

NDEP Bureau of Water Quality Planning

Review of Lahontan Reservoir Water Quality Standards

January 15, 2013

What are Standards and How Are They Used?

- Required by State Law and Federal Clean Water Act
- Define the water quality goals for a surface water
 - ◆ Beneficial uses are defined
 - ◆ Water quality criteria as needed to protect the beneficial uses
- Used to assess health status of a surface water
- Used to establish limitations for surface water discharge permits
- Used to guide voluntary nonpoint source improvement projects

Why Now?

- BWQP Strategic Plan – Improve water quality standards (appropriate beneficial uses and water quality criteria)
- Lahontan Reservoir standards haven't been reviewed since 1984
 - ◆ NDEP has been considering the need for years, but effort hadn't risen as a priority
 - ◆ Check validity of assumptions used in 1980s – nutrient loads have changed significantly
 - ◆ ~50% reduction in phosphorus loads
 - ◆ ~60% reduction in nitrogen loads

Why Now?

- For several years, NDEP has been working with Reno, Sparks, TMWRF, Washoe County and TMWA in a 3rd Party review of the Truckee River Nitrogen and Phosphorus TMDL
 - TMDL sets load limits for point and nonpoint sources
 - TMDL will be constrained by
 - Truckee River water quality standards
 - Review is underway for non-tribal portion
 - Tribal Truckee River/Pyramid Lake water quality standards
 - Recently established
 - Lahontan Reservoir water quality standards



Key Elements of Water Quality Standards

- 1) Designated beneficial uses
- 2) Criteria to protect beneficial use
- 3) Antidegradation provision (RMHQs)

Beneficial Uses Assigned to Lahontan Reservoir

- Municipal or domestic supply
- Irrigation
- Watering livestock
- Propagation of aquatic life (warm water fish)
 - ◆ Species of concern – walleye, channel catfish and white bass
- Propagation of wildlife

Beneficial Uses Assigned to Lahontan Reservoir

- Industrial Supply
- Recreation involving contact with the water (swimming)
- Recreation not involving contact with the water (boating)

Factors in Designating a Beneficial use

- Existing uses
- Public concerns
- Desired potential uses

Water Quality Criteria

- Numeric values which protect uses
 - ◆ EPA criteria are guidelines in establishing standards
 - ◆ Utilize sound scientific rationale
- Aquatic life, recreation, municipal/domestic water supply
 - ◆ Main uses with most restrictive water quality criteria

Lahontan Reservoir Water Quality Criteria

- Beneficial Uses
 - NAC 445A.1792
- Routine Pollutants
 - NAC 445A.1824
- Toxics – Statewide criteria
 - NAC 445A.1236 - *Not part of this review*

Lahontan Reservoir Routine Pollutant Criteria by Use

Use	Parameter
Aquatic Life	Temperature
	Total phosphorus
	Nitrite
	Total ammonia
	Dissolved oxygen
	Total suspended solids
	Turbidity
	Alkalinity
Wildlife	pH
Irrigation	Sodium adsorption ratio

Use	Parameter
Municipal/ Domestic Supply	Nitrate
	Color
	Total dissolved solids
	Chlorides
	Sulfate
Contact Rec	pH
	Total phosphorus
	E. Coli
	Fecal coliform

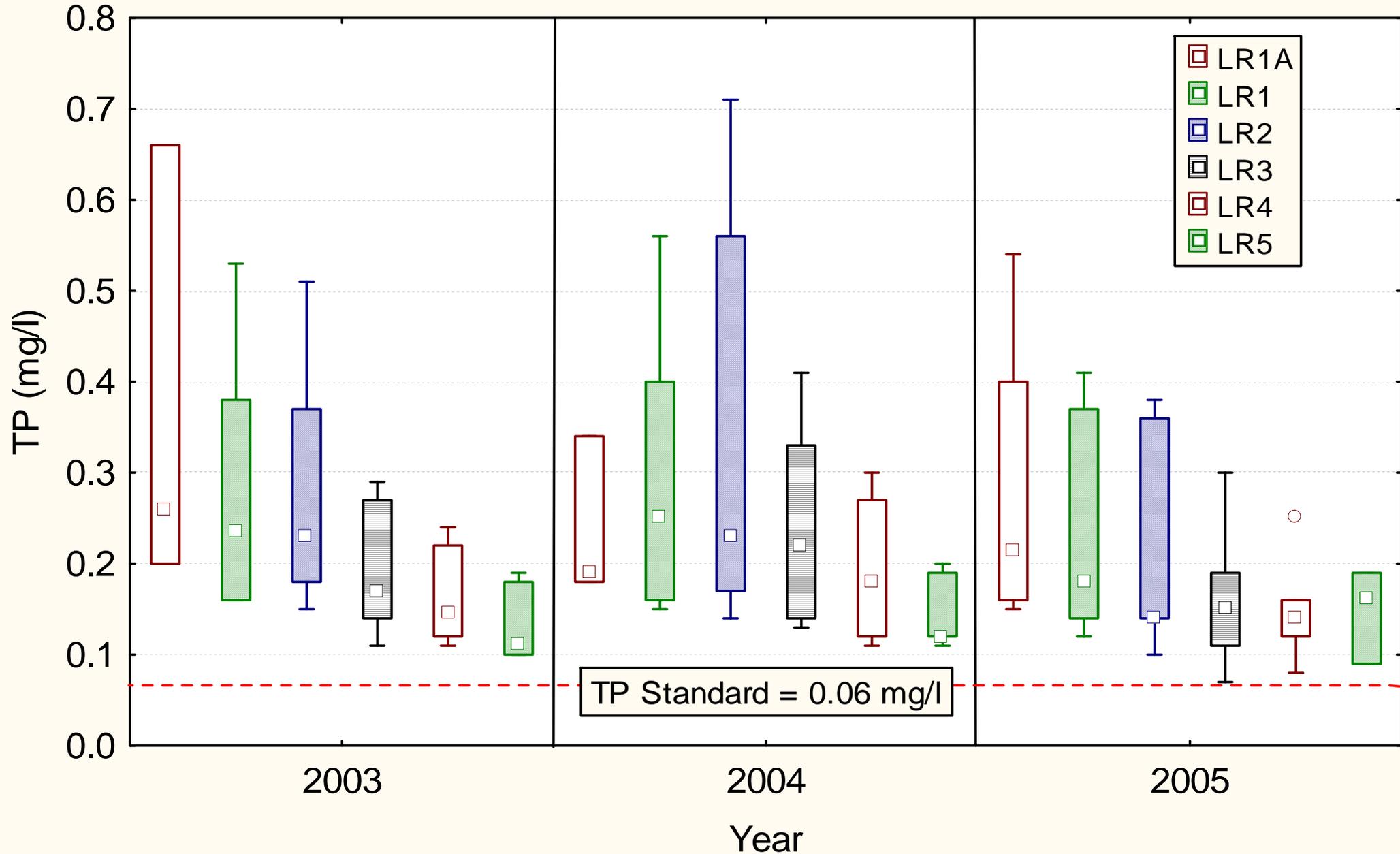
Currently not meeting TSS, turbidity, total phosphorus standards
(2008-10 Integrated Report)



Lahontan Reservoir Monitoring Sites, 2003- 05

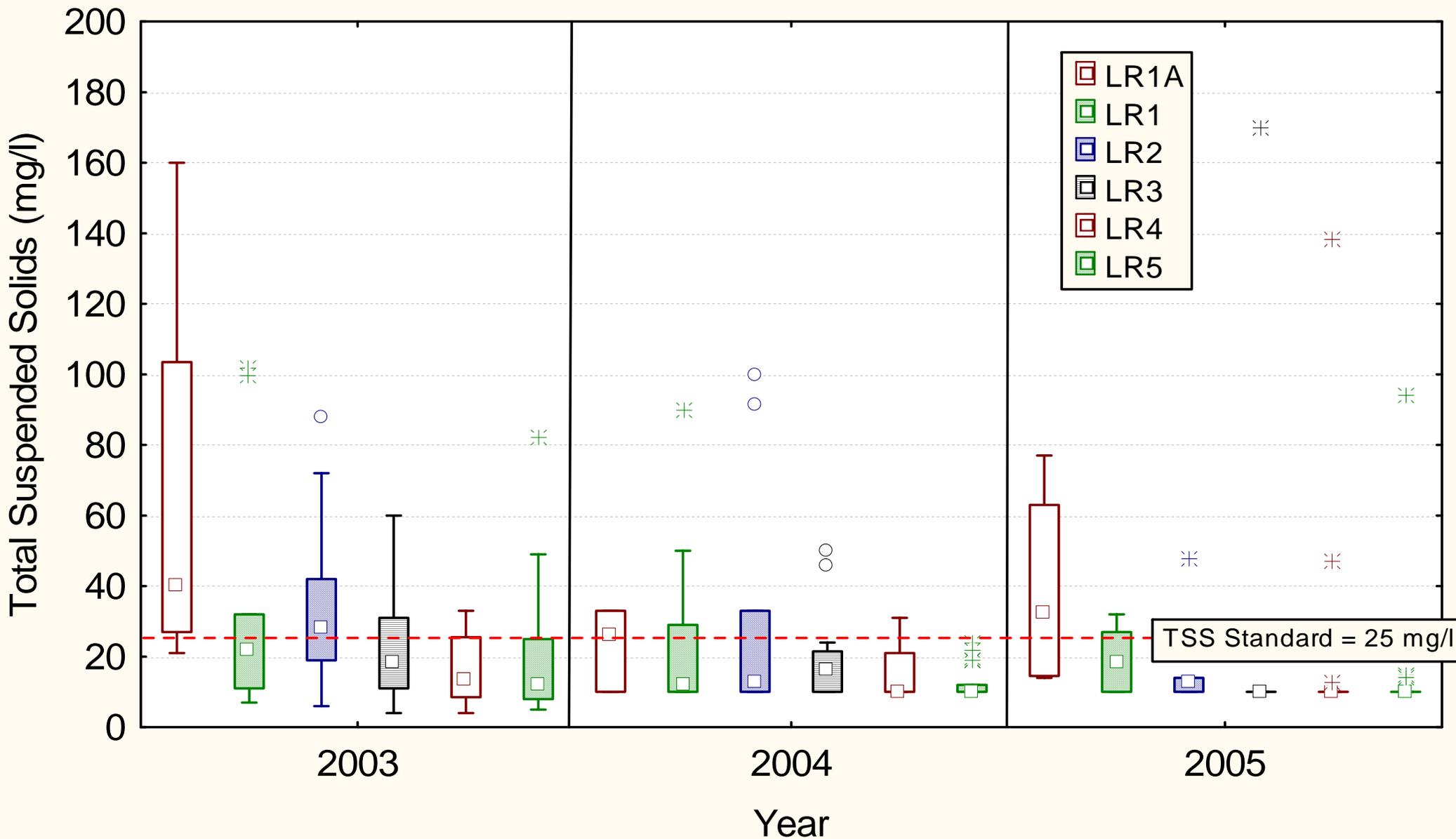
Total Phosphorus Levels

Square = Median; Box = 25%-75%; Whisker = Non-Outlier Range



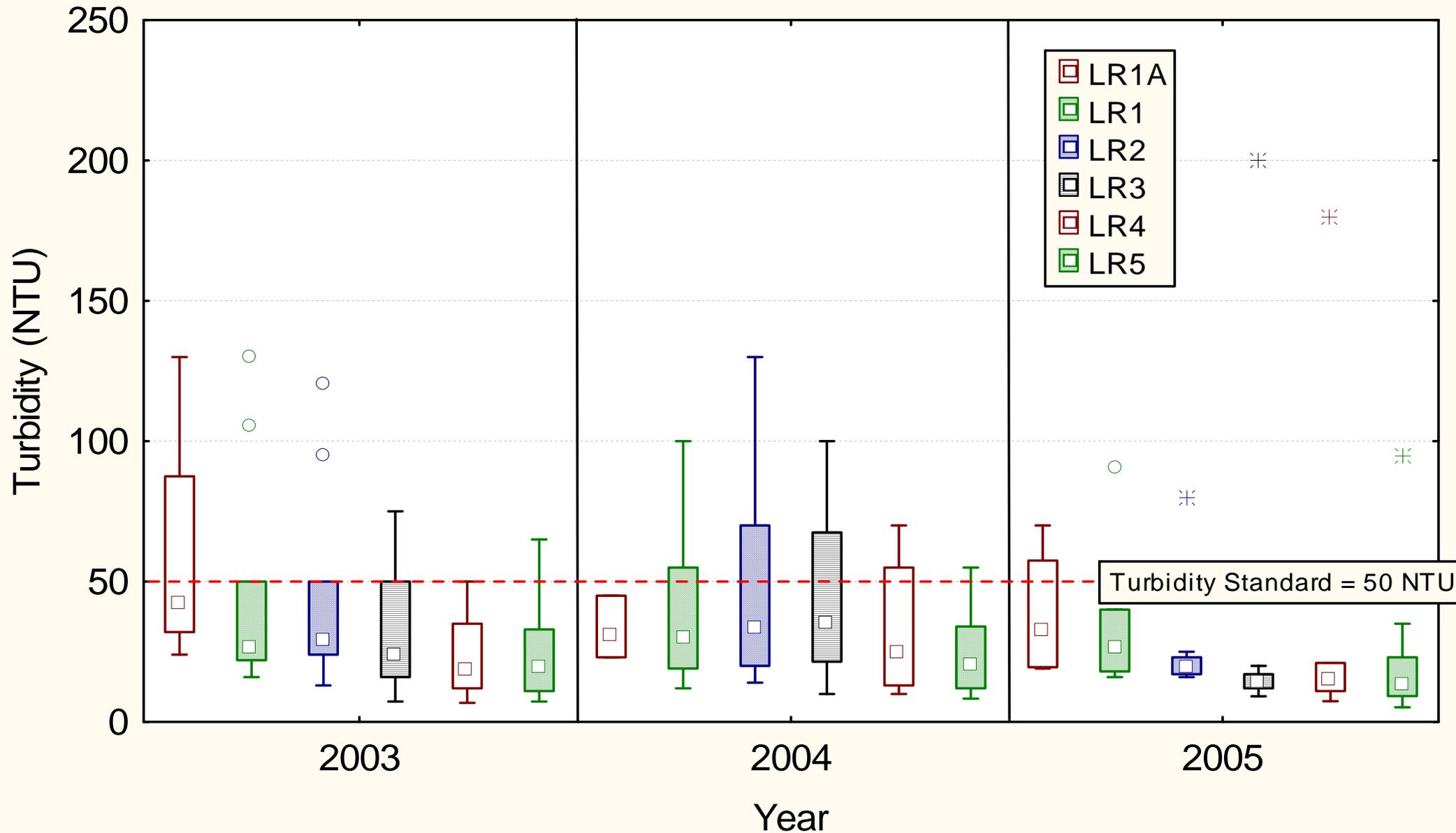
Total Suspended Solids

Square = Median; Box = 25%-75%; Whisker = Non-Outlier Range



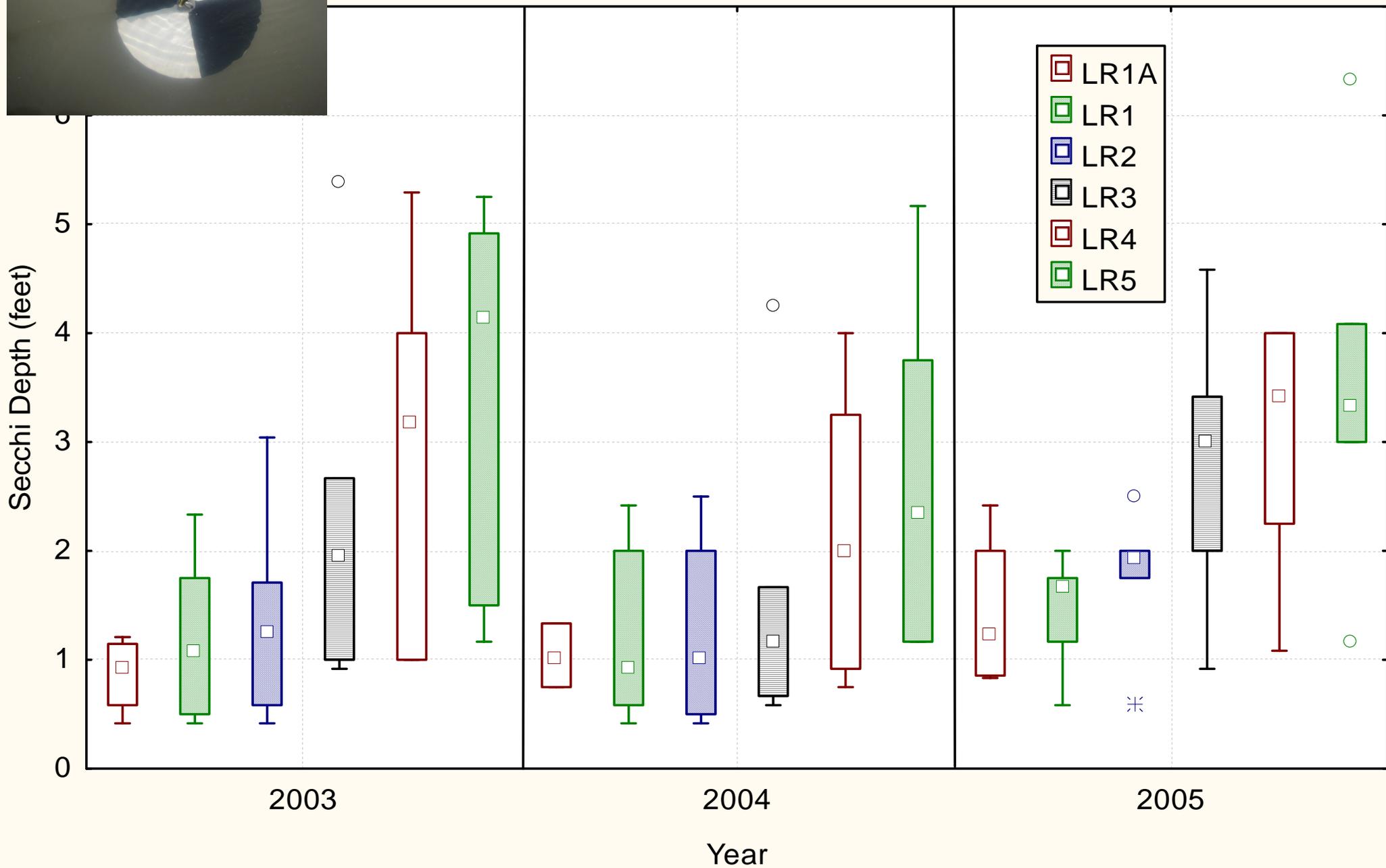
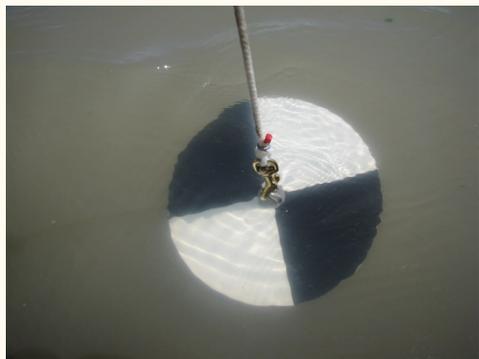
Turbidity

Square = Median; Box = 25%-75%; Whisker = Non-Outlier Range



Secchi Depth Readings

Square = Median; Box = 25%-75%; Whisker = Non-Outlier Range



Some Key Aspects to be Examined

- Existing standards are structured for a stream not a reservoir
 - ◆ Breakout reservoir from reach segment
 - ◆ Break out reservoir by basin
 - ◆ Need to recognize stratification and its impacts on dissolved oxygen, temperature, etc.
- Evaluate appropriateness of beneficial uses
- Evaluate existing RMHQ Antidegradation standards

Some Key Aspects to be Examined

- Nutrient standards set only for phosphorus
 - ◆ Phosphorus standard based upon relationship with Algae levels
 - ◆ Preliminary evaluations suggests that relationship may not be appropriate
 - ◆ Evaluate Algae target (chlorophyll-a) – driven by beneficial use needs
 - ◆ Evaluate the need to add nitrogen criteria for algae control

Some Challenges for Lahontan Reservoir

- No applicable nutrient or algal criteria recommendations from EPA
 - ◆ Literature, studies, other state regulations provide a range of chlorophyll-a thresholds for the protection of various beneficial uses
 - ◆ Aquatic life (warmwater, coldwater), recreation, drinking water
 - Conflict between the uses
 - Warmwater fish yield increases with algal level increases
 - Recreation use can sometimes be the most restrictive

Some Challenges for Lahontan Reservoir

- Total phosphorus standard (0.06 mg/l) exceeded in 100% of the samples (2003-05, 2012)
 - ◆ Flow weighted averages > 0.06 mg/l
 - ◆ Carson River - ~ 0.20 mg/l
 - ◆ Truckee Canal - ~ 0.08 mg/l
- Internal phosphorus loading
 - ◆ Based upon estimates by Richard-Haggard (1982), internal loading enough to result in TP = 0.06 mg/l during average storage conditions
 - ◆ 2012 (very low inflows) – TP increased 2X – 5X from June to September
- NRS 445A.520(2)
 - ◆ Standards should be reasonably achievable
- CFR 131.10(d)
 - ◆ Uses attainable through effluent limits, cost-effective and reasonable BMPs

Main Steps in Process

- Develop Rationale and Petition
- Hold a series of stakeholder meetings
 - ◆ Obtain input to consider during development of DRAFT Rationale and Petition
 - ◆ Public workshops
 - This meeting and subsequent interim workshops
 - ◆ CRC WQ Workgroup
 - ◆ Other meetings, information gathering efforts
 - TCID, NDOW, State Parks, USFWS, USBR
 - Others as requested
 - ◆ Present Rationale/Petition prior to submittal to SEC and obtain input
- Public hearing with State Environmental Commission (early 2014)
- Submittal to State Legislative Committee and AG's Office
- Submittal to EPA (mid 2014)

CRC Water Quality Work Group

- Re-start CRC Workgroup
 - ◆ Serving as more of a Focus Group
 - ◆ ~4 meetings over the next 6-12 months
- Ongoing opportunity for stakeholder input as NDEP works through the technical aspects of the review
 - ◆ Beneficial use review
 - ◆ Nutrient criteria
 - ◆ Other criteria – TSS, turbidity, alkalinity, etc.
 - ◆ RMHQs
- Public workshops to the broader group will be held once NDEP has develop its proposal

Supporting Documents

- Lahontan Reservoir: General Analysis of Water Quality Data, 2003-05 (NDEP, 2007)
- Trends in Nutrient Loads to Lahontan Reservoir (NDEP 2007)
- Preliminary Review of Lahontan Reservoir Total Phosphorus Water Quality Standard (NDEP, 2012)
- Fact Sheets
 - ◆ Existing Water Quality Standards for Lahontan Reservoir (NDEP, 2012)
 - ◆ Summary of Lahontan Reservoir Water Quality, 2003-05 (NDEP, 2012)
 - ◆ Summary of Trends in Nutrient Loads to Lahontan Reservoir (NDEP, 2012)

Electronic documents available at following:

http://ndep.nv.gov/bwqp/lahontan_rvw.html

Opportunities for Comment

- Initial comments
 - ◆ Today
 - ◆ Submit to Randy Pahl at rpahl@ndep.nv.gov
- Focus Group
- Future workshops
- Meet with your group if requested

Thank You

BUREAU OF WATER QUALITY PLANNING

Bureau Chief

Kathy Sertic: (775) 687-9455

ksertic@ndep.nv.gov

WATER QUALITY STANDARDS

Supervisor

John Heggeness: (775) 687-9449

jheggene@ndep.nv.gov

SPECIAL PROJECTS COORDINATOR

Randy Pahl: (775) 687-9453

rpahl@ndep.nv.gov

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

Bureau of Water Quality Planning

901 S. Stewart Street, Suite 4001

Carson City, Nevada 89701

fax (775) 687-9561

<http://ndep.nv.gov/bwqp/index.htm>