Assessing Water Quality of the Salt River - An Analysis of an Urban Aquatic Ecosystem in an Arid Environment

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The Salt River only has one stretch downstream from the Granite Reef Dam where it is a hydrologically and ecologically a real river. This research investigates water quality long the 10-kilometer stretch of the Salt River, which we refer to as Rio Verdado, between the Tres Rios Wetlands, a constructed treatment wetland, and the Lower Buckeye Diversion Dam. Bimonthly water samples were taken at three locations, **Tres Rios Wetlands outflow, Base & Meridian Wildlife Area, and the Lower Buckeye Diversion Dam; Water Quality samples include NO2, NO3, NH4, TN, TP, PO4, and DOC, on-site sampling included DO, conductivity, pH, and temperature.**

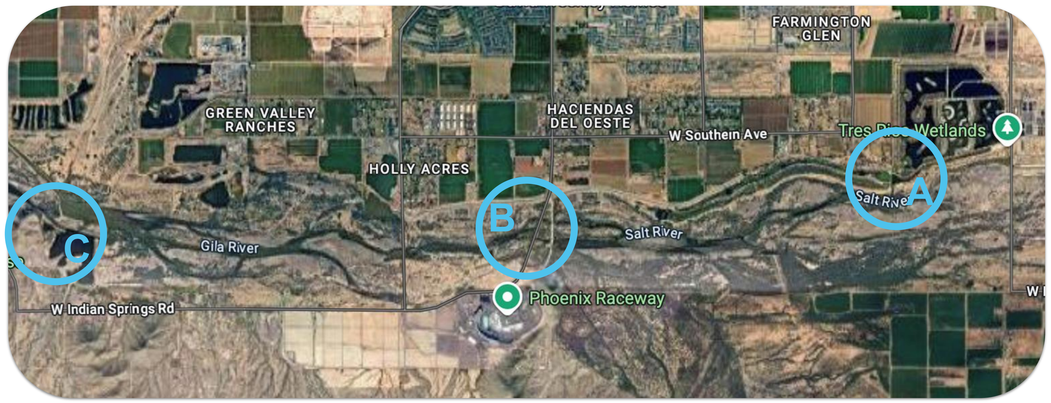

Figure 1: Samples Areas: Tres Rios Wetland (A), Base & Meridian Wildlife Area (B), and Lower Buckeye Diversion Dam/Buckeye Canal (C). (Google, 2024)

Tres Rios Wetlands

- Constructed Treatment Wetland
- Continual water quality monitoring since 2011
- Constructed to meet Nitrogen limits set by EPA

Base & Meridian Wildlife Area

- Mixed natural rehabilitation/human restored area
- High human-nature interaction
- Confluence of Salt & Gila Rivers

Lower Buckeye Diversion Dam

- River is diverted into irrigation canals
- Trash dumping area for surrounding communities

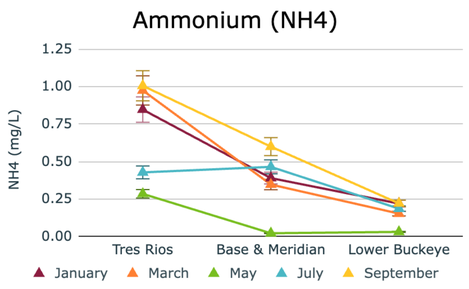

Fig. 2: NH4 Values between Tres Rios Wetlands and Lower Buckeye Diversion Dam between January and September 2024

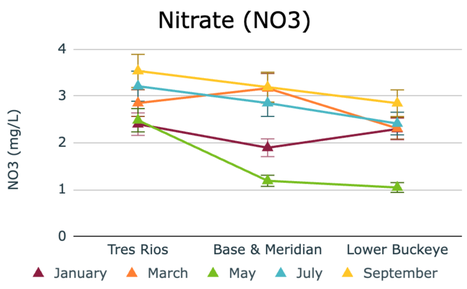

Fig. 3: NO3 Values between Tres Rios Wetlands and Lower Buckeye Diversion Dam between January and September 2024

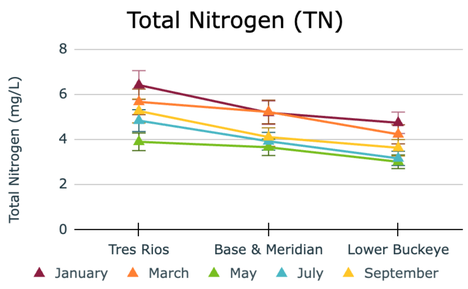

Fig. 4: TN Values between Tres Rios Wetlands and Lower Buckeye Diversion Dam between January and September 2024

Summary of Findings

- ❖Decrease in Nitrogen analytes
- ❖Little seasonal variance in levels
- ❖Riparian areas provide key ecosystem services

Initial analysis shows an increase in water water correlating with a **decrease in Nitrogen analytes**. Nitrogen is the limiting nutrient in Arizona and is sequestered out of water by the vegetated riparian corridor. This points to a healthy, functioning ecosystem existing in a arid urban environment that was primarily rehabilitated naturally by restored water flow from the Tres Rios Wetlands (Fig. 4)

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