

# **Fossil Creek Native Fish Repatriation 2009 Implementation Plan Arizona Game and Fish Department**

## **MONITORING:**

Annual monitoring is conducted for each species stocked, typically during late summer or early fall. However, for Gila topminnow, an additional monitoring, at six-month post-stocking will be conducted as per standard protocols for this species. For each species, monitoring will be done prior to stocking as follows: 1) for species scheduled to be stocked during autumn, monitoring will be done during late summer or early autumn, 2) for species scheduled to be stocked during spring, annual monitoring conducted during the previous autumn will be considered the pre-stocking monitoring, except for Gila topminnow, for which sites stocked during autumn 2008 will be monitored during spring within a month prior to stocking. Methods are described fully in the monitoring plan (Robinson 2009).

- Spikedace and loach minnow. Conduct annual monitoring in Fossil Creek at and near sites stocked during 2007 and 2008 (Figure 1). Methods for spikedace include seining and snorkeling in runs and shear-zones. Methods for loach minnow include backpack electrofishing+kick seining combination and snorkeling in riffles.
  - April 2009. Annual post-stocking monitoring for sites upstream of Fossil Springs Dam; could not complete monitoring during November 2008 because of dam deconstruction.
  - September 2009. Annual post-stocking monitoring; all sites stocked to date.
- Longfin dace. Longfin dace will be surveyed by seining appropriate shoreline habitat in at and in the vicinity of the 2008 and 2009 stocking site (Figure 2).
  - September 2009. Annual monitoring.
- Razorback sucker. Razorback sucker will be surveyed by snorkeling and possibly hoop netting in large pools in the stocking areas and downstream (Figure 2).
  - September 2009. Annual monitoring, all sites stocked to date.
- Gila topminnow. Conduct survey 6-months after initial stocking, and annually thereafter. Methods include minnow traps, seining, and dip netting in backwaters and side channels in stocking sites (Figure 1) and areas immediately downstream and upstream (if passable for Gila topminnow).
  - April-May 2009. For sites newly stocked during November 2008, conduct 6-month post-stocking monitoring.
  - September 2009. Annual post-stocking monitoring; all sites stocked to date.

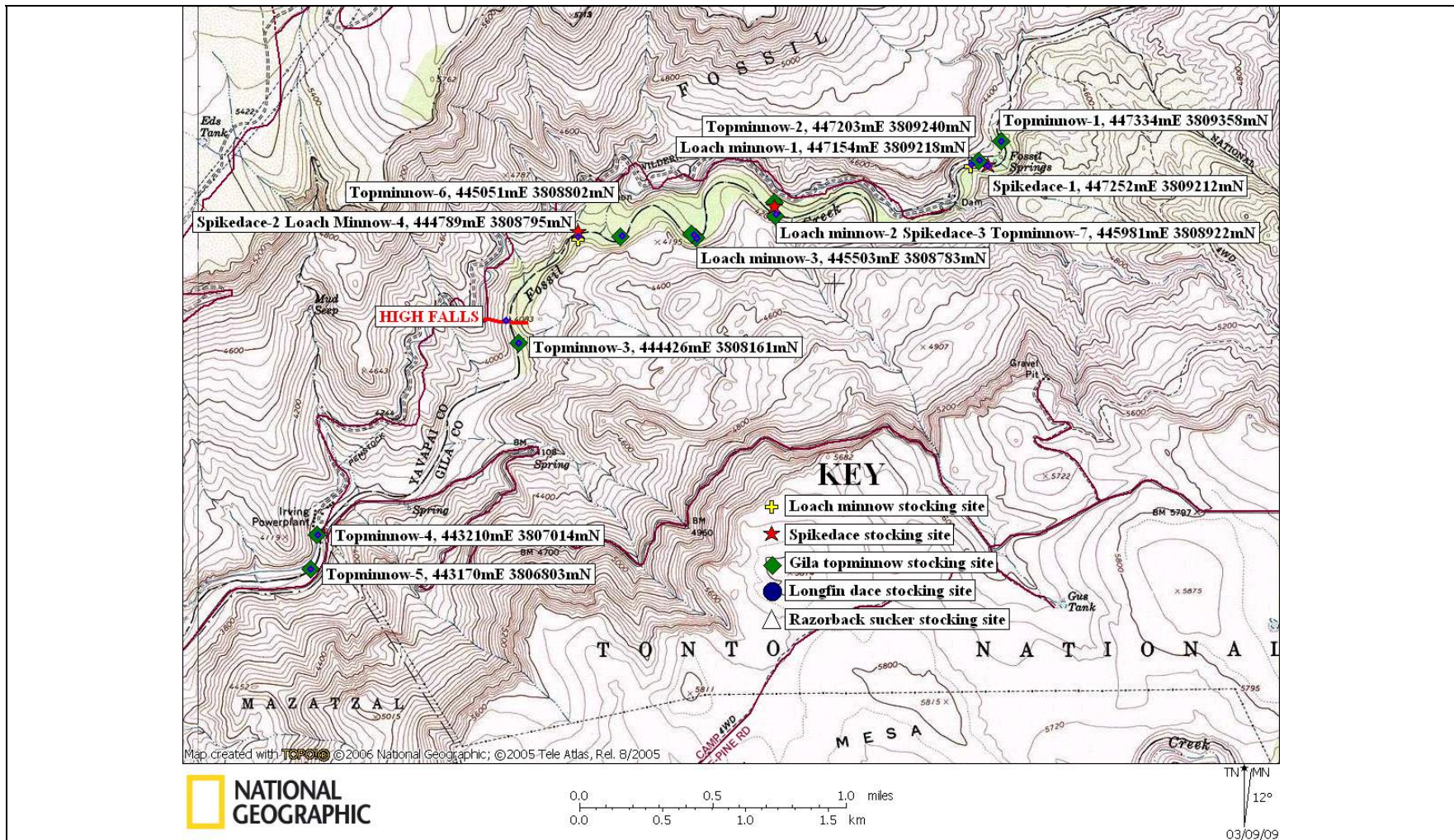


Figure 1. Map of upper portion of Fossil Creek showing stocking locations. Topminnow sites 1 through 5, Loach minnow-1 and spikedace-1 were stocked during November 2007. Loach minnow were stocked a second time at Loach minnow-1 during March 2008. Gila topminnow were stocked a second time at site Topminnow-3 during November 2008. At sites Loach minnow-2 and Loach minnow-3, loach minnow were stocked during May and November 2008. Sites Loach minnow-4, Spikedace-2, Spikedace-3, Topminnow-6, and Topminnow-7 were stocked during November 2008.

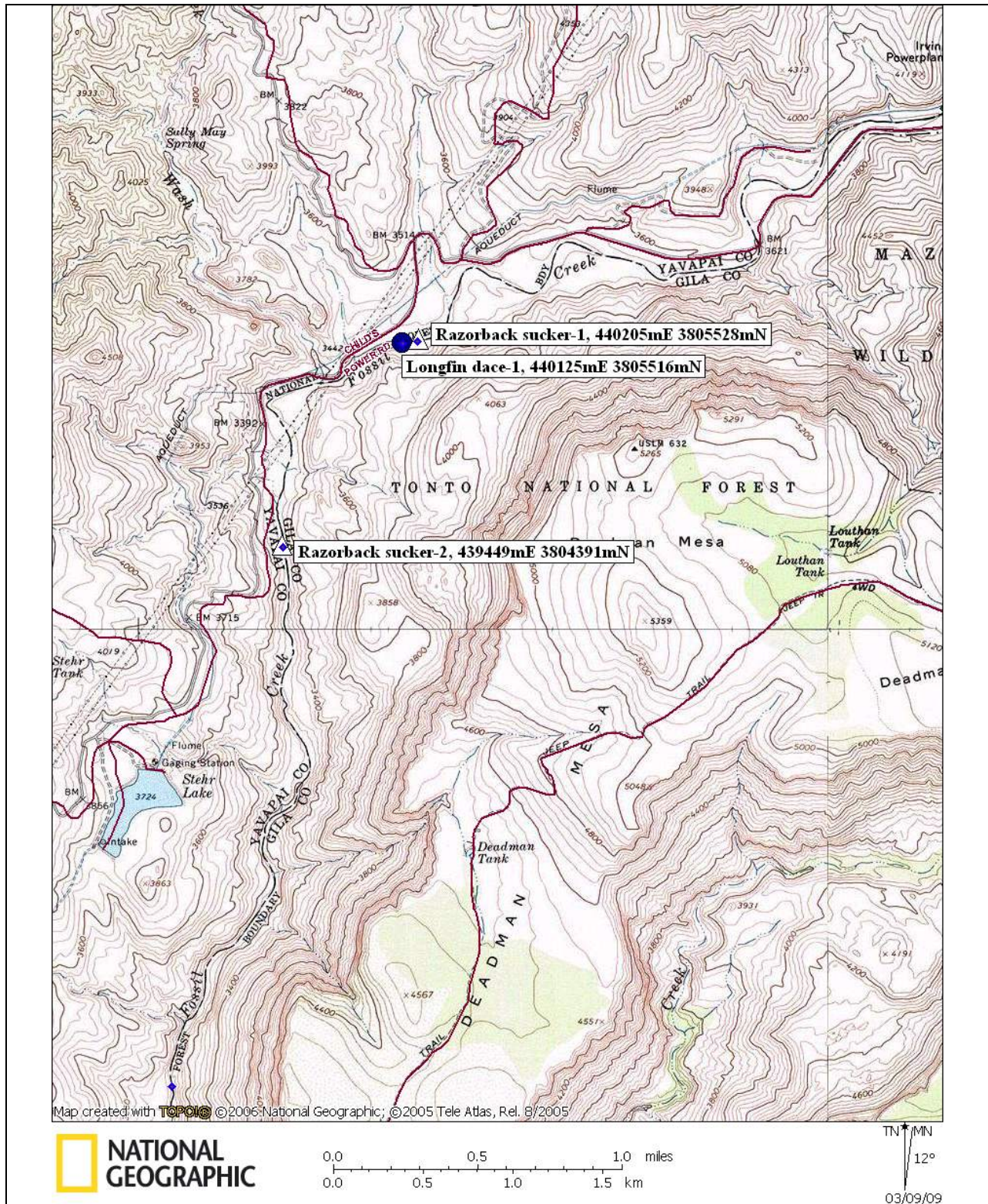


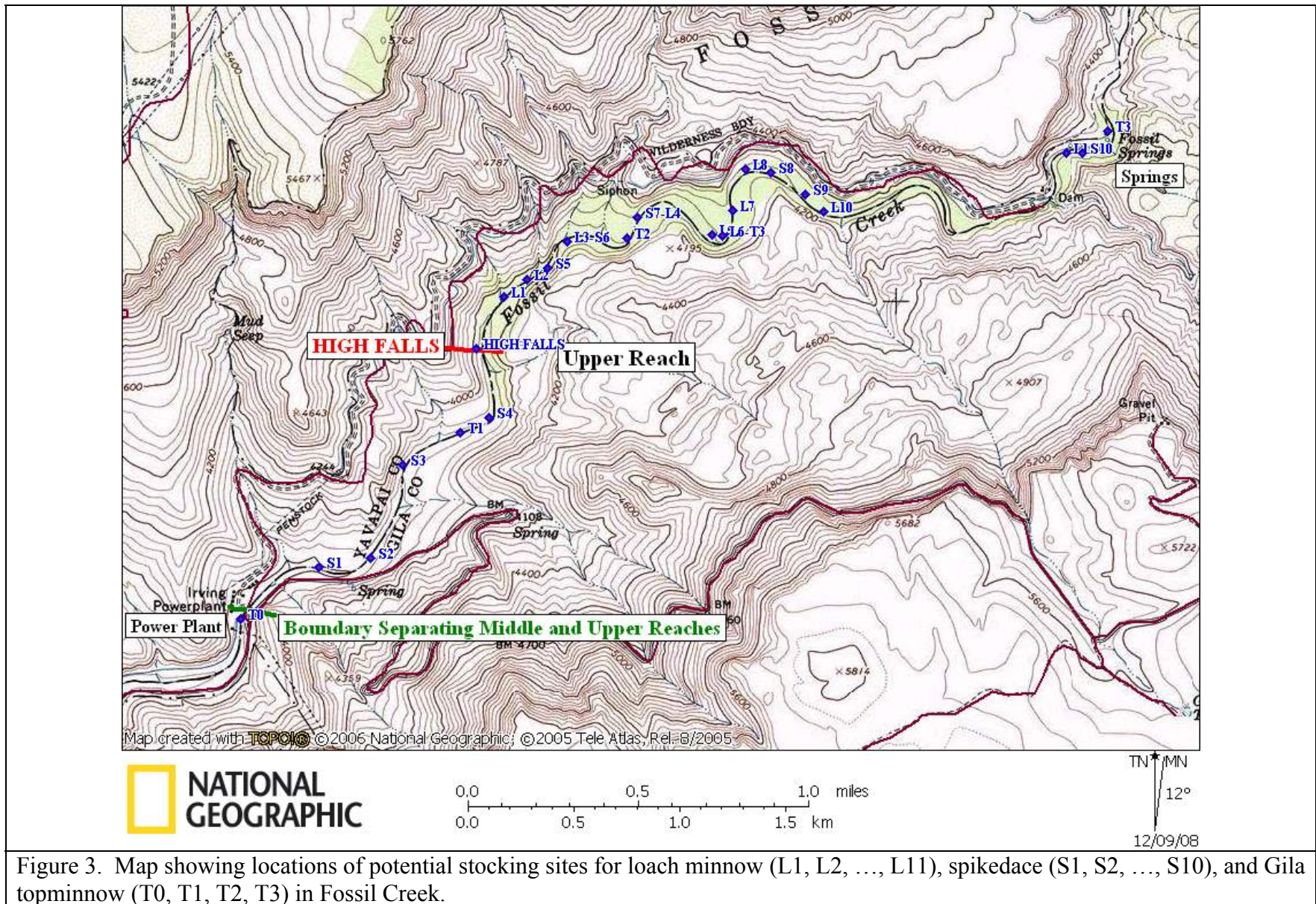
Figure 2. Map of lower portion of Fossil Creek showing stocking locations. Longfin dace were stocked into site Longfin dace-1 during February 2008. Razorback sucker were stocked into site Razorback sucker-1 during April 2008, and into site Razorback sucker-2 during November 2008.



### FISH STOCKINGS:

For each species, stockings will only occur after monitoring has been completed.

- Spikedace *Meda fulgida*. Stocking sites include glide-run and riffle habitat above the deconstructed Fossil Springs Dam and between the dam and the Irving Power Plant (Figures 1 and 3). Stockings during 2009 are considered augmentations.
  - September-October. Stock 500 spikedace above Fossil Springs Dam, and stock 1000+ spikedace below dam at sites shown in Figure 1 and 2.
- Loach minnow *Tiaroga cobitis*. Stocking sites include riffle habitat above the deconstructed Fossil Springs Dam and between the dam and High Falls (Figures 1 and 3). Stockings during 2009 are considered augmentations.
  - September-October. Stock 1000+ loach minnow at identified sites in Figure 1.
- Gila topminnow *Poeciliopsis occidentalis*. Stocking sites for Gila topminnow include spring and backwater habitat  $\geq 2$  miles upstream from Fossil Springs Dam, backwater habitat approximately 2.3 mi downstream from the Fossil Springs Dam (above Irving Power Plant), as well as backwater habitat near the Irving Power Plant (Figures 1 and 3).
  - April-May. Augmentation stocking of 500+ Gila topminnow into each of three general areas: 1) upstream of Fossil Springs Dam, 2) between Fossil Springs Dam and High Falls, 3) between High Falls and Irving Power Plant, and 4) immediately downstream of Irving Power Plant. Sites within each area are identified in Figures 1 and 3. Stock near end of spring-time runoff (Figure 4).
- Razorback sucker *Xyrauchen texanus*. Stocking sites are in deep pool habitat near the lowest downstream road access point, approximately 7.5 miles downstream from Fossil Springs dam (Figure 2). Razorback sucker will be PIT-tagged to help determine how razorbacks move around in the system and to help other research projects in Fossil Creek and the Verde River.
  - April (or when fish can be acquired from Dexter NFH). Stock 500 to 2000+ razorback sucker at general location identified in Figure 2.
- Longfin dace *Agosia chrysogaster*. Stocking sites are pool-run habitat with silt-sand substrates in the reach between the lowest road access point and Irving Power Plant (Figure 2).
  - April-May. Stock 500-1000+ longfin dace within middle reach.



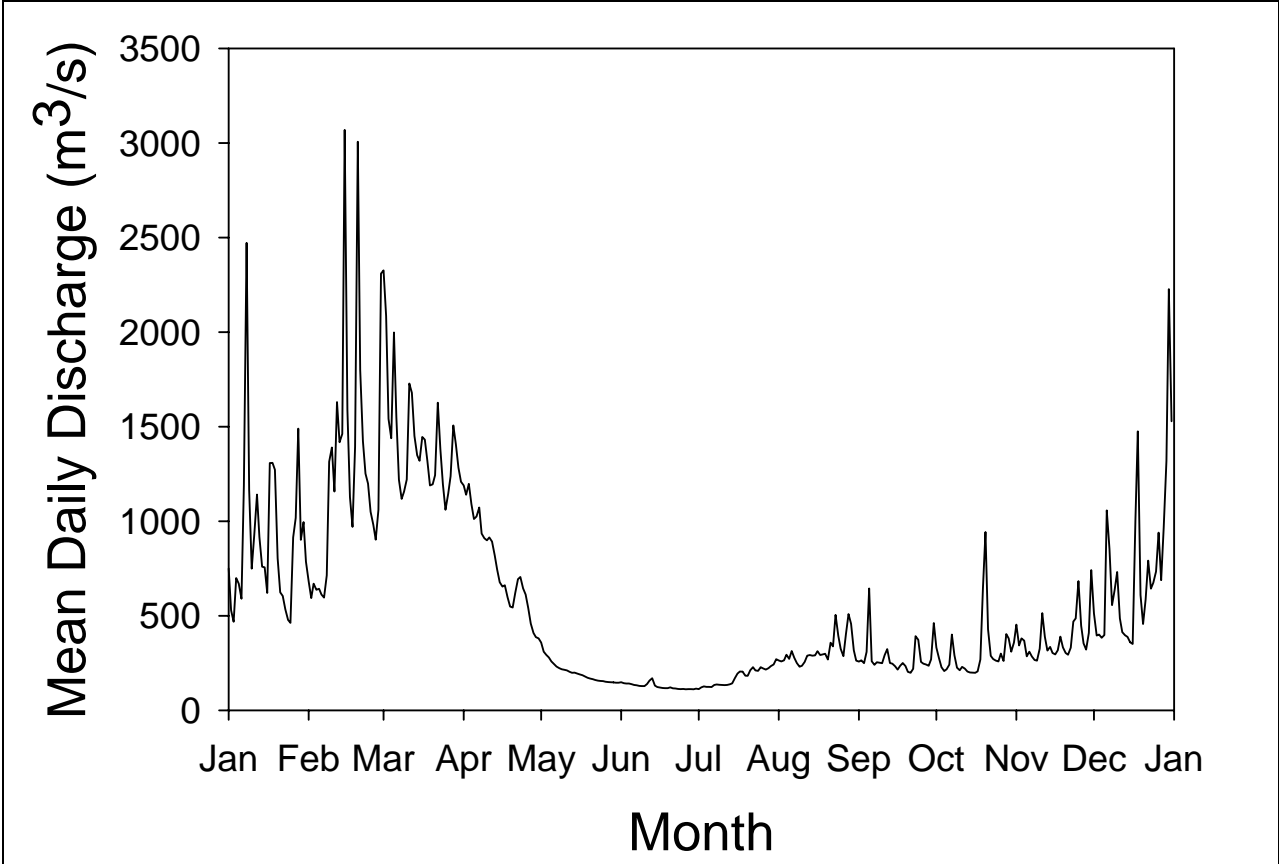


Figure 3. Mean daily flows in the Verde River just upstream of Tangle Creek (USGS gauge 09508500) during 1946-2008. Flows in Fossil Creek are assumed to follow a similar pattern.