



## Source & Transport of Suspended Sediment in Las Vegas Wash

<b>Products</b>	<ul style="list-style-type: none"> <li>1) A database with all the monitoring data</li> <li>2) A technical report describing the approach, data, analysis, and results from the study in detail</li> <li>3) A journal paper regarding the concentration profile of nonuniform suspended material</li> </ul>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>1) The study will help understanding of water clarity issues in the wash.</li> <li>2) The study will help local managers to identify the source of fine suspended load in the wash that can carry pollutants into Lake Mead.</li> <li>3) The study will help to estimate the sediment in the wash – bed load, suspended load (including wash load), and total sediment flux</li> </ul>
<b>Issue</b>	<p>Sediment particles in motion can be generally classified as bed load and suspended load; suspended load is further divided into various wash loads, generally considered to be the fine-sized silt and clay materials responsible for significant proportions of the transport of contaminants. The Desert Research Institute (DRI) has conducted field measurements of base flow hydraulic properties and suspended and bed load along the wash from October 2003 to December 2004. The measured data were expected to be applied to predict the sediment flux in storm events when the monitoring sites are inaccessible. However, since most of suspended load in the wash consists of fine-sized material, and this wash-load part is controlled mainly by the precipitation and supply of this material in the watershed, no existing formulas can be applied to calculate the concentration of wash load under non-equilibrium regime. The uncertainty associated with this problem is not well understood and difficult to quantify.</p>
<b>Description</b>	<p>The primary objective of this project was to identify the source and quantify the transport of wash load and fine suspended load in the Las Vegas Wash. Specifically, there are seven tasks of this project. Task 1 – inventory existing measured data; Task 2 – obtain water turbidity data from the Southern Nevada Water Authority (SNWA) and Clark County Regional Flood Control District (CCRFC); Task 3 – identify subwatersheds and rain gauges; Task 4 – identify the sources of wash load; Task 5 – estimate the total sediment</p>



Dong Chen taking a field measurement, Las Vegas Wash

flux into Lake Mead during base flow and flood events; Task 6 – investigate the fractional concentration profiles; Task 7 – prepare a written report. We have already finished the Tasks 1, 2, 3, 5, and 6. The ongoing tasks are Task 4 and 7. We finished an interim technical report titled “Suspended load transport study in Las Vegas Wash”. The report included the output of Tasks 1, 2, 3, and 5. Furthermore, we have submitted a research paper titled “Modified settling velocity formula for sand-sized particles accounting for article-to-particle collisions” to the *Journal of Hydraulic Engineering*. The paper includes the output of Task 6. Part of Task 6 output was also presented at American Geophysical Union (AGU) 2006 Fall Conference. The final report summarizing all the tasks will be prepared and submitted by the agreed upon date.

**Sponsor** Urban Flood Damage Reduction and Channel Restoration Development and Demonstration Program for Arid and Semi-Arid Regions (UFDP)

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