

PAJARITO PLATEAU SPECIAL STUDY / ASSESSMENT NOTES

The NMED Surface Water Quality Bureau (SWQB) conducted a special study of the Pajarito Plateau in 2006 and 2007. This was primarily a stormwater study performed with assistance and cooperation from the NMED Department of Energy Oversight Bureau (DOE OB) and Los Alamos National Laboratory (LANL).

As discussed in detail in Section A of the preface to the Public Comment Draft of the New Mexico §303(d) - §305(b) Integrated List, streams on the Pajarito Plateau which are likely ephemeral and fall outside of the LANL boundary -- previously noted as 20.6.4.97 on the 2006 Integrated List-- were listed and assessed under 20.6.4.98 for the 2010 Integrated List. As with the rest of the 2010 Integrated List, marginal warmwater aquatic life (WWAL) will be a presumed use for these waters noted as 20.6.4.98. In practical terms, this means:

- a. Both chronic and acute AL criteria were assessed (see Section 3.1.2.1 of the 2010 Assessment Protocols for additional information regarding the assessment of chronic aquatic life)
- b. pH, temp, and DO data were assessed when available

To prepare the Pajarito Plateau assessment dataset, all available 2004 – 2008 surface water quality data from “watershed” stations were collated. This dataset includes data collected by SWQB during the special study mentioned above, NMED DOE OB, and LANL. Data were labeled as “watershed” based on the characteristics of the station location. For the purposes of assessment for the 2010 integrated list, watershed stations are those sites located on a natural watercourse. This was determined based the sampling location having a clearly defined upstream surface water course drainage pattern when land surface topography is viewed on USGS 24K quad maps. All data labeled “watershed” were used for assessment purposes as these stations are in receiving waters. It is important to note sampling locations determined to be in “unassessed drainage” and therefore not used for assessment is not a determination that these waters are not surface waters of the state of New Mexico and/or the United States.

Available data from site monitoring area (SMA) sampling locations that are not directly on receiving waters were not used for assessment purposes. Available data from SMA sampling locations where the mainstem assessment unit and the SMA sampling location are one-in-the-same (ex: Acid Canyon E055.5 watershed gage) were used for assessment. This approach is reasonable because:

- If data from SMA sampling locations exceed target action levels stated in the applicable NPDES permit(s) for a particular parameter (which is the WQ criterion because there is no dilution factor), technology-based best management practices (BMPs) necessary to reduce pollutants will be enhanced as needed through the NPDES process.
- If data from the receiving mainstem assessment unit indicates impairment for a particular parameter, the potential contributions from any SMA, unassessed

drainage, or other potential source will be discussed in the TMDL and allotted some form of WLA when possible.

The assessed data including data flags and other information can be accessed at <http://www.nmenv.state.nm.us/swqib/303d-305b/2010-2012/index.html>. Although the next survey date is noted as 2017 for these waters on the Integrated List, SWQB does not plan monitoring of these watersheds in the next ten years. However, ongoing water quality data will continue to be collected by LANL and NMED DOE OB.

Several of NMED's water quality monitoring stations were co-located at LANL gaging stations and set to automatically sample during storm events. Therefore, there are some instances when storm water from the same storm event were collected and analyzed by both NMED and LANL, albeit from different points on the storm hydrograph. Examples include data from LANL ISCOs and NMED ISCOs, or LANL ISCOs and NMED Environmental Liquid Sampler (ELS) single stage sampling devices. Data were considered to be collected from the same storm event when the recorded sample time is generally within sixty minutes. LANL does not correct for daylight savings time, whereas NMED does. LANL and NMED also may be using different analytical methods. In these cases, the following assessment rules were used for the development of the 2010-2012 Integrated List:

1. Adjusted gross alpha

- Gross alpha data from all sources was used for assessment and when possible was corrected for special nuclear and by-product material as defined by the Atomic Energy Act of 1954. If there was no data on special nuclear materials for a given sample there was no gross alpha adjustment.
- If both alpha and gamma spectroscopy data was available for special nuclear materials, alpha spectroscopy data, due to greater precision/lower detection limits, was used for gross alpha adjustments.
- Adjusted gross alpha was noted as a non-detect if gross alpha minus available special nuclear materials data resulted in a negative value
- SWQB gross alpha values were not corrected with LANL's data for special nuclear materials since the data were likely collected at different times on the storm hydrograph
- When using LANL data with corresponding uranium data vs. U-mass, the uranium value was simply subtracted out vs. performing the U-mass/pCi correction in the Assessment Protocol which was written to handle SLD data.

2. PCBs

- NMED uses the congener method (EPA 1668A) to determine Total PCB concentration because this method has a detection limit that is below New Mexico's associated water quality criteria for Total PCBs. In contrast, LANL generally uses the Arochlor method (EPA 608) which has a detection limit above the PCB water quality criteria. Consequently, LANL's Arochlor results that were above detection were used for assessment purposes, where as results reported as

“below detection” contain no information about the concentration relative to the applicable water quality criterion and were therefore not used for assessment purposes. See section 2.1.8 of the 2010 Assessment Protocols for additional details.

3. Other parameters

- If the same or comparable analytical methods were used to analyze both LANL and NMED samples from the same storm event, the result with the higher concentration was used for assessment purposes to be conservative in protecting water quality.

4. Hardness dependent metals criteria

- To determine the applicable hardness-dependent metals criteria for acute aquatic life assessments, a hardness value of 30 mg/L as CaCO₃ was used (see table below). This value was based on the geometric mean of nearly 455 stormwater hardness values collected during 2004-2007 from receiving waters (i.e. streams). This dataset is available upon request. This value has also been used by EPA to set concentration limits for the stormwater LANL permit.

Calculation Based on Reported Hardness Value		
Reported Hardness as CaCO ₃ , mg/L		30
Acute Criteria, Dissolved, ug/L	Silver	0.4
	Cadmium	0.6
	Chromium	210
	Copper	4.3
	Lead	17.0
	Nickel	170
	Zinc	42

- To determine the applicable hardness-dependent metals criteria for chronic aquatic life assessments, a hardness value of 62 mg/L as CaCO₃ was used (see table below). This value was based on the geometric mean of nearly 245 hardness values collected during baseflow, ambient, or snowmelt conditions during 2004-2007 from receiving waters (i.e. streams).

Calculation Based on Reported Hardness Value		
Reported Hardness as CaCO ₃ , mg/L		62
Chronic Criteria, Dissolved, ug/L	Cadmium	0.18
	Chromium	50
	Copper	6.0
	Lead	1.5
	Nickel	35.0
	Zinc	79