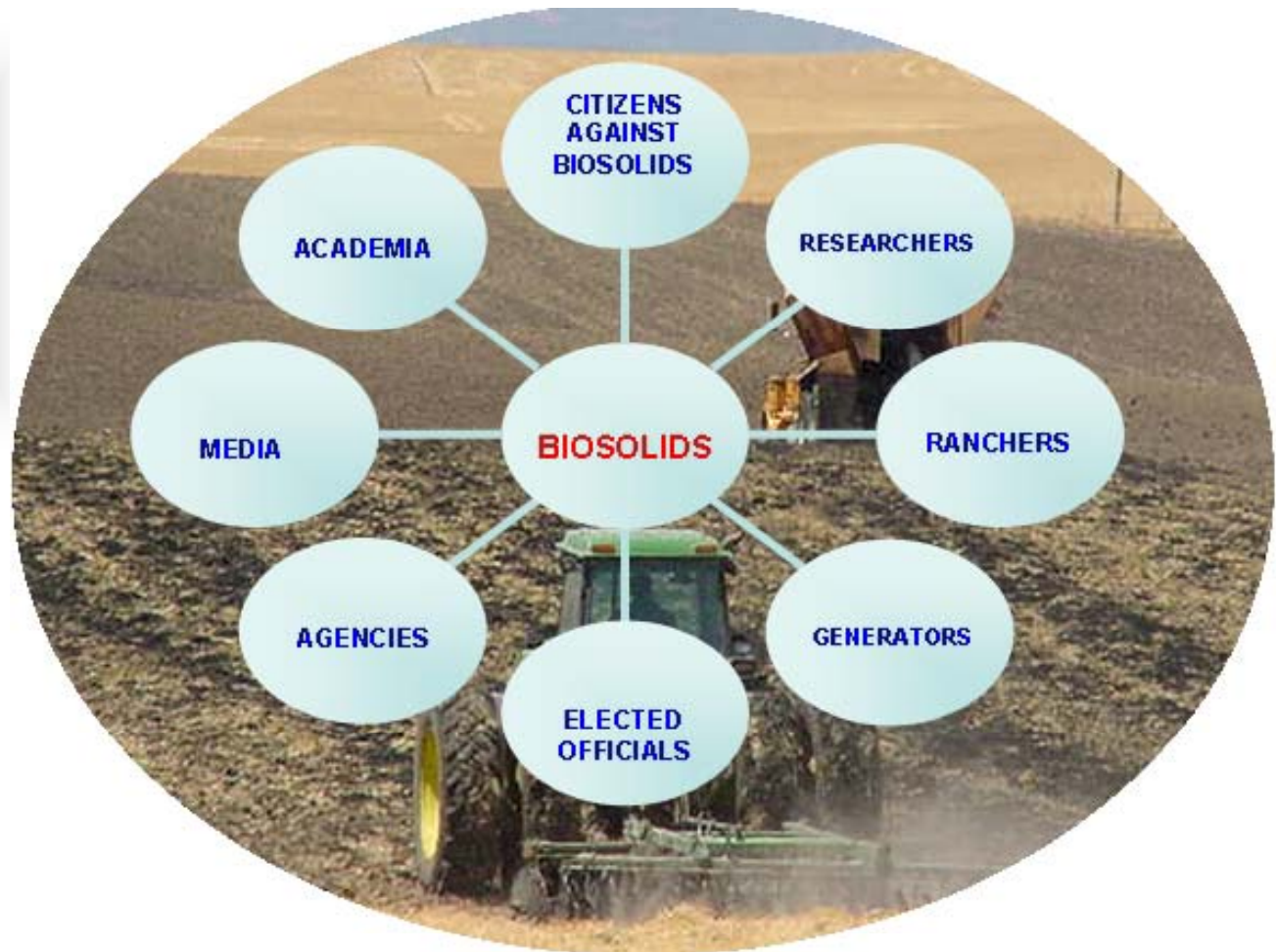


# Comprehensive Program Addressing Community Concerns in the Land Spread Application of Biosolids



**EXCELLENCE IN ENVIRONMENTAL HEALTH AWARD  
2008**

# Types of Biosolids



## **Class A:**

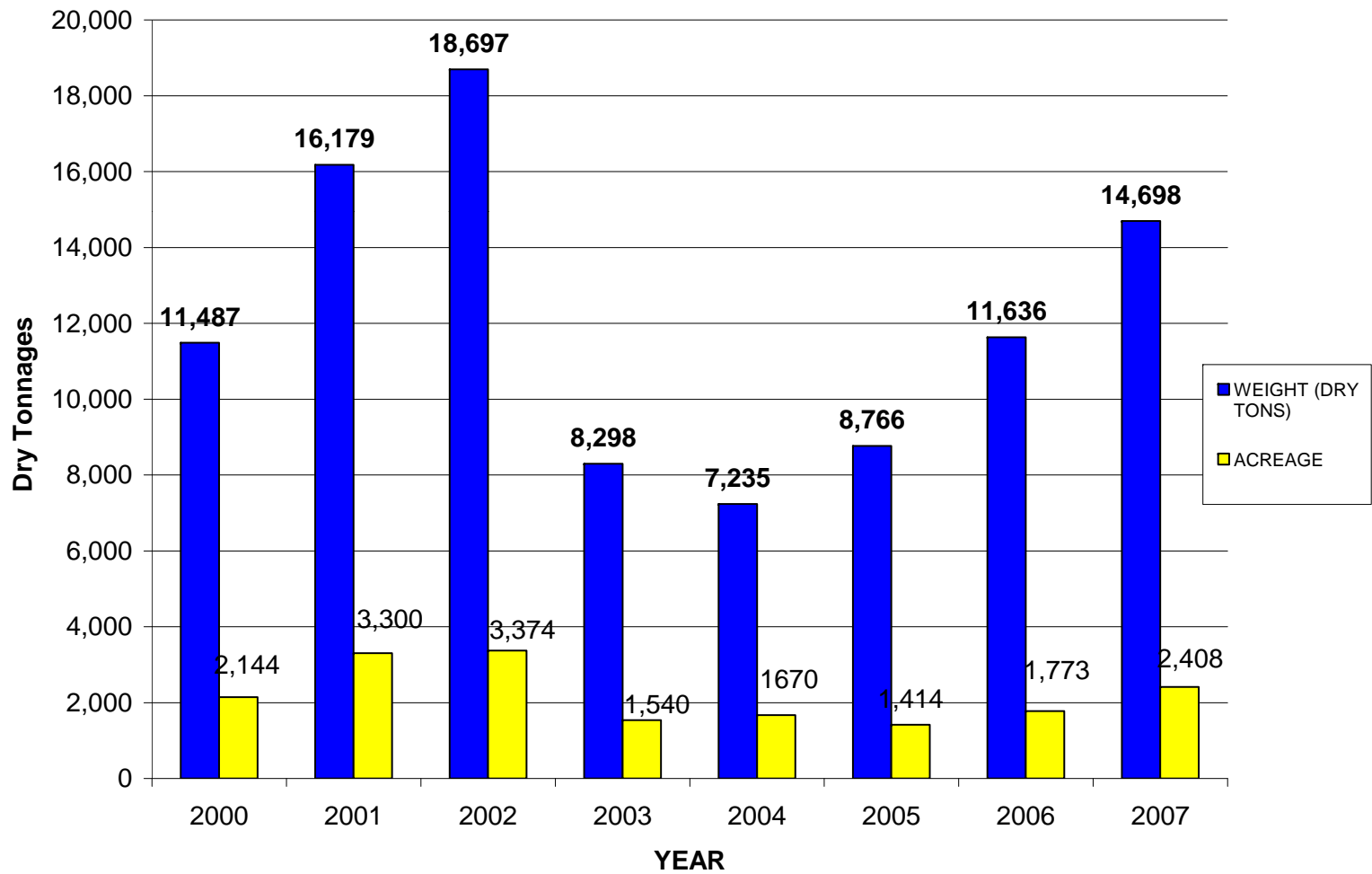
Pathogens reduced to level that biosolids are considered “pathogen free”.

## **Class B:**

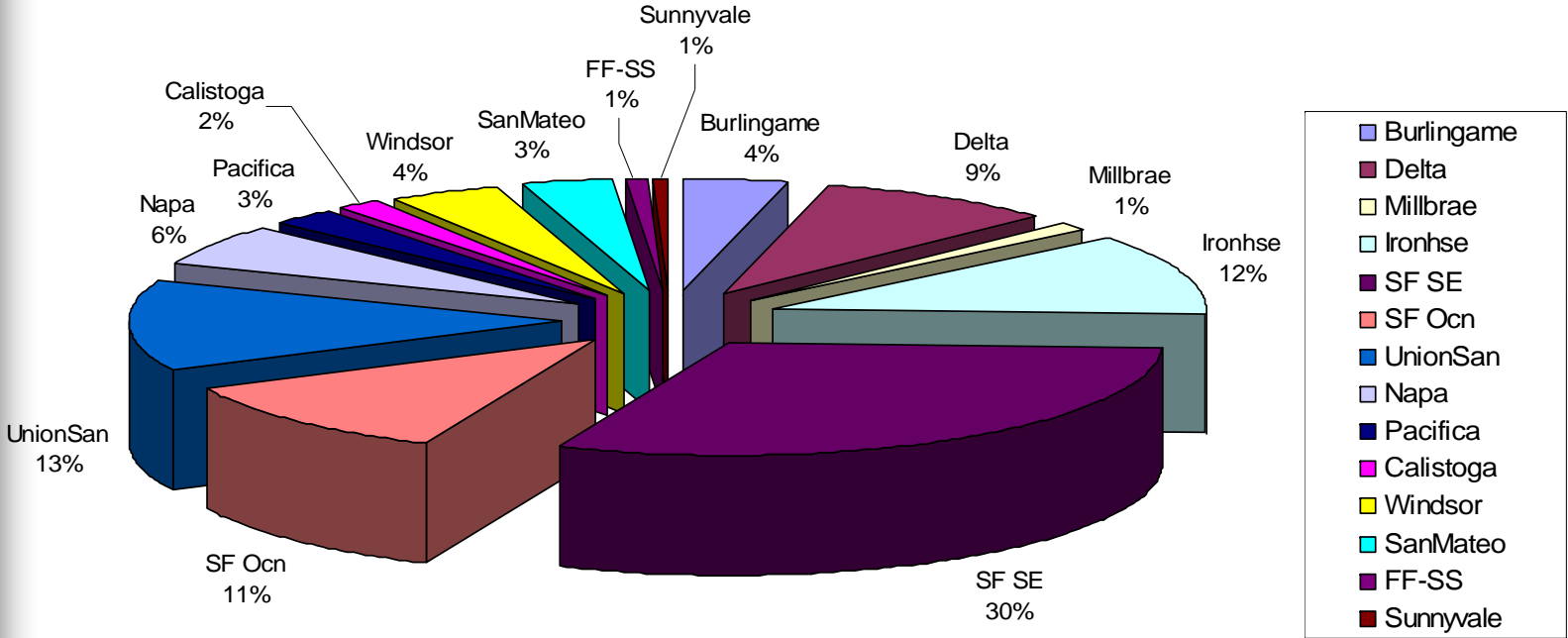
Pathogens reduced, but not eliminated. Rely upon site controls to protect public health and the environment until the pathogens naturally die in the environment.

# Applied Quantities and Acreage of Land

**Biosolids and Acres Utilized  
2000 - 2007**



### Generator Percentages 2007 (Wet Tons)



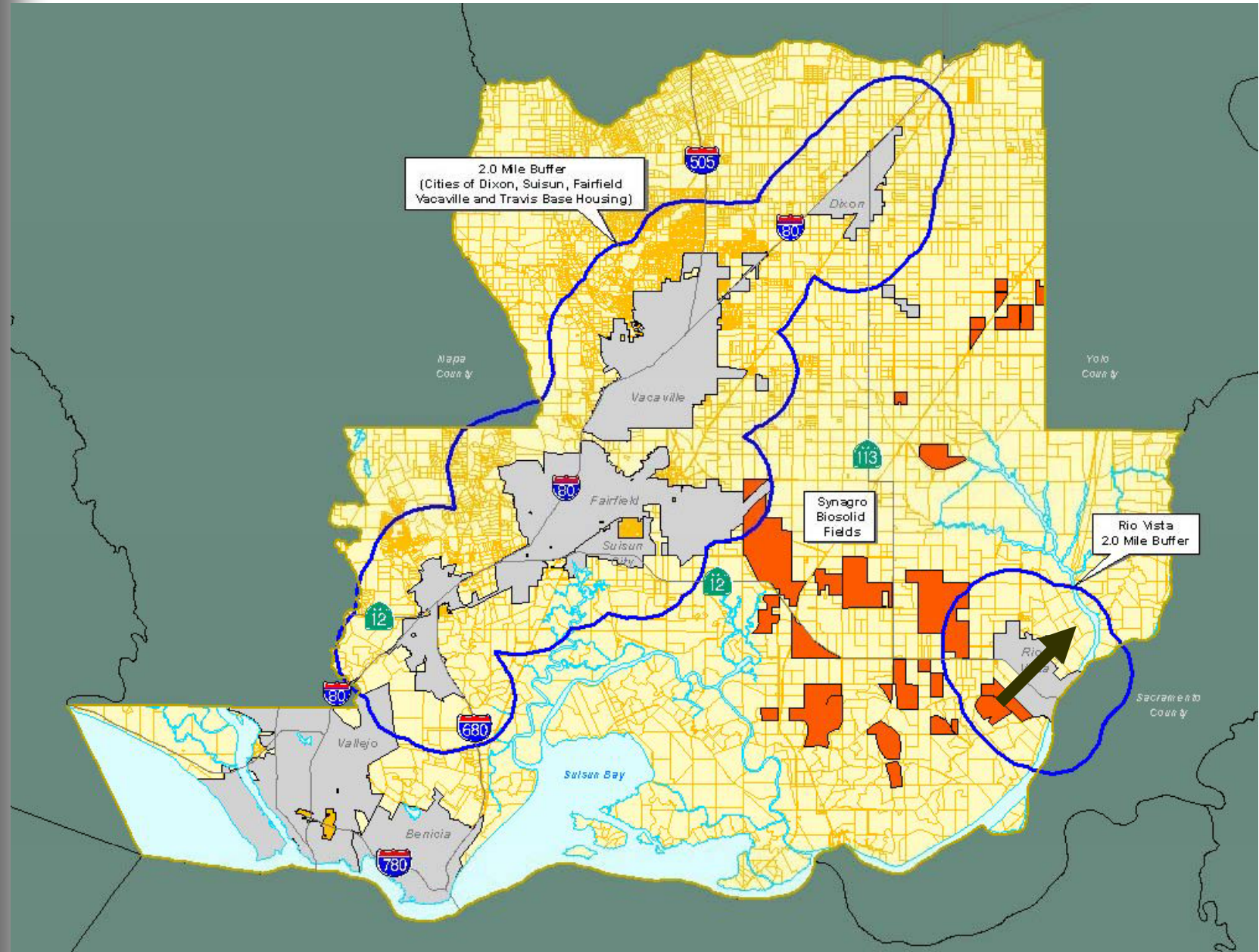
# Regulations

- Fed 40 CFR – Part 503
- State DWQ-2004-0012
- Solano County Chapter 25

## Program pre-2000

- Initial limited oversight
- Low priority
- Primarily review of site registration materials
- One or two inspections





# Public Opposition

- Strong opposition from the Rio Vista citizens due to increased number of odor complaints - 2000
- Town hall meetings - Residents filed appeal letters to have biosolids **banned** in Solano County
- Uncertainty over material and Environmental Health program.





## **Three Pronged Approach**

- **Public Participation**
- **Research Partnership**
- **Proactive Enforcement**



# Increased Public Participation

- Formal Board Workshops
  - Academic and regulatory experts in the field (Cornell, William and Mary, UC Riverside, UC Berkeley, USEPA and others)
  - Public question and answer period
- Year end reports to the Board of Supervisors
- Periodic Stakeholder Meetings
- Internet based complaint form
- 24/7 EH On Call Odor Response Team

# Research Partnerships

- Four areas of research
  - Complete characterization
  - Human health studies, including aerosol exposure
  - Impacts to water, soil and wildlife
  - Bioaccumulation in pasture grass or feed
- Fee for research based on acres applied paid by generator.

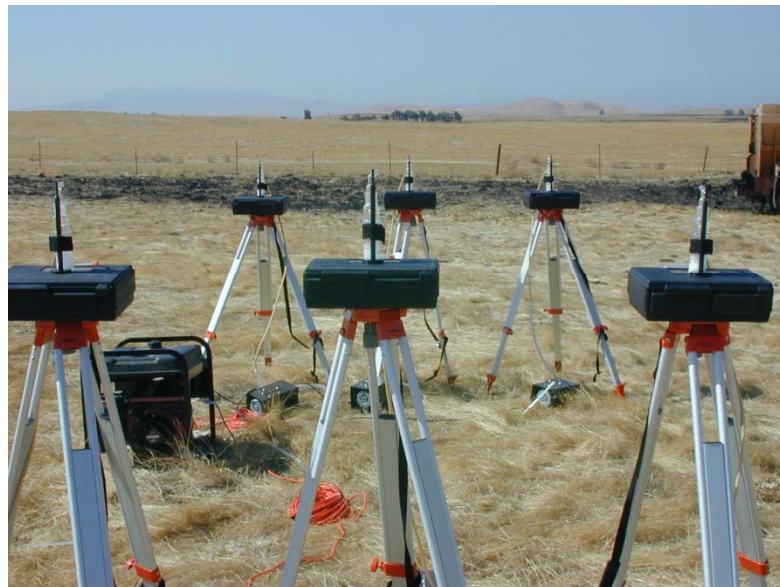


# Characterization

- **Metals:** Sampling by generator and Environmental Health staff:
  - All heavy metals are below levels established for Class B. Most meet Class A-EQ and proposed 2015 EU standards.
- **Pathogen Regrowth:** Study prepared and implemented by stakeholder group and EH.
  - Bacteriological regrowth above 2 million MPN can occur between the treatment plant and field.
- **Pharmaceuticals and Personal care Products (PPCPs)** – University of Mississippi.
  - Most PPCPs sampled for were not found.
  - Some present in ppm in biosolids, but ppb in soils.

# Human Health Studies

- No human health studies yet, considering WERF
- **Aerosols:** University of Arizona.  
No pathogens detected beyond 50 feet of loading operations.



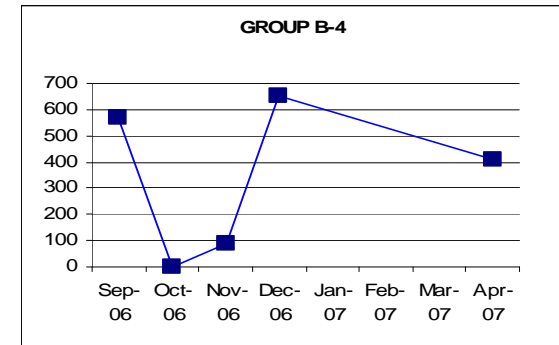
## Watershed impact to water, soil and wildlife

➤ **Soils:** Environmental Health staff.  
Sampling on 0, 30, 60, 90 and 210 day intervals shows no substantial increase in e. coli levels in soils.

➤ **Surface Water:** Environmental Health staff.  
No substantial increase in total or fecal coliform in areas applied with biosolids compared to areas not associated with land application sites.

## Bioaccumulation in pasture grass or feed

➤ **Polybrominated diphenyl ethers (PBDEs):** University of Mississippi  
No PBDEs were found in grass collected in Solano County by the University of Mississippi.



# Proactive Enforcement

- **Protective local regulations based on science and nuisance control, e.g.- set backs, incorporation, etc.**
- **Daily inspections:** e.g., 249 hours - 2007
- **Weather monitoring:** Weather station to monitor wind speed 24/7.
- **Complaint investigation:** 24/7 Odor-Nuisance Response Protocol with after hours telephone and web based complaint form.
- **Protest Rights:** to address concerns of adjacent residents
- **Annual Report to the Board of Supervisors**
- **Generators must provide update on other uses of biosolids**



# Protective Local Requirements

Sensitive Receptor or item	Solano County Chapter 25	State DWQ-2004-0012	Fed 40CFR - Part 503
Cities	2 miles	1/2 mile from educational facilities	Not given
Rural residence	1,320' = 1/4 mile	500'	Not given
Domestic Wells	500'	500'	Not given
Non-domestic water wells	500'	100'	Not given
Surface water, marsh, drainages, creeks, ponds, lakes	200'	100'	33'
Agricultural drainage ways	200'	33'	33'
Domestic water supply intake	2,500'	2,500'	33'
Tributary to a domestic water supply	200'	200'	33'
Limitation on period of application	April 15 – Oct 15	Not given	Not given
Property lines	100'	10'	Not given
Wind speed	25 mph for 60 min (any moisture content)	25 mph (less than 75% moisture content- not typical in Solano County)	Not regulated
Adjacent residents	Protest rights	No specific protest rights	none No specific protest rights
Primary Marsh/Secondary Marsh	Prohibited	Prohibited	No
Nuisance	Odor and Vector Reduction	Odor and Vector Reduction	Odor and Vector Reduction
Incorporation	Required	Not given	Not given

## **The conclusion of the matter**

- **Improved perception by the community**
- **Appropriate level of research**
- **Inclusion of an interactive model based on periodic public stakeholders meetings**
- **From a permissive ordinance to one of the most protective biosolids ordinances in the nation**
- **From limited sampling and testing to developing sampling and testing protocols with stakeholders and leading researchers**
- **From limited scientific basis to becoming the Only county in California or the nation that it at the fore front partnering with academia and professional organizations in scientific research**
- **Ordinance and program implementation was reviewed by the 2003-2004 Grand Jury. A finding that the “County has developed adequate regulations and monitoring procedures to maintain the safety for residents near biosolids sites” and the “County should continue this cutting-edge program to insure the health and welfare of all citizens**
- **A program that has received the attention of professional organization and public agencies such as WERF and USEPA, that look at the Solano County Model for future biosolids regulations and Solano County staff as experts in regulation of biosolids.**