

THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS  
ACTION AGENDA SUMMARY

DEPT: Agricultural Commissioner/Ag. Advisory Board

BOARD AGENDA # B-11

Urgent

Routine

AGENDA DATE March 31, 2009

CEO Concurs with Recommendation YES  NO

4/5 Vote Required YES  NO

(Information Attached)

SUBJECT:

Approval to Accept a Report from the Agricultural Advisory Board on the Use of Tertiary Wastewater for Agricultural Purposes

STAFF RECOMMENDATIONS:

Accept a Report from the Agricultural Advisory Board on the Use of Tertiary Wastewater for Agricultural Purposes

FISCAL IMPACT:

There is no direct fiscal impact associated with the Board of Supervisor's acceptance of this report by the Agricultural Advisory Board on the feasibility of using tertiary wastewater for agricultural purposes. The information in the report is intended to assist the Board with their policy discussion regarding the possible use of this water source based on available scientific research and its application by other jurisdictions.

BOARD ACTION AS FOLLOWS:

No. 2009-203

On motion of Supervisor Grover, Seconded by Supervisor O'Brien  
and approved by the following vote,

Ayes: Supervisors: O'Brien, Chiesa, Grover, Monteith, and Chairman DeMartini

Noes: Supervisors: None

Excused or Absent: Supervisors: None

Abstaining: Supervisor: None

1) X Approved as recommended

2) \_\_\_\_\_ Denied

3) \_\_\_\_\_ Approved as amended

4) \_\_\_\_\_ Other:

MOTION:



ATTEST: CHRISTINE FERRARO TALLMAN, Clerk

File No.

# Approval to Accept a Report from the Agricultural Advisory Board on the Use of Tertiary Wastewater for Agricultural Purposes

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## **DISCUSSION:**

### Background

The Agricultural Advisory Board (Advisory Board) was formed on December 12, 1989 for the purpose of advising the Board of Supervisors on agricultural issues. The Board of Supervisors may refer issues to the Advisory Board. The Advisory Board has reviewed subjects such as agricultural burn permits, the confined animal ordinance, agricultural zoning, endangered species, and the use of biosolids and genetically modified organisms in Stanislaus County. Additionally, the Advisory Board was instrumental in the recent update to the Agricultural Element of the Stanislaus County General Plan and has been involved in other land use policy discussions.

On October 1, 2007, the Agricultural Advisory Board was approached regarding whether tertiary wastewater effluent could be used to irrigate crops in Stanislaus County. Tertiary wastewater is an advanced treatment of sewage to nearly drinking water quality. The Advisory Board had a general discussion on the topic during that meeting. It was indicated that Stanislaus County had not implemented such a use although there had been some interest in looking into this topic several years ago. It was further stated at this meeting, that Monterey County had successfully implemented a program where approximately 12,000 acres planted with spinach and leafy greens had used tertiary treated water for irrigation. Questions regarding the available science and technology regarding this possible water resource were raised. The Agricultural Advisory Board authorized the current Chairperson to prepare a letter to the Board of Supervisors seeking direction regarding whether there was any interest in having the Agricultural Advisory Board examine this issue in further detail.

### Charge of the Agricultural Advisory Board

On November 13, 2007, the Stanislaus County Chief Executive Officer prepared a formal letter to the Agricultural Advisory Board regarding the use of tertiary wastewater, also known as recycled water, for the irrigation of crops in Stanislaus County. The Chief Executive Officer provided direction to the Agricultural Advisory Board indicating that the County would be "well-served by an analysis of the potential use of tertiary wastewater for agricultural uses." The Advisory Board was asked to incorporate the best available science to support any evaluation and recommendations. In his letter, the Chief Executive Officer noted the relevance of evaluating the viability of using other water sources for landscape maintenance, crop irrigation, and other non-drinking uses as the demand for potable water continues to increase throughout the valley.

## Approval to Accept a Report from the Agricultural Advisory Board on the Use of Tertiary Wastewater for Agricultural Purposes

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### Research and Discovery

During its December 10, 2007 regular meeting, the Agricultural Advisory Board discussed the letter received from the Chief Executive Officer regarding the use of tertiary wastewater for agricultural purposes and acted to form a subcommittee to look into the issue and report back the Agricultural Advisory Board with their findings upon the conclusion of the research and analysis. The Agricultural Advisory Board Tertiary Wastewater Subcommittee (Tertiary Wastewater Subcommittee) met several times in early 2008 to develop a strategy for completing the assigned task. The initial discussions centered on reviewing and discussing any available research and literature. The University of California at Riverside was instrumental in assisting the Tertiary Wastewater Subcommittee obtain useful documentation on the subject that was reviewed and discussed. Information provided by the Environmental Science Department at the University of California at Riverside provided evidence on the safe use of tertiary treated water. The following is a partial listing of several background pieces and documentation reviewed by the Tertiary Wastewater Subcommittee.

- *Water Reuse and Health Risks – Real vs. Perceived by Simon Toze (2005);*
- *Reuse of Effluent Water – Benefits and Risks by Simon Toze (2005);*
- *The Role of Wastewater Treatment in Protecting Water Supplies Against Emerging Pathogens by Christopher S. Crockett (2007);*
- *Detection of Infectious Parasites in Reclaimed Water by Debra E. Huffman, Angela L. Gennaccaro, Tracy L. Berg, Glenda Batzer, and Giovanni Widmer (2006);*
- *Tertiary Filtered Municipal Wastewater as Alternative Water Source in Agriculture: A Field Investigation in Southern Italy (2003);*
- *Assessment of the Risk of Infection by Cryptosporidium and Giardia in Non-Potable Reclaimed Water by H. Ryu, Al. Alum, K.D. Mana and M. Abbaszadegan (2007); and*
- *Research Priorities for Coordinating Management of Food Safety and Water Quality by David M. Crohn and Mary L. Bianchi (2008).*

Furthermore, the University of California at Riverside also referred the Tertiary Wastewater Subcommittee to the Monterey Regional Water Pollution Control Agency. The Monterey Regional Water Pollution Control Agency has been involved in the use and application of tertiary wastewater to agricultural crops in Monterey County.

### Benchmarking the Monterey Regional Water Pollution Control Agency

On July 15, 2008, a selected team from the Tertiary Wastewater Subcommittee visited the Monterey Regional Water Pollution Control Agency (MRWPCA) and

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toured the water recycling facility. MRWPCA operates the world's largest water recycling facility designed for raw food crop irrigation. Members gathered details to be brought back to the full Agricultural Advisory Board as an informational report. The Monterey Regional Water Pollution Control Agency provided the team with supporting documentation regarding the operation of the facility. Furthermore, Agency staff shared information regarding their experience from planning to implementation.

The primary source for water in Monterey County is from aquifers hundreds of feet below the ground. The reserve is diminishing as the number of farms, businesses and residences have increased. In fact, so much water has been removed that intruding seawater has come within two miles of Salinas's wells. In addition to threatening the drinking water supply, seawater intrusion threatens the region's multi-billion dollar agricultural economy.

In the mid 1970s, a group of community leaders began discussing the idea of recycling wastewater. This led to the extensive five-year Monterey Wastewater Reclamation for Agriculture Study that began in 1980. The final results of this research proved that recycled water is safe for the irrigation of crops that are consumed without cooking. Today, this definitive report is used as the standard in countries all over the world.

In 1992, MRWPCA and the Monterey County Water Resources Agency formed a partnership to build two projects: a water recycling facility at the Regional Treatment Plant; and a distribution system including 45 miles of pipeline and 22 supplemental wells. Its objective was to retard the advance of seawater intrusion by supplying irrigation water to nearly 12,000 acres of farmland in the northern Salinas Valley. This would significantly reduce the draw of water from the underground aquifers. The \$75 million projects were completed in 1997 after three years of construction.

The use of highly treated wastewater to irrigate landscaping has been practiced for years, yet for food crops, it is relatively new. The recycled water facility in Monterey is capable of producing an average of 29.6 million gallons of recycled water per day. This is the equivalent of one foot of water over 91 acres of land. In the future, MRWPCA plans to additionally supply recycled water to city parks, roadway landscape and golf courses.

### Findings and Recommendation

The information from the Monterey tour was brought back by the Tertiary Wastewater Subcommittee and shared with the Agricultural Advisory Board during their August 4, 2008 meeting. The Tertiary Wastewater Subcommittee shared a power point presentation that the Monterey Regional Water Pollution

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Control Agency had made available that highlighted the years of planning, emphasis on public education, facility operations and supporting science and technology. The Agricultural Advisory Board discussed all the research obtained by the Tertiary Wastewater Subcommittee and directed that a meeting be held with community stakeholder groups to share this information and solicit local opinions. A copy of the stakeholders invited to this meeting is included as Attachment A. This meeting was held on January 9, 2009. Although the meeting drew low attendance, the Tertiary Wastewater Subcommittee was able to provide information regarding the research and answer questions posed by several key local stakeholders. On February 3, 2009, the Tertiary Wastewater Subcommittee agreed to recommend to the Agricultural Advisory Board its findings indicating, "that the use of tertiary treated water for crops grown in Stanislaus County has possible significance, provided, that sound science is factored in when evaluating its feasibility. Also, significant resources should be provided for outreach into the community regarding the safety of tertiary treated wastewater as irrigation water so that the agricultural industry is protected."

The Agricultural Advisory Board considered the recommendation from the Tertiary Wastewater Subcommittee and approved forwarding the report and presentation to the Stanislaus County Board of Supervisors for acceptance during its March 2, 2009 meeting. At the meeting, the Agricultural Advisory Board discussed inviting officials from the Monterey Regional Water Pollution Control Agency to be in attendance during the presentation to the Board of Supervisors on this issue to be available to provide insight and answer questions based on their actual experiences.

### **POLICY ISSUE:**

The Board of Supervisors should determine whether acceptance of the report from the Agricultural Advisory Board is consistent with its priority of striving for a Strong Agricultural Economy and Heritage.

### **STAFFING IMPACT:**

There are no staffing impacts associated with the acceptance of the report by the Board of Supervisors on the use of tertiary treated wastewater for agricultural purposes.

List of Stakeholders for Tertiary Wastewater Use in Stanislaus County:

U.C. Cooperative Extension  
U.C. Riverside  
Stanislaus Farm Bureau  
Natural Resource Conservation Service  
Stanislaus County Agricultural Commissioner  
Stanislaus County Department of Environmental Resources  
Irrigation Districts  
Cities  
Building Industry Association of Central Valley  
Manufacturers Council of the Central Valley  
Department of Water Resources  
Army Corps of Engineers  
Stanislaus County Public Health  
State of California Fish and Game  
Central Valley Regional Water Quality Control Board  
California Department of Food and Agriculture  
Monterey Wastewater Reclamation  
Stanislaus County Department of Planning

# Stanislaus County Board of Supervisors

Report by the Agricultural Advisory Board on  
the Use of Tertiary Wastewater for  
Agricultural Purposes.

March 31, 2009



# Role of the Agricultural Advisory Board

- The Agricultural Advisory Board (Advisory Board) was formed on December 12, 1989 for the purpose of advising the Board of Supervisors on agricultural issues. Examples include:
  - Agricultural burn permits, the confined animal ordinance, agricultural zoning, endangered species, and the use of biosolids and genetically modified organisms.
  - Recent update to the Agricultural Element of the Stanislaus County General Plan.



# Agricultural Advisory Board

## Current Members

- John Herlihy, Chairman (Agricultural Financing Institution)
- Chris Hemplemen, Ray Prock, Vice Chairman, Alan Cover, Norman Kline, John Azevedo (District Representatives)
- Wayne Zipser (Stanislaus Farm Bureau)
- Bridget Riddle (California Women of Agriculture)
- Ed Perry (UC Cooperative Extension)
- Rowe Barney (Environmental Resources/Agricultural Conservation)
- Thomas Maring (Soil Conservation Services/Resource Conservation)
- Richard Gibson (Agricultural Related Industry)
  
- Ex Officio: Jim DeMartini and Vito Chiesa, Alternate, (Board of Supervisors) and Gary Caseri (Agricultural Commissioner)

# Use of Tertiary Wastewater for Agricultural Purposes

- In November 2007, the Chief Executive Officer provided direction to the Agricultural Advisory Board indicating that the County would be “well-served by an analysis of the potential use of tertiary wastewater for agricultural uses.”

# Research and Discovery

- The Agricultural Advisory Board formed the Tertiary Wastewater Subcommittee in December 2007 to look into this issue.
- Consulted with U.C. Riverside to obtain and review available research and science.
- Contacted Monterey Regional Water Pollution Control Agency for benchmarking purposes.

# Community Stakeholders

- U.C. Riverside, Stanislaus Farm Bureau, Natural Resource Conservation Service, Irrigation Districts, Cities, Building Industry Association of Central Valley, Manufacturers Council of the Central Valley, Department of Water Resources, Army Corps of Engineers, State of California Fish and Game, Central Valley Regional Water Quality Control Board, California Department of Food and Agriculture, Monterey Wastewater Reclamation, and appropriate County Departments.

# Monterey Regional Water Pollution Control Agency - Best Practice

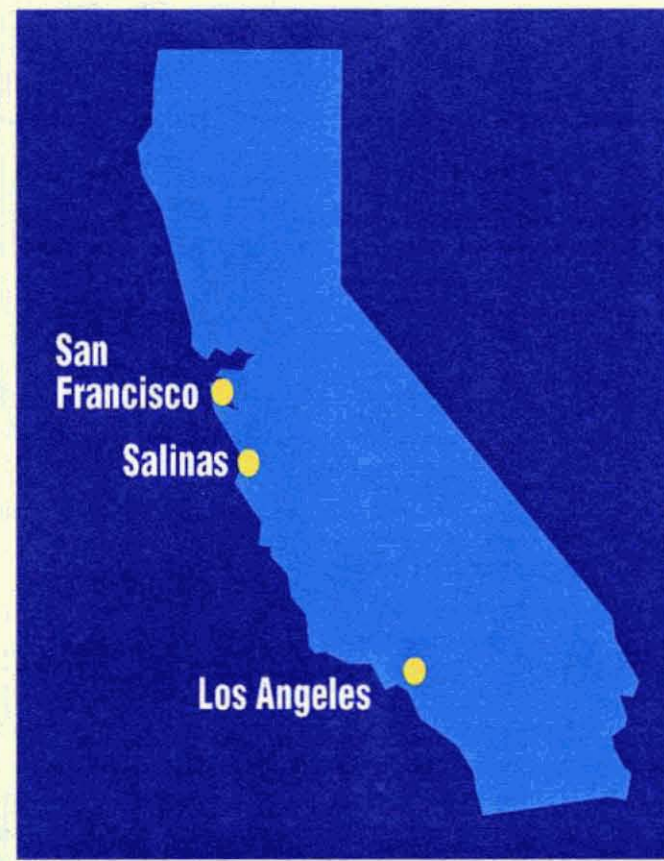
- Tertiary Wastewater Subcommittee tour of facility in July 2008.
- Technical information provided by Karen Harris, Community Relations Specialist.
- Introduction of Brad Hagemann, PE., Assistant General Manager to provide testimonial of implementation.

**Stanislaus County Board of Supervisors**  
***Recycled Water for Agriculture:***  
***A Case History in***  
***Securing Grower Confidence***

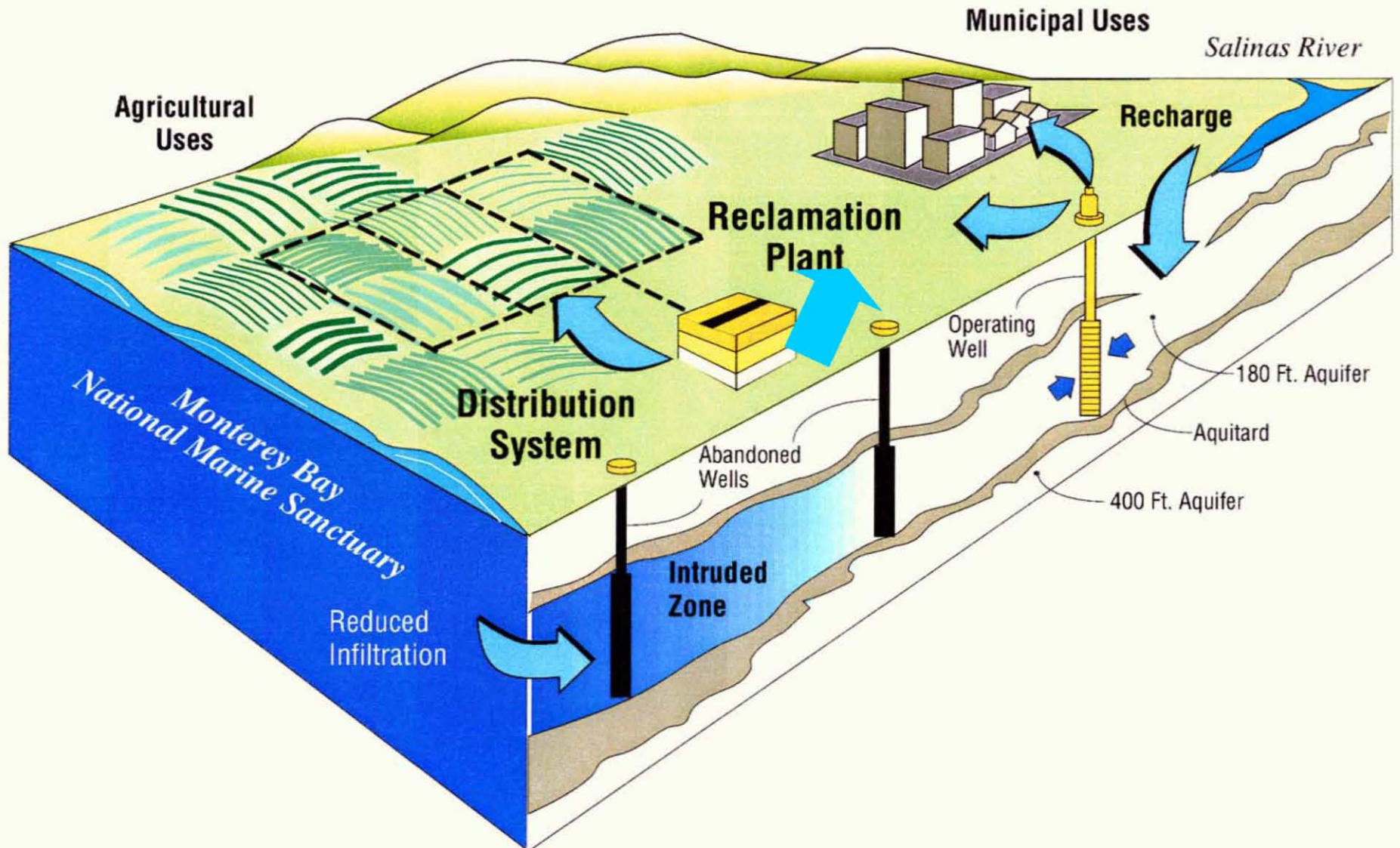


March 31, 2009

Monterey Regional Water Pollution Control Agency



# Development of the Reclamation Concept





# GAINING GROWER ACCEPTANCE

## DATA

- Independent analysis
- Scientifically sound
- Expert review
- Use opposition

## COMMUNICATION

- Transparency
- Collaboration
- Monthly meetings
- Education

## VALUE

- Competitive/ cost effective
- Added value product
- High quality

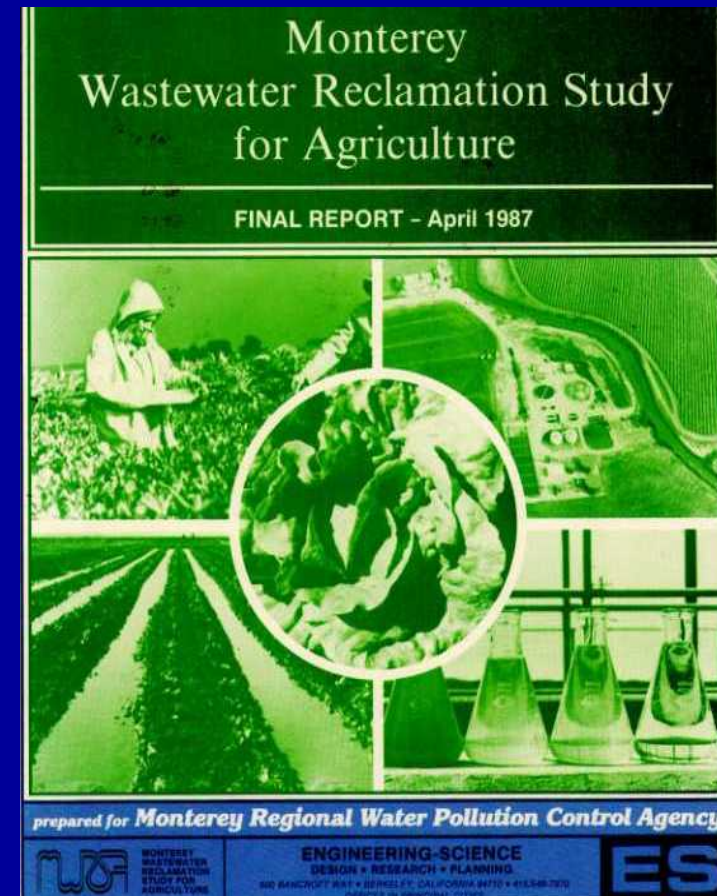
## CUSTOMER SERVICE

- Voluntary use
- On-going extra monitoring
- Special studies
- Crisis management support

# DATA

## Monterey Wastewater Reclamation Study for Agriculture (MWRSA )

- **11 year study: 1976 to 1987**
- **5 years of field testing**
- **Independent monitoring:  
UC Davis and UC Berkeley**
- **Team included state,  
local health officials, and ag  
stakeholders**
- **Pathogen, soil, plant  
tissue analysis**



# FIELD RESEARCH RESULTS



**No viruses detected**

**99.999% removal of seeded virus**

**No negative field worker health effects**

**Heavy metals not detected**

**Crop quality unaffected**

**Crop yields increased**

**Conclusion:  
Food Crops Safe To Be Eaten Uncooked**

# 2-PHASE IMPLEMENTATION

**Regional Treatment  
Plant (RTP)  
1989**

Secondary Treatment  
Ocean outfall 2 miles  
250,000 population

**Monterey County Water  
Recycling Projects  
1997**

**3° TREATMENT  
Salinas Valley  
Reclamation  
Project (SVRP)**

Title 22 – Cl<sub>2</sub> Disinfection  
Unrestricted use

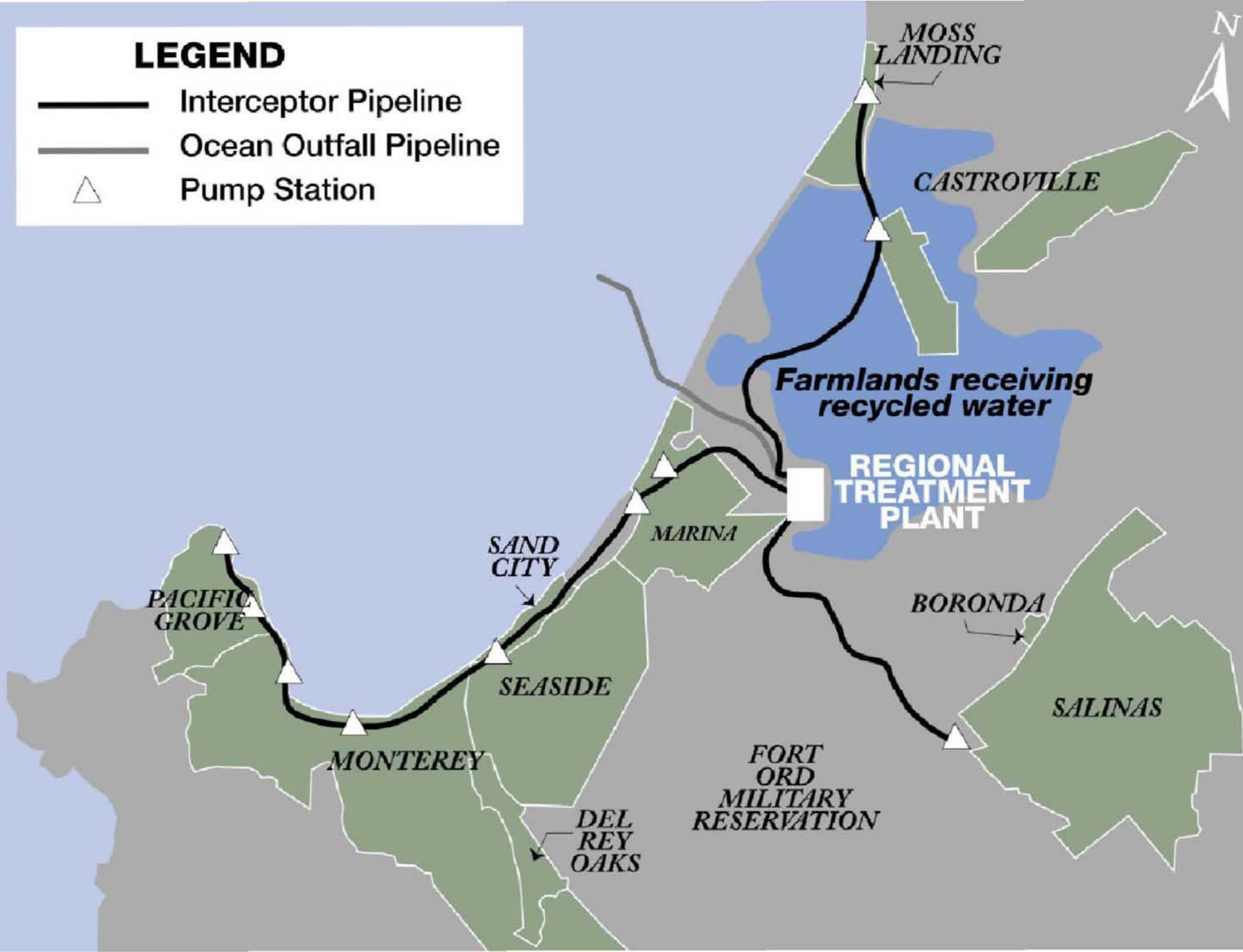
**DISTRIBUTION  
Castroville Seawater  
Intrusion Project  
(CSIP)**

12,080 Acres  
45 miles pipeline

**New water supply for 19,450 AFY**

# LEGEND

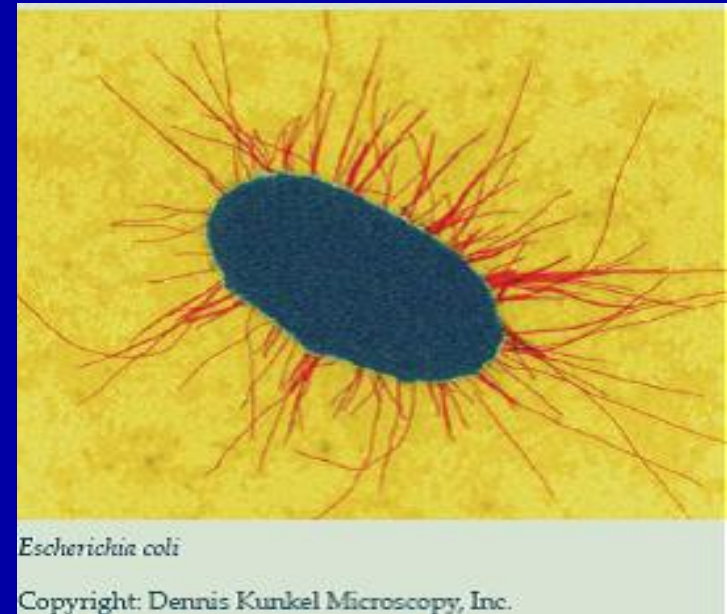
- Interceptor Pipeline
- Ocean Outfall Pipeline
- △ Pump Station



# Food Safety Study, 1997-1998

## Efficacy of Pathogen Removal Study 1997-2003

- *Salmonella*
- *Cyclospora*
- *E. Coli* 0157:H7
- *Legionella*
- *Giardia*
- *Cryptosporidium*
- Fecal Coli, Turbidity, Cl Residual



### Results:

No viable microbes of public health concern in recycled water

# COMMUNICATION

## Maximizing Perceived Safety

- **Transparency**
  - Web data access
  - Grower webpage – daily updates
- **Collaboration**
  - Community leaders, ag industry, regulators & staff
  - Monthly meetings
- **Education & outreach**
  - Tours
  - School programs
  - Civic and professional group talks
  - Exhibits
  - Newsletters



Build and maintain trust

# Collaboration Results

## Reasonable site labeling





# CUSTOMER SERVICE

- **Voluntary Use**
- **Additional Studies**
  - 3° Filter flow rate increase 50%
  - Soil salt monitoring 8+ years
  - Endocrine disrupting compounds
- **On-going Data Collection**
  - Agronomic
  - Food safety
- **Crisis Management Support**



95% use project water

# VALUE

Monitoring included

Nutrients (N, K, P)

Competitive cost

Quality assured water at reasonable cost



# Title 22 Water Recycling For "Unrestricted Use"

## 1. Primary – gravity

- 70-75% solids removed

## 2. Secondary – biological

- 95% solids removed

## 3. Tertiary – chemical filtration

- Alum polymer flocculation
- Filtration – anthracite, sand, gravel
- Disinfection - 2 hrs,  $\text{Cl}_2$
- < 98% solids removed



# 2000 California Water Recycling Criteria

## - Agricultural Uses -

<b>Type of Use</b>	<b>Total Coliform Requirements</b>	<b>Treatment Required</b>
Irrigation of fodder, fiber & seed crops, processed food crops, pasture for non-milking animals, orchards & vineyards (no contact with edible portion of crop)	None specified	<ul style="list-style-type: none"><li>• Secondary</li></ul>
Irrigation of pasture for milking animals	23/100 mL	<ul style="list-style-type: none"><li>• Secondary</li><li>• Disinfection</li></ul>
Irrigation of food crops (no contact with edible portion of crop)	2.2/100 mL	<ul style="list-style-type: none"><li>• Secondary</li><li>• Disinfection</li></ul>
Irrigation of any food crop where reclaimed water comes in contact with the edible portion of the crop, including root crops	2.2/100 mL	<ul style="list-style-type: none"><li>• Secondary</li><li>• Filtration</li><li>• Disinfection</li></ul>

# CONCEPT TO SALAD BOWL

**DATA**

Prove its safe

**COMMUNICATION**

Get them to believe and trust.

**VALUE**

How can they say NO?

**CUSTOMER SERVICE**

Keep them happy



***“Changing Wastewater To Safe Water”***

**Brad Hagemann**  
**Assistant General Manager**  
**(831) 883-6133**  
**[brad@mrwpca.com](mailto:brad@mrwpca.com)**

# Agricultural Advisory Board's Finding

- “the use of tertiary treated water for crops grown in Stanislaus County has possible significance, provided, that sound science is factored in when evaluating its feasibility. Also, significant resources should be provided for outreach into the community regarding the safety of tertiary treated wastewater as irrigation water so that the agricultural industry is protected.”

# Staff's Recommendation

- Accept the Report from the Agricultural Advisory Board on the Use of Tertiary Wastewater for Agricultural Purposes.

