



Update on Water Quality Criteria for Selenium



Background

There are high levels of naturally occurring selenium in Las Vegas Valley soils

- Dissolves in groundwater and migrates to surface water
- Very little dilution in the tributaries
- High selenium levels in the tributaries
 - Much higher than the existing or proposed surface water criteria

Background

- Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning, provided notice of intent to revise water quality standards for Las Vegas Wash and Lake Mead in May 2019
- Proposed standards included a proposal for new statewide selenium criteria based on U.S. Environmental Protection Agency (EPA) guidance issued in 2016

Selenium

- RFCD contracted with Arcadis/Benchmark in May 2020 to begin the work necessary to develop a site-specific standard for selenium
- Have met with NDEP multiple times (virtually) to discuss progress
- Have also met with EPA to review data



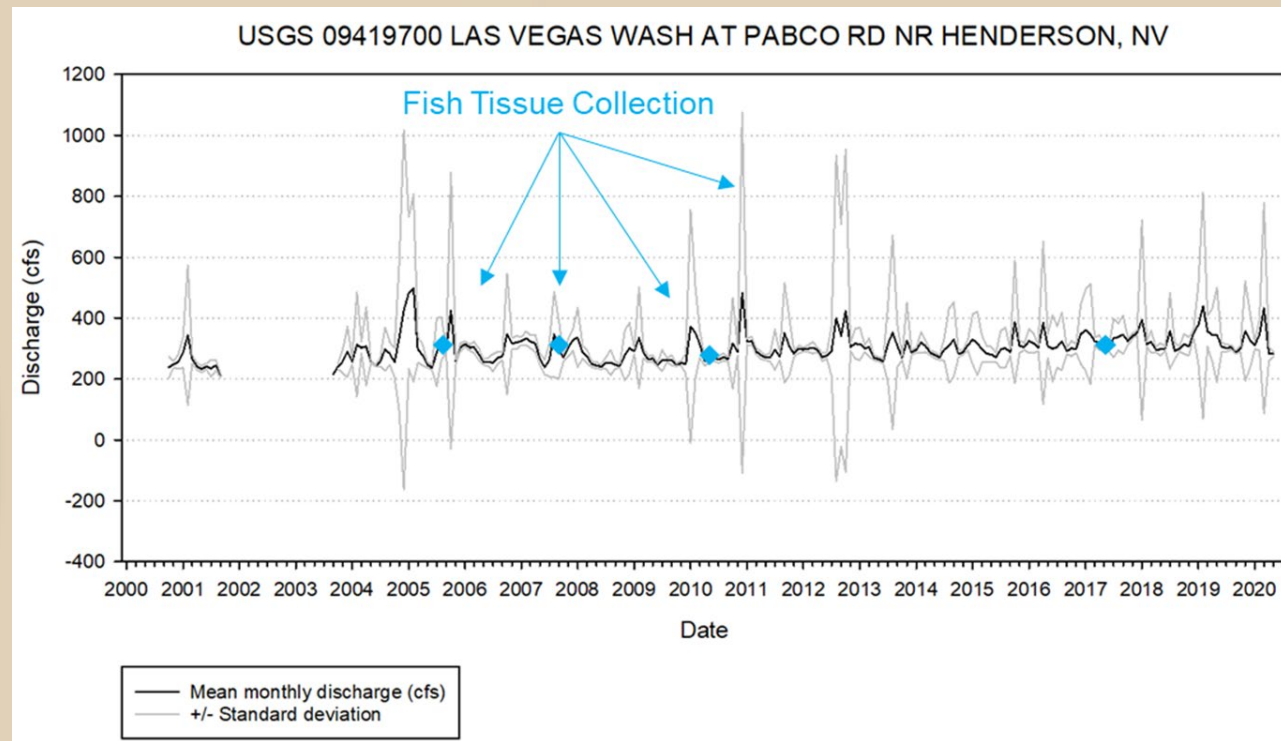
Benchmark
Environmental LLC

Data

- Four primary data sources:
 - Flow (USGS)
 - Fish community
 - Se water
 - Se fish

Flow Monitoring Data

- Flow monitoring data shows stability in conditions over the period that was analyzed (2000-2020)



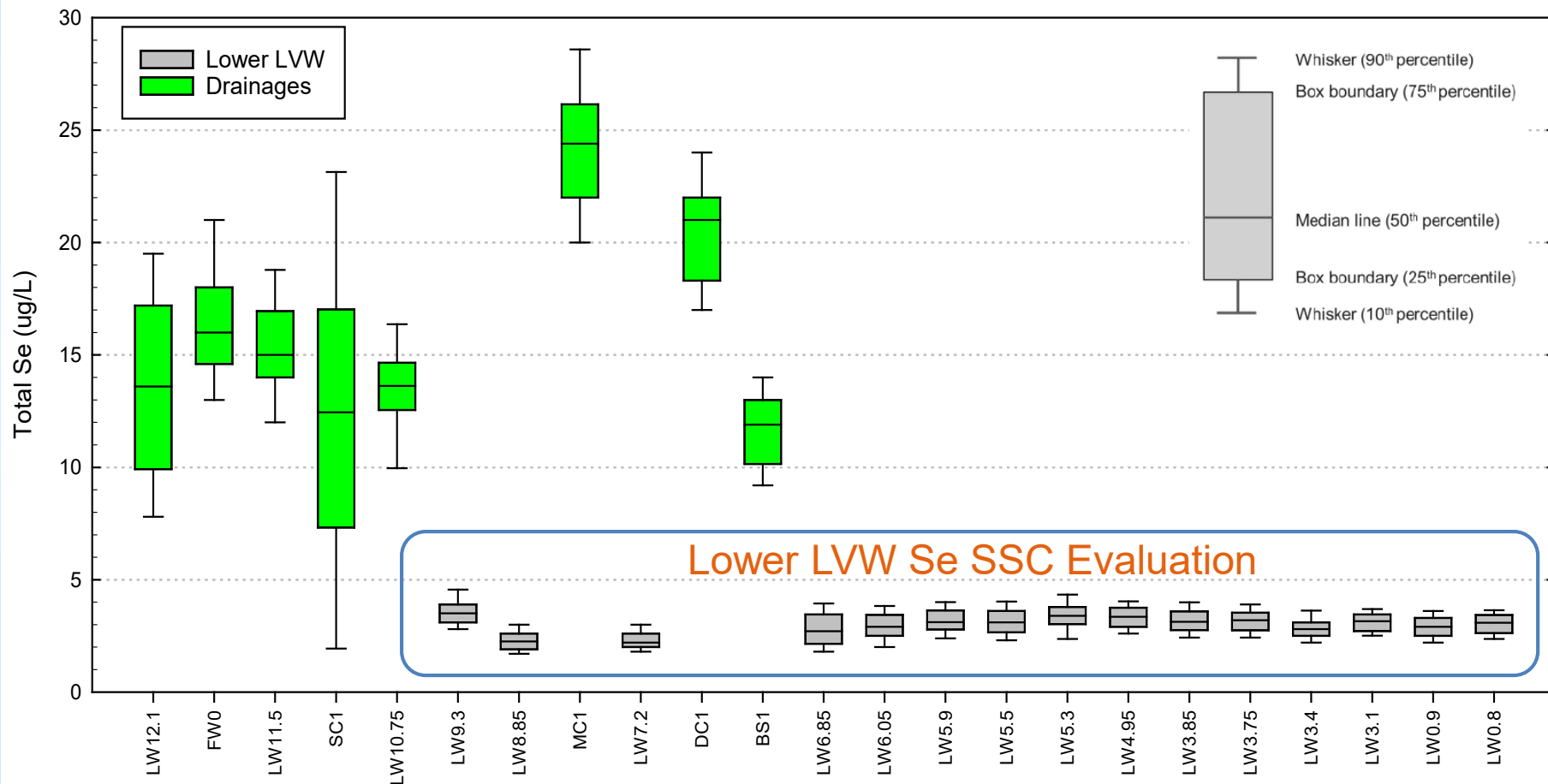
Fish Community Data

- Fish community data is based on fish surveys conducted by the SNWA in 2002-2003 and 2017-2019
- Fish surveys have identified 9 species of fish, including green sunfish
 - All are non-native fish species
- Green sunfish (*Lepomis cyanellus*) are important indicator species for selenium as identified in the EPA criteria guidance document

Selenium Water Quality Data

- SNWA and the US Bureau of Reclamation have been conducting water quality monitoring in the tributaries and mainstem of the Las Vegas Wash for roughly 20 years
- Dataset is robust and impressive
- Data show higher levels of selenium in the tributaries that is then diluted by treatment plant effluent in the Las Vegas Wash

Existing Se data from long-term monitoring locations in LVW sub-basin (2000-2020)¹



Upstream

Downstream

Notes:

1. SNWA and USBR data.
2. Excludes non-detected Se concentrations.
3. Selenium concentrations from duplicates and laboratory splits were averaged.

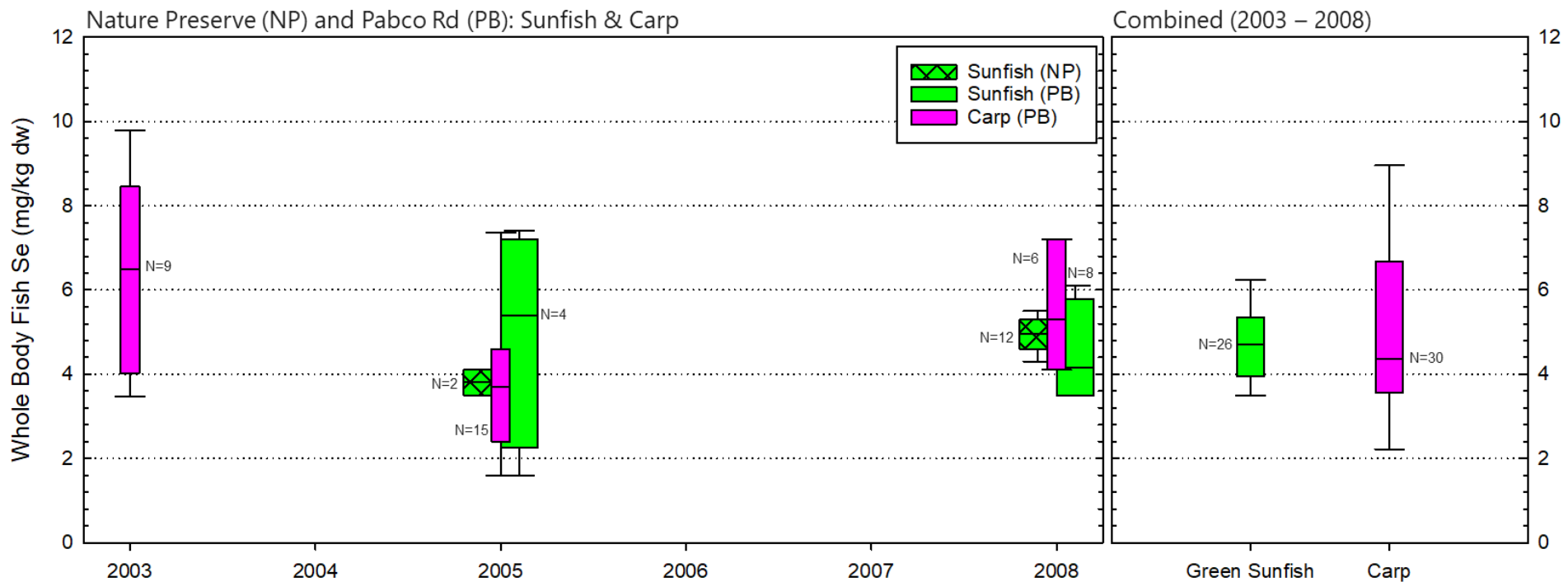
Takeaways

- Some selenium concentrations in Lower Las Vegas Wash slightly exceed Nevada standard of 3.9 micrograms per liter
- Site specific criterion would make Lower Las Vegas Wash compliant
- Higher concentrations in tributaries to be addressed in Phase II
 - Goal is to remove tributaries from the 303(d) list

Bioassessment Data

- Site specific criteria will be developed using the water quality data and bioassessment data
- SNWA collected fish tissue data from 2001 through 2011, and 2017
- Data show fish tissue concentrations are protective of fish (Nevada standard is 9.5 mg/kg whole body)
 - Water concentrations therefore are protective

Bioassessment Fish-Tissue Se (2003-2011)



Analysis

- Arcadis/Benchmark presented all existing data to NDEP on July 31, and September 2, 2020
- Data indicates stability in surface water hydrology and selenium concentrations
- NDEP indicated that they were “impressed” with data and the analysis
- NDEP recommended that the consultant team present the data to representatives of the EPA (headquarters and Region IX)

Analysis

- Arcadis/Benchmark and NDEP presented findings to EPA on November 19, 2020
 - Only EPA concern is the age of the data
- Consultant prepared additional analysis to respond to EPA concerns
- Currently awaiting feedback from EPA on next steps (expected after January 1, 2021)

Budget

Task No.	Task	Original Proposal	Revised Proposal	Actual Spent (through December 2020)
1	Project Management	\$9,600.00	\$16,440.00	\$4,686.90
2	Site Visit and Project Kick-off	\$22,800.00	\$22,800.00	\$0.00
3	Regulatory Agency Meeting Support	\$16,300.00	\$46,500.00	\$25,933.68
4	SSC Approach and Draft Reporting	\$50,500.00	\$93,100.00	\$54,257.46
5	Fish Tissue Data Collection Support		\$11,400.00	\$0.00
6	Finalization of SSC		\$23,560.00	\$0.00
7	Data Collection for Tributary Assessment		\$17,100.00	\$0.00
8	Tributary 303(d) Assessment		\$32,300.00	\$0.00
9	Laboratory Analysis (Fish Tissue)		\$15,800.00	\$0.00
Total		\$99,200.00	\$279,000.00	\$84,878.04

Funding

LVVWAC FY 2020-2021 Budget	\$100,000.00
NDEP	\$65,000.00
<i>Remaining</i>	<i>\$114,000.00</i>

Budget

- Revised budget assumes the following:
 - Additional fish tissue collection **will** be required by EPA
 - SNWA Wash Team staff will collect the necessary fish
 - Budget includes estimated funding for lab analysis of additional fish tissue samples
 - Budget includes work necessary to address de-listing of the tributaries for selenium and other contaminants

Questions?

