Supplemental Information for "Contributions of sediment from the Slate Canyon Alluvial Fan to the formation and morphogenesis of the Keeler Dunes, CA"

The Supplemental Information provides support for the methods summarized in the main text. This includes details on: (1) delineation of subbasins, (2) land cover classifications, (3) soil classifications, (4) PRISM precipitation, (5) details about the FLO-2D model grid, (6) the HEC-RAS model cross-sections, and (7) the average gradation curve for use with the SAM model.

1. Delineation of Subbasins

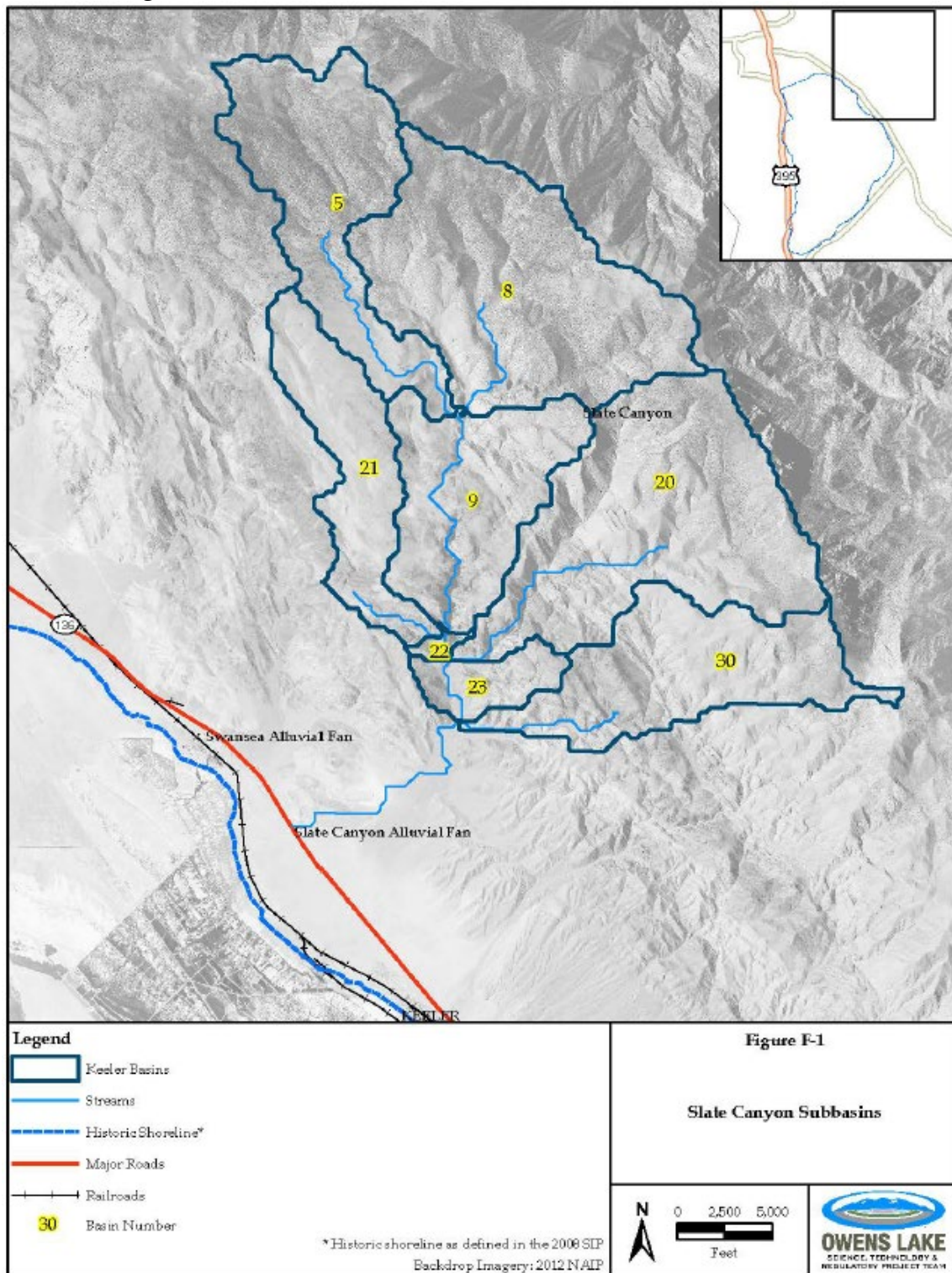The locations and numbers of the subbasins for the Slate Canyon Fan watershed are shown in Figure S1.

Figure S1. Slate Canyon subbasins

2. Land Cover Classifications

Table S1. NLCD Land Cover Classifications for Slate Canyon

NLCD Classification	Land Cover Type	Area (Acres)	Percent of Total Area
31	Barren Land	8.02	<1
41	Deciduous Forest	1.03	<1
42	Evergreen Forest	3,003.25	18.9
43	Mixed Forest	18.50	<1
52	Scrub/Shrub	12,823.55	80.6
71	Grassland	55.92	<1
	Total	**15,910.27**	

3. **Soil Classifications**
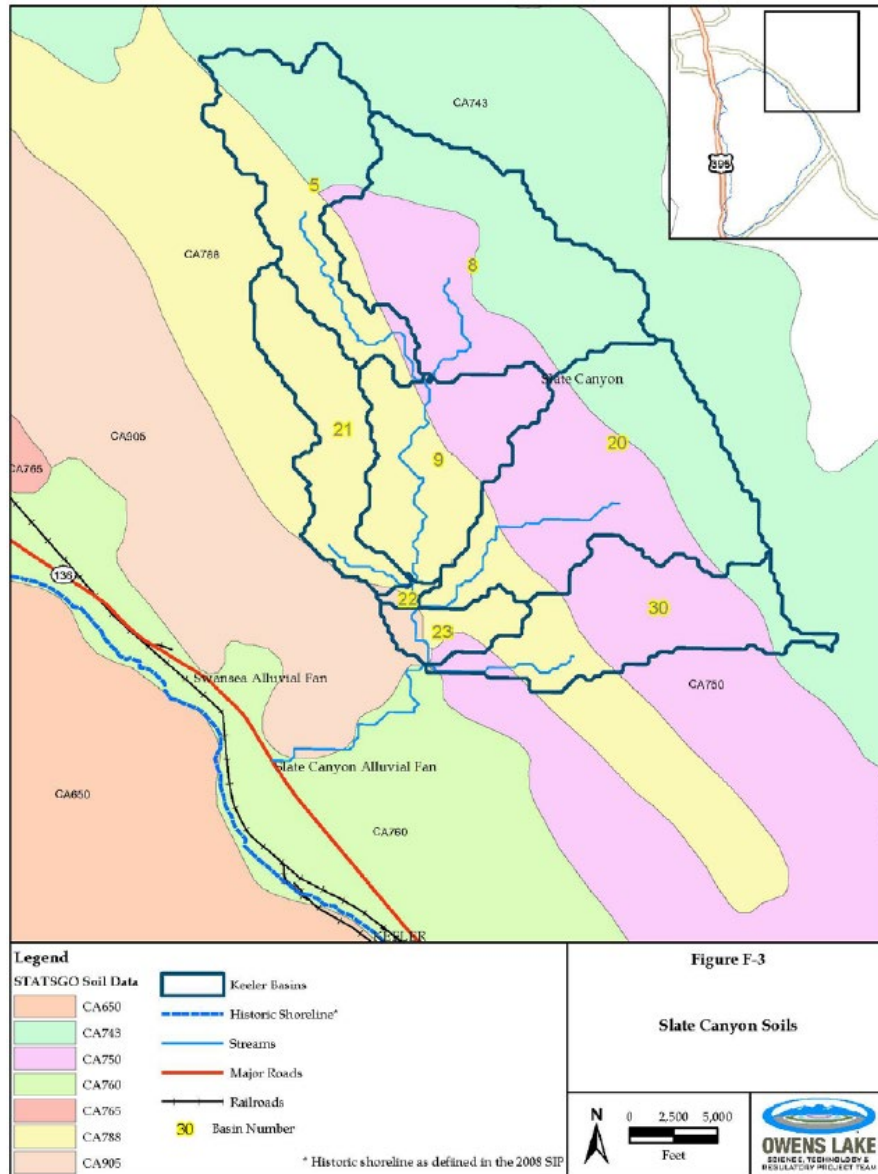
Figure S2. Soils Classifications for the Slate Canyon Fan

Table S2. Slate Canyon Soil Classifications

STATSGO	NRCS Classification	Hydrologic Soil Group
CA743	205	B
CA750	234	D
CA760	232	D
CA788	234	D
CA905	232	D

4. PRISM (Parameter-elevation Regressions on Independent Slopes Model) Precipitation
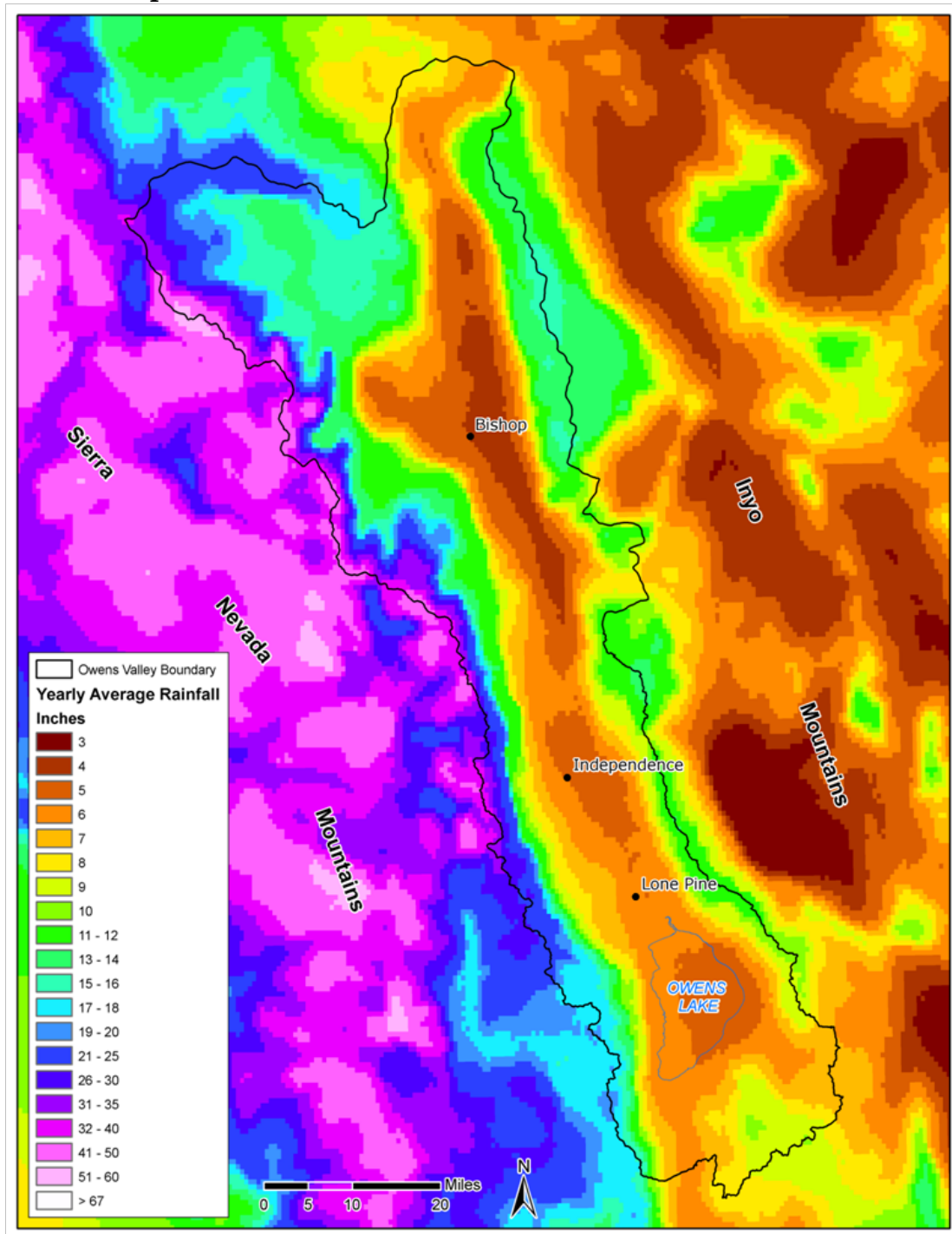

Figure S3. Annual Precipitation Totals for the Owens River Valley (PRISM)

5. FLO-2D Model Grid

Two digital elevation models (DEMs) for the Slate Canyon Fan and vicinity were generated: berm and no-berm scenarios. Both DEMs are horizontally referenced to the North American Datum of 1983 UTM Zone 11 North, and are vertically referenced to the North American Vertical Datum of 1988. The DEMs have a pixel resolution of 1 meter. The berm scenario DEM was sampled directly from the LiDAR data acquired by Photo Science, Inc. in August 2012. The no-berm scenario DEM is exactly the same as the berm scenario DEM except in the vicinity of the Caltrans berm that is located up-Fan of State Highway 136. In this area, the berm was digitally removed to generate a data set representative of historical conditions on the lower Fan.

Topographic data processing for use in numerical modeling included several steps. First, the 1-meter resolution data sets were down-sampled to 20 ft resolution for use in the Slate Canyon Fan FLO-2D models. ESRI's 3D Analyst tool Feature to 3D was used to sample the centroid elevations of the 20 ft (6.1 m) resolution FLO-2D grid cells from the two higher resolution DEMs described above. The 3D feature classes containing the grid cell centroid elevations were then converted to an ASCII file for direct import to the FLO-2D model using ESRI's Feature Class Z to ASCII tool. The down-sampled elevation data sets used in FLO-2D are horizontally referenced to the North American Datum of 1983 State Plane California IV FIPS 0404 (feet), and are vertically referenced to the North American Vertical Datum of 1988.

For the upper third of the Fan, no LiDAR data is available. To obtain this DEM, the upper Fan data were developed by up-sampling 3 m resolution InterMap data to a 3 ft pixel resolution DEM. This DEM was down-sampled to 20 ft resolution for use in the FLO-2D model using the same methodology described above for the data sets for the two scenarios. The resulting data set used in FLO-2D is horizontally referenced to the North American Datum of 1983 State Plane California IV FIPS 0404 (ft) and vertically referenced to the North American Vertical Datum of 1988.

6. HEC-RAS Model Cross-sections
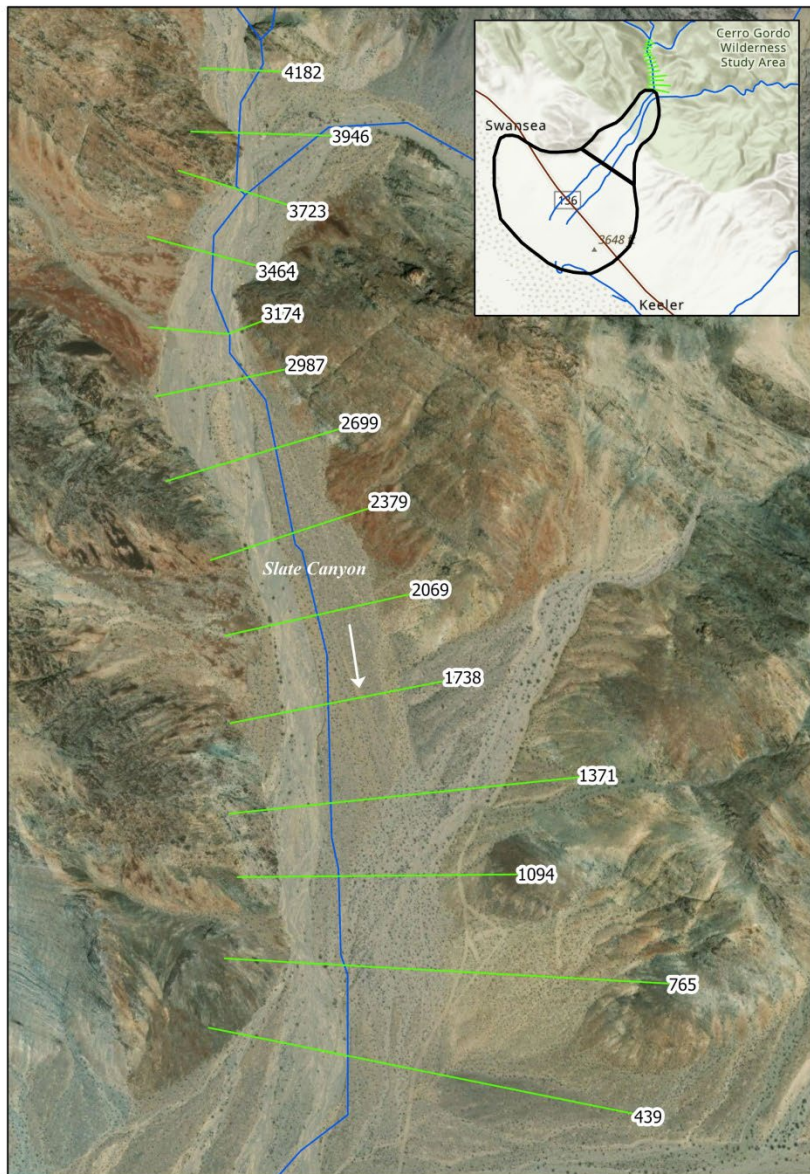
Figure S4. HEC-RAS model sections for Slate Canyon above the hydrographic apex of the Fan. The cross-sections are labeled to show feet above the Fan hydrographic apex.

7. Average Gradation Curve from Sediment Samples

Slate Canyon Fan Average Gradation Curve