



# The King County Biosolids Recycling Program: 2008

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# System Overview



West Point Treatment Plant

	West Point	South Plant
<b>Solids Treatment Process</b>	Secondary, anaerobic mesophilic digestion, Class B biosolids	
<b>Dewatering</b>	Alfa Laval and Humboldt high-solids centrifuges	Andritz high-solids centrifuges
<b>Biosolids - 2007</b>	12,412 dry tons	14,100 dry tons
	46,420 wet tons	61,584 wet tons
<b>Average % Solids</b>	26.70%	22.90%
<b>On-Site Storage</b>	None	

Vashon and Carnation send raw solids to South Plant for processing into biosolids.

# Thirty-five Years of Recycling

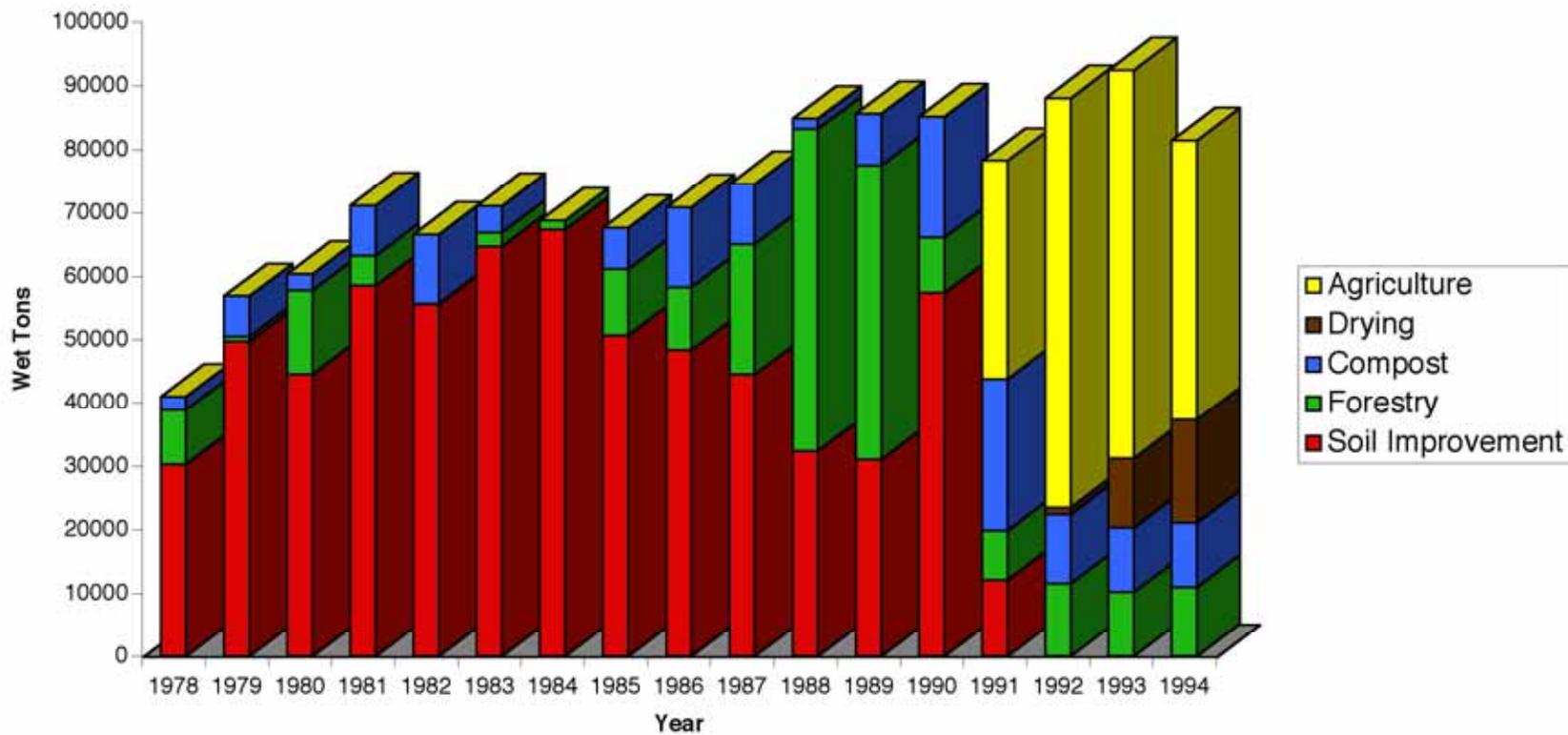
- |           |   |
|-----------|---|
| 1965-1972 | Solids discharged into Puget Sound  |
| 1973-1983 | Research and demonstration: forestry, coal mine reclamation, landfill cover |
| 1976      | Composting began  |
| 1983      | First forestland purchase   |
| 1991      | First agriculture project   |
| 1995      | Partnership with Mountains to Sound Greenway; forests transferred to state  |
| 2008      | Stable program of agriculture, forestry, composting (70:25:5)               |

## Early Days of Program 1970s-1980s

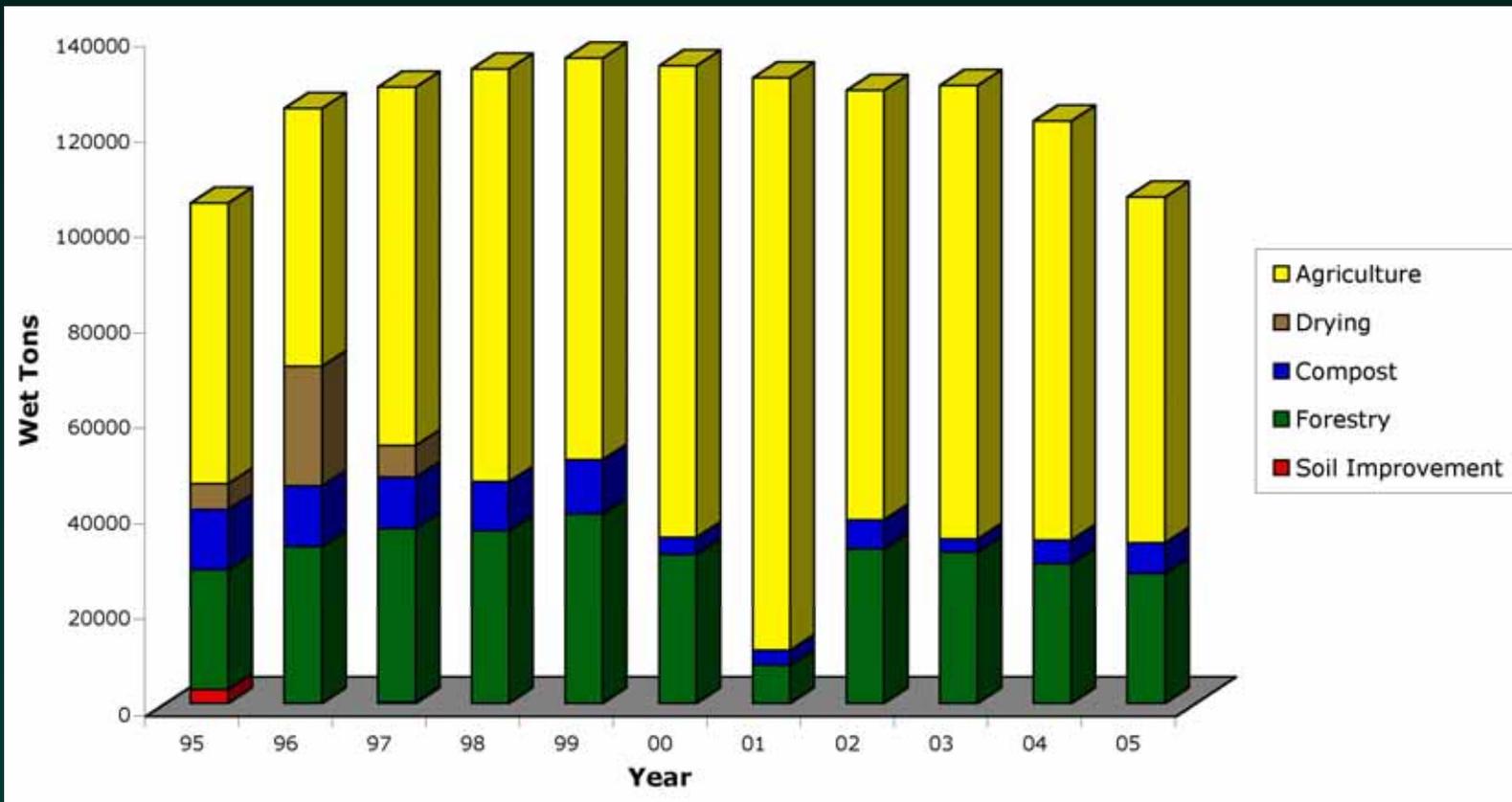
- Coal mine reclamation
- Forest application with liquid biosolids
- Primarily out-of-county



## Uses of Metro Biosolids 1978-1994



## Uses of King County Biosolids 1995-2005



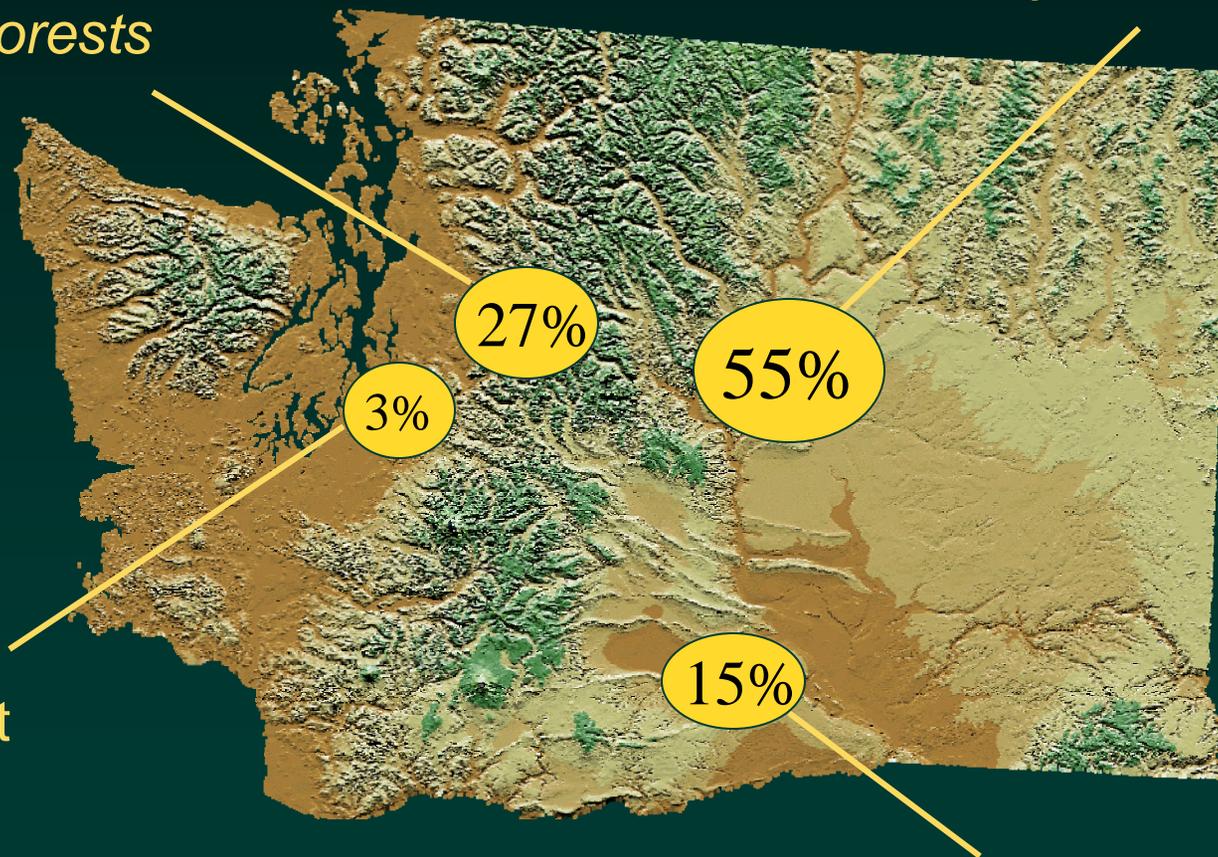
A large-scale Class B program

Strongest market: eastern Washington farm customers

*Private and public forests*

*Dryland wheat*

GroCo compost



*Canola, irrigated crops*

# Transporting Biosolids



KC purchased fleet of 27 trucks + trailers for \$5 M in 2000.

- Annual net savings of \$360K
- Increased truck capacity by 15% to 33 wet tons.

- Trucks operated and maintained by Skagit Transportation.
- WTD staff direct the distribution of biosolids to sites, working closely with contractor's dispatcher.



## Boulder Park Inc. (BPI) - dryland wheat



- Using WTD biosolids since 1992
- Avg. 50+% of KC annual production
- More than 100 farmers in project
- Farmers manage applications in their own county and are active spokespersons





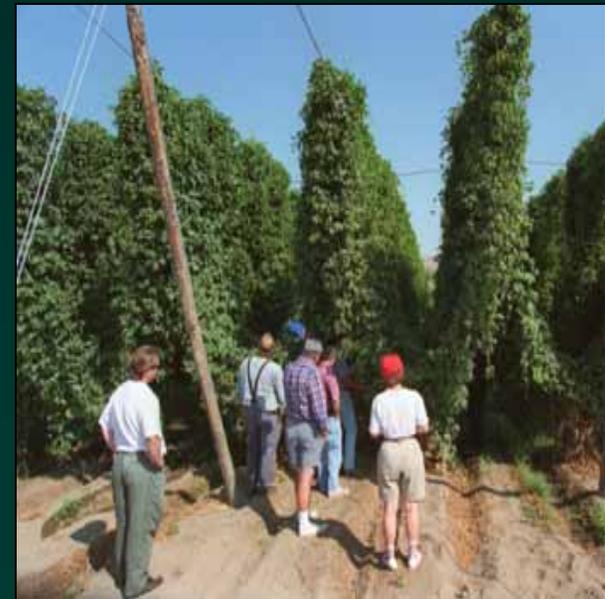
# Natural Selection Farms - irrigated agriculture

- Using WTD biosolids since 1991
- Avg. ~15% of annual KC production
- 116,000 acres permitted
- Farm managers are respected, prominent in community
- Actively seek new uses for biosolids:  
Latest venture is growing and crushing canola



A diverse mix of dryland and irrigated crops:

- wheat, canola, hops, grapes, corn, pasture, orchards and vineyards





# Forestry

## An in-county program

- UW research began in 1973
- Demonstration phase 1983-87
- Snoqualmie Forest project began 1987 with Weyerhaeuser Co.
- 50-year Mountains to Sound Greenway “Biosolids Forestry Program” begun in 1995 with partners:
  - State Department of Natural Resources
  - University of Washington
  - Mountains to Sound Greenway Trust
  - Weyerhaeuser → Hancock



Biosolids trucks deliver directly to sites in the forest and unload into the portable bin. No overnight storage. Up to 200 wet tons can be applied daily.



- Custom applicator developed and owned by WTD
- Swedish log forwarder with add-on spreader (Aero-Spread)
- Log grapples converted to clamshell for self loading

- Young commercial plantations (5+ years old) and thinned timber (30-40 years)
- Year-round applications if soils are well-drained



# GroCo Compost

## Privately manufactured in-county

- Produced since 1976 with WTD biosolids and biosolids from smaller plants
- Class A biosolids product
- Class AA compost product
- 3:1 mixture of sawdust and biosolids
- GroCo customers include the general public and commercial landscapers. Available either in 80-lb bags or in bulk
- Important site during winter season when pass is closed

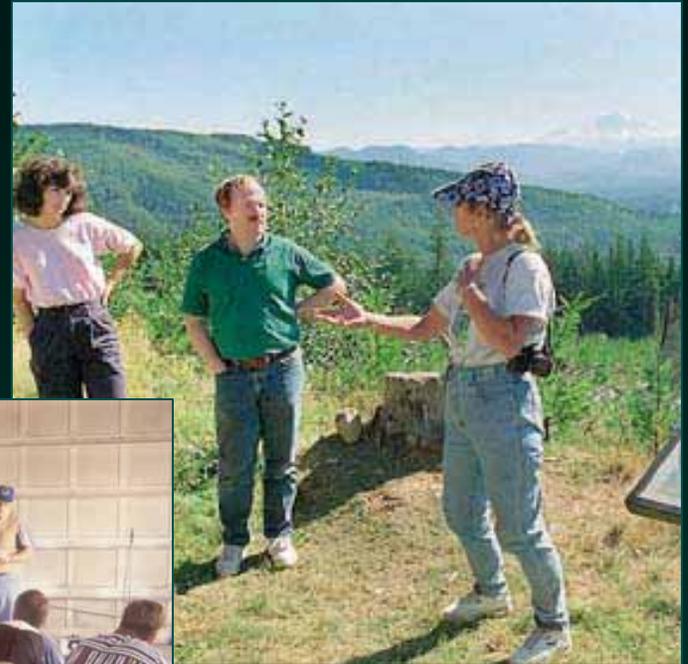


# Operating Costs



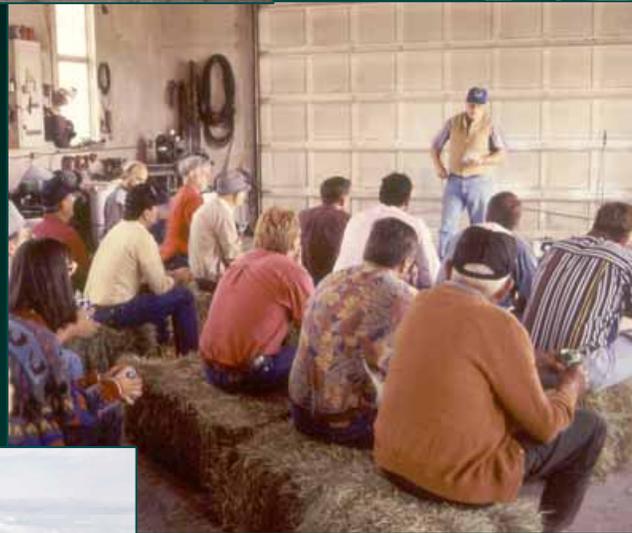
# Keys to Success

- Go where you're wanted
- Work with respected farmers
- Use community spokespersons
- Support university research
- Build rapport with regulators
- Stay diverse - locations and uses
- Network with other utilities
  - Northwest Biosolids Management Association
- Continually improve - EMS



## Building Trust

What could be more convincing than hearing directly from a farmer or environmentalist about biosolids?



# U. of Arizona

National Science Foundation  
Water Quality Center



- Sampling and analysis of bioaerosols
- Fate and degradation of PBDEs
- Regrowth of bacteria
- Fate of prions in biosolids

# Washington State Univ. Extension, Puyallup



- Dryland wheat: growth response and crop analysis
- Compost performance
- Education/outreach for soils and gardens

# University of Washington

College of Forest Resources



- Forest applications
- Nitrogen, metals, soil chemistry
- Mine reclamation
- Canola, biodiesel
- Restoration with composts
- Carbon sequestration

# Current Challenges

- Strongest market is 200 miles east and fuel costs are increasing (both for transport and application)
  - Need to expand & develop western WA options
- Sawdust for composting is expensive, scarce
  - Need new compost recipes or alternative to composting





# Opportunities

- Reclaim gravel mines in western WA
- Expand to other eastern WA counties
- Expand canola to biodiesel program
- Use as fuel for renewable energy?

On July 3, 2008, King County will issue a *Request for Information* (RFI) for Biosolids Management Services July 3, 2008.

Purpose is to solicit information on new uses and projects.