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COLORADO RIVER AT DIAMOND CREEK (09404200)

Colorado River above Diamond Creek
Summer 2003

Overview for the
Adaptive Management Technical Work Group
March 2009

History of the Diamond Creek Gage

- Gage established in 1989; operated for several months during 1983 and 1985
- Funding source: *Southern Nevada Water Authority (stage/discharge only)*
- Added to the USGS Colorado River NASQAN program in 1997 and discontinued in 2007 – 10 years of QW Record
- Operated water temperature and specific conductivity sensors for Reclamation from 2005-06

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Colorado River National Stream Quality Accounting Network (NASQAN) Sites 1995–2006

EXPLANATION

4215 ▲ STREAMFLOW-GAGING STATION AND ABBREVIATED NUMBER—Complete station number is 09421500. See table below for complete station numbers and names

STATION NUMBER	STATION NAME
09180500	Colorado River near Cisco, Utah
09315000	Green River at Green River, Utah
09379500	San Juan River near Bluff, Utah
09380000	Colorado River at Lees Ferry, Arizona
09404200	Colorado River above Diamond Creek, Arizona
09421500	Colorado River below Hoover Dam, Nevada-Arizona
09429490	Colorado River above Imperial Dam, Arizona-California
09522000	Colorado River at northerly international boundary

■ WATER DIVERSION POINTS ALONG LOWER COLORADO RIVER

Figure 1. Location of Colorado River Basin, subbasins, NASQAN sites, and diversion points. NASQAN sites are at or near streamflow-gaging stations shown.

Colorado River drainage area – 250,000 mi^2

At Diamond Creek = 144,600 mi2

About 60% of the basin

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The Colorado River NASQAN Program Addressed these issues:

- Salinity
- River modifications and effects on water quality
- Transport of chemical constituents
- Yield and Load Estimates

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Current NASQAN Program

- Focus is on the Mississippi Basin Network (19 sites) and Coastal Network (13 sites)
- Colorado River at the Northerly International Boundary (09522000) is funded by NASQAN for QW
- Constituents sampled for: *major ions, nutrients, carbon, pesticides, suspended sediment, isotopes, and field parameters*

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Field Measurements at Diamond Creek

Median values from 1997–2005

- Temperature
  - 13.1 degrees C
- Specific conductance
  - 840 µS/cm at 25 degrees C
- Dissolved oxygen
  - 10.3 mg/L
- pH
  - 8.2
- Turbidity
  - 14.9 NTU

Colorado River above Diamond Creek 2004

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Nutrient Concentrations at Diamond Creek, 1997 – 2005

- Ammonia
  - 0.015 mg/l median
  - 0.098 mg/L maximum
- Nitrite + Nitrate
  - 0. 227 mg/L median
  - 0.58 mg/L maximum
- Total P
  - <0.010 mg/L median
  - 0.015 maximum
- Ortho-P
  - <0.010 median
  - 0.011 maximum

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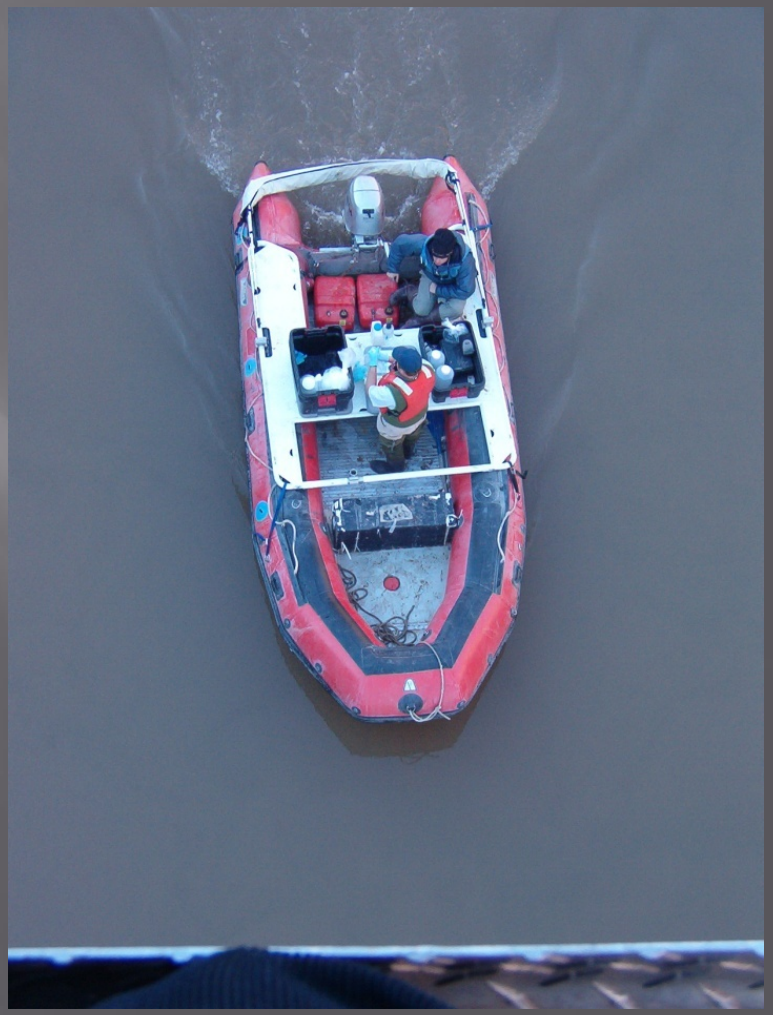
Selected Trace Metals at Diamond Creek, 1995 – 2005

- Arsenic
  - 1.8 µg/L Median
  - 2.5 µg/L Maximum
- Selenium
  - 2.0 µg/L Median
  - 3.8 µg/L Maximum
- Uranium
  - 3.5 µg/L Median
  - 4.9 µg/L Maximum



"Red Hot Chili Pepper" in service at Diamond Creek 2004

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Radionuclides at Diamond Creek
Dissolved and Suspended
Range in values, 2001– 2003

Constituent	Concentration Dissolved, pCi/L	Concentration Suspended, pCi/g
Gross alpha	2 – 9.1	--
Gross beta	7.5 -10	--
Radium-226	0.12 – 0.17	0.1 – 0.2
Radium-228	--	0.1 – 0.4
Uranium-234	2 - 2.2	0.1
Lead-210	--	0.6 – 1.4

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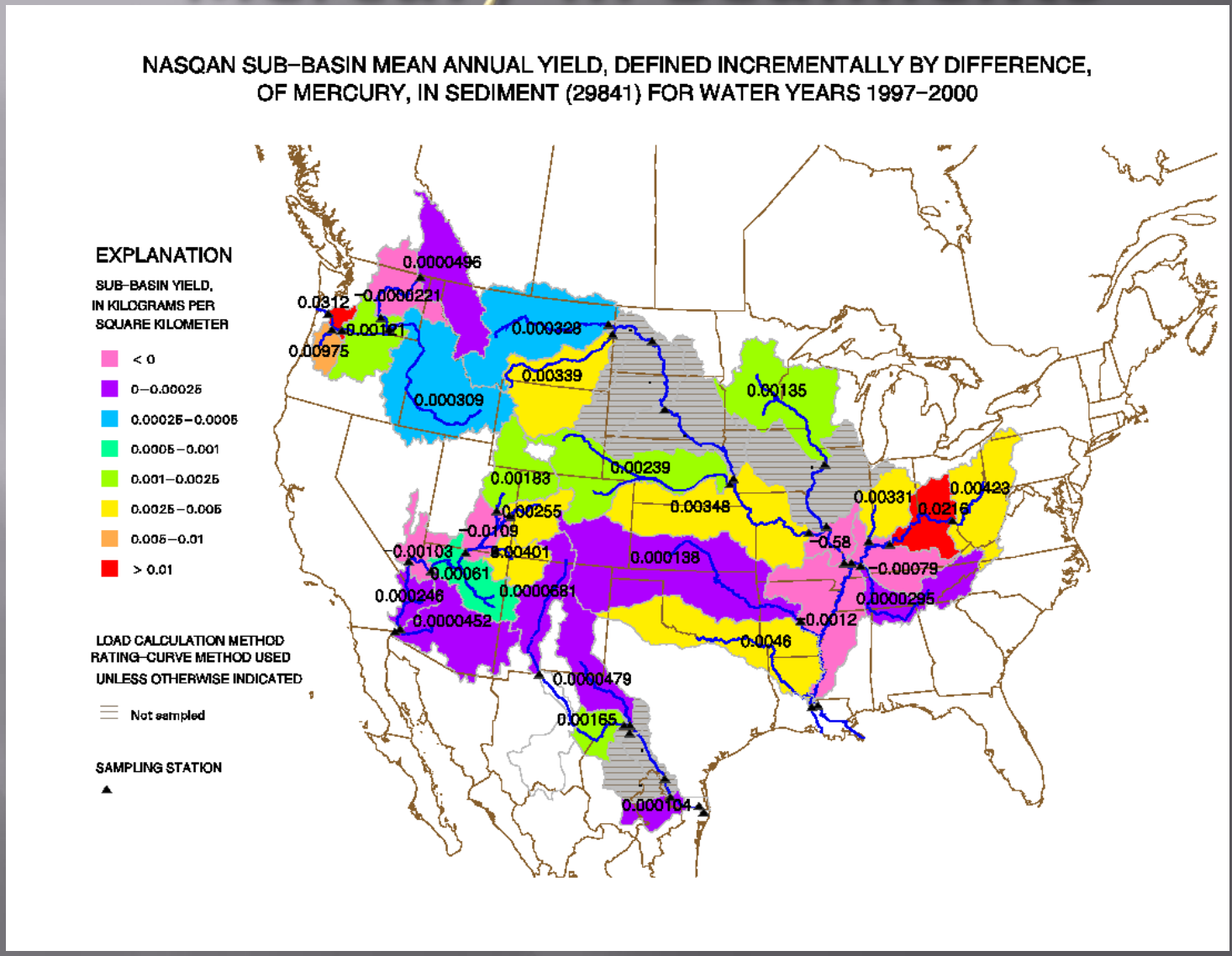
NASQAN Yield Map Mercury in Sediments



Estimated Costs at Diamond Creek (per sample trip)

- $4,650 Labor, travel, vehicles, boat, supplies, processing and review
- $1,200 – 1,500 Lab Analysis
  - Major ions
  - Nutrients, DOC
  - Trace elements (includes Hg, Se, As, others)
- TOTAL/Sample Trip; $5,850 - $6,150
- 7 samples/year; $40,950 - $43,050
- 13 samples/year; $76,050 - $79,950

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Selected USGS Web Sites

- http://nevada.usgs.gov/lmqw/ USGS/SNWA Lake Mead Water Quality Program
- http://water.usgs.gov/nasqan/progdocs/ History of the NASQAN program
- http://water.usgs.gov/nasqan/data/ Data for the NASQAN program
- http://pubs.usgs.gov/wri/wri014255/results/yield.htm Yield maps for NASQAN sites
- http://az.water.usgs.gov/index.html Arizona Water Science Center

Selected USGS Publications

- http://pubs.usgs.gov/fs/fs-014-00/ Fact Sheet on the Colorado River NASQAN program
- http://az.water.usgs.gov/pubs/OFR01-222 Open-File Report on the variability of pH, DO, SC, Water Temperature, in the Lees Ferry reach
- http://pubs.usgs.gov/sir/2004/5120/ WRI Report on the physical and chemical characteristics of selected side canyons on Lake Powell
- http://pubs.usgs.gov/of/2005/1178/ Open-File Report on the sediment chemistry of the Colorado River delta, Lake Powell

Selected USGS Publications *Continued…*

- http://water.usgs.gov/nasqan/publications/index.html NASQAN Publications
- *Data from the Synoptic Water-Quality Studies on the Colorado River in the Grand Canyon, 1990 and 1991* – Open-File Report 96-614 **Not available online; contact hetaylor@usgs.gov**

Thank You