



ENVIRONMENTAL CONSULTANTS

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## Technical Memorandum

**To:** Debby Kriegel  
Coronado National Forest

**From:** David Barr, SWCA Environmental Consultants

**Date:** April 10, 2012

**Re:** **Assessment of the Proposed Arizona Trail Realignment / SWCA Project No. 11204.17, Phase 6**

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### INTRODUCTION

At the request of the Coronado National Forest (the Coronado), SWCA Environmental Consultants (SWCA) accompanied Mark Flint during field checking of the preliminary Arizona Trail realignment provided by the Coronado. SWCA personnel conducted a cursory biological, historical properties, and paleontological assessment of the realignment. In addition, SWCA personnel assisted Mr. Flint with placement of the trail for sustainability and minimization of noise from State Route (SR) 83 and views of the proposed Rosemont Mine, while providing opportunity areas, i.e. vistas and unusual topographic and geological features, along the route. The field visit consisted of traversing 9.90 miles of proposed trail and locating a 1.2-acre area for parking passenger vehicles and horse rigs (Figure 1). The following provides the findings during the field visit for the trail realignment.

### AESTHETICS

The proposed realignment affords new views that equal and perhaps surpass those present on the existing trail. At the south end, trail users will have clear views of the Huachuca Mountains and the Empire Cienega—views not available on the existing trail. One unavoidable negative consequence is the proximity to SR 83 as the trail approaches the crossings.

### SUSTAINABILITY

With proper construction, this trail can meet high sustainability standards, keeping ongoing maintenance needs to a minimum. Much of the trail consists of long contours that will allow grade reversals to prevent erosion. The target maximum average grade of 7% was attainable for most of the route. In a few places, it was necessary to do short runs of steeper grades, 10%–12%, along with two or three very short runs of 15%–18%—usually leading into and out of turns. In all places where the grade exceeded the optimal level, there were design and construction options available to keep water from running down the trail so that they can be made sustainable.

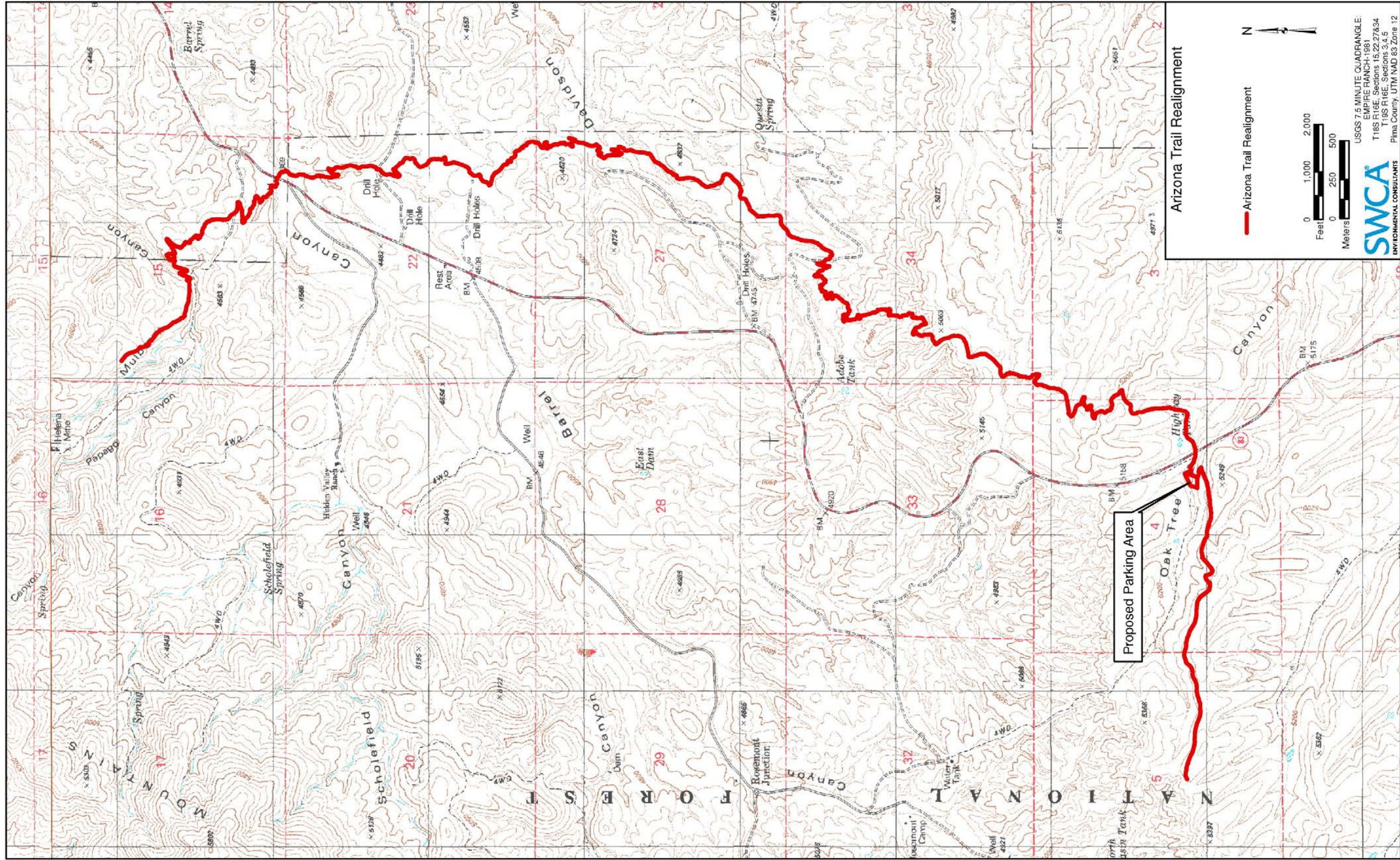


Figure 1. Proposed realignment of the Arizona Trail

## **QUAD FILTERS**

As mine activities restrict access to motorized recreation west of SR 83, people who traditionally operate off-highway vehicles in that area will likely seek riding areas on the east side of the highway. The design of the reroute took this into consideration and used natural barriers where possible.

Beginning at the north end, the fence crossing east of the undercrossing can incorporate a stepover gate.

The next access point to the south is Davidson Road. A bench cut on a wash crossing a short distance north of the road will provide a good barrier to quad access. The open country south provided no such opportunity, however, and the trail could be linked to an old but still visible Jeep road about 0.5 mile south of Davidson Road. The best option on the south side of Davidson Road was to continue up the wash on the west bank, crossing higher up so it would be less visible. As the trail proceeds south into the hills, physical barriers are more readily available, and we took care to find them near road crossings.

The trail between the ridge crest and the south undercrossing returns to more open grassland and risk of motorized incursion. There are fewer roads, and we observed little evidence of motorized activity on them currently.

## **CONSTRUCTION**

In general, construction of this trail is typical of what one might expect for the foothills of the Santa Rita Mountains. Much of it is open and relatively easy to build, especially at the north end east of SR 83. West of SR 83, the descent into Mulberry Canyon has a few hundred feet of steel side hill, but using an old road on the west side of the canyon will reduce the amount of bench construction considerably.

Toward the south end of the reroute, it was necessary to gain significant elevation, climbing up long “finger” ridges while maintaining grade that meets sustainability goals. This necessitated some long runs across steep side hills, where the bench cuts will require greater tread width for safety.

For the most part, turns were located on flat spots, but a few partial switchbacks (with lower half crib walls) will be necessary.

## **SR 83 UNDERCROSSINGS**

Both of the concrete box culvert undercrossings will work for all trail users, but equestrians should be advised to dismount, especially at the south crossing. Signs at both ends of each underpass warning of the low clearance and instructing equestrians to dismount should be sufficient to address the height issues.

The north undercrossing is of adequate height (8.8 feet) for many equestrians to ride through; others may have to dismount. The downstream (east) side will need some rock work to fill a headcut.

The south undercrossing, which is 7.9 feet high and considerably longer (168.9 feet), will require all equestrians to dismount. In addition, it has nail points, 1–2 inches long, coming through the overhead. These will need to be snipped by sidecutters.

Another equestrian safety issue near the south undercrossing is the stepover gate west of the structure. The crossbar is higher than the standard 14 inches, which could be a barrier for some stock.

## **TRAILHEAD OPPORTUNITIES**

Relocating the trail to the east side of SR 83 has eliminated two access points on road crossings that have served as trailheads. One, Rosemont Ranch Road, provided parking for 12–15 horse rigs. Substitutes for both are possible near the two undercrossings. The corral area by the north undercrossing has room to develop a small trailhead. The Oak Tree Canyon area could be developed to accommodate 8–10 horse rigs plus an equal number of passenger vehicles.

## **BIOLOGICAL**

The proposed alignment of the trail is located within two upland vegetation communities: semidesert grassland and Madrean evergreen woodland. Semidesert grassland is characterized by open grasslands with widely scattered shrubs and cacti and generally covers the lower elevations and northern alignment of the proposed trail. Madrean evergreen woodland is characterized by open woodlands or savanna, primarily consisting of trees interspersed with grasses and forbs, and covers the higher elevations and southern alignment of the proposed trail. The proposed trail alignment crosses several ephemeral washes that contain the following riparian vegetation: interior riparian deciduous woodland or ephemeral fluvial systems, which support upland vegetation. No special aquatic sites, including springs, seeps, or flowing washes, were located within or near the proposed trail alignment.

The northern section of the proposed alignment between SR 83 and the confluence with the existing Arizona Trail is located in a rocky area that contains several cacti species, scattered agaves, yuccas, and ocotillo. These plant species should be avoided to the maximum extent possible when constructing the trail in this and all areas of the proposed alignment. When crossing washes, the placement of fill (e.g., native rocks and soil) should be minimized to what is necessary to create a stable crossing to avoid the need for a Clean Water Act Section 404 permit, particularly on the larger washes.

A benefit of the proposed alignment is that the north end of the alignment is located farther away from the Helena Mine complex, a known lesser long-nosed bat (endangered species) roost, than the existing trail alignment. The existing trail is immediately adjacent to this bat roost, and the nearest location of the proposed alignment is approximately 0.3 mile to the east of the roost. This increased distance should reduce the likelihood of recreational impacts to this species at this location. The proposed alignment near the south end will be located close to a known Chiricahua leopard frog location (Highway Tank) (one Chiricahua leopard frog was confirmed here in 2008). However, the tank is not perennially wet, the proposed alignment is to the southeast of the tank, and the tank would not be visible from the trail.

## **HISTORIC PROPERTIES**

As currently designed, the trail potentially crosses through 20 previously recorded properties that were identified during the ANAMAX survey. Based on the results of previous surveys conducted by SWCA in the Rosemont area, there is a high probability that many of these properties will not meet current Arizona State Museum (ASM) site criteria and will be considered isolated occurrences. Surface observations during the field visit identified few artifacts and no surface features along the route. The results of the Class III survey showed that sites that meet the ASM criteria will probably be bisected to some degree by the proposed trail alignment. However, given the nature of these sites, i.e., large, sparse artifact scatters, chipping stations, rock piles, and rock concentrations, the adverse impacts will be negligible.

## **PALEONTOLOGICAL**

Several large fragments of enamel of the bunodont cusps of a mastodon molar were found in an arroyo cut bank in a tributary of Davidson Wash near the proposed trail re-alignment. During the current field visit, the trail was extended further to the east of the known paleontological site and designed to contour around/above drainages. No evidence of black mat was observed in the cut banks of adjacent drainages; therefore, no impacts to undiscovered paleontological sites are anticipated.