5.0 WASTE LOAD ALLOCATIONS AND LOAD ALLOCATIONS

5.1 Total Phosphorus

The Target Capacity Loading Analysis (see Table 4-1) determined that the allowable total phosphorus mass load in the Rio Hondo is 3.19 lbs/day. In determining the load allocation for the total phosphorus TMDL, the allowable pollutant load of 3.19 lbs/day is divided between the MOS, background, point and nonpoint source discharges. As described in Section 6.0, an explicit MOS of 5% is reserved to account for uncertainties. In addition, because of New Mexico's antidegradation policy (see Section 5.1.3), another 15% of the TMDL will be set aside to protect and maintain existing water quality. Therefore, the MOS is 0.63 lbs/day.

5.1.1 Load Allocation

Analysis of existing water quality data has shown that natural sources of phosphorus (chemical weathering of geological materials and breakdown of natural biological materials) contribute a minimum of 0.08 lbs/day near the WWTP; maximum natural contributions may occasionally be as high as 1.45 lbs/day. Background loads of phosphorus occur naturally through soil erosion, the decay of plant material, and wild animal waste. The annual background load was estimated in Section 3.1.1 to be 0.53 lbs P/day and is based on reference stream concentrations and annual 4Q3 critical low-flow conditions.

Numerous anthropogenic nonpoint sources of phosphorus also exist in the upper Rio Hondo watershed. The most important are thought to be runoff from parking lots and recreational areas. Application of phosphorus export coefficients suggests that these diffuse sources contribute about 0.96 lbs/day of phosphorus annually to the Rio Hondo (Section 3.1.1). A phosphorus export coefficient was also applied to approximate the contribution from air deposition. Air deposition was estimated to supply 0.006 lbs/day of phosphorus to the system. Thus, that portion of the total phosphorus TMDL assigned to nonpoint and atmospheric sources is 0.966 lbs/day, or 30 percent of the total stream carrying capacity.

The sum of natural and nonpoint phosphorus sources is estimated to be 1.50 lbs/day; this load is equivalent to 47 percent of the TMDL and would cause in-stream total phosphorus levels to be approximately 0.05 mg/L.

5.1.2 Growth Allocation

All calculations in development of this TMDL used a plant design capacity of 0.200 MGD. Consequently, all flow calculations in this TMDL estimate treatment capacity in the future scenario, which accommodates projected growth through 2020 (see Section 8.0)**.** Future projections also indicate that nonpoint sources of phosphorus will more than likely increase as the Village of Taos Ski Valley continues to grow and develop. Therefore, in addition to the projected growth that was integrated into the TMDL calculations, two percent of the TMDL, or 0.06 lbs/day, will be set aside for a growth allocation (GA), as a placeholder for unknown or future sources of phosphorus.

5.1.3 Waste Load Allocation

After 54 percent of the annual total phosphorus TMDL is apportioned to the load allocation, growth allocation, and MOS, only 46 percent, or 1.47 lbs/day, remains for point sources. However, the current annual waste load allocation for total phosphorus is only 1.00 lbs/day. The state of New Mexico's antidegradation policy (NMAC 20.6.4.8, 2002) states:

> *…Existing instream uses and the level of water quality necessary to protect the existing uses shall be maintained and protected in all surface waters of the state… Where the quality of a surface water of the state is meeting some or all applicable water quality criteria* ***the existing quality shall be maintained and protected*** *unless the commission finds… that allowing lower water quality is necessary to accommodate important economic and social development in the area in which the water is located. In allowing such degradation or lower water quality the state shall assure water quality adequate to protect existing uses fully.*

The SWQB and the VTSV would like to maintain the current load in the new NPDES permit even though this TMDL document calculated a higher TP waste load allocation than the current limit because of the antidegradation policy noted above (Straebel, 2005). The SWQB and the VTSV <u>will not increase phosphorus loading</u> into the Rio Hondo watershed since the state cannot "assure that water quality adequate to protect existing uses fully" will be met with increased phosphorus loading. Therefore, 1.00 lbs/day, or 31%, of the TMDL will be set aside for the waste load allocation (WLA) and the remaining 15%, or 0.47 lbs/day, will be set aside as part of the Margin of Safety.

The only existing point source on this assessment unit is the NPDES-permitted wastewater treatment plant owned and operated by the Village. There are no individually permitted Municipal Separate Storm Sewer System (MS4) storm water permits in this assessment unit. Excess nutrient levels may be a component of some (primarily construction) storm water discharges so these discharges should be addressed.

In contrast to discharges from other industrial storm water and individual process wastewater permitted facilities, storm water discharges from construction activities are transient because they occur mainly during the construction itself, and then only during storm events. Coverage under the NPDES construction general storm water permit (CGP) requires preparation of a Storm Water Pollution Prevention Plan (SWPPP) that includes identification and control of all pollutants associated with the construction activities to minimize impacts to water quality. In addition, the current CGP also includes state specific requirements to implement best management practices that are designed to prevent to the maximum extent practicable, an increase in sediment, or a parameter that addresses sediment (e.g., total suspended solids, turbidity, siltation, stream bottom deposits, etc.) and flow velocity during and after construction compared to pre-construction conditions. In this case, compliance with a SWPPP that meets the requirements of the CGP is generally assumed to be consistent with this TMDL.

Other industrial storm water facilities are generally covered under the current NPDES Multi Sector General Storm Water Permit (MSGP). This permit also requires preparation of an SWPPP that includes identification and control of all pollutants associated with the industrial activities to minimize impacts to water quality. In addition, the current MSGP also includes state

specific requirements to further limit (or eliminate) pollutant loading to water quality impaired/water quality limited waters from facilities where there is a reasonable potential to contain pollutants for which the receiving water is impaired. In this case, compliance with a SWPPP that meets the requirements of the MSGP is generally assumed to be consistent with this TMDL.

Therefore, this TMDL does not include a specific WLA for storm water discharges for this assessment unit, nor does it exclude these discharges. However, because the Village of Taos Ski Valley owns and operates an NPDES-permitted wastewater treatment plant a WLA for the WWTP is included in this TMDL.

Table 5-1. Calculation of Annual TMDL for Total Phosphorus

Parameter	WLA (lbs/day)	LA (lbs/day)	GA (lbs/day)	Background (lbs/day)	MOS (20%) (lbs/day)	TMDL (lbs/day)
Total Phosphorus	1.00	0.97	0.06	0.53	0.63	**3.19**

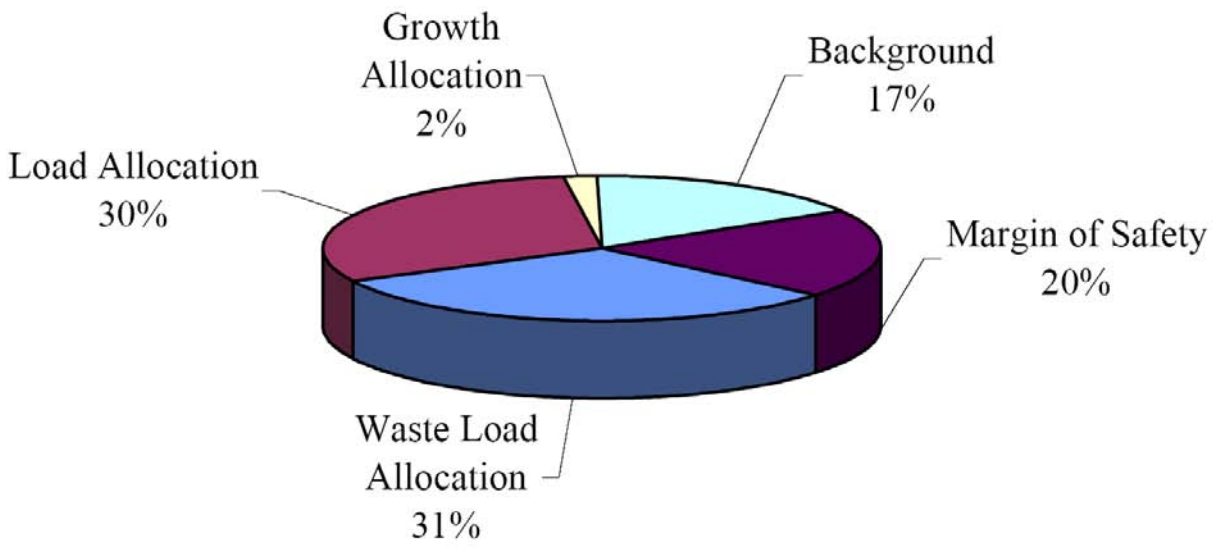

Figure 5-1. *Annual* TMDL for Total Phosphorus

5.2 Total Nitrogen

The Target Capacity Loading Analysis (see Table 4-1) determined that the allowable total nitrogen mass load in the Rio Hondo is 31.9 lbs/day. In determining the load allocation for the total nitrogen TMDL, the allowable pollutant load of 31.9 lbs/day is divided between the MOS, background, point and nonpoint source discharges. As described in Section 6.0, an explicit MOS of 5% is reserved to account for uncertainties. Therefore, the MOS is 1.60 lbs/day.

5.2.1 Load Allocation

Analysis of existing water quality data has shown that natural sources of nitrogen contribute a minimum of 2.94 lbs/day near the WWTP, whereas maximum natural contributions may occasionally be as high as 18.7 lbs/day. Background loads of nitrogen occur naturally through decaying plant material (such as leaf litter), soil erosion, and wild animal waste. The annual background load was estimated in Section 3.2.1 to be 6.84 lbs N/day and is based on reference stream concentrations and annual 4Q3 critical low-flow conditions.

Numerous anthropogenic nonpoint sources of nitrogen also exist in the upper Rio Hondo watershed. The most important are thought to be runoff from parking lots and recreational areas, and seepage from overloaded or malfunctioning on-site sewage disposal systems located near the stream. Application of nitrogen export coefficients suggests that these diffuse sources contribute about 11.7 lbs/day of nitrogen annually to the Rio Hondo (Section 3.2.1). A nitrogen export coefficient was also applied to approximate the contribution from air deposition. Air deposition was estimated to supply 0.097 lbs/day of nitrogen to the system. Thus, that portion of the total nitrogen TMDL assigned to nonpoint and atmospheric sources is 11.8 lbs/day, or 37 percent of the total stream carrying capacity.

The sum of natural and nonpoint nitrogen sources is estimated to be 18.7 lbs/day. This load is equivalent to 58 percent of the TMDL and would cause in-stream total nitrogen levels to be approximately 0.60 mg/L.

5.2.2 Growth Allocation

All calculations in development of this TMDL used a plant design capacity of 0.200 MGD. Consequently, all flow calculations in this TMDL estimate treatment capacity in the future scenario, which accommodates projected growth through 2020 (see Section 8.0)**.** Future projections also indicate that nonpoint sources of nitrogen will more than likely increase as the Village of Taos Ski Valley continues to grow and develop. Therefore, in addition to the projected growth that was integrated into the TMDL calculations, two percent of the TMDL, or 0.63 lbs/day, will be set aside for a growth allocation (GA), as a placeholder for unknown or future nitrogen sources.

5.2.3 Waste Load Allocation

After 65 percent of the annual total nitrogen TMDL is apportioned to the load allocation, growth allocation, and the MOS, 35 percent, or 11.0 lbs/day, remains for point sources. The only existing point source on this assessment unit is the NPDES-permitted wastewater treatment plant owned and operated by the VTSV. There are no individually permitted MS4 storm water permits in this assessment unit. Excess nutrient levels may be a component of some (primarily construction) storm water discharges so these discharges should be addressed.

In contrast to discharges from other industrial storm water and individual process wastewater permitted facilities, storm water discharges from construction activities are transient because they occur mainly during the construction itself, and then only during storm events. Coverage under the NPDES CGP requires preparation of a SWPPP that includes identification and control of all pollutants associated with the construction activities to minimize impacts to water quality. In addition, the current CGP also includes state specific requirements to implement best management practices that are designed to prevent to the maximum extent practicable, an increase in sediment, or a parameter that addresses sediment (e.g., total suspended solids, turbidity, siltation, stream bottom deposits, etc.) and flow velocity during and after construction compared to pre-construction conditions. In this case, compliance with a SWPPP that meets the requirements of the CGP is generally assumed to be consistent with this TMDL.

Other industrial storm water facilities are generally covered under the current NPDES MSGP. This permit also requires preparation of an SWPPP that includes identification and control of all pollutants associated with the industrial activities to minimize impacts to water quality. In addition, the current MSGP also includes state specific requirements to further limit (or eliminate) pollutant loading to water quality impaired/water quality limited waters from facilities where there is a reasonable potential to contain pollutants for which the receiving water is impaired. In this case, compliance with a SWPPP that meets the requirements of the MSGP is generally assumed to be consistent with this TMDL.

Therefore, this TMDL does not include a specific WLA for storm water discharges for this assessment unit, nor does it exclude these discharges. However, because the Village of Taos Ski Valley owns and operates an NPDES-permitted wastewater treatment plant a waste load allocation for the WWTP is included in this TMDL.

In addition, the Village has developed a phased plan for a community-wide sewer line extension project. The objective of this phased project is to convert all on-site septic systems in the community to the wastewater treatment facility (WWTF). The city council and public works department are incorporating this plan to help reduce nonpoint source pollution contributed by septic systems in Taos Ski Valley. If the Village succeeds in converting all septic systems to the WWTF, then the portion of the total nitrogen LA that is associated with septic systems (e.g. 5.17 lbs/day) can become a WLA. If the WWTF does not pull in the septic systems, it will not proceed on to Phases II-V and would be bound to the WLA at Phase I, with the LA still reflecting the original septic load. Table 5-2 summarizes the results for this phased approach and includes the LAs, GAs, WLAs and maximum allowable effluent concentrations (see Appendix F for spreadsheets). However, because Taos County and Taos Valley Ski Basin have been

growing rapidly over the last few decades, it is imperative that best management practices (BMPs) continue to be utilized and improved upon in this watershed.

Table 5-2. Calculation of *Phased* Annual TMDL for Total Nitrogen based on percent capture of septic systems in Taos Ski Valley

% Conversion	WLA (lbs/day)	LA (lbs/day)	GA (lbs/day)	Background (lbs/day)	MOS (5%) (lbs/day)	TMDL (lbs/day)	*Allowable 30-day Av. Conc.*[1] *(mg/L)*
Phase I – 0% capture	11.0	11.8	0.63	6.84	1.60	31.9	*6.5*
Phase II – 25% capture	12.3	10.5	0.63	6.84	1.60	31.9	*7.0*
Phase III – 50% capture	13.6	9.24	0.63	6.84	1.60	31.9	*8.0*
Phase IV – 75% capture	14.9	7.94	0.63	6.84	1.60	31.9	*9.0*
Phase V – 100% capture	16.2	6.65	0.63	6.84	1.60	31.9	*10.0*

1. Maximum allowable effluent concentration to be protective of the river within this assessment unit given the annual waste load allocation and proposed design capacity for the WWTP. Value rounded to the nearest tenth.

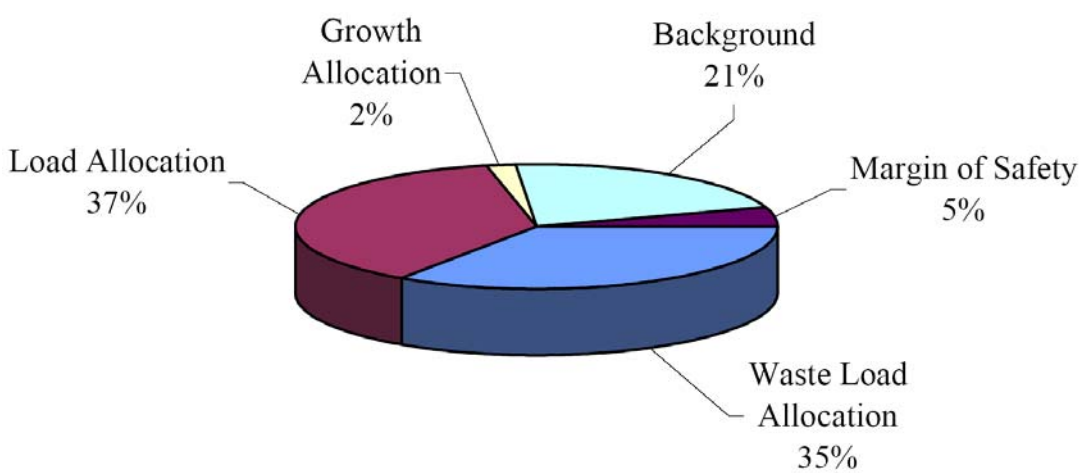

Figure 5-2. *Annual* TMDL for Total Nitrogen