7.0 CONSIDERATION OF SEASONAL VARIATION

Section 303(d)(1) of the CWA requires TMDLs to be "established at a level necessary to implement the applicable WQS with seasonal variation." Sampling for this stream was conducted during three seasons representative of different expected hydrological conditions. Calculations made at the critical low-flow (4Q3), in addition to using other conservative assumptions as described in the previous section on MOS, are protective of the water quality standards designed to preserve aquatic life in the stream.

Critical low-flow criterion on a seasonal basis can also reduce operational costs for the VTSV while still protecting stream standards. The ability of the Rio Hondo to dilute wastewater is least during the winter months (November through April) because precipitation is in the form of snowfall, thus reducing streamflow. Winter is also the period during which the Village's wastewater discharges are greatest because of the influx of skiers into the valley. Seasonally high receiving water flows associated with snowmelt (May through June) and monsoon storms (July through August) can accommodate a higher effluent discharge concentration without exceeding water quality standards because the ratio of effluent discharge to streamflow is minimal during spring and summer. Similarly, during the fall (September and October) the Village typically releases less wastewater into the Rio Hondo because of fewer tourists, which results in a smaller effluent discharge to streamflow ratio and a higher allowable effluent concentration. Application of a seasonal limit is appropriate because of the large variability in critical low-flows and effluent discharge during different seasons.

As noted above, stream standards could be attainable with less stringent wastewater treatment during high flow months or during the non-tourist season(s). Applying seasonal 4Q3s (Appendix C) and an explicit MOS of 5% to account for uncertainties in flow calculations will determine the maximum allowable loads and effluent concentrations that could be utilized for NPDES permit limitations. This will create a more flexible approach to wastewater treatment, which will ultimately reduce operational costs on a yearly basis.

The WLA was calculated by subtracting the load allocation, growth allocation, and MOS from the target capacity, or TMDL (see Appendix F). Results for total phosphorus and total nitrogen NPDES permit limitations are presented in Table 7-1.

Table 7-1. Seasonal Waste Load Allocations for the Village of Taos Ski Valley (NPDES Permit No. NM0022101), Taos County, New Mexico

Parameter	Time Interval	Streamflow 4Q3[1] (mgd)	Proposed Effluent Volume[2] (mgd)	Seasonal WLA[3] (lbs/day)	Calculated Effluent Conc.[4] (mg/L)	Allowable 30-day Av. Conc.[5] (mg/L)	Allowable 7-day Av. Conc.[6] (mg/L)
Total Phosphorus	January	3.693	0.200	1.46	0.87	0.8	1.0
	February	3.693	0.200	1.46	0.87	0.8	1.0
	March	3.693	0.200	1.46	0.87	0.8	1.0
	April	3.693	0.200	1.46	0.87	0.8	1.0
	May	14.97	0.200	5.80	3.48	3.0	4.5
	June	14.97	0.200	5.80	3.48	3.0	4.5
	July	8.559	0.100	3.32	3.98	4.0	6.0
	August	8.559	0.100	3.32	3.98	4.0	6.0
	September	6.321	0.040	2.44	7.32	7.0	10
	October	6.321	0.040	2.44	7.32	7.0	10
	November	3.693	0.200	1.46	0.87	0.8	1.0
	December	3.693	0.200	1.46	0.87	0.8	1.0
Total Nitrogen	January	3.693	0.200	11.1	6.64	6.5	9.5
	February	3.693	0.200	11.1	6.64	6.5	9.5
	March	3.693	0.200	11.1	6.64	6.5	9.5
	April	3.693	0.200	11.1	6.64	6.5	9.5
	May	14.97	0.200	44.0	26.4	26	39
	June	14.97	0.200	44.0	26.4	26	39
	July	8.559	0.100	25.1	30.1	30	45
	August	8.559	0.100	25.1	30.1	30	45
	September	6.321	0.040	18.5	55.5	55	82
	October	6.321	0.040	18.5	55.5	55	82
	November	3.693	0.200	11.1	6.64	6.5	9.5
	December	3.693	0.200	11.1	6.64	6.5	9.5

1 The critical low flow condition in the Rio Hondo is the average low-flow that persists for four consecutive days once every three years, on average (4Q3). (Appendix C)

2 Effluent volume is the proposed design capacity and/or seasonal effluent volume of Twining WWTP (in mgd).

3 Seasonal waste load allocations (in lbs/day) allotted to Twining Water and Sanitation District. (Appendix F)

4 Maximum allowable effluent concentrations to be protective of the river within this assessment unit. (Appendix F)

5 The allowable 30-day average was determined by rounding the calculated effluent concentration.

6 The allowable 7-day average is defined as 1.5 times the allowable 30-day average.