APPENDIX I – WATERSHEDS ON NATIONAL FOREST SYSTEM LANDS WITH THE HIGHEST LEVELS OF ANTHROPOGENIC DISTURBANCE

Watersheds on National Forest Lands with the Highest Levels of Anthropogenic Disturbance

These watersheds have the greatest amount of anthropogenic disturbance and have the highest potential for impacts to aquatic, riparian, and wetland resources due to the high percentage of anthropogenic activities. The potential effects for all anthropogenic activities were analyzed by cumulating the percentile ranking for each of the identified anthropogenic activities. There were a total of six different activity categories used for this process using all the activities: transportation, water use, vegetation management, urbanization, mineral extraction, and recreation. The values of 1 through 5 were assigned based upon the percentile in which that HUC was location for the anthropogenic activity with 5 being the highest percentile of impact. The watersheds in the following table were listed in Quantile 5 for all anthropogenic activities, which corresponds to the 100-80th percentile range for percentage of watershed area affected by anthropogenic disturbances (Winters et al. 2006b). These watersheds may be good candidates for remediation. The watersheds in Quantiles 1 through 4 can be found in the Aquatic, Riparian, and Wetland Ecosystem Assessment for the San Juan National Forest.

Table I-1 - Watersheds on National Forest lands with the highest levels of anthropogenic disturbance

HUC 6	HUC 6 Name	Recreation	Urbanization	Minerals	Transportation	Vegetation	Water Use	Total	Cluster
140801070104	Chicken Creek	3	4	3	5	5	3	23	4r
140300020209	Upper Dolores River-Taylor Creek	4	2	3	5	4	5	23	5r
140801011601	Upper Beaver Creek	2	3	5	3	5	5	23	5r
140801020401	Martinez Creek-Dutton Creek	5	3	1	4	4	5	22	5r
140801010302	Fourmile Creek	3	2	3	4	4	5	21	2r
140300020105	Lower West Dolores River	2	3	3	3	5	5	21	5r
140801050105	Upper Cherry Creek	2	5	3	5	3	3	21	5r
140801040502	Elbert Creek	3	3	3	5	4	3	21	5r
140300020401	Upper Lost Canyon	4	2	1	4	5	4	20	2r
140801070103	Upper Mancos Valley	2	5	5	3	2	3	20	5r
140801070102	West Mancos River	1	3	2	5	5	3	19	2r
140801010303	Laughlin Park	3	2	3	3	3	5	19	5r
140300020305	Beaver Creek-Trail Canyon	1	3	4	4	4	3	19	4r
140300020404	Stapleton Valley	0	5	2	4	4	4	19	4r
140300020407	House Creek	1	2	3	5	5	3	19	4r
140300020604	Dolores Canyon-Lake Canyon	3	2	3	3	4	4	19	4r
140801010304	Upper Pagosa Springs	2	4	3	3	4	3	19	4r
140801010504	Navajo River-Weisel Flat	5	2	3	3	3	3	19	4r
140801010507	Coyote Creek	2	2	3	4	4	4	19	4r
140801011404	Vallecito Reservoir	5	2	1	3	4	4	19	5r
140801020301	Upper Devil Creek	4	2	1	4	5	3	19	5r
140801020501	Yellow Jacket Creek	2	3	3	3	4	4	19	4r
140801070105	East Fork of Mud Creek	1	5	5	3	2	3	19	4r
140801011602	Middle Beaver Creek	2	3	4	3	4	3	19	5r
140801040303	Lower Cascade Creek	5	2	2	4	4	2	19	2r

Cluster 2r – The watersheds in cluster 2r are characterized by a high-elevation snowfall-driven hydroclimatic regime. The streams are underlain by rock units derived from mainly non-igneous formative processes. This cluster is dominated by high-gradient streams with a snowmelt regime that produces moderate to high yields of both coarse and fine sediment. Anthropogenic influences could have large influences on low gradient reaches if excessive sediment were produced. Sediment produced in this cluster could

influence stream reaches downstream. Watersheds in this cluster occupy the majority of the highest-elevation watersheds in the San Juan Mountains. Cluster 2r is among the most sensitive to changes in the thermal regime. Watersheds in this cluster are relatively unresponsive to changes in sediment regime resulting from the overall dominance of high gradient stream channels.

Cluster 4r – The watersheds in cluster 4r are driven by a predominantly mixed precipitation hydroclimatic regime. The largely high-gradient streams in this cluster are typically underlain by non-calcareous lithology of a non-igneous origin. This cluster is dominated by high-gradient streams with a mixed snowmelt and rainfall flow regime that produces moderate to high yields of both coarse and fine sediment. The rain- and snow-driven conditions would produce a significant amount of sediment if exposed during periods of increased runoff. Cluster 4r watersheds are mainly at mid-elevations. A mixture of stream gradients is present. Cluster 4r is somewhat sensitive to changes in the thermal regime. Anthropogenic disturbance that increases sediment production would be detrimental to fish populations and riparian communities.

Cluster 5r – The watersheds in cluster 5r are driven by a predominantly mixed precipitation regime. The largely high-gradient streams in this cluster are typically underlain by lithology of a non-igneous origin. This cluster is dominated by high-gradient and mid-gradient streams with a mixed snowmelt and rainfall regime that produces moderate to high yields of both coarse and fine sediment. Because of the heterogeneity of conditions within this cluster more site-specific analysis would be necessary to determine potential for sediment movement from management activities. Cluster 5r is somewhat sensitive to changes in the thermal regime. Additional sediment will be temporarily stored during low-flow conditions, degrading the biotic condition (Winters et al. 2006b).

Winters, D., Staley, D., Fryxell, J., and J. Krezelok, 2006. Aquatic, riparian and wetland ecosystem assessment for the San Juan National Forest. Report 3 of 3: Ecological driver analysis and anthropogenic influence results: Synthesis and discussion. Denver, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Region.