

## 4.0 TARGET LOADING CAPACITY

This section describes the relationship between the numeric target and the allowable pollutant-level by determining the waterbody’s total assimilative capacity, or loading capacity, for the pollutant. The loading capacity is the maximum amount of pollutant loading that a waterbody can receive while meeting its water quality objectives. The Linkage Analysis therefore represents the critical quantitative link between the TMDL and attainment of the water quality standards.

As the Rio Hondo flows past the Village of Taos Ski Valley, it has a specific carrying capacity for nutrients. This carrying capacity, or TMDL, is defined as the mass of pollutant that can be carried under critical low-flow conditions without violating the numerical stream standard (i.e. concentration) for that constituent. This TMDL was developed based on simple dilution calculations using 4Q3 flow (Appendix C) and the narrative and numeric criteria defined by the State of New Mexico in the Standards for Interstate and Intrastate Surface Waters. The specific carrying capacity of a receiving water for a given pollutant, defined by numeric criterion, may be estimated as:

$$\text{Combined flow (in MGD)} \times \text{numeric target (in mg/L)} \times 8.34 = \text{TMDL}$$

The combined flow is calculated by adding the critical low-flow (4Q3) and the proposed additional effluent discharge from the VTSV’s WWTP. A unit-less conversion factor of 8.34 is used to convert units to pounds per day (Appendix E). By applying Equation 1 to total phosphorus, it is determined that the Rio Hondo can transport approximately 3.19 lbs/day of total phosphorus during critical low-flow conditions and in-stream concentrations will not exceed 0.10 mg/L. Similarly, applying Equation 1 to total nitrogen results in an approximate annual carrying capacity of 31.9 lbs/day. The annual target loads are summarized in Table 4-1.

**Table 4-1. Estimates of Annual Target Loading for the Assessment Unit: Rio Hondo (South Fork to Lake Fork Creek)**

Parameter	Combined Flow (mgd)	Numeric Target (mg/L)	Conversion Factor	Estimate of Target Loading (lbs/day)
Total Phosphorus	3.83 <sup>1</sup>	0.10	8.34	3.19
Total Nitrogen	3.83 <sup>1</sup>	1.0	8.34	31.9

1. Critical low-flow (4Q3) for “combined flow” calculation determined using Thomas equation (Appendix C). Effluent flow was assumed to be the proposed *additional* discharge from the WWTP (0.10 million gallons/day).