

Seattle-Tacoma International Airport

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Developed for the

**FAA Northwest
Mountain Region
Airports Conference**

Airport Environmental Challenges



Presenter

Bob Duffner

Water Resources Manager

Aviation Environmental Programs

Overview

- ❖ **Airport Vision and Strategies**
- ❖ **Challenges**
 - ◆ **Wetland mitigation and management**
 - ◆ **Stormwater Management**
 - ◆ **Wildlife Attraction Issues**

Vision and Strategies

❖ Vision –

- ◆ "The cleanest, greenest, most energy efficient Port in the nation" - Port CEO Tay Yoshitani

❖ Strategy –

- ◆ "Exhibit environmental stewardship through our actions"

Third Runway Environmental

Miller Creek, Vacca Farm, Lora Lake

- **Over 1200 feet of creek relocation**
- **Multiple acres of creek enhancements**
- **85 acres of floodplain & wetlands improvements**
- **Over 250,000 new native plants**

Stormwater Treatment

- **Over 550 million gallons to date**

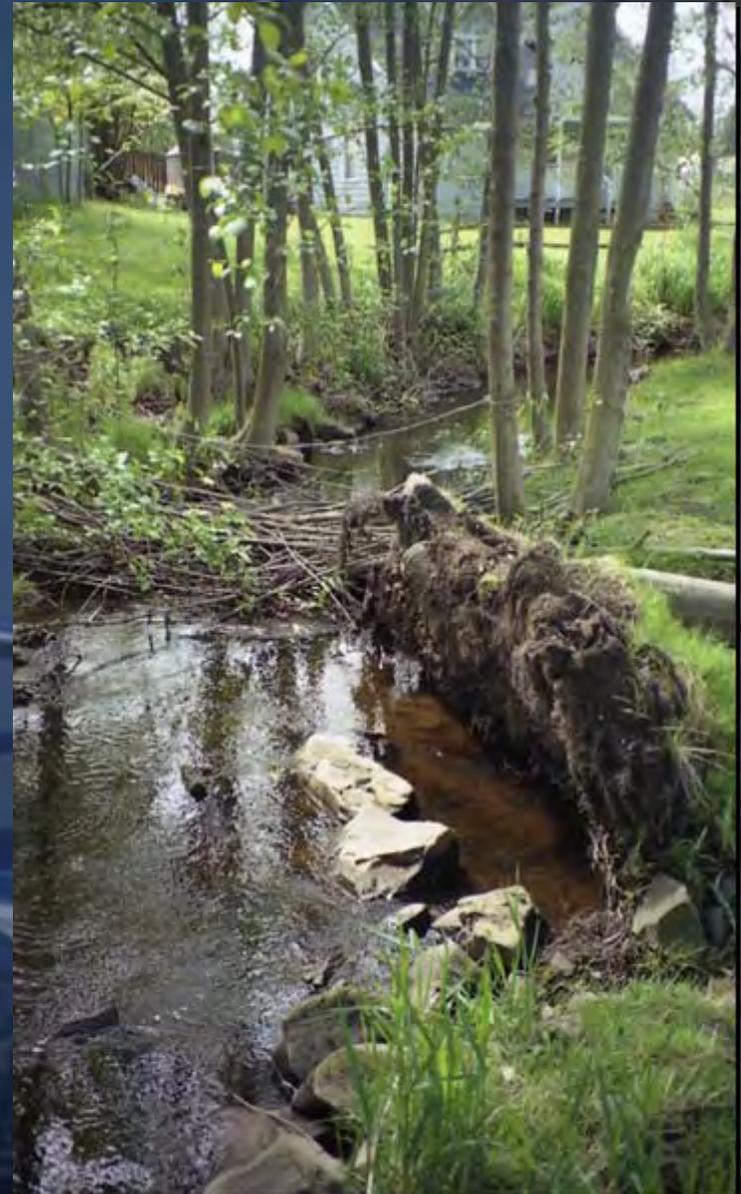
Offsite mitigation - Auburn

- **68 acres of waterfowl wetland habitat**

Third Runway Environmental Challenges

- ❖ No on-site mitigation sites
- ❖ Small urbanized watershed
- ❖ Habitat functions conflict with air operation (waterfowl)
- ❖ Highly restrictive 401/404 and NPDES permits

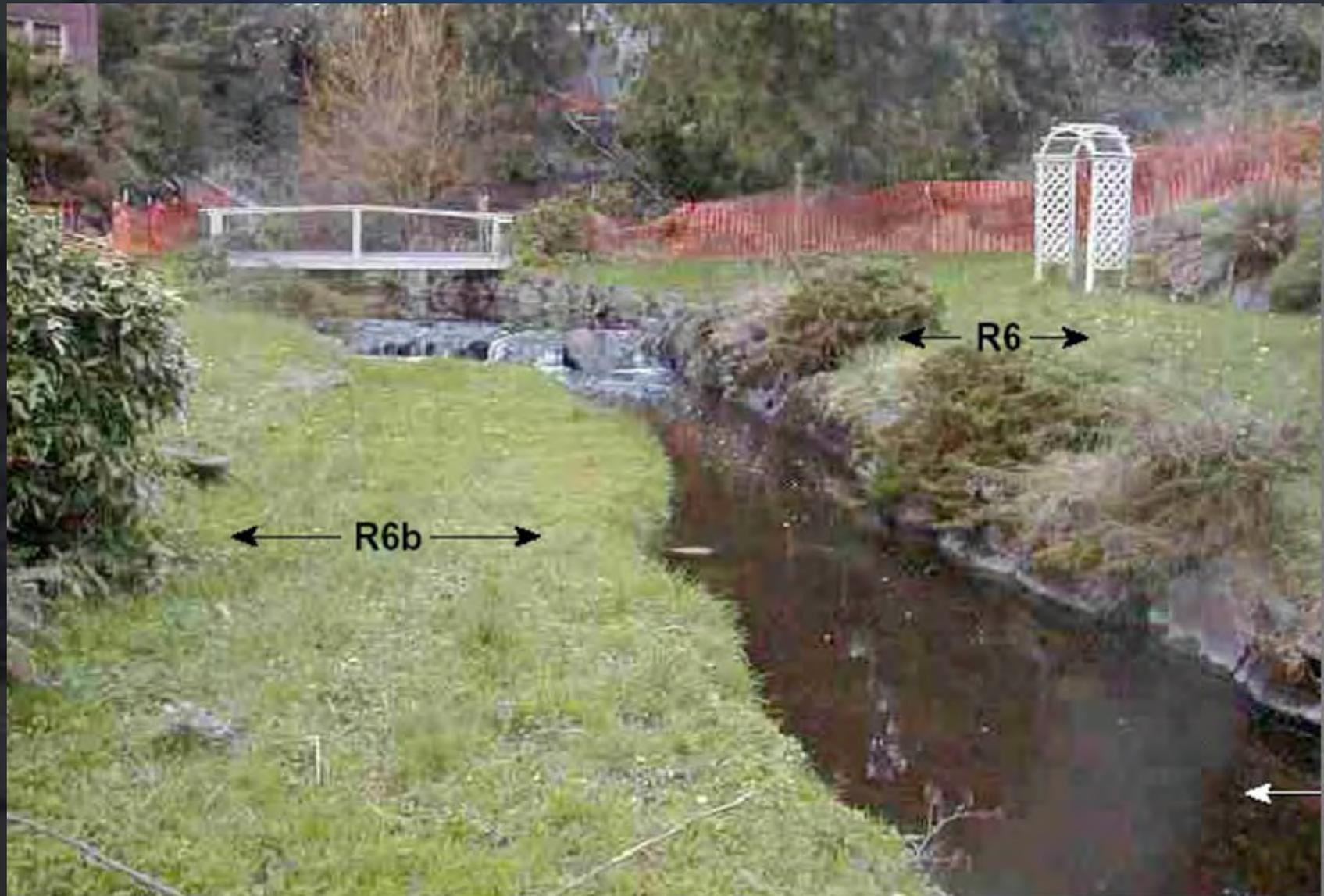
Miller Creek Relocation - Pre-Construction



Relocated Miller Creek – Fall 2004



Instream Enhancement Pre-Construction



Miller Creek Post-Construction: Channel and Bank Restoration



Instream Enhancements



Old 154th/156th Bridge

Remove Riprap
Reslope Banks
Native Vegetation

154th/156th Street Bridge

Gravel
Logs and Wood
Boulders



On-Going Wetland Management Challenges

- ❖ Long-term hydroperiod analysis and adaptive management program
- ❖ 10% invasive species
- ❖ Integrating wetlands into maintenance program

Construction Stormwater Challenges

- ❖ Over 350 acres of open earth
- ❖ Year round construction
- ❖ 1,000 trucks per day fill haul
- ❖ Full-time agency inspector
- ❖ 5 NTU Standard

Construction Stormwater Challenges

Embankment Construction



9-1-05

SKY-PIX
800.325.4342

Construction Stormwater Challenges

Full-time agency inspector



Construction Stormwater Challenges

- ❖ 5 NTU turbidity standard
- ❖ 1 inch rain produced 8 million gallons of turbid runoff
- ❖ Over 550 million gallons managed since 2004



Construction Stormwater Challenges



Construction Stormwater Challenges

- ❖ 80 acre-ft (26 mill gallons) storage



Construction Stormwater Challenges

- ❖ Advanced CESF chemical treatment



- ❖ 550 million gallons at over \$10 million

Facility Stormwater Challenges

- ❖ Increased detention requirements
- ❖ Lower limits for pollutants such as zinc and copper
- ❖ EPA effluent limitation guidelines for aircraft and ground deicing
- ❖ Wildlife hazard management conflicts

Stormwater Detention

- ❖ **Retrofit entire Airport required for Third Runway mitigation**
- ❖ **Detention required for all future development**
- ❖ **Increased standards**
 - ◆ **Existing to predevelopment conditions**
 - ◆ **Doubling detention sizing**

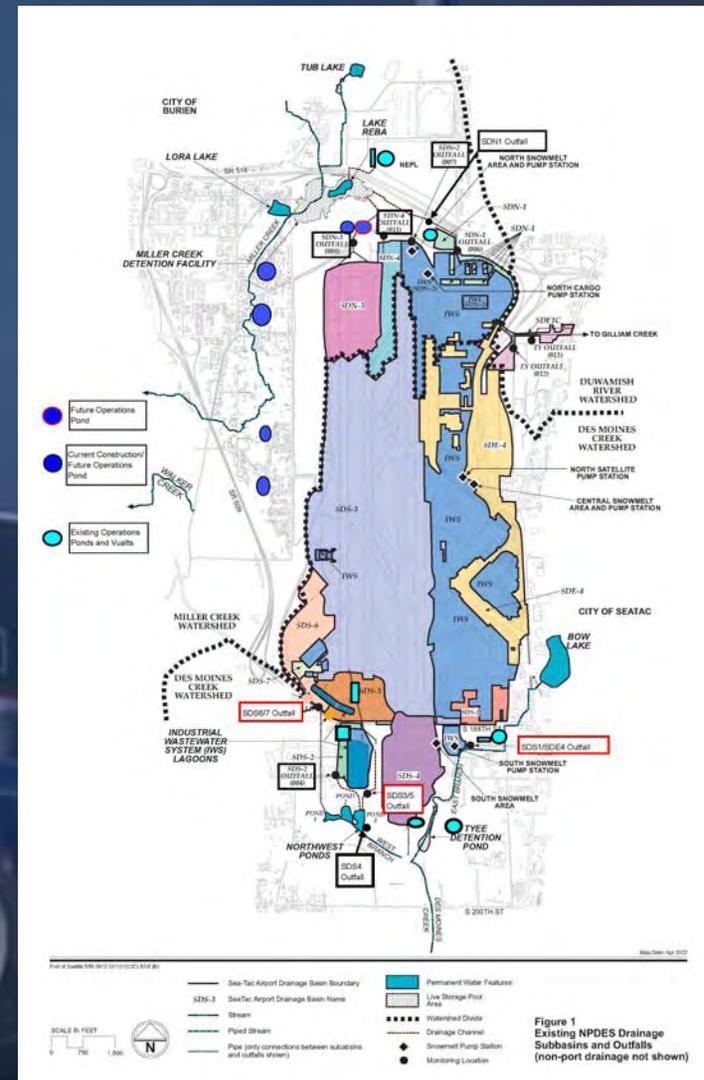
Stormwater Detention

◆ 125 acre-ft of stormwater detention

◆ 11 detention ponds

◆ 4 vaults

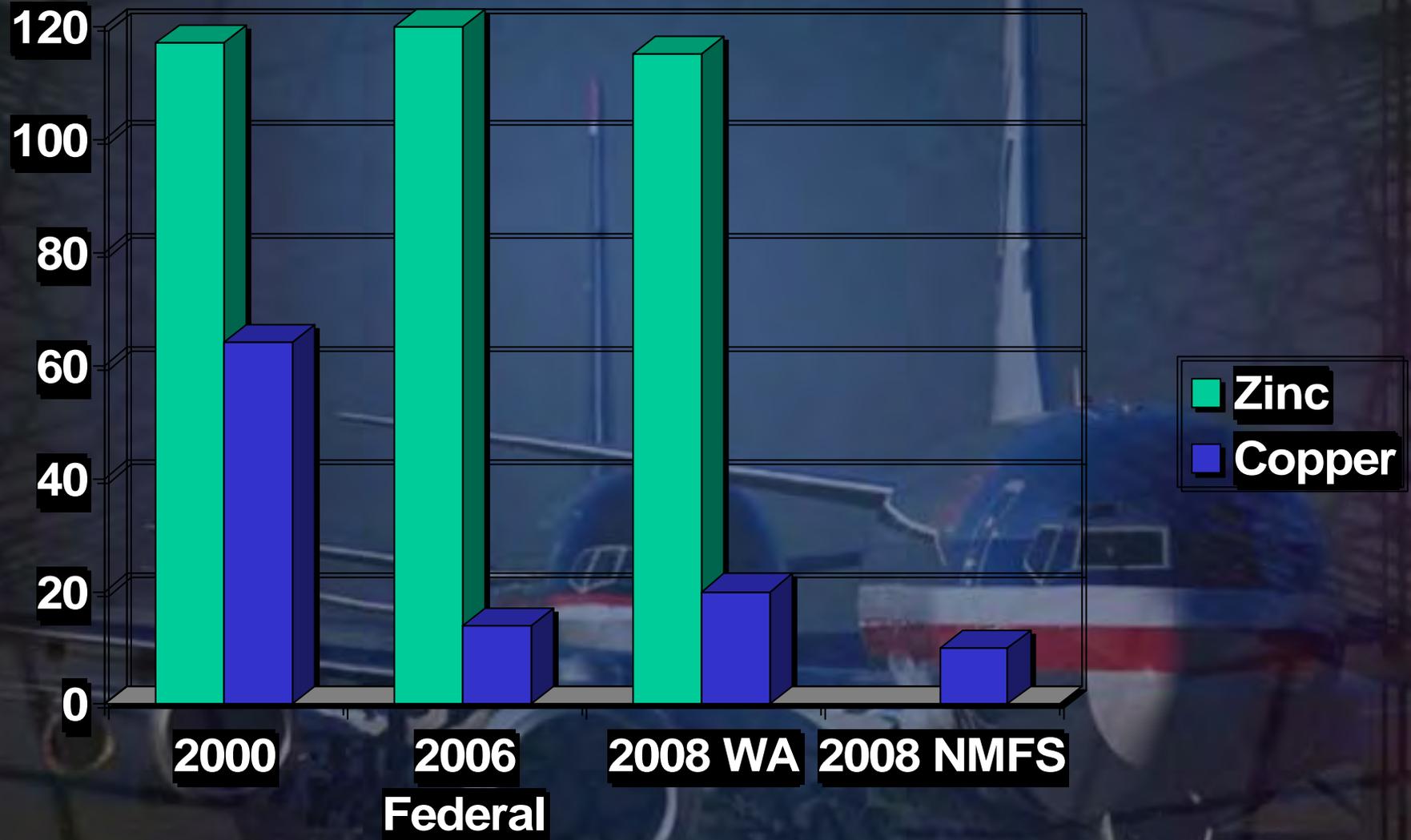
◆ Four region facilities



Detention Facilities

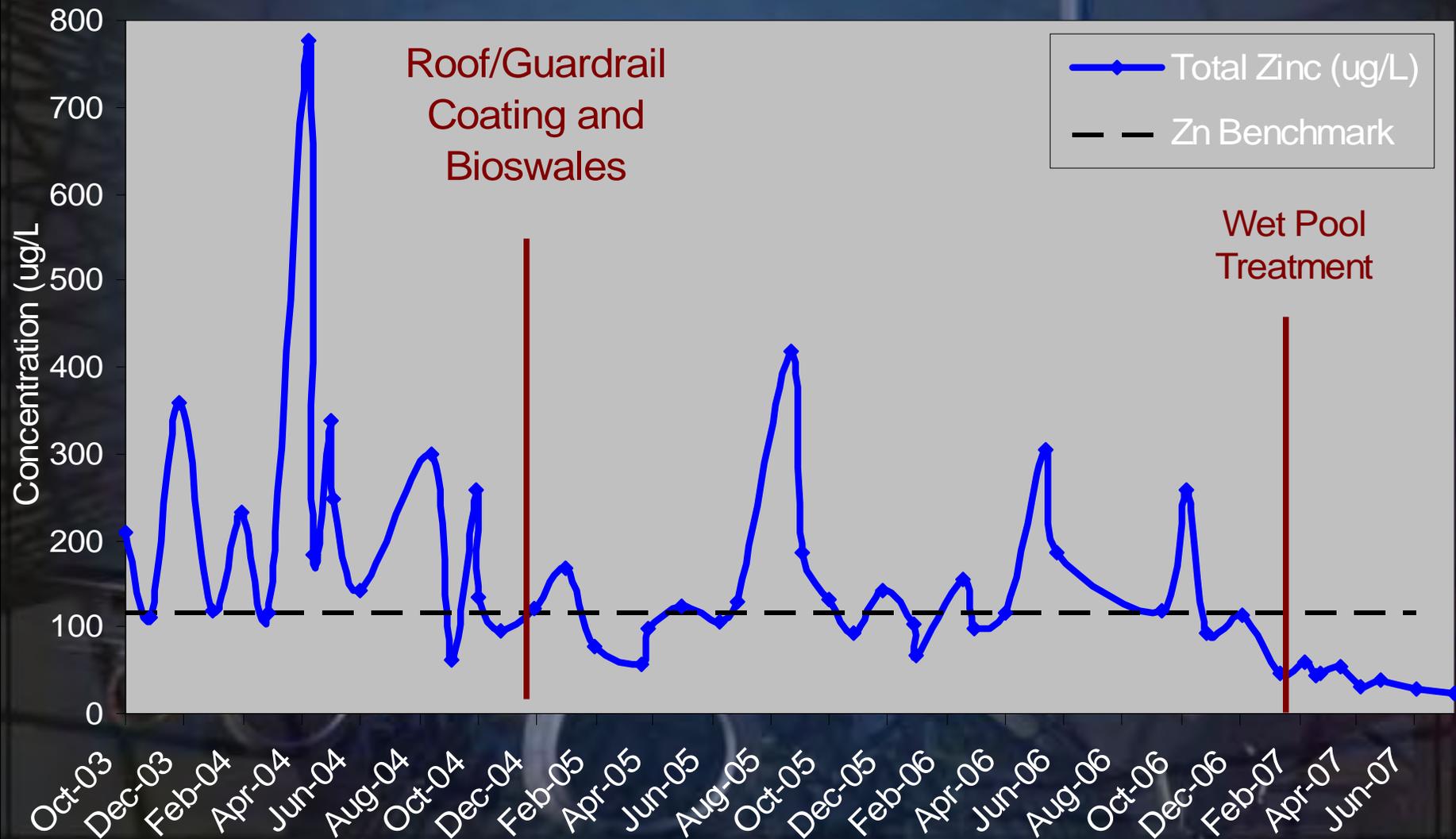


Lower Water Quality Standards



Stormwater Treatment

Total Zinc in Stormwater



Effluent Limitation Guidelines

- ◆ **USEPA Evaluating Aircraft and Pavement Deicing**
- ◆ **Based on Questionnaire of 225 Airports Nationwide and 94 Carriers**
- ◆ **Proposed rule June 2008 and final action December 2009**
 - ◆ **Potential Effluent Limitations on Aircraft Deicing Runoff**
 - ◆ **Deicing Management Practices for runways**

Wildlife Hazard Management Conflicts

❖ Wetlands

- ◆ In-basin mitigation design
- ◆ Out-of-basin mitigation for lost wildlife values

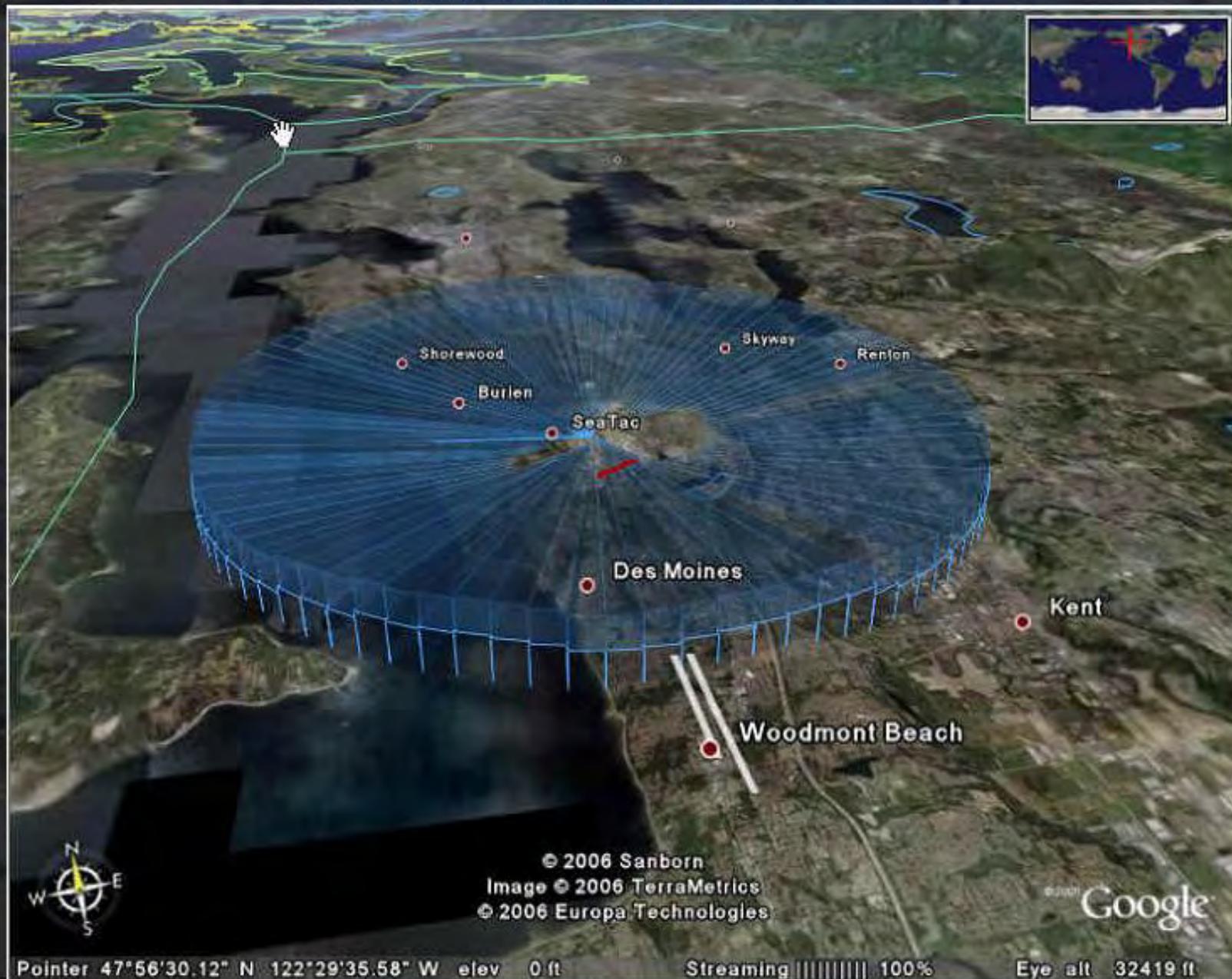
❖ Stormwater Detention

- ◆ Minimize vegetation through side liners
- ◆ Infiltration to reduce standing water
- ◆ Netting

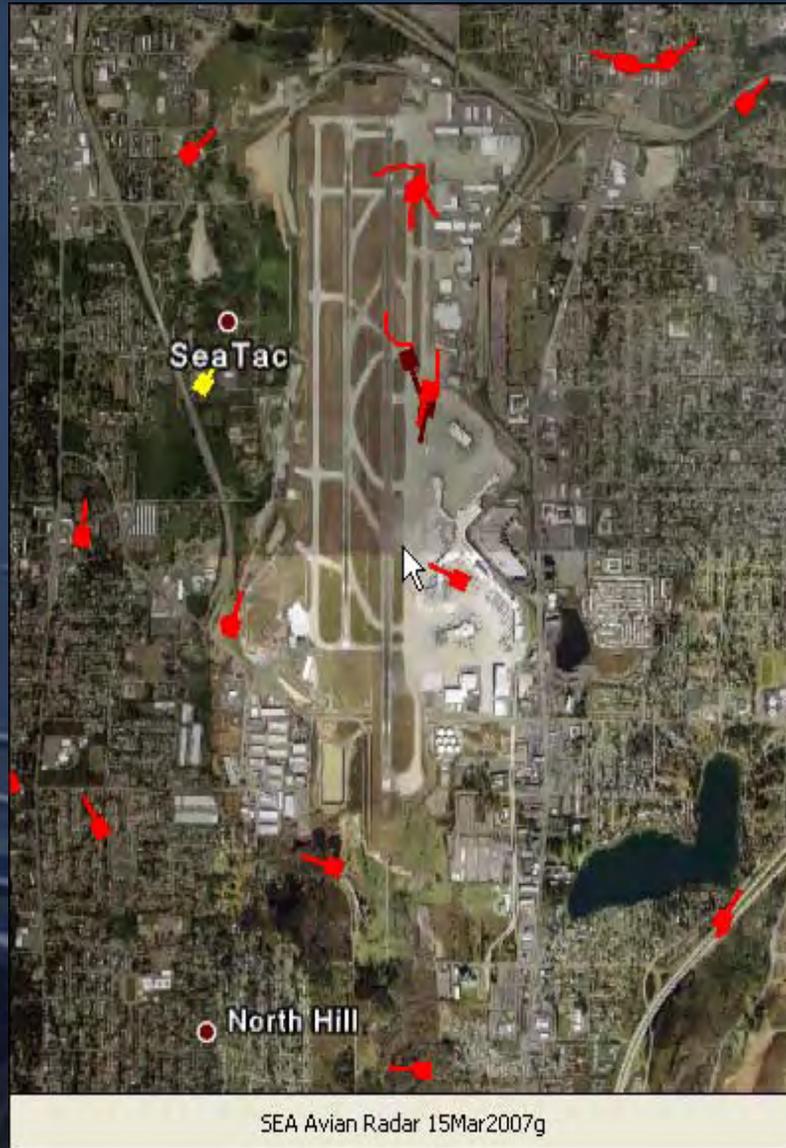
Bird Radar Testing



A Sense Of Coverage for an X-band Radar With a Dish Antenna at Sea



Bird Radar Testing



Airport Runoff Manual

- ❖ Developed by WSDOT
- ❖ Airport specific best management practices
- ❖ Satisfy water quality and safety requirements
- ❖ Provide predictability for developing stormwater facilities that address wildlife conflicts