3.0 INDIVIDUAL WATERSHED DESCRIPTIONS

TMDLs were developed for assessment units for which constituent (or pollutant) concentrations measured during the 2004 water quality survey indicated impairment. Because characteristics of each subwatershed, such as geology, land use, and land ownership provide insight into probable sources of impairment, they are presented in this section for the individual subwatersheds within the Rio Puerco basin. In addition, the 2006-2008 Integrated CWA §303(d)/§305(b) list for waters within the Rio Puerco basin are discussed (NMED/SWQB 2007) below.

3.1 Bluewater Creek Subwatershed

The headwaters of the 231 mi^2 Bluewater Creek subwatershed originate on Mount Taylor. According to available Geographic Information System (GIS) coverages, the Bluewater Creek watershed has an average elevation of 7,400 feet above sea level and receives approximately 17.5 inches of precipitation a year. As presented in Figure 2.1, land uses include 80% forest, 15% shrubland, 4% grassland, and less than 1% barren, wetlands, and residential. Land ownership is 68% Forest Service, 25% private, 3% State, 2% Native, 1% State Park, and less than 1% BLM (Figure 2.2). The geology of the Bluewater Creek watershed is predominantly comprised of evaporates, carbonates, sandstones, and metamorphic rocks (Figure 2.6).

Bluewater Creek (Bluewater Reservoir to headwaters) is approximately 18 miles in length. SWQB established one station along this assessment unit and deployed one thermograph during the 2004 intensive survey. Bluewater Creek (Bluewater Reservoir to headwaters) was included on the 2006-2008 Integrated CWA §303(d)/§305(b) list for sedimentation/siltation, turbidity, temperature, and nutrients. The sedimentation/siltation and turbidity listings will remain on the List pending further data collection and refinement of assessment protocols.

Bluewater Creek (non-tribal Rio San Jose to Bluewater Reservoir) is approximately 11 miles in length. SWQB established one station along this assessment unit and deployed one thermograph during the 2004 intensive survey. Bluewater Creek (non-tribal Rio San Jose to Bluewater Reservoir) was included on the 2006-2008 Integrated CWA §303(d)/§305(b) list for temperature and nutrients.

No TMDLs have previously been established for Bluewater Creek. Therefore, TMDLs were developed for inclusion in this document for the following assessment units in the Bluewater Creek subwatershed:

- ***Temerature, nutrients*:** Bluewater Creek (Bluewater Reservoir to headwaters)
- ***Temerature, nutrients*:** Bluewater Creek (non-tribal Rio San Jose to Bluewater Reservoir)

Photo 3.1 Bluewater Creek above Bluewater Lake (February 2004)

3.2 La Jara Creek Subwatershed

The headwaters of the 12 mi^2 La Jara Creek subwatershed originate in the Naciemento Mountains. According to available Geographic Information System (GIS) coverages, the La Jara Creek watershed has an average elevation of 8,228 feet above sea level and receives approximately 22.8 inches of precipitation a year. As presented in Figure 2.1, land uses include 71% forest, 14% agriculture, 8% grassland, 6% shrubland and less than 1% of the land use in this watershed is developed or barren. Land ownership is 64% Forest Service, 32% Private, and 4% BLM (Figure 2.2). The geology of the La Jara Creek watershed is predominantly comprised of metamorphic rocks, carbonates, and sandstones (Figure 2.3).

La Jara Creek (perennial reaches above Arroyo San Jose) is approximately 10 miles in length. SWQB established one station along this assessment unit and deployed one thermograph during the 2004 intensive survey. La Jara Creek (perennial reaches above Arroyo San Jose) was included on the 2006-2008 Integrated CWA §303(d)/§305(b) list for aluminum.

No TMDLs have previously been established for La Jara Creek. Therefore, TMDLs were developed for inclusion in this document for the following assessment unit in the La Jara Creek subwatershed:

- ***Aluminum*:** La Jara Creek (perennial reaches above Arroyo San Jose)

Photo 3.2 La Jara Creek above Irrigation Diversion (March 2004)

3.3 Rio Moquino Subwatershed

The headwaters of the 74 mi^2 Rio Moquino subwatershed originate on Mount Taylor. According to available Geographic Information System (GIS) coverages, Rio Moquino watershed has an average elevation of 8,189 feet above sea level and receives
approximately 13 inches of precipitation a year. As presented in Figure 2.1, land uses include 47% forest, 44% shrubland, 8% grassland, and less than 1% pasture, mines and residential. Land ownership is 96% private, 4% Forest Service, and less than 1% native (Figure 2.2). The geology of the Rio Moquino watershed is predominantly comprised intrusive or plutonic rocks, sandstones, alluvium, and localized mineralized rocks(Figure 2.6).

Rio Moquino (Laguna Pueblo to Seboyettia Creek) is approximately 2 miles in length.
SWQB established one station along this assessment unit and deployed one thermograph during the 2004 intensive survey and subsequent 2006 redeployments. Rio Moquino (Laguna Pueblo to Seboyettia Creek) was included on the 2006-2008 Integrated CWA §303(d)/§305(b) list for nutrients, sedimentation/siltation, and temperature. The sedimentation/siltation listing will remain on the List pending further data collection and refinement of assessment protocols.

No TMDLs have previously been established for Rio Moquino. Therefore, TMDLs were developed for inclusion in this document for the following assessment unit in the Rio Moquino subwatershed:

- ***Nutrients, temperature*:** Rio Moquino (Laguna Pueblo to Seboyetita Creek)

Photo 3.3 Rio Moquino below confl of Seboyetita Creek and Seboyeta Creek (August 2006)

3.4 Rio Puerco Subwatershed

The headwaters of the 4,736 mi^2 Rio Puerco HUC originate in the Naciemento Mountains. According to available Geographic Information System (GIS) coverages, the Rio Puerco HUC has elevations that range from 4,700 feet to 11,000 feet above sea level and receives approximately 12-20 inches of precipitation a year. As presented in Figure 2.1, land uses for this reach include 62% forest, 21% shrubland, 4% agriculture, and less than 1% developed, barren, and mining. Land ownership for this reach is 38% Forest Service, 37% private, 14% native, 11% BLM, and less than 1% State(Figure 2.2). The geology of the Rio Puerco watershed in this reach is predominantly comprised of metamorphic rocks, alluvium, and intrusive or plutonic rocks (Figure 2.3).

Rio Puerco (Arroyo Chijuilla to northern boundary Cuba) is approximately 8 miles in length. SWQB established three stations along this assessment unit during the 2004 intensive survey and deployed one water thermograph during the 2006 redeployment. Rio Puerco (Arroyo Chijuilla to northern boundary Cuba) was included on the 2006-2008 Integrated CWA §303(d)/§305(b) list for nutrients, ammonia, sedimentation/siltation, and aluminum. The ammonia impairment is addressed in the plant nutrients TMDL.

A TMDL for sedimentation/siltation was developed by SWQB in 2006 for this assessment unit. TMDLs were developed for inclusion in this document for the following assessment unit in the Rio Puerco watershed:

- ***Aluminum, nutrients*:** Rio Puerco (Arroyo Chijuilla to northern boundary Cuba)