



Development of Water Quality Standards for Willard Spur

2012 Willard Spur Sampling Plan

Willard Spur Science Panel

April 5, 2012



Key Questions

- **Overall Question for Program**
 - *What water quality standards are appropriately protective of beneficial uses of Willard Spur waters as they relate to the proposed POTW discharge?*
- **Question for this Study**
 - *What is the current condition of Willard Spur?*





Objectives

- **Describe overall condition & function of Willard Spur**
 - Compare 2011 to 2012
- **Document impacts from nutrient sources**
 - Compare 2011 to 2012
- **Augment 2012 experiments**
 - Nutrient cycling project



Results

- **If adverse effect**
- **If no adverse effect**
- **If data is unclear**

Seek Science
Panel input and
recommendations



2012 Sampling Plan

Methods





2012 Workplan

1. Environmental Sampling

- High Priority

2. Special Studies

- High Priority

3. Supplemental Studies

- If resources (i.e., time) are available

**Key Question:
Repeat 2011 or
focus efforts?**



2012 Workplan



Sampling Sites - East



Sampling Sites – Harold Crane WMA



Environmental Sampling

- **Water samples**
 - Bi-weekly during spring runoff at 14 inflow sites
 - Monthly basis at 48 sites (32 inflow, 16 open water)
- **Sediment samples**
 - Summer (chemistry)
 - 16 sites
 - Fall (diatoms)
 - 16 sites



DWQ will collect:

- **Macroinvertebrate samples**
 - Monthly – 16 sites
- **Phytoplankton/Zooplankton samples**
 - Monthly – 16 sites (preserved only)
- **Vegetation Monitoring**
 - Monthly – 16 sites
- **Fish Sampling**
 - Summer – 6 sites



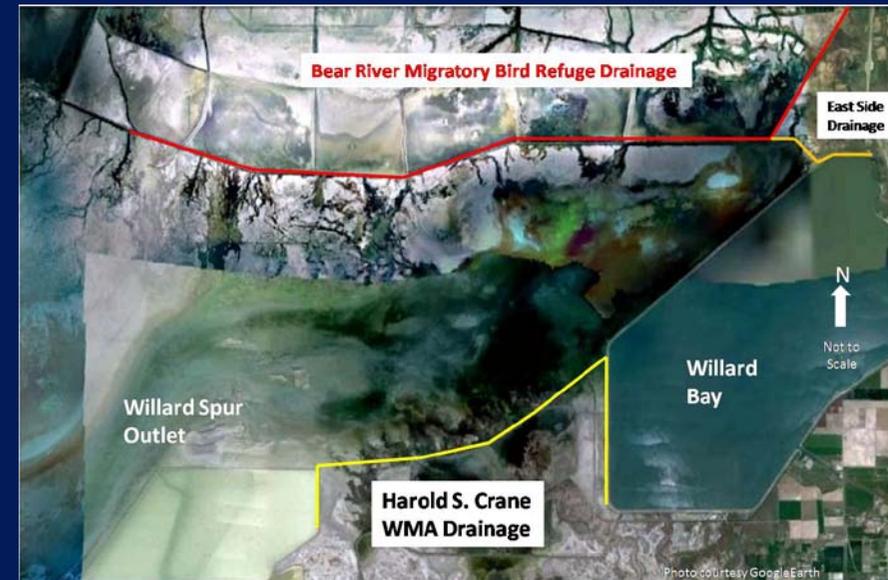
Special Studies

- **Hydrology Study**
 - Inflows/Outflow
 - Water level/Meteorology
- **Sitewide Intensive Sampling Event**
- **Sonde Deployment**
- **Nutrient Uptake Capacity**
- **Macroinvertebrates**
- **North Dike WMA Sampling**

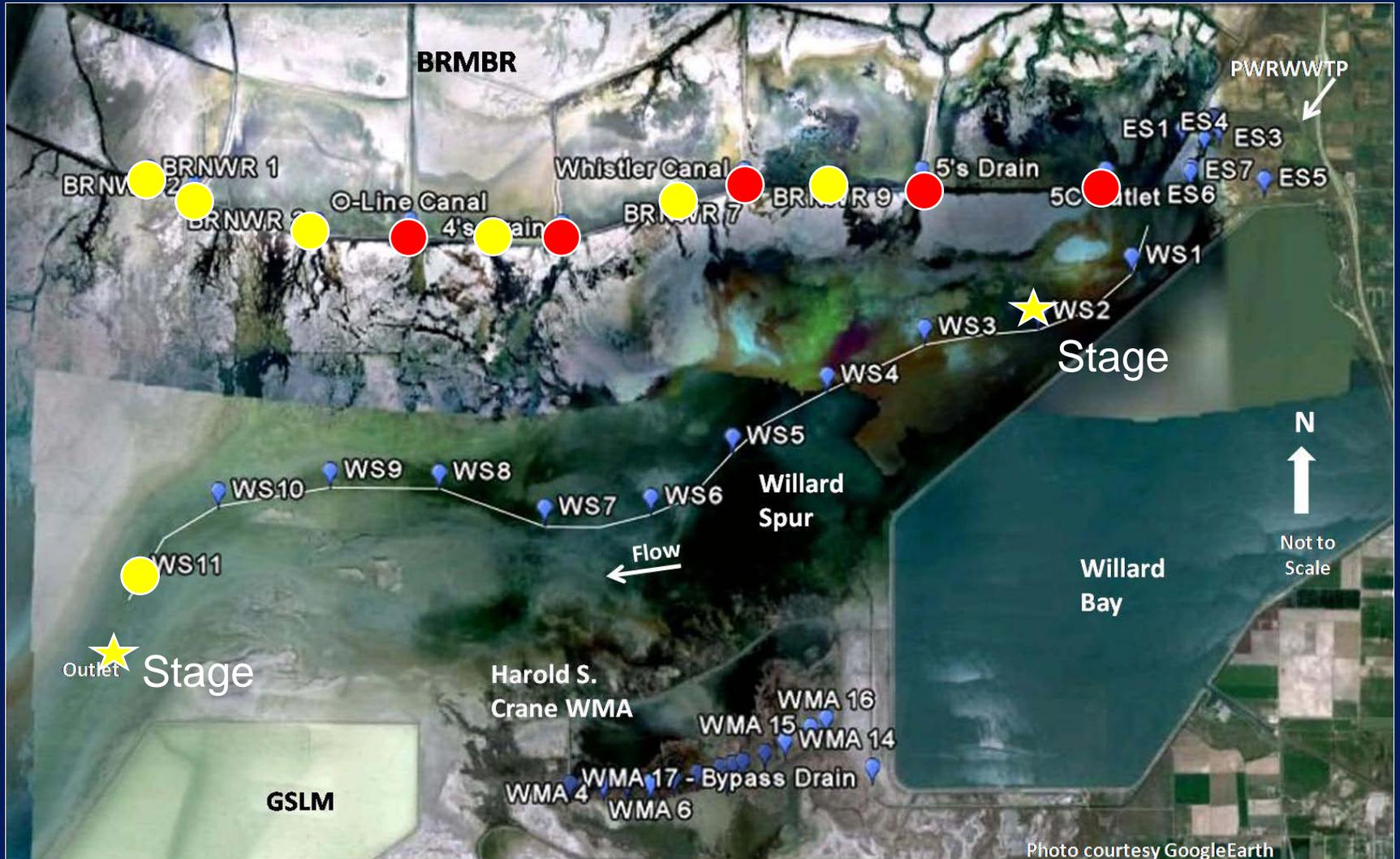


Hydrology

- **USGS** <http://waterdata.usgs.gov/ut/nwis/current/?type=flow>
 - 5 inflow sites @ BRMBR
 - 1 lake stage & MET
- **DWQ**
 - 6 inflow sites @ BRMBR
 - IRR return flow site
 - Harold Crane WMA
 - Outflow (3Xs)
- **PWRWWTP – outflows**
- **USBR – Willard Bay**



Flow Measurement Sites - BRMBR



Flow Measurement Sites – East Side



Flow Measurement Sites - WMA



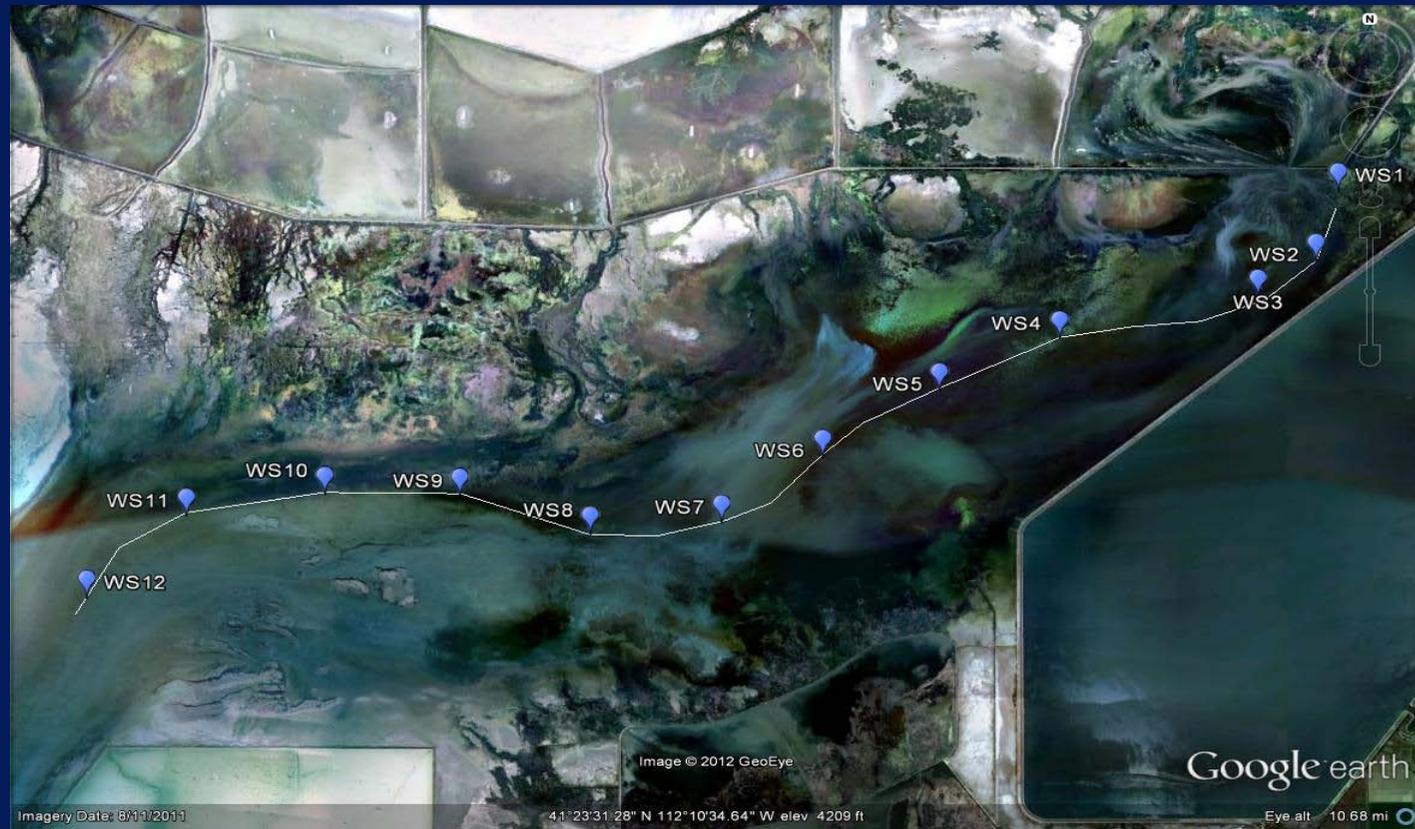
Site-wide Intensive Sampling Event – 1X

- How do conditions vary spatially?



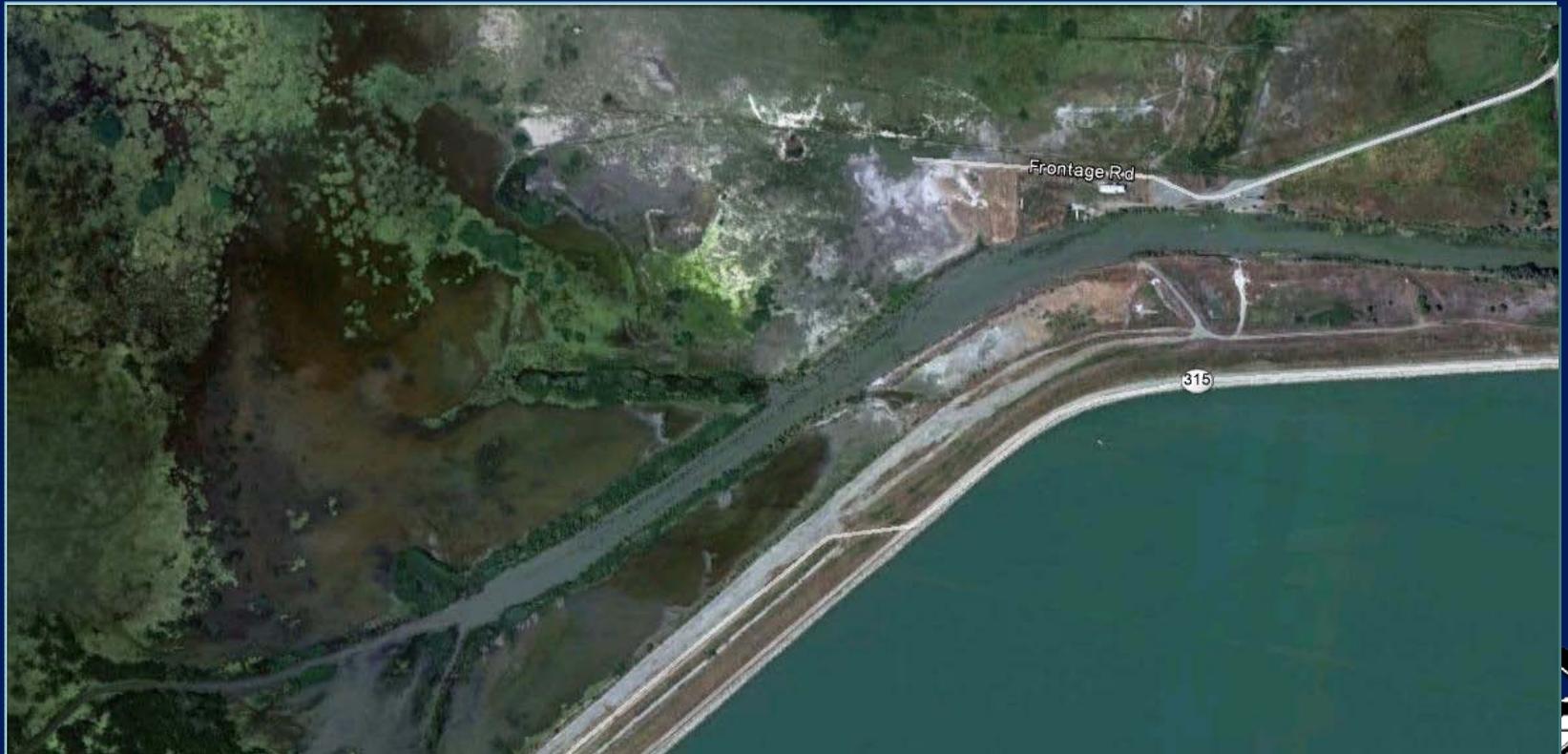
Sonde Deployment – 2Xs, 7 days

- How do DO, pH, temp, spec conductance vary over time?



Nutrient Uptake Capacity

- What is the nutrient uptake capacity of the tailrace channel?





Macroinvertebrates

- **Identification of Life Stages**
 - Collect samples monthly at 6 sites
 - In conjunction with normal sampling
- **Define predator-prey relationships**
 - Sample 2X at 2 locations
 - Macroinvertebrates, algae, detritus, plants
 - Stable isotope analysis

North Dike WMA Sampling

- Define WQ relationships between North and South Dikes



Supplemental Studies

- **Residence Time Experiment**
 - How long does water stay in Willard Spur?
- **Existing Distribution of Phragmites**
 - What is the current extent?
- **Bird Surveys**
 - How is bird use linked to water quality?
- **Evaluation of POTW's Mixing Zone**





Implementation Schedule

- **Draft Sampling Plan in Review**
- **DWQ to start sampling/deploy equipment in April**





Challenges/Solutions

- **Access**
 - DWQ has a boat!
- **Equipment**
 - Equipment in place already
 - Only 1 new transducer
- **Coordination & Documentation**
 - Measures in place
- **Data Management**





Comments or Questions?

