

Memorandum

To: File

CC:

From: Chris Garrett, SWCA

Date: August 29, 2013

Re: Review of Available Water Information Raised by Cooperators

Public comments were received on the Preliminary Administrative FEIS that was distributed to the cooperating agencies on July 1, 2013, concerning the analysis of impacts to riparian areas and streamflow. The purpose of this memo is to document that data sources suggested and raised by cooperators were reviewed, and whether or how that information was incorporated into the FEIS.

Pima County Information

On August 6, 2012, Pima County provided web link via email to information that had been promised to the Forest during a cooperator meeting in June 2012. Among these items was the link to a memorandum concerning GIS coverages of perennial streams, intermittent streams, and areas of shallow groundwater (Huckleberry 2000).

Pima County raised this data source again in their comments on the July 1 version of the FEIS, indicating that the information contained within this memo reflected areas of intermittent streams that were not included in the analysis.

SWCA reviewed all data sources that were provided on August 6, 2012. With respect to the specific memo, three basic coverages were described:

- Perennial streams (Figure 2 of Huckleberry 2000) – There is a low certainty perennial reach shown that appears to be associated with Scholefield Spring, or one of the springs in its vicinity. The impacts associated with Scholefield Spring, other springs in the vicinity, and associated riparian habitat are already fully

assessed in the Seeps, Springs, and Riparian Areas section of the FEIS. Other perennial areas appear to be associated with Cienega Creek and are already accounted for.

- Intermittent streams (Figure 3 of Huckleberry 2000) – There is a moderate certainty intermittent reach shown that appears to be associated with Davidson Canyon parallel to Highway 83. This appears to be associated with Barrel Spring. The impacts associated with Barrel Spring and associated riparian habitat are already fully assessed in the Seeps, Springs, and Riparian Areas section of the FEIS. Other intermittent areas appear to be associated with Cienega Creek and Davidson Canyon and are already accounted for.
- Shallow Groundwater Areas (Figure 4 of Huckleberry 2000, as well as GIS coverage on Pima County MapGuide [<http://gis.pima.gov/maps/mapguide/>]) – There are extensive shallow groundwater areas that are shown to be located throughout Barrel Canyon and the other tributaries around the mine site.

The FEIS has analyzed areas of hydroriparian habitat and mesoriparian habitat. It has also analyzed areas of perennial streamflow, and springs and seeps. Shallow groundwater may be associated with all of these, but in and of itself a map of shallow groundwater locations does not provide evidence that any of these exist. Pima County mapping of riparian habitat, informed and refined by field observations, was used to define areas of hydroriparian and mesoriparian habitat. Observations of flow on the surface, or available coverages of intermittent and perennial streams, were used to define stream reaches. These designations are made directly on stream reaches in order to define their characteristics, not on a single factor (shallow groundwater) that may contribute to them.

The provided information does not provide additional information that is useful to define new perennial or intermittent reaches within the project area. All perennial reaches, intermittent reaches, and springs and seeps have been based on more reliable evidence that is adequate to define their physical characteristics in order to properly assess and disclose potential impacts to these resources.

Chiricahua Leopard Frog Reports

Pima County suggested in their comments on the July 1, 2013 version of the FEIS that the Chiricahua Leopard Frog survey reports completed by Rosemont be reviewed for locations of intermittent streams. CLF survey reports are available from 2008 through 2011. The 2011 summary report is typical of the locations surveyed (WestLand 2011). Four areas of potential intermittent streams were identified:

- Box Canyon – Lower Reach and Upper Reach. A series of springs along Box Canyon are already included in the FEIS that cover the same areas identified as intermittent during the CLF surveys. These include Box Canyon Spring No. 1 (Spring ID 9), Box Canyon Spring No. 2 (Spring ID 10), Procter Box Spring (Spring ID 51), Unnamed Spring in Box Canyon (Spring ID 74), and Basin Spring (Spring ID 2).
- Mulberry Canyon – This area was already included in the FEIS (Spring ID 43).
- South Sycamore Canyon – This area appears to coincide with a spring already included in the FEIS (Unnamed Spring in South Sycamore Canyon, Spring ID 76).

It appears likely that areas identified as intermittent reaches in the CLF survey reports were included in the FEIS, just handled as individual spring locations instead of a linear stretch of channel. Mulberry Canyon and South Sycamore Canyon are clearly already included and analyzed in the FEIS.

The five springs identified in Box Canyon all have riparian vegetation identified in the FEIS, and three of these springs have water identified. The impacts to the presence of water and the riparian vegetation associated with these springs due to the drawdown of water in the regional aquifer are analyzed in the FEIS. Redefining these resources as intermittent stream reaches instead of individual springs would result in the same physical resources being assessed for impact. Therefore a change is not warranted based on the information contained in the CLF survey reports.

However, one of the issue factors assessed in the Seeps, Springs, and Riparian Areas section is the miles of intermittent/perennial stream channel that would change to ephemeral stream channel. Handling these intermittent reaches as individual springs means that this issue factor could be underestimated.

Therefore, language has been added to the FEIS to identify that intermittent stream reaches associated with the springs in Box Canyon could be impacted as well in a similar fashion to the specific springs along the stream channel.

Water Sources Reviewed on West Side of Santa Ritas

One limitation of the groundwater models was that the western boundaries do not allow the cone of depression to propagate outwards into the Santa Cruz basin. It is relatively easy to extrapolate how far the cone of depression might go (estimated at approximately 1 mile beyond the boundary), and unless there are sensitive receptors in

these areas, the impacts as described in the FEIS cover the impacts that would be seen beyond the western groundwater model boundaries.

The FEIS states that: "This does not affect the analysis because there are no critical areas that would be affected beyond the western boundary: the known springs on the west side of the Santa Rita Mountains fall within the model domain, with no identified springs located beyond the boundary; the primary concentration of residential wells associated with Corona de Tucson lies within the boundary; and there are no sensitive riparian areas that rely on regional groundwater located within several miles of the model boundary."

Comments raised on the July 1, 2013 version of the PAFEIS indicated that it was not clear what data sources were reviewed to reach this conclusion. The following data sources were reviewed:

- USGS topographic maps, in order to identify any spring locations or other hydrologic features. No features were identified.
- GIS coverages of perennial and intermittent streams, including maps provided in Huckleberry (2000). No perennial or intermittent streams were identified in the area.
- Review of Pima County Riparian mapping, in order to identify any areas designated as hydro- or mesoriparian habitat. The area reviewed consists solely of xeroriparian headwaters to washes that flow northwest towards the Santa Cruz River.

The area reviewed roughly corresponds to Township 18 South, Range 15 East, Sections 20, 21, 28, 29, 32 and 33.

It should be noted that these areas were surveyed specifically because they fall outside the analysis area and outside of the groundwater modeling domain. All areas within the model boundaries were specifically analyzed in the FEIS.

REFERENCES

Huckleberry, C. 2000. Memorandum: Coverages of Perennial Streams, Intermittent Streams, and Areas of Shallow Groundwater. January 26.

WestLand Resources, Inc. 2011. Preliminary 2011 Rapid Survey Summary of the Rosemont Holdings and Vicinity. October 27.