 |
| 19 | Walnuts | 342 |
| 20 | eggs, chicken | 282 |

Source: California Agricultural Statistics 2003. California Department of Food and Agriculture. Sacramento, CA, October 2004, <ftp://www.nass.usda.gov/pub/nass/ca/AgStats/2003cas-all.pdf>

Table 3: California Crops Grown Over the Largest Acreage (crops the Region has worked on in recent years are indicated in **bold**)

| Rank | Crop / Commodity | Acreage (1,000 acres) |
|------|--|---|
| 1 | Hay, alfalfa | 1,570 |
| 2 | Grapes, all Raisin Table Wine | 819 255 85 479 |
| 3 | Cotton | 694 |
| 4 | Almonds | 550 |
| 5 | Rice | 507 |
| 6 | Wheat, all | 485 |
| 7 | Tomatoes, all Processing Fresh market | 311 274 37 |
| 8 | Lettuce, all | 232 |
| 9 | Walnuts | 213 |
| 10 | Oranges, all | 195 |
| 11 | Corn, grain | 170 |
| 12 | Stone fruits Peaches Plums Nectarines | 140 68 36 36 |
| 13 | Broccoli | 125 |
| 14 | Oil crops | 107 |
| 15 | Pistachio | 88 |
| 16 | Beans, dry | 75 |
| 17 | Carrots | 71 |
| 18 | Melons, cantaloupe and honeydew | 70 |
| 19 | Avocados | 60 |
| 20 | Barley | 58 |

Note: For certain agricultural commodities (e.g., milk and cream, nursery crops, cattle and calves, cut flowers, chickens, and eggs), acreage is not a useful measure. Therefore, these agricultural commodities do not appear in this table.

Source: California Agricultural Statistics 2003. California Department of Food and Agriculture. Sacramento, CA, October 2004, <ftp://www.nass.usda.gov/pub/nass/ca/AgStats/2003cas-all.pdf>

Stakeholder Ability and Willingness

Two additional criteria are critical in deciding how the Region will spend its resources. The Program's non-regulatory activities to promote a more sustainable future for agriculture must rely on the abilities and willingness of our partners.

Producers of many crops in CA are organized into industry, trade, and marketing associations. Many of these associations have state charters and strong ties to University of California Cooperative Extension (<http://www.cdfa.ca.gov/mkt/mkt/mktbrds.html>). Through these commodity organizations, growers are more able to participate as partners in Region efforts. The Program works with the Almond Board of California and the Lodi-Woodbridge Winegrape Commission, for example. Growers of commodities that are less well organized are harder to for the Program to reach. In addition, growers and their representative organizations must be willing to work with the Region. Working with willing and able partners, the Region creates models whose success encourages others to follow.

Summary: Region 9's Focus on Agriculture

Agriculture, broadly defined, is the production of food, feed, and fiber using both plants and animals. This entire field is too broad for a small program to address. Through the continual, iterative planning process outlined above, the Region has focused its collaborative work in agriculture on:

- Land-based farming activities that contribute to environmental and regulatory issues,
- The San Joaquin Valley where these issues are especially acute,
- Crops with the highest value and acreage, and
- Stakeholders who are able and willing to engage with us

Notable results of this focus are projects on reducing the use of organophosphate pesticides in dormant almond orchards and on assessing available technologies for managing dairy manure. Due to resource constraints, the Region has not addressed and currently has no plans to address the environmental effects of forestry, grazing, and aquaculture, though these industries are significant in Region 9.

The Region also works to address market imperfections and to shape policy on and regulation of agricultural technologies. This work includes efforts to use a Regional grant program to direct Food Quality Protection Act funds towards helping growers transition away from high-risk pesticides towards more sustainable agricultural practices. It also includes efforts to support market-based incentives for sustainable production through third-party certification, and to influence national policy and guidance on funding for integrated pest management, on pesticide drift and the application of NPDES regulation to pesticides, and on agricultural biotechnology.

Appendix I: Region 9 Agriculture Contacts

Agriculture Advisor to the Regional Administrator Kathy Taylor 415-947-4201

Communities and Ecosystems Division

Agriculture Program

| | | |
|----------|---------------|--------------|
| Director | Kathy Taylor | 415-947-4201 |
| Staff | Karen Heisler | 415-947-4240 |
| | James Liebman | 415-947-4241 |
| | Cindy Wire | 415-947-4242 |
| | Don Hodge | 415-972-3240 |

Pesticides Program

| | | |
|---------|------------|--------------|
| Manager | Pam Cooper | 415-947-4217 |
|---------|------------|--------------|

Air Division

| | | |
|--------------------|-------------|--------------|
| Associate Director | Kerry Drake | 415-947-4157 |
|--------------------|-------------|--------------|

Water Division

| | | |
|--------------------|------------------|--------------|
| Associate Director | Jovita Pajarillo | 415-972-3491 |
| CAFO Team Leader | John Ungvarsky | 415-972-3963 |

Notes

¹ California Air Resources Board, Almanac Emissions Projection Data (published in 2005), Estimated Annual Average Emissions, San Joaquin Valley Air Basin, <http://www.arb.ca.gov/ei/maps/basins/absjvmap.htm>

² US EPA Office of Air and Radiation (<http://www.epa.gov/docs/ozone/mbr/mbrqa.html>); World Meteorological Organization, Global Ozone Research and Monitoring Project – Report No. 37: Scientific Assessment of Ozone Depletion: 1994. Geneva, Switzerland.

³ According to the USDA-Natural Resource Conservation Service, “The 1996 National Water Quality Inventory, which summarizes state surveys of water quality in the United States, indicates that about 40 percent of surveyed U.S. waterbodies are impaired by pollution, with the leading source being polluted runoff. About 70 percent of impaired rivers and streams and 49 percent of lakes are impaired by runoff or discharges from agriculture.” Source: web site (<http://rigis2.nhq.nrcs.usda.gov:80/cleanwater/action/c2c.html>), Actions to Strengthen Core Clean Water Programs - Strong Polluted Runoff Controls.

⁴ Relative contribution of agriculture compared to other sources of pollution is based on analysis by EPA Region 9 staff of the 1996 Water Quality Assessment submitted to US EPA by the State of California, and on Natural Resources Conservation Service Strategic Plan, p. 6-51 of USDA Strategic Plan 1997-2002.

⁵ Sacramento River, San Joaquin River, Tulare Lake, and Central Coast watersheds

⁶ US Geologic Survey, Central Valley Regional Water Quality Control Board, and the CA Department of Pesticide Regulation

⁷ Figures on pesticides use come from United States Department of Agriculture, Agricultural Statistics (<http://www.usda.gov/nass/pubs/agstats.htm>); Aspelin, A.L. and A.H. Grube. 1999. *Pesticides Industry Sales and Usage: 1996 and 1997 Market Estimates*. US EPA Office of Pesticide Programs, Biological and Economic Analysis Division, Washington, DC; Wilhoit, L. *et al.* 1999. *Pesticide Use Analysis and Trends from 1991 to 1996*. California Department of Pesticide Regulation, Sacramento, CA; and Kegley, S. *et al.* 2000. *Hooked on Poison: Pesticide Use in California, 1991-1998*. Pesticide Action Network, San Francisco, CA.

⁸ “Active Ingredient” refers to the registered portion of the pesticide product. The “inert” or “other” ingredients include carriers, spreader-stickers, and other agents to aid in formulation. Many of these other ingredients are quite toxic, and contribute an additional 150 million pounds per year. See: Marquardt, S. *et al.* 1998. *Toxic Secrets: "Inert" Ingredients in Pesticides*. Northwest Coalition for Alternatives to Pesticides, Eugene, OR.

⁹ Data for agriculture is reported under the CA Pesticide Use Reporting (PUR) system; data for industry is reported under the Toxics Release Inventory (TRI). An analysis is published in: *Generations at Risk: How Environmental Toxicants May Affect Reproductive Health in California*. Physicians for Social Responsibility and California Public Interest Research Group, 1999. San Francisco, CA.

¹⁰ Coye, M.J. 1985. The health effects of agricultural production: I. Health of agricultural workers. *Journal of Public Health Policy* 6:349-370. U.S. Congress, Office of Technology Assessment, *Neurotoxicity: Identifying and Controlling Poisons of the*

Nervous System, OTA-BA-436 (Washington, DC: U.S. Government Printing Office, April 1990), p. 283.

¹¹ National Agricultural Statistics Service, Agricultural Statistics Board. 2000. *Farm Labor*. US Department of Agriculture, Washington, DC
(<http://usda.mannlib.cornell.edu/reports/nassr/other/pfl-bb/2000/fmla1100.pdf>).

¹² California Department of Food and Agriculture. 2003. *California Agricultural Resource Directory 2002*. California Department of Food and Agriculture, Sacramento, CA. 176 pp.