TABLE OF CONTENTS

EXECUTIVE SUMMARY\OVERVIEW 2
- **STATE ATLAS** 4
- **WATERBODY RIVER INDEX** 5
- **WATERBODY LAKE INDEX** 10
- **WATERBODY WETLANDS INDEX** 11

METHODOLOGIES 12

TOTAL USE SUPPORT 13
- **SUMMARY OF CAUSES** 14
- **SUMMARY OF SOURCES** 15

LAKE STATUS 16
- **LAKE CLASSIFICATION** 17
- **INVENTORY OF PUBLICLY OWNED FRESHWATER LAKES** 18
- **INVENTORY OF SIGNIFICANT LAKES** 21

LAKE QUALITY REPORT 22

WETLANDS OF NEVADA 32

PUBLIC HEALTH AND AQUATIC / WILDLIFE CONCERNS 34

SUMMARY OF TOTAL WATERBODY SIZE MONITORED FOR TOXICS 35

WATER QUALITY MONITORING PLAN 36
- **SURFACE WATER ASSESSMENT** 36
- **TABLE 1** (List of parameters) 36
- **TABLE 2 (**NDEP's routine monitoring network**)** 38
- **OTHER SOURCES OF WATER QUALITY DATA** 41
- **TABLE 3** (USGS NASQAN Monitoring Program) 43

WATER POLLUTION CONTROL PROGRAM 48
- **POINT SOURCE CONTROL PROGRAM** 48
- **COMPLIANCE MONITORING AND ENFORCEMENT** 51

GROUND WATER PROTECTION IN NEVADA 52

WELLHEAD PROTECTION 55

NONPOINT SOURCE PROGRAM 57
- **NONPOINT SOURCE PROJECTS** 58

SPECIAL ISSUES/CONCERNS 65

NEVADA'S 1998 303(d) LIST 69
- **TABLE 4** (River basins on 303(d) List) 71
- **TABLE 5** (Ranking for TMDL development) 73
- **CURRENT STATUS OF TMDL DEVELOPMENT** 74
- **STATEWIDE OBSERVATIONS** 76

EXECUTIVE SUMMARY\OVERVIEW

The State of Nevada along with other state, federal and local government agencies operate an extensive monitoring program, regularly monitoring over 100 sampling points in the 14 hydrographic regions found in the state. In addition to these fixed monitoring stations, several water quality intensive field studies are conducted on the major water systems of Nevada. These studies included Truckee River, Carson River, Walker River and the Humboldt River. In addition a number of lakes and reservoirs have been added to the monitoring program.

There are 143,578 total miles of rivers, streams and creeks of which 14,988 miles are perennial, 126,257 miles of intermittent, 1,782 miles of ditches/canals and 551 border miles of shared rivers. Nevada has 1,070 lakes, reservoirs or ponds with a total acreage of 533,239 (according to EPA's "Total Waters Report") and approximately 136,650 acres of wetlands. Of the 14,988 miles of perennial rivers, streams and creeks, and 126,257 miles of intermittent rivers, streams and creeks which have narrative standards but have not been assigned a beneficial use, 2,995 miles have beneficial use standards which are numeric, narrative or both. This 305(b) report addresses a total of 1,639 assessed river miles in Nevada. The overall use support of these rivers are 864 miles are fully supporting, 657 miles are partially supporting, 118 miles are not supporting. The remaining 11,993 river miles are unclassified because of their inaccessibility due to the remote location of these streams.

There are 533,239 acres of lakes and reservoirs of which 320,906 acres were assessed. 265,999 acres are fully supporting, 16,107 acres are partially supporting and 38,800 acres are not supporting. 212,333 acres were not assessed in this report cycle.

There are 136,650 acres of freshwater wetlands of which 21,326 acres are fully supporting while 115,326 acres were not assessed in this report cycle.

Beneficial uses are assigned to classified waters in Nevada but not all waters have the same uses applied to it. These beneficial uses include aquatic life, wildlife propagation, recreation involving water contact, recreation not involving water contact, municipal drinking supply, stock watering, irrigation and industrial supply.

Since Nevada is a water poor state, the water which is available is under great demand and is heavily used. The major users are agriculture and municipal and industrial sources. The impacts on water quality from the municipal and industrial sources has been greatly reduced over the last few years with most point source polluters eliminated from direct discharges or are stringently controlled. Agriculture has the greatest impacts on the waters of Nevada due mainly to nonpoint source pollution. The causes are directly related to irrigation, grazing and flow regulation practices. The reduction in flows in many of the rivers account for much of the non support of beneficial uses. Temperature, pH, nutrients and suspended solids are the main pollutants of concern and are being targeted in the Nonpoint Source Program.

Water quality has been improving due to the removal of point sources and more stringent standards being implemented on the remaining point sources. Most exceedances are seasonal and are of a natural condition such as pH and temperature.

The Nonpoint Source Program will help to further improve water quality by promoting public awareness, grazing and irrigation practices, erosion control measures and implementation of Best Management Practices.

The Truckee River showed that nutrients, total dissolved solids and turbidity are of concern. Drought conditions followed by sever flooding is felt to be the major contributing factor to water quality problems in the river.

The Carson River water quality standard for total phosphates was exceeded. Turbidity and suspended solids exceedances occur during the summer months at low flows. The major causes can be attributed to nonpoint sources in Carson Valley, a major agricultural area and growing urban area. Drought conditions followed by sever flooding is felt to be the major contributing factor to water quality problems in the river. A fish consumption health advisory has been issued for portions of the Carson River and Lahontan Reservoir since 1985 due to high levels of mercury. Portions of the river are a designated EPA Superfund Site.

The Walker River has seen some improvement in nitrates and phosphates. Total Dissolved Solids (TDS) continues to be a problem downstream from Weber Reservoir to Walker Lake.

The Humboldt River continues to have water quality problems as turbidity, suspended solids and total phosphates (TP) were not consistently attained. There were very low flows in the Humboldt River followed by sever flooding during this time which resulted in the high levels. The river normally has a highly variable flow with a major irrigation / recreation reservoir on the lower end of the system (Rye Patch Reservoir) and a terminal sink. Major point sources have all but been eliminated.

Agricultural and rangeland nonpoint sources are contributing the large sediment and nutrient loads to the waters of the State. Urban drainage systems contribute nutrients, heavy metals and organic loads to the nonpoint source load. The Nonpoint Source Program is assisting agriculture and reducing nonpoint source loads.

Vice President Gore's "Clean Water Action Plan", if approved by Congress, should increase funding to Nevada for additional nonpoint source control.

STATE ATLAS

Topic	Value
State population	1,826,466
State surface area	110,000
Total miles of rivers and streams - Miles of perennial rivers/streams - Miles of intermittent streams - Miles of ditches and canals - Border miles of shared rivers/streams	143,578 14,988 126,257 1,782 551
Number of lakes/reservoirs/ponds	1,070
Acres of lakes/reservoirs/ponds	533,239
Acres of freshwater wetlands	136,650

The State Atlas shown above indicates the State of Nevada's estimated population increase by 244,186 since the previous 1994-1996 305(b) Report.

The following pages contain the Waterbody Index. The Index is based on river basins and river sections (reaches) within those basins. A description and length of each reach is also described.

WATERBODY RIVER INDEX

ID	NAME	DESCRIPTION	SIZE	CAT UNIT
NV13-CL-A	Virgin River	Virgin River from Arizona stateline to Mesquite	4.50	15010010
NV13-CL-B	Virgin River	Virgin River from Mesquite to river mouth at Lake Mead	25.75	15010010
NV13-CL-C	Muddy River	Muddy River from river source to Glendale	11.50	15010012
NV13-CL-D	Muddy River	Muddy River from Glendale to river mouth at Lake Mead	15.00	15010012
NV13-CL-E	Las Vegas Wash	Las Vegas Wash from Pabco Road to Lake Mead	5.25	15010005
NV13-CL-F	Colorado River	Colorado River from Hoover Dam to Lake Mojave inlet	33.30	15030101
NV13-CL-G	Colorado River	Colorado River from Lake Mojave inlet to CA stateline	45.60	15030101
NV3-SR-A	Big Goose Creek	Big Goose Creek	27.30	17040211
NV3-SR-B	Salmon Falls Creek	Salmon Falls Creek	37.20	17040213
NV3-SR-C	Shoshone Creek	Shoshone Creek	11.20	17040213
NV3-SR-D	EF Jarbidge River	EF Jarbidge River	18.60	17050102
NV3-SR-E	Jarbidge River	Jarbidge River above the town of Jarbidge to source	7.44	17050102
NV3-SR-F	Jarbidge River	Jarbidge River below the town of Jarbidge to the Idaho stateline	8.68	17050102
NV3-SR-G	Bruneau River	Bruneau River	39.70	17050102
NV3-SR-H	Owyhee River	Owyhee River from China Dam to the Idaho stateline	5.60	17050104
NV3-SR-I	Owyhee River	Owyhee River from Mill Creek to China Dam	13.00	17050104
NV3-SR-J	Owyhee River	Owyhee River from Wildhorse Reservoir to Mill Creek	11.80	17050104

ID	NAME	DESCRIPTION	SIZE	CAT UNIT
NV3-SR-K	SF Owyhee River	SF Owyhee River	75.00	17050105
NV4-HR-A	Humboldt River	Humboldt River from the upstream source of the main stem to Elko	168.50	16040101
NV4-HR-B	Humboldt River	Humboldt River from Elko to Palisade	100.40	16040101
NV4-HR-C	Humboldt River	Humboldt River from Palisade to Battle Mountain	58.90	16040105
NV4-HR-D	Humboldt River	Humboldt River from Battle Mountain to Comus	52.70	16040108
NV4-HR-E	Humboldt River	Humboldt River from Comus to Imlay	77.50	16040108
NV4-HR-F	Humboldt River	Humboldt River from Imlay to Woosley	39.00	16040108
NV4-HR-G	Humboldt River	Humboldt River from Woosley to Rodgers Dam (Class C)	8.00	16040108
NV4-HR-H	Humboldt River	Humboldt River from Rodgers Dam to the Humboldt Sink (Class D)	21.80	16040108
NV4-HR-I	NF Humboldt River	NF Humboldt River from the National Forest Boundary to the Humboldt River (Class B)	111.60	16040102
NV4-HR-J	SF Humboldt River	SF Humboldt River from Lee to Humboldt River (Class B)	29.80	16040103
NV4-HR-K	Mary's River	Mary's River from T42N, R60E to the Humboldt River (Class B)	47.70	16040101
NV6-SC-B	Steamboat Creek	Steamboat Creek from Washoe Lakes to Sec 33, T18N, R20E (Class C)	4.30	16050102
NV6-SC-C	Steamboat Creek	Steamboat Creek from Sec 33, T18N, R20E to the Truckee River (Class D)	10.20	16050102
NV6-SC-D	Galena Creek	Galena Creek from Sec 2, T17N, R19E to Steamboat Creek (Class C)	3.72	16050102
NV6-SC-E	White's Creek	White's Creek from source to east line of Sec 33, T18N, R19E (Class A)	3.70	16050102

ID	NAME	DESCRIPTION	SIZE	CAT UNIT
NV6-SC-F	White's Creek	White's Creek from east line of Sec 33, T18N, R19E to Steamboat Creek (Class B)	9.00	16050102
NV6-SC-G	Thomas Creek	Thomas Creek from source to National Forest Boundary (Class A)	4.34	16050102
NV6-SC-H	Thomas Creek	Thomas Creek from National Forest Boundary to Steamboat Creek (Class B)	9.00	16060102
NV6-SC-I	Galena Creek	From origin to east line of S18, T17N, R19E (Class A)	2.48	16060102
NV6-SC-J	Galena	From east line of S18, T17N, R19E to S2, T17N, R19E (Class B)	3.10	16060102
NV6-TB-A	First Creek	Tahoe Basin	1.20	16050101
NV6-TB-B	Second Creek	Tahoe Basin	2.00	16050101
NV6-TB-C	Wood Creek	Tahoe Basin	1.24	16050101
NV6-TB-D	Third Creek	Tahoe Basin	6.20	16050101
NV6-TB-E	WF Incline Creek	Tahoe Basin	2.75	16050101
NV6-TB-F	Incline Creek	Tahoe Basin	4.50	16050101
NV6-TB-G	Mill Creek	Tahoe Basin	1.86	16050101
NV6-TB-H	Tunnel Creek	Tahoe Basin	1.86	16050101
NV6-TB-J	Marlette Creek	Tahoe Basin	1.86	16050101
NV6-TB-K	Secret Creek	Tahoe Basin	2.48	16050101
NV6-TB-L	Harbor Creek	Tahoe Basin	1.24	16050101
NV6-TB-M	North Canyon Creek	Tahoe Basin	4.96	16050101
NV6-TB-N	Bliss Creek	Tahoe Basin	1.24	16050101
NV6-TB-O	Slaughter-House Canyon Cr	Tahoe Basin	2.30	16050101
ID	NAME	DESCRIPTION	SIZE	CAT UNIT

NV6-TB-Q	Glenbrook Creek	Tahoe Basin	3.00	16050101
NV6-TB-R	North Logon House Cr	Tahoe Basin	3.00	16050101
NV6-TB-S	Logan House Creek	Tahoe Basin	1.80	16050101
NV6-TB-T	Lincoln Creek	Tahoe Basin	3.72	16050101
NV6-TB-U	Zephyr Creek	Tahoe Basin	3.50	16050101
NV6-TB-V	McFaul Creek	Tahoe Basin	4.00	16050101
NV6-TB-W	Burke Creek	Tahoe Basin	3.72	16050101
NV6-TB-X	Edgewood Creek	Tahoe Basin	5.00	16050101
NV6-TR-A	Truckee River	Truckee River from CA stateline to Idlewild	43.70	16050102
NV6-TR-B	Truckee River	Truckee River from Idlewild to East McCarran Blvd	5.60	16050102
NV6-TR-C	Truckee River	Truckee River from East McCarran Blvd to Lockwood	5.60	16050102
NV6-TR-D	Truckee River	Truckee River from Lockwood to Derby Dam	13.60	16050102
NV6-TR-E	Truckee River	Truckee River from Derby Dam to Wadsworth	9.90	16050102
NV6-TR-F	Truckee River	Truckee River from Wadsworth to Pyramid Lake	22.00	16050102
NV8-CR-A	Bryant Creek	Bryant Creek	3.25	16050201
NV8-CR-B	EF Carson	EF Carson River from stateline to Riverview Mobile Home Park	7.00	16050201
NV8-CR-C	EF Carson	EF Carson River at Riverview Mobile Home Park to Muller Lane	9.25	16050201
NV8-CR-D	EF Carson / WF Carson	EF Carson River at Muller Lane (2.5Mi) and WF from stateline to Genoa Lane (19.5Mi)	22.00	16050201
NV8-CR-E	Carson River	Genoa Lane to Cradlebaugh Bridge	5.00	16050201

ID	NAME	DESCRIPTION	SIZE	CAT UNIT
NV8-CR-F	Carson River	Cradlebaugh Bridge to Mexican Ditch Gage	5.25	16050201
NV8-CR-G	Carson River	Mexican Ditch Gage to New Empire	7.00	16050201
NV8-CR-H	Carson River	New Empire to Dayton Bridge	8.75	16050201
NV8-CR-I	Carson River	Dayton Bridge to Weeks Bridge at Highway #95	25.50	16050201
NV8-CR-J	Carson River	Weeks Bridge at Highway #95 to Lahontan Dam	24.50	16050201
NV8-CR-K	Carson River	Class C Waters: From below Lahontan Res. to Carson Sink	31.60	16050201
NV9-WR-B	West Walker River	West Walker River from CA stateline to Wellington	14.70	16050302
NV9-WR-C	West Walker River	West Walker River from Wellington to the confluence with the E. Walker	24.50	16050302
NV9-WR-D	SweetwaterCreek	Sweetwater Creek from CA stateline to the East Walker River	7.00	16050301
NV9-WR-E	East Walker River	East Walker River from CA stateline to the confluence with the W. Walker	41.50	16050301
NV9-WR-F	Walker River	From the confluence of the West and East Walker River to the inlet of Weber Reservoir	30.50	16050303
NV9-WR-G	Walker River	Walker River from the outlet of Weber Reservoir to the inlet of Walker Lake	24.00	16050303
NV9-WR-H	Desert Creek	Desert Creek from the CA stateline to the West Walker River	22.00	16050302

Total River Miles Assessed: 1,639.29 Miles

WATERBODY LAKE INDEX

ID	NAME	DESCRIPTION	SIZE	CAT UNIT
NV10-CAV	Cave Lake	Cave Lake	32.00	16060008
NV13-CL-H	Colorado R (Las Vegas Bay)	Western boundary of Las Vegas Marina Campground to confluence of Las Vegas Wash	92.00	15010005
NV13-CL-I	Colorado R (Lake Mead)	Lake Mead (Nevada portion)	90,000.00	15010005
NV13-MOH	Lake Mohave	Lake Mohave (Nevada portion only)	14,000.00	15030101
NV2-SUM	Summit Lake	Summit Lake	560.00	16040202
NV3-WHR	Wild Horse Reservoir	Wild Horse Reservoir	2,830.00	17050104
NV3-WIL	Wilson Reservoir	Wilson Reservoir	828.00	17050105
NV4-RPR	Rye Patch Reservoir	Rye Patch Reservoir	11,400.00	16040108
NV4-SFR	South Fork Reservoir	South Fork Reservoir	1,650.00	16040103
NV6-HOB	Hobart Reservoir	Hobart Reservoir	10.00	16050102
NV6-PYR	Pyramid Lake	Pyramid Lake	108,000.00	16050102
NV6-SC-A	Washoe Lakes	Washoe Lakes (Class C)	6,100.00	16050102
NV6-TB-I	Marlette Lake	Tahoe Basin	350.00	16050101
NV6-TB-P	Spooner Lake	Tahoe Basin	69.00	16050101
NV6-TB-Y	Lake Tahoe	Tahoe Basin (NV Portion)	29,230.00	16050101
NV8-LAH	Lahontan Reservoir	Lahontan Reservoir	14,800.00	16050202
NV9-WR-A	Topaz Lake	Topaz Lake (Nevada portion)	1,205.00	16050302
NV9-WR-I	Weber Reservoir	Weber Reservoir (Class C)	950.00	16050303
NV9-WR-J	Walker Lake	Walker Lake (Class D)	38,800.00	16050304
		Total Lakes Assessed:	**320,906.00**	**Acres**

WATERBODY WETLANDS INDEX

ID	NAME	DESCRIPTION	SIZE	CAT UNIT
NV8-SINK	Carson Lake	Carson Lake (Carson Sink)	2,000.00	16050203
NV8-STIL	Stillwater Marsh	Stillwater Marsh (Class C Waters and Class D Waters)	19,326.00	16050201
		Total Wetlands Assessed:	**21,326.00**	**Acres**

METHODOLOGIES

Waterbody assessments were performed at three levels, monitored, best professional judgement and evaluated. Monitored waters utilized numeric ambient water quality data from the years 1996-1997 and evaluated waters were based on known land use patterns, location of pollution sources, information provided by wildlife agencies, available documentation and best professional judgement.

Numeric water quality data collected by NDEP and other agencies was obtained from the EPA STORET Data Base for utilization of the numeric ambient water quality.

For each hydrographic region, river system control points where water quality standards/criteria are specified, sampling stations associated with each of these control points have been located. Water quality data from these stations were compared to numeric beneficial use standards established at control points and percent violations were calculated. Beneficial use attainment classification was determined based on the following criteria.

Fully Supporting - For all pollutants, criteria exceeded in less than or equal to 10% of measurements and mean of measurements is less than criteria. Pollutants are not found at levels of concern.

Partially Supporting - For any one pollutant, criteria exceeded in 11 - 25% of measurements and mean of measurements is less than criteria; or criteria exceeded in less than or equal to 10% of measurements and mean of measurements is greater than criteria. Pollutants are not found at levels of concern.

Non Supporting - For any one pollutant, criteria exceeded in greater than or equal to 25% of measurements and mean of measurements is less than criteria; or criteria exceeded in less than or equal to 11 - 25% of measurements and mean of measurements is greater than criteria. Pollutants are found at levels of concern.

Beneficial use attainment classification for major tributaries was determined individually by comparing data for the tributary to standards set for the tributary or at the appropriate downstream main stem control point.

Evaluated assessment also included review of published and unpublished technical reports, studies, documents, file records, and personal communication with qualified resource management professionals. Utilization of these sources to establish beneficial use attainment levels requires best professional judgement and is subjective.

Waters which are unclassified are generally small, isolated streams and may have intermittent surface flows. Many of these streams are spring fed or originate from snow pack and both sources are highly influenced by climatic trends. Nevada is a drought prone state with an average rainfall of less than 5" per year. Due to the remote location of these waters, many are impossible to monitor or evaluate.

The State determines which waters are to be classified by interaction and mutual agreement with several state agencies (Div. of Wildlife, Div. of Water Resources and Div. of Environmental Protection) and public comments via the public notice/hearing process.

TOTAL USE SUPPORT

Code	Description	Full Support	Partial Support	Non Support	Total
Lakes					
230	Fixed station conventional/toxic pollutants	29,220.00	1,215.00	38,800.00	**69,235.00**
170	Best professional judgement	110,417.00	0.00	0.00	**110,417.00**
100	Qualitative (evaluated) Assessment	126,362.00	14,892.00	0.00	**141,254.00**
	Sub Totals:	**265,999.00**	**16,107.00**	**38,800.00**	
				Total Assessed	**320,906.00**
Rivers					
230	Fixed station conventional/toxic pollutants	697.59	654.09	93.50	**1,445.18**
170	Best professional judgement	50.54	3.25	0.00	**53.79**
100	Qualitative (evaluated) Assessment	115.82	0.00	24.50	**140.32**
	Sub Totals:	**863.95**	**657.34**	**118.00**	
				Total Assessed	**1,639.29**
Wetlands					
170	Best professional judgement	21,326.00	0.00	0.00	**21,326.00**
	Sub Totals:	**21,326.00**	**0.00**	**0.00**	
				Total Assessed	**21,326.00**

Lake (acres)
River (miles)
Wetland (acres)

SUMMARY OF CAUSES

Type	Code	Name	Magnitude	Size
Lakes				
	1300	Salinity/TDS/Chlorides	H	38,800.00
	2100	Suspended Solids	H	14,800.00
	0600	Unionized Ammonia	M	10.00
	2100	Suspended Solids	M	1,205.00
	0950	Total Phosphates	S	14,800.00
	1450	Temperature	S	10.00
Rivers				
	2500	Turbidity	H	14.50
	0950	Total Phosphates	M	64.25
	1450	Temperature	M	11.50
	2100	Suspended Solids	M	166.35
	2500	Turbidity	M	261.70
	0900	Nutrients	S	23.50
	0950	Total Phosphates	S	187.70
	1000	pH	S	133.15
	1450	Temperature	S	182.34
	2100	Suspended Solids	S	130.25
	2500	Turbidity	S	129.60

Lake (acres)
River (miles)
H = High Impact M = Moderate Impact S = Slight Impact

SUMMARY OF SOURCES

Type	Code	Name	Magnitude	Size
Lakes				
	5650	Historic Mill Tailings/Mine Tailings	H	14,800.00
	7400	Flow Regulation/Modification	H	38,800.00
	8600	Natural	H	14,800.00
	1000	Agriculture	M	38,800.00
	8600	Natural	M	40,005.00
	1000	Agriculture	S	14,800.00
	8600	Natural	S	10.00
Rivers				
	4000	Urban Runoff/Storm Sewers (NPS)	H	11.20
	7000	Hydromodification	H	5.60
	7400	Flow Regulation/Modification	H	78.90
	8600	Natural	H	294.00
	1000	Agriculture	M	585.60
	3000	Construction	M	11.20
	3200	Land Development	M	51.50
	4000	Urban Runoff/Storm Sewers (NPS)	M	48.50
	7000	Hydromodification	M	92.60
	8600	Natural	M	120.50
	1000	Agriculture	S	104.50
	1400	Pasture Land	S	13.00
	1500	Range Land	S	48.80
	4000	Urban Runoff/Storm Sewers (NPS)	S	100.00
	7400	Flow Regulation/Modification	S	11.80
	8600	Natural	S	40.04

Lake (acres)
River (miles)
H = High Impacat M = Moderate Impact S = Slight Impact

LAKE STATUS

ID	Name	Size	Significant	Lat.	Long.	Status	Trend	Trend Size
NV8-LAH	Lahontan Reservoir	14,800.00	Yes	392705.933	1190418.520	Eutrophic	S	14,800.00
NV9-WR-J	Walker Lake	38,800.00	Yes	384136.343	1184308.641	Eutrophic	S	38,800.00
NV6-TB-I	Tahoe Basin	350.00	No	391030.109	1195404.937	Mesotrophic	S	350.00
NV3-WHR	Wild Horse Reservoir	2,830.00	Yes	414029.239	1154845.035	Mesotrophic	S	2,830.00
NV2-SUM	Summit Lake (on reservation land)	560.00	No	413046.534	1190348.213	Mesotrophic	S	560.00
NV4-SFR	South Fork Reservoir	1,650.00	Yes	404050.491	1154606.917	Mesotrophic	S	1,650.00
NV4-RPR	Rye Patch Reservoir	11,400.00	Yes	402946.739	1181858.578	Mesotrophic	S	11,400.00
NV6-SC-A	Washoe Lakes (Class C)	6,100.00	Yes	391541.628	1194753.055	Mesotrophic	S	6,100.00
NV3-WIL	Wilson Reservoir	828.00	No	414041.885	1162005.728	Mesotrophic	S	828.00
NV9-WR-A	Topaz Lake (Nevada portion)	1,205.00	Yes	384116.102	1193206.999	Mesotrophic	S	1,205.00
NV6-PYR	Pyramid Lake (on reservation land)	108,000.00	Yes	400114.694	1193414.369	Mesotrophic	S	108,000.00
NV13-CL-H	Western boundary of Las Vegas Marina Campground to confluence of Las Vegas Wash	92.00	Yes	360751.666	1145208.655	Meso-eutrophic	S	92.00
NV6-TB-P	Tahoe Basin	69.00	No	390632.156	1195430.865	Meso-oligotrophic	S	69.00
NV10-CAV	Cave Lake	32.00	No	391126.684	1144142.695	Meso-oligotrophic	S	32.00
NV9-WR-I	Weber Reservoir (Class C)	950.00	No	390350.488	1185316.303	No Data		0.00
NV6-HOB	Hobart Reservoir	10.00	No	391145.272	1195159.167	No Data		0.00
NV6-TB-Y	Tahoe Basin (Nevada portion)	29,230.00	Yes	390725.414	1195942.918	Oligotrophic	S	29,230.00
NV13-CL-I	Lake Mead (Nevada portion)	90,000.00	Yes	360809.908	1142642.367	Oligotrophic	S	90,000.00
NV13-MOH	Lake Mohave (Nevada portion)	14,000.00	Yes	352543.198	1143849.839	Oligotrophic	S	14,000.00

LAKE CLASSIFICATION

There are 131 publicly owned lakes in Nevada with a combined surface area of 387,665 acres. These lakes are listed in Appendix A.

There are 21 significant lakes in Nevada with a combined surface area of 362,331 acres. These lakes are listed in Appendix D. Listed below are the trophic level status for various lakes and reservoirs found within Nevada.

Bassett Lake	No Data
Boulder Reservoir	No Data
Cave Lake	No Data
Chimney Creek Reservoir	No Data
Hobart Reservoir	No Data
Lahontan Reservoir	Eutrophic
Lake Mead	
Main Basin	Oligotrophic
Las Vegas Bay	Meso-eutrophic
Lake Mohave	Oligotrophic
Lake Tahoe	Oligotrophic
Marlette Lake	Mesotrophic
Pyramid Lake	Mesotrophic
Reno Urban Ponds	No Data
Rye Patch Reservoir	Mesotrophic
South Fork Reservoir	Mesotrophic
Spooner Lake	Meso-oligotrphic
Summit Lake	Mesotrophic
Topaz Lake	Mesotrophic
Walker Lake	Eutrophic
Wall Canyon Reservoir	No Data
Washoe Lake	Mesotrophic
Weber Reservoir	No Data
Wildhorse Reservoir	Mesotrophic
Wilson Reservoir	Mesotrophic

INVENTORY OF PUBLICLY OWNED FRESHWATER LAKES

Lake/Area Name	County	Hydrographic Region	Surface Area Acres
Adams-McGill Reservoir[a]	Nye	Colorado River Basin	791.0
Angel Lake	Elko	Humboldt River Basin	13.0
Ardans Reservoir[a]	Eureka	Central Region	0.8
Artesia Lake	Lyon	Walker River Basin	1000.0
Baker Lake	White Pine	Great Salt Lake Basin	10.0
Bassett Lake	White Pine	Central Region	120.0
Big Spring Reservoir[a]	Humboldt	Northwest Region	480.0
Blue Lakes	Humboldt	Northwest Region	20.0
Bog Hot Reservoir	Humboldt	Northwest Region	38.0
Bowman Reservoir[a]	Clark	Colorado River Basin	165.0
Boulder Lake	Elko	Humboldt River Basin	6.0
Boulder Reservoir[a]	Washoe	Northwest Region	10.0
Boyd Reservoir[a]	Elko	Humboldt River Basin	120.0
Lake "C"	Nye	Death Valley Basin	70.0
Catnip Reservoir	Washoe	Northwest Region	55.0
Canvasback March[a]	Churchill	Carson River Basin	843.0
Carson Lake[a]	Churchill	Carson River Basin	2000.0
Cave Lake	White Pine	Central Region	32.0
Cold Lake #1	Elko	Humboldt River Basin	3.7
Cold Lake #2	Elko	Humboldt River Basin	1.8
Cold Creek Reservoir	White Pine	Central Region	7.0
Crittenden Reservoir[a]	Elko	Great Salt Lake Basin	230.0
Dacey Reservoir	Nye	Colorado River Basin	215.0
Dack Reservoir	Elko	Great Salt Lake Basin	230.0
Davis Lake	Washoe	Truckee River Basin	2.0
Dead Lake	White Pine	Great Salt Lake Basin	10.0
Deep Creek Reservoir[a]	Elko	Snake River Basin	136.0
Dorsey Creek Reservoir[a]	Elko	Humboldt River Basin	14.0
Dufurrena Ponds	Humboldt	Northwest Region	25.0
Eagle Valley Reservoir	Lincoln	Colorado River Basin	59.0
Echo Lake	Elko	Humboldt River Basin	29.0
Echo Reservoir	Lincoln	Colorado River Basin	64.0
Emerald Lake	Elko	Snake River Basin	1.0
Favre Lake	Elko	Humboldt River Basin	19.0
Fernley Reservoir #1	Lyon	West Central Region	3.0
Fernley Reservoir #2	Lyon	West Central Region	3.0
Fernley Reservoir #3	Lyon	West Central Region	3.0
Fish Lake	Nye	Central Region	80.0
Fort Churchill Ponds	Lyon	Walker River Basin	300.0
Goicoechea Ponds	White Pine	Central Nevada Region	3.5
Gray Lake	Washoe	Truckee River Basin	1.0
Greys Lake	Elko	Humboldt River Basin	5.0
Griswald Lake	Elko	Humboldt River Basin	15.0
Groves Lake	Lander	Central Region	17.0

(a) Private lake or reservoir but open to the public
(b) On Indian land but open to the public.

INVENTORY OF PUBLICLY OWNED FRESHWATER LAKES

Lake /Area Name	County	Hydrographic Region	Surface Area Acres
Harmon Reservoir[a]	Churchill	Carson River Basin	400.0
Hay Meadow	Nye	Colorado River Basin	203.0
Hidden Lake #1	Elko	Humboldt River Basin	6.1
Hidden Lake #2	Elko	Humboldt River Basin	2.8
Hobart Reservoir	Washoe	Truckee River Basin	10.0
Honey Bee Pond	Clark	Colorado River Basin	32.0
Humboldt & Toulon Lakes	Pershing	Humboldt River Basin	7700.0
Hunter Lake[a]	Washoe	Truckee River Basin	1.0
Idlewild Pond	Washoe	Truckee River Basin	--
Illipah Creek Reservoir[a]	White Pine	Central Nevada Region	29.7
Indian Lakes[a]	Churchill	Carson River Basin	3500.0
Iowa Canyon Reservoir[a]	Lander	Humboldt River Basin	28.0
Island Lake	Elko	Humboldt River Basin	7.0
Jakes Creek Reservoir[a]	Elko	Snake River Basin	62.0
Jarbidge Lake	Elko	Snake River Basin	45.0
J D Pond #1[a]	Eureka	Humboldt River Basin	20.0
J D Pond #2	Eureka	Humboldt River Basin	20.0
John Day Reservoir[a]	Elko	Humboldt River Basin	127.0
Johnson Lake	White Pine	Great Salt Lake Basin	5.0
Joggles Pond[a]	Lyon	Walker River Basin	--
Joy Lake	Washoe	Truckee River Basin	4.0
Lahonton Reservoir	Churchill & Lyon	Carson River Basin	14800.0
Lamoille Lake	Elko	Humboldt River Basin	70.0
Liberty Lake	Elko	Humboldt River Basin	21.0
Lost Lake	Elko	Humboldt River Basin	1.5
Lost Lake	Elko	Humboldt River Basin	3.0
Marlette Lake	Washoe	Truckee River Basin	350.0
Lake Mead	Clark	Colorado River Basin	90000.0(NV)
Me Me Lake	White Pine	Great Salt Lake Basin	0.5
Metropolis Reservoir	Elko	Humboldt River Basin	782.0
Lake Mohave	Clark	Colorado River Basin	14000.0(NV)
Nesbitt Lake[a]	Lincoln	Colorado River Basin	240.0
Old River Reservoir	Churchill	Carson River Basin	270.0
Ole's Reservoir	Churchill	Carson River Basin	350.0
Overland Lake	Elko	Central Region	20.0
Lower Pahranagat Lake	Lincoln	Colorado River Basin	583.0
Upper Pahranagat Lake	Lincoln	Colorado River Basin	370.0
Paradise Lakes	Washoe	Truckee River Basin	25.5
Pearl Lake	Elko	Humboldt River Basin	5.0
Lower Pitt Taylor Reservoir	Pershing	Humboldt River Basin	2570.0
Upper Pitt Taylor Reservoir	Pershing	Humboldt River Basin	2070.0
Pumpernickel Reservoir	Pershing	Humboldt River Basin	37.0
Pyramid Lake[b]	Washoe	Truckee River Basin	108000.0

(a) Private lake or reservoir but open to the public
(b) On Indian land but open to the public.

INVENTORY OF PUBLICLY OWNED FRESHWATER LAKES

Lake Name	County	Hydrographic Region	Surface Area Acres
Rattlesnake Reservoir[a]	Churchill	Carson River Basin	502.0
Rawhide Reservoir[a]	Elko	Snake Reservoir	147.0
Robinson Lake	Elko	Central Nevada Region	17.4
Ruby Marsh	Elko	Central Nevada Region	9000.0
Rye Patch Reservoir	Pershing	Humboldt River Basin	11400.0
Saval Reservoir	Elko	Humboldt River Basin	10.0
Scheckler Reservoir[a]	Churchill	Carson River Basin	2500.0
Schroeder Reservoir	Lincoln	Colorado River Basin	20.0
Seitz Lake	Elko	Humboldt River Basin	3.0
Sheep Creek Reservoir[b]	Elko	Snake River Basin	850.0
Silver Creek Reservoir[a]	White Pine	Great Salt Lake Basin	13.0
Smith Lake	Elko	Humboldt River Basin	3.0
Big Soda Lake	Churchill	Carson River Basin	385.0
Little Soda Lake	Churchill	Carson River Basin	20.0
Soldier Lake	Elko	Humboldt River Basin	6.0
Spooner Lake	Douglas	Truckee River Basin	69.0
Squaw Valley Reservoir[a]	Washoe	Black Rock Desert Region	47.0
Steele Lake	Elko	Central Region	6.0
Stella Lake	White Pine	Great Salt Lake Basin	5.0
Stillwater Marsh	Churchill	Carson River Basin	782.0
Stillwater Point Reservoir	Churchill	Carson River Basin	1900.0
Stillwater Wildlife Management Area	Churchill	Carson River Basin	17144.0
Stoney Lake	Washoe	Truckee River Basin	20.0
Lake Tahoe	Wa,Do,CC	Truckee River Basin	36812.0(NV)
Tamarack Lake	Washoe	Truckee River Basin	10.0
Teresa Lake	White Pine	Great Salt Lake Basin	1.0
Tonkin Reservoir[a]	Eureka	Humboldt River Basin	4.0
Topaz Lake	Douglas	Walker River Basin	1205.0(NV)
Tracy Pond[a]	Storey	Truckee River Basin	30.0
Tule Field Reservoir	Nye	Colorado River Basin	218.0
Verdi Lake	Elko	Humboldt River Basin	5.0
Virgin Valley Reservoir	Humboldt	Northwest Region	15.0
Virginia Lake	Washoe	Truckee River Basin	24.0
Walker Lake	Mineral	Walker River Basin	38800.0
Wall Creek Reservoir	Washoe	Northwest Region	182.0
Warm Spring Pond	White Pine	Central Region	9.3
Washoe Lake	Washoe	Truckee River Basin	6100.0
Weber Reservoir[b]	Mineral	Walker River Basin	950.0
Wildhorse Reservoir	Elko	Snake River Basin	2830.0
Willow Creek	Elko	Humboldt River Basin	761.0
Willow Creek	Lander	Central Region	10.0
Wilson Sink Reservoir	Elko	Snake River Basin	828.0
Winchell Lake	Elko	Central Region	2.0
Zunino Reservoir	Elko	Central Region	30.0

(a) Private lake or reservoir but open to the public.
(b)On Indian land but open to the public

INVENTORY OF SIGNIFICANT LAKES

Lake Name	County	Hydrographic Region	Surface Area Acres
Artesia Lake	Lyon	Walker River Basin	1000.0
Indian Lakes[(a)]	Churchill	Carson River Basin	3500.0
Lahontan Reservoir[*]	Churchill & Lyon	Carson River Basin	14800.0
Stillwater Point Reservoir	Churchill	Carson River Basin	1900.0
Stillwater Wildlife Management Area	Churchill	Carson River Basin	17144.0
Ruby Marsh	Elko	Central Nevada Region	9000.0
Lake Mead[*]	Clark	Colorado River Basin	90000.0(NV)
Lake Mohave	Clark	Colorado River Basin	14000.0(NV)
Rye Patch Reservoir[*]	Pershing	Humboldt River Basin	11400.0
Wildhorse Reservoir[*]	Elko	Snake River Basin	2830.0
Pyramid Lake[*]	Washoe	Truckee River Basin	108000.0
Lake Tahoe[*]	WA,DO,CC	Truckee River Basin	36812.0(NV)
Washoe Lake[*]	Washoe	Truckee River Basin	6100.0
Topaz Lake[*]	Douglas	Walker River Basin	1205.0(NV)
Walker Lake[*]	Mineral	Walker River Basin	18800.0
Carson Lake	Churchill	Carson River Basin	2000.0
Humboldt & Toulon Lakes	Pershing	Humboldt River Basin	7700.0
Lower Pitt Taylor Reservoir	Pershing	Humboldt River Basin	2570.0
Upper Pitt Taylor Reservoir	Pershing	Humboldt River Basin	2070.0
Ruby Marsh	Elko	Central Nevada Region	9000.0
Scheckler Reservoir[(a)]	Churchill	Carson River Basin	2500.0

[*] Lakes studied in the National Eutrophication Survey.
(a) Private lake or reservoir but open to the public.

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV10-CAV NAME: Cave Lake TYPE: L SIZE: 32.00 A

CU: 16060008 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: White Pine FIP CODE: 32033 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: MO TROPHIC STATUS NAME: Meso-oligotrophic SIZE: 32.00

USE SUPPORT

FULL: 32.00 PARTIAL: 0.00 NON: 0.00

ID: NV13-CL-H NAME: Western boundary of Las Vegas Marina Campground to confluence of Las Vegas Wash TYPE: L SIZE: 92.00 A

CU: 15010005 ECOREGION NO: 14 ECOREGION NAME: Southern Basin and Range

COUNTY: Clark FIP CODE: 32003 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: ME TROPHIC STATUS NAME: Meso-eutrophic SIZE: 92.00

USE SUPPORT

FULL: 0.00 PARTIAL: 92.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV13-CL-I NAME: Lake Mead (Nevada portion) TYPE: L SIZE: 90,000.00 A

CU: 15010005 ECOREGION NO: 14 ECOREGION NAME: Southern Basin and Range

COUNTY: Clark FIP CODE: 32003 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: O TROPHIC STATUS NAME: Oligotrophic SIZE: 90,000.00

USE SUPPORT

FULL: 90,000.00 PARTIAL: 0.00 NON: 0.00

ID: NV13-MOH NAME: Lake Mohave (Nevada portion only) TYPE: L SIZE: 14,000.00 A

CU: 15030101 ECOREGION NO: 14 ECOREGION NAME: Southern Basin and Range

COUNTY: Clark FIP CODE: 32003 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: O TROPHIC STATUS NAME: Oligotrophic SIZE: 14,000.00

USE SUPPORT

FULL: 14,000.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV2-SUM NAME: Summit Lake TYPE: L SIZE: 560.00 A

CU: 16040202 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Humboldt FIP CODE: 32013 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 170 ASSESSMENT DESCRIPTION: Best professional judgement

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 560.00

USE SUPPORT

FULL: 560.00 PARTIAL: 0.00 NON: 0.00

ID: NV3-WHR NAME: Wild Horse Reservoir TYPE: L SIZE: 2,830.00 A

CU: 17050104 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Elko FIP CODE: 32007 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 2,830.00

USE SUPPORT

FULL: 2,830.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV3-WIL NAME: Wilson Reservoir TYPE: L SIZE: 828.00 A

CU: 17050105 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Elko FIP CODE: 32007 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 170 ASSESSMENT DESCRIPTION: Best professional judgement

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 828.00

USE SUPPORT

FULL: 828.00 PARTIAL: 0.00 NON: 0.00

ID: NV4-RPR NAME: Rye Patch Reservoir TYPE: L SIZE: 11,400.00 A

CU: 16040108 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Pershing FIP CODE: 32027 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 11,400.00

USE SUPPORT

FULL: 11,400.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV4-SFR NAME: South Fork Reservoir TYPE: L SIZE: 1,650.00 A

CU: 16040103 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Elko FIP CODE: 32007 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 1,650.00

USE SUPPORT

FULL: 1,650.00 PARTIAL: 0.00 NON: 0.00

ID: NV6-HOB NAME: Hobart Reservoir TYPE: L SIZE: 10.00 A

CU: 16050102 ECOREGION NO: 05 ECOREGION NAME: Sierra Nevada

COUNTY: Washoe FIP CODE: 32031 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 170 ASSESSMENT DESCRIPTION: Best professional judgement

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: ND TROPHIC STATUS NAME: No Data SIZE: 0.00

USE SUPPORT

FULL: 10.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV6-PYR NAME: Pyramid Lake TYPE: L SIZE: 108,000.00 A

CU: 16050102 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Washoe FIP CODE: 32031 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 170 ASSESSMENT DESCRIPTION: Best professional judgement

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 108,000.00

USE SUPPORT

FULL: 108,000.00 PARTIAL: 0.00 NON: 0.00

ID: NV6-SC-A NAME: Washoe Lakes (Class C) TYPE: L SIZE: 6,100.00 A

CU: 16050102 ECOREGION NO: 05 ECOREGION NAME: Sierra Nevada

COUNTY: Washoe FIP CODE: 32031 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 6,100.00

USE SUPPORT

FULL: 6,100.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV6-TB-I NAME: Tahoe Basin TYPE: L SIZE: 350.00 A

CU: 16050101 ECOREGION NO: 05 ECOREGION NAME: Sierra Nevada

COUNTY: Washoe FIP CODE: 32031 COUNTY: Carson City FIP CODE: 32510

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 350.00

USE SUPPORT

FULL: 350.00 PARTIAL: 0.00 NON: 0.00

ID: NV6-TB-P NAME: Tahoe Basin TYPE: L SIZE: 69.00 A

CU: 16050101 ECOREGION NO: 05 ECOREGION NAME: Sierra Nevada

COUNTY: Douglas FIP CODE: 32005 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 170 ASSESSMENT DESCRIPTION: Best professional judgement

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: MO TROPHIC STATUS NAME: Meso-oligotrophic SIZE: 69.00

USE SUPPORT

FULL: 69.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV6-TB-Y NAME: Tahoe Basin (Nevada Portion) TYPE: L SIZE: 29,230.00 A

CU: 16050101 ECOREGION NO: 05 ECOREGION NAME: Sierra Nevada

COUNTY: Douglas FIP CODE: 32005 COUNTY: Washoe FIP CODE: 32031

ASSESSMENT TYPE

ASSESSMENT CODE: 230 ASSESSMENT DESCRIPTION: Fixed station conventional/toxic pollutants

WATER QUALITY LIMITED?: No TOXIC MONITORING?: Yes

LAKE ASSESSMENT

TROPHIC STATUS CODE: O TROPHIC STATUS NAME: Oligotrophic SIZE: 29,230.00

USE SUPPORT

FULL: 29,220.00 PARTIAL: 10.00 NON: 0.00

ID: NV8-LAH NAME: Lahontan Reservoir TYPE: L SIZE: 14,800.00 A

CU: 16050202 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Lyon FIP CODE: 32019 COUNTY: Churchill FIP CODE: 32001

ASSESSMENT TYPE

ASSESSMENT CODE: 100 ASSESSMENT DESCRIPTION: Qualitative (evaluated) Assessment

WATER QUALITY LIMITED?: No TOXIC MONITORING?: Yes

LAKE ASSESSMENT

TROPHIC STATUS CODE: E TROPHIC STATUS NAME: Eutrophic SIZE: 14,800.00

USE SUPPORT

FULL: 0.00 PARTIAL: 14,800.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV9-WR-A NAME: Topaz Lake (Nevada portion) TYPE: L SIZE: 1,205.00 A

CU: 16050302 ECOREGION NO: 05 ECOREGION NAME: Sierra Nevada

COUNTY: Douglas FIP CODE: 32005 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 230 ASSESSMENT DESCRIPTION: Fixed station conventional/toxic pollutants

WATER QUALITY LIMITED?: No TOXIC MONITORING?: Yes

LAKE ASSESSMENT

TROPHIC STATUS CODE: M TROPHIC STATUS NAME: Mesotrophic SIZE: 1,205.00

USE SUPPORT

FULL: 0.00 PARTIAL: 1,205.00 NON: 0.00

ID: NV9-WR-I NAME: Weber Reservoir (Class C) TYPE: L SIZE: 950.00 A

CU: 16050303 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Lyon FIP CODE: 32019 COUNTY: Mineral FIP CODE: 32021

ASSESSMENT TYPE

ASSESSMENT CODE: 170 ASSESSMENT DESCRIPTION: Best professional judgement

WATER QUALITY LIMITED?: No TOXIC MONITORING?: No

LAKE ASSESSMENT

TROPHIC STATUS CODE: ND TROPHIC STATUS NAME: No Data SIZE: 0.00

USE SUPPORT

FULL: 950.00 PARTIAL: 0.00 NON: 0.00

LAKE QUALITY REPORT

Nevada 305(b) 1998

ID: NV9-WR-J NAME: Walker Lake (Class D) TYPE: L SIZE: 38,800.00 A

CU: 16050304 ECOREGION NO: 13 ECOREGION NAME: Northern Basin and Range

COUNTY: Mineral FIP CODE: 32021 COUNTY: FIP CODE:

ASSESSMENT TYPE

ASSESSMENT CODE: 230 ASSESSMENT DESCRIPTION: Fixed station conventional/toxic pollutants

WATER QUALITY LIMITED?: No TOXIC MONITORING?: Yes

LAKE ASSESSMENT

TROPHIC STATUS CODE: E TROPHIC STATUS NAME: Eutrophic SIZE: 38,800.00

USE SUPPORT

FULL: 0.00 PARTIAL: 0.00 NON: 38,800.00

WETLANDS OF NEVADA

Nevada wetlands may be classified as Palustrine-Forested, Palustrine Scrub-shrub, Palustrine-Emergent and Lacustrine wetlands. Within these classifications, riparian wetlands are included in the Palustrine-Forested and Palustrine Scrub-shrub types. The riparian zones are characteristically flooded on a seasonal or intermittent basis. Riparian wetlands are estimated to cover less than 1% of the land in Nevada. There is no data which quantifies the historic amount of riparian wetlands in Nevada. By estimating the amount of stream in the State prior to perturbation and using the approximate width of riparian zones that presently occur along unaltered streams there may have been approximately 90,900 acres of riparian habitat. There is no information on the quality of the wetlands prior to perturbation.

The amount of meadow wetlands during historic times is harder to estimate since there has never been an attempt to survey either their condition or size. Historical acreage is estimated at 246,000 with present acreage statewide estimated at 136,650 with an estimated net loss of 109,350 acres.

Wetlands are defined as land that has a predominance of hydric soils that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

In Nevada, the U.S. Army Corp of Engineers (COE) and the U.S. Environmental Protection Agency (EPA) have primary responsibility for the Section 404 permit program. Under amendments contained in the Clean Water Act (CWA), EPA has authorized the State to oversee specific parts of the CWA in respect to Section 404. The State has assumed part of the responsibility to review and comment on proposed projects under the 401 Certification Program and has the right to deny a 404 permit or to require the COE to place special restriction into the 404 permit. The State follows the 404 and 401 guidelines as published in the Federal Register and other amended guideline documents that have been adopted by EPA.

Within the Nevada Department of Conservation and Natural Resources, there are two agencies which are primarily responsible for the protection of wetlands. The Division of Environmental Protection (NDEP) and the Division of State Lands (DSL) have legislative authority for indirect wetlands protection within the State. DEP has primary responsibility for the advising as well as permitting of projects that could effect water quality, which includes wetlands in the State. NDEP does not have a formal wetlands protection program. However, Section 401 of the Clean Water Act is utilized as a wetlands protection tool. Application is made with NDEP for 401 certification of a 404 permit. A 404 permit is administered through the Corps of Engineers (COE) and is required for wetland dredge and fill activities. NDEP may

grant or deny certification for a federally permitted activity that may result in a discharge to the waters of the state or adversely impact downstream water quality. If the applicant can demonstrate that the proposed project is neutral with respect to water quality or water quality improvements are expected, 401 certification is given.

If the project is expected to negatively impact water quality, NDEP will require conditions in the permit to offset project impacts. If during the COE review process, NDEP advises COE that a project does not meet the State criteria for projects under Section 404 review, the COE is prohibited from permitting the project.

The Nevada Revised Statues (NRS) 445.131 through 445.354 inclusive, gave the State Environmental Commission (SEC) the legislative powers to pass Nevada Administrative Codes (NAC) 445.117 through 445.234 inclusive for the regulation of water quality in the State. These regulations provide the protection mechanism to insure that the water quality in Nevada is protected.

The DSL permits projects that affect State lands. In respect to wetlands, the DSL may permit a project if that project is either on State property or crosses a navigable body of water within the State. The DSL has been given legislative approval through NRS Chapter 321 inclusive. Another Statue mandates DSL to protect one of the nations pristine lakes, Lake Tahoe. NRS 445.080 prescribes the regulations governing pier construction, deposit of fill, dredging or alteration of the Lake Tahoe Shoreline.

The Division of Wildlife (DOW)may require a "Habitat Proliferation Permit", if prior to any dredging in any river, stream or lake in this state the Department determines that the dredging operation will be deleterious to fish or aquatic life. This authority is covered in NRS 503.425. The DOW may also use NRS 503.430 which makes the deposit of substances deleterious to fish a misdemeanor. NRS 503.587 gives the Wildlife Commission the authority to manage land to carry out a program for conserving, protecting, restoring and propagating selected species of native fish, wildlife and other vertebrates and their habitats which are threatened with extinction and destruction.

SUMMARY OF TOTAL WATERBODY SIZE MONITORED FOR TOXICS

Waterbody Type	Waterbody Size	Unit
Lake, Reservoir	8,4035	Acres
River, Stream	1,445	Miles

WATER QUALITY MONITORING PLAN
SURFACE WATER ASSESSMENT

Introduction

State Requirements:

The State must conduct a water quality monitoring program in order to evaluate the quality of the waters of the State. This evaluation is necessary in order to determine if the quality of the waters of the State are suitable for the beneficial uses associated with them. This monitoring strategy has been developed in order to describe the manner in which the State intends to comply with EPA's monitoring requirements.

Federal Requirements:

A monitoring program is needed so the EPA can assess the State's progress towards the goals of P.L. 92-500 (Federal Water Pollution Control Act of 1972).

State Authority:

The State authority for conducting a monitoring program is contained in Nevada Revised Statute (NRS) 445.214 and 445.216.

Federal Authority:

In order for the State to receive a Federal Grant for a water pollution control program, it must operate an appropriate monitoring program on the quality of the navigable bodies of water in the State (PL 92-500; Section 106(e)).

Monitoring Program

The Nevada Division of Environmental Protection (NDEP) surface water monitoring network is described in Table 1 and Table 2. Table 1 lists the parameters analyzed in the monitoring program. The monitoring network was adopted in 1967 as a part of the State’s implementation plan. Modifications were made and are continuing to be made to reflect review of the data base, recognize resource constraints and to coordinate and utilize other government agencies monitoring activities. The selection of the stations in the monitoring network are based on land use, water quality, hydro modifications and topography. The monitoring network is used to assess compliance with water quality standards, conduct trend analysis, validate water quality models and set total maximum daily loads (TMDL's). The data is also used to conduct nonpoint source assessments, compile the 303(d) List, 208 Plan Amendments, and compile the 305(b) report.

Table 2 lists the sampling sites, frequency and STORET number of the routine monitoring network.

TABLE 1

List of parameters analyzed in NDEP's routine monitoring network

Conventional Pollutants
Total Dissolved Solids
Total Suspended Solids
Electrical Conductivity
Turbidity
Color
pH - field
pH - lab
Temperature
Alkalinity
Bicarbonate
Carbonate
Kjeldahl-N

Metals
Cadmium*
Zinc*
Chromium*
Arsenic*
Copper*
Boron*
Iron*
Selenium
Mercury
Lead*

*Total Recoverable Metals

Conventional Pollutants
Nitrate-NO_3
Nitrite-N
Ammonia-N
Total Nitrogen
Ortho Phosphorus
Total Phosphorus
Chloride
COD
BOD
Sulfate
Calcium
Magnesium
Sodium
Hardness ($CaCo_3$)*
Sodium Absorption Ratio

Bacteriology
Fecal Coliform
Fecal Streptococcus
E. Coliform

TABLE 2
LIST OF NDEP'S ROUTINE MONITORING NETWORK

RIVER SYSTEM	Frequency Time/Year Agency	NDEP Station Number	STORET Number
WALKER RIVER SYSTEM			
Walker River at Wabuska	6 NDEP	W4	310030
Walker River at Schurz Bridge	6 NDEP	WSB	310127
Walker River at Mason Gage	6 NDEP	W9	310117
E.Walker River at Nordyke Road	6 NDEP	W3	310029
W.Walker River at Nordyke Road	6 NDEP	W4	310026
E.Walker River at the Elbow	6 NDEP	EFE	310109
E.Walker River at Ivy Ranch	6 NDEP	EF5	310112
W.Walker River at Hudson Gage	6 NDEP	W7	310118
E.Walker River at Stateline	6 NDEP	EFS	310028
W.Walker River at Topaz Lane	6 NDEP	W5	310023
W.Walker at Wellington	6 NDEP	W10	310025
Topaz Lake	6 NDEP	TOP	310024
Desert Creek	6 NDEP	DC	310033
Sweetwater Creek	6 NDEP	SWC	310027
Walker Lake at Sportsmans Beach	6 NDEP	WL	310652
HUMBOLDT RIVER SYSTEM			
Mary's River	6 NDEP	HS1	310087
N.F. Humboldt River at I-80	6 NDEP	HS2B	310188
N.F. Humboldt River at N.F. Ranch	6 NDEP	HS15	310585
N.F. Humboldt River at Taco Tunnel	6 NDEP	HS16	310584
Humboldt River at Osino Cutoff	6 NDEP	HS4	310080
S.F. Humboldt River below Dixie Cr	6 NDEP	HS3A	310089
Humboldt River near Carlin Bridge	6 NDEP	HS5	310081
Humboldt River near Palisade	6 NDEP	HS6	310082
Humboldt River at Battle Mountain	6 NDEP	HS7	310083
Humboldt River at Comus	6 NDEP	HS8	310084
Humboldt River near Imlay	6 NDEP	HS9	310085
Toulon Drain	6 NDEP	HS10	310091
Humboldt River near Humboldt Sink	6 NDEP	HS12	310086
Pine Creek	6 NDEP	HS13	310582
Maggie Creek	6 NDEP	HS14	310583
South Fork Reservoir	6 NDEP	SFR	310587
Below Rye Patch Reservoir	6 NDEP	H6	310079

TABLE 2 (CONTINUED)
LIST OF NDEP'S ROUTINE MONITORING NETWORK

RIVER SYSTEM	Frequency Time/Year Agency	NDEP Station Number	STORET Number
COLORADO RIVER SYSTEM			
Colorado River at Willow Beach	4 NDEP	CL2	310054
Colorado River below Davis Dam	4 NDEP	CL1	310055
Las Vegas Wash at Northshore	4 NDEP	CL3	310070
Road	4 NDEP	CL6A	310032
Virgin River at Riverside Bridge	4 NDEP	CL6	310037
Virgin River at Mesquite	4 NDEP	CL4	310071
Muddy River at Glendale	4 NDEP	CL11	310095
Muddy River near Overton			
LAKE TAHOE TRIBUTARIES			
First Creek at Dale & Knotty Pine	6 NDEP	1A	310056
First Creek at Lakeshore Drive	6 NDEP	1B	310057
Second Creek at Second Creek Dr.	6 NDEP	2A	310058
Second Creek at Lakeshore Drive	6 NDEP	2B	310059
Wood Creek at Lakeshore Drive	6 NDEP	WO	310061
E.F. Third Creek at Hwy 27	6 NDEP	EF3A	310063
Third Creek at Lakeshore Drive	6 NDEP	3B	310064
W.F. Incline Creek at Hwy 27	6 NDEP	WFINCA	310065
Incline Creek at Lakeshore Drive	6 NDEP	INCL	310067
Lake Tahoe at Sand Harbor	6 NDEP	SH	310128
E.F. Incline Creek below Diamond Peak	6 NDEP	EFINCA	310066
Lake Tahoe at Cave Rock	6 NDEP	CR	310588
SNAKE RIVER SYSTEM			
S.F. Owyhee River at IL Ranch	4 NDEP	E1	310050
E.F. Owyhee River at Boney Lane	4 NDEP	E2	310049
E.F. Owyhee River at China Dam	4 NDEP	E3	310048
E.F. Owyhee River above Mill Creek	4 NDEP	E4	310047
W.F. Bruneau River at Mind Ranch	4 NDEP	E5	310046
W.F. Jarbidge River below Jarbidge	4 NDEP	E6	310045
W.F. Jarbidge River above Jarbidge	4 NDEP	E7	310044
E.F. Jarbidge River above Murphys	4 NDEP	E11	310043
Salmon Falls Creek at Hwy 93	4 NDEP	E8	310041
Shoshone Creek	4 NDEP	E9	310042
Big Goose Creek	4 NDEP	E10	310040
Below Wildhorse Reservoir	4 NDEP	E12	310586

TABLE 2 (CONTINUED)
LIST OF NDEP'S ROUTINE MONITORING NETWORK

RIVER SYSTEM	Frequency Time/Year Agency	NDEP Station Number	STORET Number
TRUCKEE RIVER SYSTEM			
Truckee River at Farad	12 DRI	T1	310000
Truckee River at Circle C Ranch	12 DRI	T7	310092
Truckee River at Idlewild	12 DRI	T2	310001
Truckee River at McCarran Bridge	12 DRI	T3	310002
Truckee River at Vista Gage	12 DRI	T4A	310006
Truckee River at Tracy	12 DRI	T5	310004
Truckee River at Wadsworth	12 DRI	T6	310005
Truckee River at Nixon	12 DRI	T10	310514
North Truckee Drain	12 DRI	T9	310513
Steamboat Creek above WWTP	12 DRI	T8	310502
CARSON RIVER SYSTEM			
W.F. Carson near Paynesville	6 NDEP	C8	310008
E.F. Carson at Riverview	6 NDEP	C9	310011
E.F. Carson at Hwy 88	6 NDEP	C16	310152
E.F. Carson at Muller	6 NDEP	C15	310093
Brockliss Slough at Muller Lane	6 NDEP	C5	310060
W.F. Carson at Muller Lane	6 NDEP	C14	310165
Carson at Genoa Lane	6 NDEP	C3	310013
Carson at Cradlebaugh Bridge	6 NDEP	C2	310014
Carson at Mexican Gage	6 NDEP	C13	310167
Carson at New Empire Bridge	6 NDEP	C1	310015
Carson at Dayton Bridge	6 NDEP	C11	310022
Carson at Weeks Bridge	6 NDEP	C10	310016
Truckee Canal at Hwy 50	6 NDEP	C22	310510
Carson below Lahontan Dam	6 NDEP	C18	310106
Bryant Creek	6 NDEP	C20	310009

TABLE 2 (CONTINUED)
LIST OF NDEP'S ROUTINE MONITORING NETWORK

RIVER SYSTEM	Frequency Time/Year Agency	NDEP Station Number	STORET Number
STEAMBOAT CREEK SYSTEM			
Little Washoe Outfall	6 NDEP-WCCP*	SB1	310200
Steamboat Creek at Pleasant Valley	6 NDEP-WCCP	SB3	310201
Galena Creek	6 NDEP-WCCP	SB4	310202
Steamboat Creek at Rhodes Road	6 NDEP-WCCP	SB5	310203
Steamboat Ditch	6 NDEP-WCCP	SB6	310204
Steamboat Creek at Geiger Grade	6 NDEP-WCCP	SB7	310205
Whites Creek	6 NDEP-WCCP	SB8	310206
Thomas Creek	6 NDEP-WCCP	SB10	310207
Steamboat Creek at Short Lane	6 NDEP-WCCP	SB11	310208
Alexander Ditch	6 NDEP-WCCP	SB12	310209
Rio Poco Drain	6 NDEP-WCCP	SB14	310210
Boynton Slough	6 NDEP-WCCP	SB16	310211
Steamboat Creek near Pembroke Lane	6 NDEP-WCCP	SB17	310212
Yori Drain	6 NDEP-WCCP	SB18	310213
Steamboat Creek at Clean Water Way	6 NDEP-WCCP	SB19	310214
*Washoe County Comprehensive Planning			

OTHER SOURCES OF WATER QUALITY DATA

U.S. Geological Survey (USGS):

Water Resources data collected by the USGS also serves as a source of water quality data. Surface water resources data collected for the 1994 water year comprise the following record (Clary, S. et al. 1995).

1)Water discharge for 187 gaging stations on streams, canals and drains

2)Discharge data for 160 peak-flow stations and miscellaneous sites, and 66 springs

3)Stage and contents for 22 lakes and reservoirs

4)Water quality data for 177 streams, canals and drain sites, and 154 wells

NAWQA Program:

In addition to routine monitoring, USGS is also conducting the National Water Quality Assessment Program (NAWQA). The program's intent is to describe the status and trends in water quality conditions for a large, diverse, and geographically distributed part of the Nation's ground and surface water resources. Also, the intent of the program is to identify, describe, and explain the major natural and human factors that affect these observed conditions and trends.

The Nevada Basin and Range NAWQA program, which includes the Las Vegas Valley area and the Carson and Truckee River basins, began in 1991. Data on physical, chemical, and biological properties of surface and ground water resources in the program study unit will be combined with data from up to 59 other study units to represent water quality conditions in resources that provide more than 60 percent of the Nation's drinking water supplies (Clary, S. et al 1994).

NASQAN Program:

Water chemistry stations maintained by the USGS include the National Stream - Quality Accounting Network (NASQAN). NASQAN is a nationwide data-collection network designed by USGS to meet needs of government agencies and other groups involved in water quality planning and management (Clary, S. et al 1994). The following stations are part of the NASQAN network in Nevada:

	USGS Station Number
Colorado River	
Virgin River at Littlefield, AZ	09415000
Colorado River Below Hoover Dam, AZ-NV	09421500
Carson River	
Carson River near Fort Churchill	10312000
Humboldt River	
Humboldt River near Carlin	10321000
Truckee River	
Truckee River near Nixon	10351700

The NASQAN program sampling frequency is six times per year for the parameters listed in Table 3.

TABLE 3

List of parameters analyzed in the USGS NASQAN Monitoring Program
(Analyses reported as dissolved unless otherwise noted)

Conventional Pollutants

Flow
Specific conductance
Field pH
Temperature
Turbidity (NTU)
Dissolved Oxygen
Hardness (as $CaCO_3$)
Calcium
Magnesium
Sodium
Potassium
Bicarbonate (as HCO_3)
Carbonate (as CO_3)
Total Alkalinity (as $CaCO_3$)
Sulfate
Chloride
Fluoride

Metals

Aluminum
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt Selenium
Copper
Iron
Vanadium
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Silver
Strontium

Conventional Pollutants

Silica
Suspended Sediments
Total Dissolved Solids
Nitrite - Nitrogen (total)
Nitrite-N
Nitrate + Nitrite Nitrogen (total)-N
Nitrate + Nitrite-N
Ammonia Nitrogen (total)-N
Ammonia Nitrogen-N
Ammonia + Organic Nitrogen (total)-N
Phosphorus (total)-P
Phosphorus-P
Ortho Phosphorus (total)-P
Ortho Phosphorus-P

Bacteriology

Fecal Coliform
Fecal Streptococcus

The NAWQA program in Nevada consist of various projects. Some of these include:

Lake Tahoe Basin Study

The USGS has 33 surface water stations where streamflow and water quality data are routinely collected around Lake Tahoe. The surface-water data will be used to provide a long term data base of streamflow and of sediment and nutrient loadings from major tributaries to Lake Tahoe.

Walker Lake Basin Study

Located in west-central Nevada and eastern California, the study will assess and monitor the flow and chemistry of water in the Walker Lake hydrographic basin. Stream flow and water chemistry are measured at eight gaging stations on the Walker River and its tributaries. Walker Lake water levels and chemistry are also measured. The study will be used to determine long-term average annual water and salt inputs to Walker Lake.

Carlin Trend Network

Located in north-Central Nevada, the study consists of 7 stream gaging stations, 15 sites for miscellaneous streamflow measurements, 1 site for surface water quality, and 25 wells for water level measurements. These sites are used for monitoring regional hydrologic conditions in basins near large mines along the trend.

Stillwater Environmental Monitoring

This program is located in the Stillwater National Wildlife Refuge and Carson Lake. USGS is responsible for the hydrologic component of a biological focused data-collection program. Water quality and drainflow measurements are made routinely at nine principal agricultural drains that enter the two wetland areas. The program began in 1994 and will provide a long-term database with which to gage environmental changes that may occur as a result of changes in management of irrigation water of the Newlands Irrigation Project. Collecting and reporting of biological data are the responsibility of U.S. Fish and Wildlife Service.

Other USGS Sampling

The USGS has a number of stations scattered around the State where discharge, chemistry and temperature are measured on a less frequent basis.

Hydrologic Bench-Mark Network

The USGS also maintains a monitoring network on small drainages whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected the activities of humans (Clary, S. et al 1994). The following three stations are part of Nevada's Bench-Mark Network

	USGS Station Number
Steptoe Creek near Ely	10244950
South Twin River near Round Mountain	10249300
Sagehen Creek near Truckee, CA	10343500

Permit Required Ambient Monitoring

Ambient off-site monitoring programs have been included as permit conditions on the Reno-Sparks Water Reclamation Facility (RSWRF) to monitor the Truckee River and Clark County Sanitation District and City of Las Vegas to monitor Lake Mead and Las Vegas Wash. These programs were developed to determine violations of water quality standards, maintain and validate water quality models, and to assess trends in water quality. These monitoring programs are described in Appendices A and B.

Desert Research Institute (DRI)

In addition to the monitoring requirements in the RSWRF permit, DRI maintains a State funded program on the Truckee River. The DRI program includes stations from above Farad at the California Stateline to Nixon, Nevada. The data is uploaded into STORET by NDEP several times a year and contains parameters similar to those listed in Table 1.

Biological Monitoring

Water quality monitoring of the Truckee River and Las Vegas Bay includes some biological analyses. The program outlined in Appendix B requires that benthic invertebrate samples be collected at four stations on a quarterly basis in the Truckee River. The program outlined in Appendix A requires Chlorophyll a and zooplankton to be measured in Las Vegas Bay.

In addition, NDEP has been working with U.S.EPA Region IX staff to develop a rapid bioassessment protocol that could be modified to work in arid Great Basin Streams. NDEP hopes to develop macroinvertebrate sampling using new protocols at key routine sampling sites in the near future. Several stations along the Carson River and Walker River were sampled by EPA and NDEP in 1994-95.

NDEP has participated and will continue to participate withU.S.EPA in conducting intensive surveys, bioassessments and priority pollutant sampling. A statewide program was conducted in 1991 which included water, sediment and fish sampling.

Current Projects

NDEP has been conducting a survey of the Steamboat Creek Watershed since 1987. It is now, and will probably remain part of the routine monitoring program. NDEP is also active in the Steamboat Creek Restoration Committee. The goals of the Committee are to improve the water quality of Steamboat Creek while enhancing public and private properties and also wildlife habitat. The Committee is also considering the dynamics of the creek's history, sediment loads, source of contaminants and its relationship to its tributaries. The information will be used to develop a functional plan for the creek's restoration.

Other Monitoring Programs

The sampling program to detect pesticides in ground water is a component of the Nevada State Ground Water Protection Pesticide Management Plan (SMP) developed by the Nevada Division of Agriculture. The goal of the sampling program is to evaluate potential and existing pesticide occurrences in ground and surface water. The sampling program is outlined in the SMP (currently in draft form). Due to limited resources dedicated to this project, the agricultural areas selected for sampling will rotate from year to year in a cyclic manner. Each area will be sampled twice during a growing season, once at the beginning and once toward the end of the irrigation period. Every effort will be made to sample the same locations during both phases of sampling. Approximately 25 samples each of surface and ground water will be taken during each phase of sampling. Sample locations most prone to pesticide contamination, based upon chemical usage and soil type will be targeted. This cooperative effort is the result of an MOU between the Division of Agriculture and the NDEP.

Other special monitoring programs are conducted under 319, 314, 205(j), and 604(b) grants. Details of these monitoring programs can be found in their respective workplans and quarterly reports.

Compliance Monitoring

Monitoring and Inspections

There are 11 National Permit Discharge Elimination System (NPDES) dischargers in the State which are considered to be major and 76 minor NPDES discharges out of a total of 272 permitted discharges. At least once per year, an inspection will be made of each major discharger to determine compliance with permit conditions. The minor dischargers will be inspected once during the life of the permit. Sampling will be conducted on at least one third of the major dischargers each year. Operations and maintenance inspections will also be conducted concurrently on Publicly Owned Treatment Work's (POTW's) with zero and groundwater discharges (non NPDES). A schedule for inspecting all major dischargers will be submitted to EPA annually. A list of inspections conducted during each quarter will be submitted to the Regional Administrator by July 15, October 15, January 15, and April 15, each year. Unless evidence of noncompliance is found, a maximum of one day will be spent at each facility.

Continuous compliance monitoring will be conducted by reviewing discharge monitoring reports (DMR), submittals in accordance with any implementation schedules, and spot checks of the facilities. Dischargers with incomplete or tardy reports will be notified.

A copy of the DMRs are submitted to the Regional Administrator. A copy of all inspection forms or reports along with any other pertinent testing will also be sent to the Regional Administrator. Separate files will be maintained for each discharger into which all data pertaining to the discharger will be filed.

Laboratory Support and Quality Assurance

The Nevada State Health Laboratory is the support laboratory for the water quality monitoring program. The laboratory is certified by U.S.EPA under the Safe Drinking Water Act, and meets the criteria established by the NDEP laboratory certification program. All data accepted by NDEP under Clean Water Act authority must be analyzed by a laboratory certified by NDEP's Certification Program.

All routine monitoring data collected by NDEP is uploaded into STORET, theU.S.EPA national data base. We are currently working with two major NPEDS dischargers who have ambient monitoring requirements to develop STORET capability. The Reno-Sparks Wastewater Treatment Facility currently provides chemical analysis data to NDEP for uploading into STORET.

WATER POLLUTION CONTROL PROGRAM
POINT SOURCE CONTROL PROGRAM

The State of Nevada has been granted primacy to issue NPDES permits. In addition, point sources with discharges to the groundwater of the State are issued similar Nevada Ground Water Discharge permits. The application, issuance and compliance phases are similar for both types of permits.

The importance of these permits and compliance steps has resulted in a marked improvement of the surface water quality, even with increasing population demands on the limited water resources of the State.

The steps that the NDEP follows to issue and then ensure compliance of the effluent limits on the permits, are listed below.

Permit Application Management

Anyone who discharges pollutants or proposes to discharge pollutants to the waters of the United States or waters of the State of Nevada must obtain a discharge permit except for those types of discharges that are defined under 40 CFR 122.3.

Direct dischargers in the State are permitted by NDEP. These permits must be reapplied for renewal 180 days prior to the expiration of their current permit. For those that have not made application for a discharge permit or renewal of their existing permit, form letters are sent requesting that they file an application within 30 days. If there is no response to this request, the matter is referred for enforcement action. If an exemption is claimed, a site inspection will be conducted by the staff to determine the validity of the exemptions. All decisions may be appealed to the State Environmental Commission (SEC) within 20 days of this action. If an exemption is claimed or there is no response to a second request, an inspection of the site will be made by the staff. An inspection report will be completed, and depending upon the situation, appropriate action will be taken. If the discharger has simply refused to file, an application form will be given to him at the time of the field inspection. The discharger will be informed that the completed application must be received by staff within 15 days of the inspection. Should the discharger fail to submit the application, the Attorney General's office will be requested to take legal action.

When a permit application is received, the application will be processed in accordance with the following procedures:

1. The application is reviewed to determine if it is accurate and complete. An application is deemed complete if sufficient information is supplied for the NDEP to determine the quantity and quality of the effluent; the receiving water and point of discharge; that the discharge will not cause a violation of any water quality standard (WQS) or other regulations adopted by the SEC; and the discharge will be in compliance with the CWA and regulations and guidelines adopted thereunder.

2. Once the application is deemed complete, the applicable areawide water quality management plan (AWQMP) is reviewed to determine if the application for discharge is consistent with the plan and whether or not the AWQMP is current. Since WQS are reviewed once every three years, it is possible that an application for a permit may be received between WQS revisions and updates to the AWQMP necessitated by the WQS revisions.

   The AWQMP evaluates the conditions necessary for achievement of the WQS for a given body of water. This evaluation determines if the Total Maximum Daily Loads (TMDL) are necessary to achieve the WQS; evaluates the total load or wasteload allocation (WLA) each point source can contribute, taking into account non-point source loading; recommends effluent limits (EL) for each point source given the expected flow for the 20 year planning period; and recommends methods of reducing non-point source loads to a given goal.

   a. If the discharge is listed in a current AWQMP, EL are proposed in the draft permit consistent with and at least as stringent as the recommended EL for the facility as contained in the AWQMP.

   b. If the discharge is not listed in the current AWQMP, the AWQMP plan is not current or the application is for a flow volume greater than evaluated in the AWQMP, further evaluation is needed.

3. If the proposed discharge falls under 2b above, an evaluation must be made as to what EL are needed to meet the WQS of the receiving stream.

   The WQS are set as one set of standards applicable to the entire body of water or as different sets of standards for different segments of a body of water. For stream segments, the applicable WQS is established by control points. The WQS delineated at a specified control point applies upstream to the next control point. For bodies of water, the boundaries of the set WQS applicable to it are established.

   In order to apply this process, regulations have been adopted allowing a zone of mixing (NAC 445A.295-302). A zone of mixing allows the WQS not to be met in a specified area of the receiving water in order to allow the discharge to mix with the receiving water and meet the WQS at specified point(s) other than the point of discharge. A mixing zone is only allowed when the point source discharge has received the best degree of treatment or control practicable with current technology, it will not result in an esthetics problem within the zone of mixing, where acute toxicity values will not occur in the zone of mixing and for stream mixing zones, where a zone of passage (NAC 445A.299) will exist. In applying a zone of mixing some critical flow or volume is used to determine the expected "worst-case" dilution factor.

   Therefore, for the case when further evaluation than that contained in the AWQMP is needed, EL are developed with the application of a zone of mixing.

EL developed in this manner are interim limits. If they are not consistent, they are modified to become consistent.

4. Once the EL are derived, they are incorporated into a draft permit. If the facility has the capability to meet the limits immediately, they become the limits proposed in the draft permit. If the facility cannot presently meet the limits, a compliance schedule must be proposed in the permit which allows the permittee a reasonable time to make whatever modification are necessary to enable the facility to meet the EL. During this time frame, interim limits must be met. The interim limits usually are proposed as the design parameters of the present plant.

After the draft permit has been prepared, it is routed through the Bureau of Water Quality Planning to insure compliance with the Basin plans and WLA. The draft is also circulated in-house for other NDEP sections comments and this also gives notice to these sections of any potential problems that may concern them. After all internal comments are received, the draft permit will be sent to the discharger and the U.S.EPA for comment unless the Regional Administrator waives the right to comment.

At the end of the 30 day review period, any changes the NDEP feels are warranted, based on the applicant's and U.S.EPA's comments, are made and the proposed permit is public noticed (NAC 445.146) in a paper of local circulation and sent to interested persons on a mailing list. A period of not less than 30 days following the publication of the public notice is provided to receive comments on the proposed permit.

All comments and recommendations submitted by U.S.EPA must be addressed either by an appropriate version of the proposed permit or by a letter to U.S.EPA documenting why the modifications recommended by U.S.EPA were not incorporated.

If U.S.EPA objects to the proposed permit, it cannot be issued until all objections have been eliminated. Any objections submitted by U.S.EPA must specifically identify a lack of compliance with the CWA or regulations, policies or procedures adopted thereunder.

Should substantial changes be made to the draft permit due to comments received, the permit will be re-notified in the manner stated above. Substantial changes in this instance means only those changes that tend to lessen the requirements of the permit. These would be such things as increases in effluent limits discharge or longer periods for compliance. If the permit conditions are relaxed due to comments or testimony received at a public hearing, the redrafted permit will be sent to the Regional Administrator for concurrence.

The final permit is sent to the discharger, the Regional Administrator, and to those people or agencies on the mailing list to receive final permits. The issuance constitutes final agency action for the purpose of appeal under NRS 445A.

COMPLIANCE MONITORING AND ENFORCEMENT

At least once per year, an inspection is made of each major discharger to determine compliance with the permit conditions. The minor dischargers are inspected at least once during the life of the permit and possibly every two years. Sampling will be conducted on at least one-third of the major discharges (as defined by the U.S.EPA) each year. Operations and maintenance inspections are also conducted concurrently.

A schedule of inspections to be conducted during the year is submitted to the Regional Administrator with the workplan each year showing which dischargers will be sampled. Unless evidence of noncompliance is found, a maximum of one day is spent at each facility. In determining compliance, a checklist will be followed. Continuous compliance monitoring will be conducted in reviewing discharge monitoring reports, submittals in accordance with any implementation schedules and spot checks of the facilities.

NDEP maintains and periodically reviews a tracking system to determine timely compliance by dischargers. The criteria reviewed are comprised of quarterly reporting dates, compliance schedule dates, and dates of expiration and reapplication, and other such dates as may be specified in the relevant permit.

All reports are reviewed for compliance with applicable permit requirements. In the case of non-compliance, appropriate enforcement is taken. The violation and enforcement action taken are logged on a master list.

In the event of non-compliance with either effluent limitations, implementations, or other permit conditions, contact will be made with the permittee by telephone to determine the cause of non-compliance which will then dictate the type of response from NDEP. If the non-compliance is due to a single isolated effluent violation or lack of reporting progress, the permittee will be asked to correct the situation. Once a facility has been identified as having a history of permit violations, a review is conducted on the magnitude, frequency, and duration of the violations. If significant permit violations are identified, the Administrator will issue a Finding of Violation and Order. NDEP's determination as to how to proceed in any legal enforcement action will be made pursuant to evaluation of the facts by NDEP personnel. There is a Deputy Attorney General assigned to NDEP specifically to handle environmental pollution matters in the enforcement of the Water Pollution Control Law. By Statute, NDEP does not have to obtain concurence from the Attorney General’s Office. NRS 445.354 states:

> "The Attorney General shall serve as legal counsel for the commission and the department and shall, at the request of the director, assist in the enforcement of the provision of NRS 445.131 to 445.354, inclusive."

Pursuant to NRS Section 445.317,” whenever the Director finds that any person is engaged in or about to engage in any act or practice which violates any provisions of the Law or of any rule or regulation promulgated thereunder, the Director may refer the case to the Attorney General's office along with recommendations for such legal action as is deemed appropriate.”

GROUND WATER PROTECTION IN NEVADA

Legislation (and pursuant regulations) in Nevada that protects ground water reflects Nevada's overall approach to the protection of ground water. Nevada's approach, in general terms, is to focus on controlling specific sources of contamination and providing technical and financial support to communities wishing to develop local Wellhead Protection Plans (WHPPs). While there is no comprehensive ground water quality protection legislation in the state, Nevada has statutes that provide for source-specific controls and land use statutes that enable local authorities to implement Wellhead Protection Programs.

Source control statutes address mining, underground storage tanks, septic systems, hazardous waste and materials, solid waste, underground injection wells, agricultural practices, wastewater, and Resource Conservation and Recovery Act (RCRA) facilities. Additional statutory mandates empower municipalities to engage in wellhead protection activities by: enabling them to adopt zoning ordinances, subdivision regulations, and site plan review procedures; allowing them to participate in site plan review processes as part of state permitting procedures; and enabling them to implement certain source control programs at the local level.

CSGWPP ENDORSEMENT

Nevada has developed a Comprehensive State Ground Water Protection Program (CSGWPP) as recommended by U.S.EPA. Nevada’s Core CSGWPP is described in the CSGWPP Profile, which describes Nevada’s ground water protection efforts, and the CSGWPP Self-Assessment, which compares Nevada’s efforts to U.S.EPA’s criteria. The U.S. EPA endorsed Nevada’s Core CSGWPP in November 1997.

GROUND WATER PROTECTION GOAL

Nevada's ground water protection goal is stated in water quality legislation. The Nevada Revised Statutes (NRS) include several bodies of law with direct applicability to the protection of ground water quality. The primary statute is the Nevada Water Pollution Control Law (NRS 445A, Sections 300 to 730). The goal of the Nevada Water Pollution Control Law, which provides authority for many source control programs, is as follows (NRS 445A.305(2)):

(a) To maintain the quality of the waters of the state consistent with the public health and enjoyment, the propagation and protection of terrestrial and aquatic life, the operation of existing industries, the pursuit of agriculture, and the economic development of the state; and

(b) To encourage and promote the use of methods of waste collection and pollution control for all significant sources of water pollution (including point and diffuse sources).

Ground water is included in this goal because NRS 445A.415 defines “waters of the state” as:

> ...all waters situated wholly or partly within or bordering upon this state, including but not limited to:
>
> 1. All streams, lakes, ponds, impounding reservoirs, marshes, water courses, waterways, wells, springs, irrigation systems and drainage systems; and
> 2. All bodies or accumulations of water, surface and underground, natural or artificial.

Goals for ground water protection programs such as Hazardous Waste Disposal, Solid Waste, and Chemical Accident Prevention are also contained in legislation (Nevada CSGWPP Profile, 1998). Upon comparison, the goals of these statutes are consistent with those of the Water Pollution Control Law.

In addition to statutes relating directly to water quality, Nevada's statutes regarding water quantity issues also include goals that address ground water quality issues. Title 48 of the NRS is comprised of 13 Chapters governing the use of waters in Nevada. Chapter 534 specifies that, like surface waters, ground water in Nevada is subject to appropriation for beneficial use. Legislative intent, as documented in NRS Chapter 534.020(2), of these particular statutes is: "...to prevent the waste of underground waters and pollution and contamination thereof...". The Nevada Division of Water Resources is responsible for enforcing these statutes and the regulations promulgated under their authority.

Nevada Continuing Planning Process

Nevada's Water Pollution Control Law mandates a Continuing Planning Process (CPP) to be carried out by the Department of Conservation and Natural Resources. Although the CPP was developed primarily for use in surface water planning and management, it has also been chosen as a tool for ground water protection planning. The Protection Plan identifies eight activities undertaken by the NDEP as part of the CPP, three of which address evaluating the state's progress in achieving its ground water protection goals:

* NDEP prepares and implements water quality management plans that include specific programs, priorities, and targets for preventing and controlling water pollution.

* NDEP develops the state strategy for major objectives, approaches and priorities over a five-year period.

* NDEP develops annual state program plans, based on the state strategy, which include a mechanism for reporting progress toward achieving program objectives.

The State of Nevada adopted a CPP in March 1973, and revised it in May 1976, July 1977, July 1984, and November 1985. As specified in the 106 Workplan, this document has been revised and expanded in 1993. Currently a draft of the 1993 CPP has been developed and is being reviewed.

Ground water and wellhead protection has been identified as key concerns statewide. Efforts were coordinated with Region IX, U.S.EPA, and Fernley in support of a WHP project supported by U.S.EPA Special WHP Demonstration Project Funds. This funding was awarded to Fernley as Nevada's first WHP demonstration project.

Continuing NPS program activities include 319(h) grant funded projects in support of pollution prevention by educational outreach opportunities addressing ground water protection programs and WHP activities.

Nevada has also formed a Ground Water Protection Task Force which involves a cross section of different agencies which deal with ground water and wellhead protection issues. This group will be instrumental in the revision of the state plan.

A copy of the State of Nevada's Comprehensive State Ground Water Protection Program Profile may be obtained by writing to: Nevada Division of Environmental Protection, Bureau of Water Quality Planning, 333 West Nye Lane, Suite 138, Carson City, Nevada 89706-0851.

WELLHEAD PROTECTION

As mandated by the 1986 amendments to the Safe Drinking Water Act (SDWA), all states are required to develop a State Wellhead Protection Program to guide local governments, communities and utility companies in the preparation of local Wellhead Protection Programs. Nevada's guidance document titled "The Nevada Wellhead Protection Program" was approved by U.S.EPA in February 1994. Wellhead protection is a voluntary program to empower local communities to develop local wellhead protection programs to protect their underground drinking water resources. The U.S. EPA provides funding and technical assistance to the states, who in turn, provide technical assistance, financial assistance when possible, and program guidance to local communities and public water system purveyors.

There are seven elements, or components, to the development of a comprehensive Wellhead Protection Program (WHPP). Inclusion of all of the components to an appropriate degree would make a local WHPP eligible for state endorsement:

- identify roles & responsibilities of all affected entities and form a WHPP team;
- delineate Wellhead Protection Areas (WHPAs);
- identify existing and potential contaminant sources;
- implement WHPA management strategies;
- make contingency plans;
- plan for the siting of new wells; and
- encourage public participation.

The basic concept of wellhead protection is to determine the land surface area, called the wellhead protection area, that should be managed in order to protect the ground water being pumped from a well. Then all existing and potential contaminant sources within the wellhead protection area are located, inventoried and mapped within the wellhead protection area. Examples of potential contaminant sources include underground storage tanks, improperly abandoned wells, landfills, and septic systems. Using this information, various management options are considered, and appropriate types of management are enacted. Wellhead protection programs also include plans for dealing with emergencies or accidental contaminant exposure, while ensuring that the ground water is not affected. Public participation and education should be incorporated into all elements of a wellhead protection program. Wellhead protection is managed by NDEP.

The 1986 amendments to the Federal Safe Drinking Water Act mandated that each state develop a wellhead protection program for the purpose of protecting ground water which serves as a source for public drinking water supplies. NDEP has received approval from U.S.EPA for its wellhead protection program. Nevada's primary goal in wellhead protection is the protection of public drinking water supplies by the implementation of contaminant source control at the community level.

The Nevada Wellhead Protection Program involves a multifaceted, voluntary program at both the state and local level. The following primary objectives have been designed by the state to motivate and empower communities for their participation in wellhead protection activities.

* generate interest and participation in wellhead protection activities through public outreach and education;

* place responsibility for wellhead protection at the local level;

* develop program guidelines which will facilitate community involvement in all aspects of wellhead protection; and,

* provide technical assistance as requested.

A copy of the State of Nevada's Wellhead Protection Program may be obtained by writing to: Nevada Division of Environmental Protection, Bureau of Water Quality Planning, 333 West Nye Lane, Suite 138, Carson City, Nevada 89706-0851.

NONPOINT SOURCE PROGRAM

The primary goal of the State's Nonpoint Source (NPS) Management Program is to identify, control and abate the impacts of NPS pollution on the quality of the State's surface and ground water.

In 1987, the CWA was amended to address diffuse or "nonpoint" sources of water pollution. Section 319 of the CWA required two major reports to be completed by the State: a State Assessment Report (SAR) which describes the nature, extent, effect and cause of NPS pollution; and a State Management Plan (SMP) which provides an overview of the State's NPS programs.

Except for the Colorado River, assessments for all major river basins have been completed. Updates to the SAR are made as additional work is completed. The State Management Plan was completed in 1989 and approved by U.S.EPA Region IX in January, 1990. The SMP is effectively updated with each yearly NPS workplan.

The SMP was also required to outline annual milestones for program implementation, sources of funding for supporting program implementation, and a methodology to review Federally funded programs and development projects to insure consistency with the State's NPS Program.

Two important components the SMP addresses are: best management practices including measures to reduce pollutant loadings; and NPS programs (including as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects) to achieve implementation of the best management practices.

Best Management Practices (BMPs) are those methods, measures, or practices designed to prevent or reduce water pollution, including, but not limited to structural and nonstructural controls, and including both operation and maintenance procedures. BMPs can be effective when applied both before, during or after pollution producing activities to eliminate or reduce the introduction of pollutants into receiving waters.

The State Conservation Commission prepared a handbook of BMPs which received considerable input from interest groups, localities, NDEP and Conservation Districts. NDEP is responsible to review the handbook every two years and revise as necessary. The last review and update was completed in 1996. NDEP consults with the State Conservation Commission regarding each review and revision.

The State's current approach to controlling nonpoint sources of water pollution is to seek voluntary compliance through non-regulatory programs of technical and financial assistance, training, technology transfer, demonstration projects and education. This approach includes coordination of land and water resource management agencies and public outreach. In addition to the various fact sheets, newsletters and displays developed by the NPS Program for outreach and training, each year several education and/or demonstration projects are funded with Section 319(h) grants awarded to local entities. The NPS State program has also entered into Memoranda of Understanding (MOUs) with various federal and state agencies to develop appropriate working procedures related to water quality protection and NPS pollution prevention and control activities in the State.

NONPOINT SOURCE PROJECTS: COMPLETED AND IN-PROGRESS

State-wide Projects

Analytical Services - Analytical Services provided by the Nevada Bureau of Laboratory and Research.

Nevada Farm/Home*A*Syst - Implement a national program of ground water protection that employs an educational component, on-farm risk assessments, and helps individuals with risk-reduction assistance.

Nevada Project WET - To train educators in teaching water resources topics and to prepare educational materials.

RSVP Wellhead Protection, Contaminant Source Inventory - To utilize volunteers from the Retired Senior Volunteer Program to conduct source inventories in local communities implementing a state endorsed Wellhead Protection program.

Conservation District Annual Report - Develop and publish a report of cooperative efforts of state and federal agencies' projects to control NPS pollution.

RSVP Class V Well Inventory & Public Education - Inventory the Class V wells in the following counties: Douglas, Lyon, White Pine, Lincoln and Lander. Inventory information collected include the physical address, latitude and longitude, existing land use and well status.

Domestic Well & Septic System Booklet - To educate the general public about reducing the potential for shallow ground water contamination from septic systems.

Grazing Conferences - To develop three NPS workshops throughout the state. The workshops addressed NPS issues as they related to livestock operators, such as, how to identify, monitor, and participate in NPS assistance programs.

Water Education for Teachers - To maintain an active, coordinated corps of educators and to meet the demands for WET workshops and seminars in rural and urban communities; to address nonpoint source pollution and ground water and surface water educational needs.

Nevada Seedbank Program - To construct a safe and accessible storage building for seed storage and maintenance, and to purchase appropriate native and adapted seeds.

Snake River Basin

Bruneau River Watershed Management - To protect critical areas through installation of sediment control, structures and planned grazing systems; restore riparian habitat; stream stabilization.

Ramsey Draw Riparian Fence - Improve the riparian condition and water quality of the draw through installation of fencing, construction of off-site watering sites and implementation of a grazing management plan.

Central Basin

Gleason Creek Watershed Improvement Project - Reduce and eliminate rangeland and riparian area erosion and sedimentation by installing livestock watering facilities, fencing and cattle guards.

Virginia Dale Spring Development - Development of spring, installation of livestock watering facilities and fencing to prevent degradation of the water quality/supply.

Gleason Creek Riparian Improvement - To arrest head cutting and erosion processes, the project components include: loose rock structures, fencing to improve livestock management, and off-site watering facilities.

Colorado River Basin

Muddy River Enhancement Project - Enhance existing habitat and stream conditions; re-establish native vegetation, which improves habitat for endangered and threatened fish species, form a working coalition to promote the use of best management practices, and create a centralized data system.

Source-Area Evaluation of Hydrophobic Synthetic Organic - Sample Las Vegas Wash and tributary washes for synthetic organic compounds in water and bottom sediments.

Stormwater Quality Management Project - To implement a community based storm water quality management program in Henderson, Nevada.

EcoMasters Educational Video Game - To acquire and modify to address Las Vegas characteristics, an educational environmental video game. To distribute (free), the video game to Clark County School District.

Las Vegas VWD Wellhead/Aquifer - To develop and implement an aquifer protection program to protect the public drinking water supply of Las Vegas Valley residents.

Water Quality Resource Guide for Clark County - Create a booklet entitled "Preserving our Water Resources", a guide for Southern Nevada Residents.

Water Education Video - Presents a natural and civic history of water in the Las Vegas Valley, the water cycle and the water use cycle. It will be presented to area schools, general public and interested organizations. Part of a three part multi-media water education package coordinated by the UNLV Environmental Studies Department.

Urban Integrated Pest Management (IPM) - The objective is to teach residents to combat common pests using IPM. The project includes the creation of an IPM booklet, Fact Sheets and potentially could educate (or reach through educational material distribution) over one million Las Vegas Valley residents.

Black Rock Desert Region

Mahala Creek/E.F. Quinn Watershed Restoration - To provide for planning, implementation and monitoring of rehabilitation measures to lessen NPS pollution impacts from agriculture, fire, mine and flood runoff sources.

Eight Mile Creek Watershed Project -To reduce NPS pollution through streambank stabilization & grazing management with public education and information brochure.

Humboldt River Basin

Alternative Grazing Strategies - Construction of shading structures, to provide an alternative loafing area for cattle, instead of staying in the riparian zone. If successful, this can improve water quality and riparian areas.

Central NV Rangeland Restoration - To restore springs and riparian drains in Douglas Canyon and increase native perennial grasses in upland range habitat.

Domestic Well Water and Public Education -To use existing data and gather additional data to assess the ground water quality in suburban/rural Winnemucca.

NPS Public Information/Public Participation - Involve and educate the public and business community in preventing/minimizing NPS pollution to enter the storm water system of Elko, which drains in the Humboldt River.

Pine Creek Water Quality Project - Installation of fences, water control structures, grazing systems, livestock water systems, to increase efficiency of livestock and water management.

Range & Hayland Rehabilitation -To provide for purchase of a no-till drill and transport trailer to allow interseeding of rangeland and hayland with perennial grass seed mix. Increasing the perennial grass cover will reduce erosion and sediment yield and improve water quality.

Subsurface Drip Irrigation of Alfalfa in Nevada - A study to determine the feasibility of using the slow frequent application of water to the soil to grow alfalfa in Nevada. Research in other states has shown that this method can use water more efficiently.

South Fork Water Quality Project -To purchase a seed drill for use in re-vegetation projects to reduce erosion in the South Fork Humboldt Watershed.

Mining BMPs - To evaluate the effectiveness of implementing best management practices to control NPS pollution from mine sites.

Treating Sodic Soils & Irrigation Water with Gypsum - Research the effectiveness of solution grade gypsum on alkaline soils to minimize NPS pollution.

Dixie Creek Riparian Restoration Plan - Fencing construction to protect Dixie creek from cattle, and construction of off-site watering facilities to compensate for the loss of access to the creek.

Upper Adams Slough Erosion Control Project - Stabilize eroding stream banks, improve water quality and enhance habitat.

Truckee River Basin

Evaluating the Efficacy of Wetland Treatment -To evaluate the overall effectiveness of an artificial wetlands, and the subsequent impact on Lower Truckee River water quality.

Lower Truckee River - Fencing 2 miles of river corridor, development of off-channel livestock watering sites, construction of Oxbow wetlands at two sites, and recruitment of Cottonwood seedlings. Implementation of all four components will contribute to improving water quality and fish and wildlife habitat.

Source Water Protection Program - To delineate a wellhead and watershed protection areas, identify potential sources of contamination and develop a source water protection management plan.

Steamboat Creek NPS Education Program - Educate citizens about prevention of urban and rural surface and ground water pollution in their watershed, to include implementation of BMPs.

Steamboat Creek Restoration - Phase II - To finalize and implement restoration plan; to work and coordinate with property owners implementation of BMPs to improve water quality.

Third Creek Watershed - Improve water quality in the Third Creek Watershed by restoring natural wetlands and stream channels. This will decrease pollution loading from sediment, nutrients, etc., into the creek and into Lake Tahoe.

Truckee Meadows In-stream Flow Bank - To establish a bank with donated water rights to provide for minimum in-stream flows.

Truckee Meadows Watershed Education - To increase public awareness of nonpoint source pollution and to encourage the implementation of BMPs in the Steamboat Creek Watershed.

Truckee River Restoration at Tracy Power Plant - To restore riparian habitat through white Top control and promotion of native species.

Livestock Fencing to Establish a Control Pasture - Fence off 8 to 10 acres of land to establish a plot that will be used to demonstrate White Top eradication measures.

Lower Truckee River Vegetation Enhancement - Construction of fence, planting cottonwood poles, create conditions for the re-establishment of cottonwood seedlings, and construction of an interpretive trail for educational purposes.

First, Second and Third Creeks Watershed Improvement - To improve the function of the watersheds through resource enhancement and community outreach which will result in protection and restoration of the sensitive water quality of Lake Tahoe.

Truckee Meadows Suburban Agricultural NPS Ed Program - To reduce NPS pollution in the Steamboat Creek Watershed by educating owners of small ranchettes about BMP's.

Truckee River Restoration Plan at the Tracy Power Plant - To restore riparian habitat through White Top control and through the promotion of native species.

Steamboat Creek Wetland Mitigation - To create 6 acres of wetlands on 33 acres of Washoe County park and open space property immediately east of the Airport Authority's wetlands. The wetlands would improve the water quality in the Steamboat Creek.

Steamboat Creek Stewardship Coordinator - A cooperative effort to remedy nonpoint source pollution on Steamboat Creek through a public out-reach program.

Tahoe Urban Stormwater Education - To increase awareness of the Lake Tahoe basin population about the contribution urban storm water drainage makes to the Lake and to decrease the pollutant loading entering storm drains and roadside ditches.

Truckee River Restoration at Tracy Power Plant - To restore riparian habitat through controlling the dissemination of White Top weed and promoting the establishment of native species.

Wasteload Assessment for the Verdi Area - Install monitoring wells, collect samples and monitor water levels on these wells to characterize ground water flow and volume of flow; estimate the waste loads for the area.

Carson River Basin

Acid Mine Drainage Treatment - To design, construct, operate and monitor a passive biological system for treatment of acid mine drainage, which will substantially reduce toxic heavy metals concentrations, as well as arsenic and aluminum.

Lower Carson River CRM Project - Improve and restore the lower Carson River to a healthy desert river environment.

Middle Carson River Ecological Restoration - Formation of a Carson River Management Plan, implementation of BMPs to coordinate the efforts to control sediment loading, re-establish riparian vegetation, stabilize stream banks to the Carson River between Dayton and Weeks.

Upper Carson River Workplan - Implement the Upper Carson River Watershed Management Plan in the Upper Carson River watershed through a full-time coordinator.

Developing Total Maximum Daily Loads (TMDLs) for the Carson River - To analyze water quality data and develop an integrated water quality model to be used to assign TMDL values for the Carson River.

Virginia and Rocky Diversion Levee Reclamation - To remove sediment, stabilize the Carson River banks with excavated materials and rock rip rap, revegetate and enhance riparian vegetation.

Genoa Well Testing - To assess the water quality of private wells in Genoa as influenced by individual sewage disposal systems; provide educational materials and potential management strategies to the community.

Upper Carson River Watershed Management Plan - To develop and implement a comprehensive watershed management plan for the Upper Carson River hydrographic basin.

Yerington Stormwater Treatment - Construction of a storm water urban runoff detention pond to catch sand and silt, and an outlet works to catch oil and grease; construction of a drainage ditch to discharge into the Walker River.

Churchill County Hazardous Waste Disposal - To provide a safe, legal option for residents to dispose of their waste, by holding a Hazardous Waste Disposal day.

Rotational Crops for Soil Nitrate Remediation - To examine the effectiveness of rotational crops as a means to remove nitrogen from soil in areas with a shallow water table.

Irrigation with Drain Water for Ecological Risk Red - A research project to demonstrate that, for the Newsland Project, irrigation with drain water could be more protective of the wetlands, while not adversely impacting agriculture.

Water Canyon Water Quality Enhancement - Improve the riparian area of the Water Canyon Creek by constructing fence on the east side of the creek, constructing off-site watering facilities and plant native species of willow, cottonwood and herbaceous species.

Walker River Basin

Mason Valley Watershed Management Plan - Establish a watershed coordinator and a CRMP for the Walker River in Mason Valley.

Walker River Paiute Riparian Management Plan - To protect and improve riparian areas and water quality on the reservation.

NDEP through grants from the U.S.EPA provide approximately a half million dollars per year to fund these and other projects throughout Nevada.

SPECIAL ISSUES/CONCERNS OF THE STATE

The following issues and possible actions are those the State has identified for surface waters within the State. The special concerns are based on water chemistry data, the 303(d) List, and best professional judgement.

Truckee River Basin

Issues of Concern:

a) NPS especially from Steamboat Creek;

b) Elevated levels of Total Phosphorus(TP), Nitrite, Total Nitrogen (TN), Total Dissolved Solids (TDS), and Turbidity (TURB);

c) Point source discharge into Steamboat Creek; Truckee Meadows Water Reclamation Facility has experienced ongoing operational problems which have resulted in permit violations. The compliance problem has been caused by a snail infestation of the nitrification towers.

d) Helms Pit/Sparks Tank Farm;

Actions:

a) The NPS Management Program is providing funding for river restoration on the lower Truckee River and public education programs on the upper Truckee River and its tributaries;

b) NDEP and Washoe County have an ongoing water quality study on Steamboat Creek;

c) The Truckee River Water Quality Agreement provides for the purchase of water rights for the purpose of flow augmentation to improve water quality. It is anticipated that the additional water will allow additional assimilative capacity.

Carson River System

Issues of Concern:

a) NPS pollution;

b) Elevated levels of Total Suspended Solids (TSS), TURB, TP and Mercury;

c) Mercury contamination of sediments, fish and other higher vertebrates in the middle and lower reaches of the Carson River;

d) Wetlands issues at Stillwater Wildlife Refuge including elevated levels of boron, selenium, arsenic and mercury;

Actions:

a) Fish consumption advisory has been issued;

b) Portions of the Carson River are now considered a Superfund site;

c) The Upper Carson River Watershed Management Plan is currently being developed by various agencies, the general public, and private land owners. The State is currently providing partial funding for the development of a Watershed Management Plan for the Middle Carson River. The State is also providing partial funding to conduct restoration activities on the lower Carson River which includes sediment and debris removal and bank stabilization.

Walker River System

Issues of Concern:

a) NPS pollution;

b) Increasing TDS and critical hypolimnetic oxygen levels in Walker Lake. If the lake level is not stabilized, TDS will continue to increase and dissolved oxygen problems will be exacerbated. If the trend continues, the lake will not be able to support a Lahontan Cutthroat Trout population.

Actions:

a) The NPS Management Program is providing funding to the Walker River Paiute Tribe for restoration work on the lower Walker River;

b) NDEP is reviewing and revising the water quality standards for the Walker River.

Humboldt River System

Issues of Concern:

a) NPS pollution;

b) Elevated levels of TSS, TP, TURB, lead and iron;

c) Temperature impacts from mine dewatering;

d) Boron concentrations above the Humboldt Sink.

Actions:

a) The main objectives of several projects funded by the NPS Management Program are to reduce runoff, erosion, and sediment loads. Also included are workshop and programs to increase public awareness of nonpoint source pollution issues;

b) Evaluation of current TMDLs containing recently revised water quality standard;

c) Continuous reading and recording of temperature gauges placed in the Humboldt River.

Colorado River Basin

Issues of Concern:

a) NPS pollution;

b) Elevated levels of TP, arsenic and boron along the Muddy River;

c) Elevated levels of TP, iron and boron along the Virgin River;

Actions:

a) The main objectives of several projects funded by the NPS Management Program are to reduce runoff, erosion and sediment loads. Also included in the projects are workshops and programs to increase public awareness of nonpoint source pollution issues.

Las Vegas Wash/Lake Mead

Issues of Concern:

a) Continuing physical changes in Las Vegas Wash between the points of wastewater discharge and Las Vegas Bay appear to be changing the hydrodynamic interaction of Las Vegas Wash and Las Vegas Bay.

b) Additional study is needed to understand the role of nutrients and their ultimate impact on water quality and beneficial uses.

Action:

a) NDEP plans to investigate the liminological questions that remain unanswered. On a parallel track with the liminological investigation, NDEP also plans to evaluate existing models and available data to determine if there is a model which could be used to better describe the hydrodynamics of the Wash/Bay system.

b) Lake Mead Water Quality Forum.

Other Lakes in Nevada

Issues of Concern:

a) Effects of nutrient loading on Lake Tahoe;

b) The lack of data for some small recreational lakes in Nevada.

Actions:

a) NDEP is developing antidegradation standards for the tributaries entering Lake Tahoe.

Snake River Basin

Issues of Concern:

a) NPS pollution;

b) Elevated temperature due to low flows during the ongoing drought.

Actions:

The NPS Management program is providing funds for erosion control and bank stabilization on the Bruneau River.

NEVADA'S 1998 303(d) LIST

Introduction

Section 303(d) of the Clean Water Act requires that States develop a list of water bodies that need additional work beyond existing controls to achieve or maintain water quality standards. The additional work necessary includes the establishment of Total Maximum Daily Loads (TMDLs). The TMDL process provides an analytical framework to identify the relative contributions of each pollutant. The TMDL identifies the sources and causes of pollution or stress, e.g., point sources, non point sources, or a combination of both, and establishes allocations for each source of pollution or stress as needed to attain water quality standards.

The section 303(d) list provides a comprehensive inventory of water bodies impaired by all sources, including point sources, nonpoint sources, or a combination of both. This inventory is the basis for targeting water bodies for watershed-based solutions, and the TMDL process provides the analytical framework to develop these solutions.

METHODOLOGY

Basis For Listing

NDEP's ambient monitoring network covers each major river basin in the state. Samples are analyzed for chemical quality. Nevada does not conduct any type of biological assessments or bioassays at this time. Ambient monitoring data was assessed for exceedances of numeric beneficial use water quality standards. Beneficial use standards are contained in Nevada Administrative Code (NAC) 445A.119 to 445A.225. Other available information, studies and best professional judgment were also used in the listing decisions.

Nevada's first priority in targeting water bodies is impairment of the beneficial use standards. In general, a waterbody was included on the 303(d) list if the beneficial use standards were exceeded more than 25% of the time. The 1998 list was based on data from January 1996 to December 1997. A minimum of four samples collected during 1996 & 1997 was required. If greater than 25% violations is the result of sampling conducted during flood conditions only, the site was not listed.

Both 1996 and 1997 were wetter than average years. Devastating floods occurred in western Nevada on the Truckee, Carson and Walker Rivers in January 1997. The Carson and Walker Rivers had record high flows at many locations. Flooding and the associated damage to the river channel that can occur is a natural process and data that shows impairment as a result of a major flood event should not serve as the basis for initiating TMDLs. The flow data for 1997 is not yet available so the only data eliminated from the analysis was data associated with the January 1997 flooding on the Truckee, Carson and Walker Rivers. When flow data is available, NDEP will re-evaluate the listing decisions.

Delisting

There are sites and parameters that were identified on the 1996 303(d) List that are not included on the 1998 list. Specific explanations for the delisting are included on 303(d) List. In general, parameters were delisted because the waterbody now meets the water quality standards.

Prioritization & Schedule

Prioritizing water bodies enables the state to make efficient use of available resources to meet the objectives of the Clean Water Act. Priority ranking takes into account the severity of the pollution and the uses to be made of such waters.

Targeting high priority waters for TMDL development reflects an evaluation of the relative value and benefit of water bodies within the state and takes into consideration the following:

- Risk to human and aquatic life
- Degree of public interest and support
- Recreational, economic, aesthetic importance of a particular waterbody
- Vulnerability or fragility of a particular waterbody as an aquatic habitat
- Immediate programmatic needs such as:
    - waste load allocations
    - permits to be issued
    - new or expanding discharges
    - load allocations for needed BMPs.

Table 4 provides a summary of the dates the water quality standards were last reviewed by the State Environmental Commission and factors which influenced setting priorities.
Table 5 provides the priority ranking and schedule for TMDL development.

TABLE 4

RIVER BASINS CONTAINED ON THE 1998 303(d) LIST, DATE OF LAST STANDARDS REVIEW, AND IMPORTANT FACTORS RELATED TO THE DETERMINATION OF THE PRIORITIZATION SCHEDULE

River Basin	Date of Standards Review	Important Factors in Prioritization Process
Carson	Sep 15, 1994	1. Confirmed mercury contamination 2. Fish consumption advisory 3. Protection of downstream wetlands 4. Protection of downstream reservoir with high recreational usage 5. Need to investigate nonpoint source contributions to reaches identified as water quality limited
Humboldt	Nov 7, 1995	1. Nondesignated Area 208 Plan adopted TMDLs in 1992 for water quality paired segments - these TMDLs may have oversimplified actual conditions 2. Large scale mining activity is occurring in the basin 3. Detailed nonpoint assessment currently being conducted
Walker	Sep 13, 1985	1. Increased public and political interest 2. Nondesignated Area 208 Plan adopted TMDLs in 1992 for non supporting segments 3. Need to investigate nonpoint source contributions to reaches identified as water quality limited

Table 4 (cont.)

Snake River Basin	Sep 20, 1990	1. Need to obtain additional monitoring data
Colorado Basin		
Muddy River	Aug 1, 1985	
Virgin River	Aug 1,1985	1. Standards for Las Vegas Wash/Bay and Lake Mead currently being reviewed
Las Vegas Wash	Dec 17, 1987	2. Established TMDLs for Las Vegas Wash
Las Vegas Bay	Dec 17, 1987	3. Clark County and Las Vegas WWTF have constructed treatment facilities to meet NPDES permit limits 4. Rapid population growth in the Las Vegas Valley 5. NPDES permits for major facilities expire Jan 1997 6. Unanswered questions about the role of nutrients and their impact on beneficial uses
Truckee River	Nov 29, 1993	1. Permit WLA violations 2. Implementation of Water Quality Agreement and assessment of assimilative capacity of flow augmentation

303(d) List Acronyms:

DO = Dissolved Oxygen
NH_3 = Un-ionized Ammonia
TDS = Total Dissolved Solids
TMDL = Total Maximum Daily Load
TP = Total Phosphorus
TSS = Total Suspended Solids
Temp = Temperature
WLA = Waste Load Allocation
WWTF = Waste Water Treatment Facility

TABLE 5

Nevada's Priority Ranking for TMDL Development

River Basin	**High Priority 0-2 Years**	**Medium Priority 2-5 Years**	**Low Priority 5-13 Years**
Carson Basin		review existing TP TMDL	metals*, turbidity*
Colorado Basin			
Virgin River			TP*, metals*
Muddy River			TP*, metals*
Las Vegas Wash/Bay	review existing TP and total ammonia TMDLs		
Humboldt Basin	review existing TP & TSS TMDLs	turbidity*	metals*
Snake Basin			as needed
Truckee Basin		review existing TP, TN & TDS TMDLs	turbidity*
Walker Basin	revise WQS for pH	review existing TSS TMDL	TP*, iron*

* Before developing a TMDL, an evaluation will be made if TMDL is warranted.

303(d) List Acronyms:
TDS = Total Dissolved Solids
TMDL = Total Maximum Daily Load
TN = Total Nitrogen
TP = Total Phosphorus
TSS = Total Suspended Solids
WQS = Water Quality Standard

Current Status of TMDL Development

Humboldt River:

The existing TMDLs for total suspended solids (TSS) and total phosphorus (TP) are included in Nevada's Nondesignated Areas 208 Plan. The methodology used to determine the existing TMDLs oversimplified a complex situation to the point that the existing TMDL appears to lack scientific validity.

NDEP devoted a considerable amount effort during the 1994-1995 planning period evaluating the existing water quality and the existing TMDLs. This effort focused on understanding, analyzing and describing the data in relation to the extreme variations in flow conditions that occur in the Humboldt River on an annual basis. NDEP has not yet been successful in developing a methodology which adequately addresses the dynamics of the Humboldt River.

A modification to the 208 Plan was proposed in August, 1995. The modification added language to address the situation where a discharge would improve water quality in a segment that has been identified as requiring load reductions. This modification was public noticed and no formal comments were received.

The water quality standards for the Humboldt River were revised (November 1995). During 1996-1997, the revised TSS standard was not exceeded more than 25% of the time. As a result of revisions to the water quality standards for TP and TSS, the TMDLs need to be reevaluated. Developing appropriate TMDLs for the Humboldt River is a priority in this 2-year planning period.

There are several planned and ongoing studies in the Humboldt River Basin. In 1998, NDEP initiated a nonpoint source assessment of the Humboldt River which is anticipated to be completed by the end of 1998. This assessment should provide additional information for determining appropriate TMDLs. In addition to NDEP's nonpoint source work, U.S.EPA has funded the University of Nevada, Reno to conduct a variety of studies on the Humboldt River including sampling invertebrates, periphyton, water chemistry and assessing the physical habitat.

Carson River:

In early 1996, a draft Upper Carson River Watershed Plan was completed. The draft plan underwent an extended review during which time a number of stakeholder meetings were held to discuss revisions and future implementation. The Upper Carson River Watershed Plan provides baseline information, identifies problems and presents recommendations and opportunities for watershed stakeholders to voluntarily improve the watershed. The Carson Valley Conservation District has taken the role of watershed coordinator (with financial assistance from NDEP).

Las Vegas Bay/Wash:

During 1997, NDEP conducted a detailed review of the monitoring data and water quality standards for the Las Vegas Wash and Lake Mead. One of the conclusions of the standards review is that additional study is needed to understand the role of nutrients and their ultimate impact on water quality and beneficial uses. Las Vegas Wash, Las Vegas Bay and Lake Mead did not exceed any beneficial use standards more than 25% of the time during 1996 and 1997. Over the next two year planning period, NDEP plans to investigate the liminological questions that remain unanswered. On a parallel track with the liminological investigation, NDEP also plans to evaluate existing models and available data to determine if there is a model which could be used to better describe the hydrodynamics of the Wash/Bay system.

Also during 1997, Clark County completed a 208 Water Quality Management Plan Amendment for the Las Vegas Valley which has been approved by NDEP and U.S.EPA. The main purpose of the 1997 Amendment is to include the effects of sustained regional growth and development, to incorporate a more inclusive nonpoint source section and to provide water quality planning to a horizon year of 2020. The 1997 Amendment includes the current TMDLs for total ammonia and total phosphorus.

Truckee River:

NDEP established TMDLs for TN, TP and TDS for the Truckee River in 1994. These TMDLs have been incorporated into the NPDES permit for the Truckee Meadows Water Reclamation Facility (TMWRF). During the period from 1994 until present, TMWRF has not been able to consistently meet the waste load allocation (WLA) for total nitrogen. The compliance problem is the result of snail infestation of the nitrification towers. The snails consume the nitrifying bacteria faster than the bacteria can grow. When the snails consume the bacterial populations down to low levels, the ammonia conversion to nitrates is severely diminished and nitrogen concentrations in the final effluent increases. A 1.8 million dollar nitrification tower modification, solely for the elimination of snails, was completed in December 1996. The modification involved major piping changes, installation of a new recycle pump station and new chemical feed lines. Prior to this modification, there was no method to isolate any of the four existing towers from the final effluent discharge. The modification has allowed TMWRF staff to isolate nitrification towers so that different chemical treatments to eliminate snails could be performed on individual towers without affecting the discharge.

During the time period from December 1996 to the present, plant staff have conducted chemical/biological research to find the most effective snail treatment chemical without killing nitrifying bacteria growth on the tower media. Much progress has been made toward final effluent compliance. However, the facility is still not complying with the 500 lb/day total nitrogen waste load allocation. As a result of continued noncompliance with the permit limit for total nitrogen, NDEP issued a Finding of Alleged Violation and Order to TMWRF on November 14, 1997. The Order requires submittal of a multi-layered contingency plan and schedule that will ensure reliable performance of the nitrification facilities.

During the next 5 year planning period, the need may arise to revise the TMDLs in response to flow augmentation. The Water Quality Agreement which settles and dismisses pending litigation brought by the Pyramid Lake Paiute Tribe was signed October 1996. The Agreement provides for the acquisition of Truckee River water rights and augmentation of the flow of the Truckee River to improve water quality, habitat conditions and have the potential to increase the nutrient assimilative capacity of the Truckee River and reduce nonpoint source pollutant loading. If it can be determined that an increase in the assimilative capacity of the Truckee River has occured, a revision of the TMDLs may be necessary.

STATEWIDE OBSERVATIONS

Total Phosphorus

A relatively large number of waterbodies have been identified as impaired for total phosphorus (TP) throughout the state on both past and present 303(d) Lists. For many reaches, TP is the main or only parameter causing the waterbody to be listed as impaired. The standard of 0.1 mg/l annual average applies across much of the state. This standard is based on recommendations made in the Gold Book. These recommendations are not strongly supported in the Gold Book and are not identified as criteria, but rather as a "desired goal for the prevention of plant nuisances". Given the native soil conditions in the Great Basin and the topography that exists over much of Nevada, the suitability of the TP water quality standard must be questioned. It is clear that additional research is needed on the role of TP in eutrophication. Studies done on the Truckee River and Pyramid Lake have shown that, in fact, nitrogen rather than phosphorus is the limiting nutrient. Before a large amount of resources are devoted to developing TMDLs and control strategies, it is advisable to evaluate the suitability of the existing water quality standards.

Copper

Using a strict interpretation of the methodolgy, (>25% exceedances, minimum of 4 samples) analysis of data in STORET would result in more than half of the monitored waters in the state being listed for exceedance of the copper water quality standard. The standard is based on hardness of the water. The softer (lower hardness) the water, the more strict the standard. The State Health Lab which analyzed samples collected from monitored waters, lacked precision close to the standard in softer waters. The state lab has rounded copper data to the nearest 10 ug/l consequently, a data value reported as 10 ug/l could actually be anywhere from 5 ug/l to 15 ug/l. This data is not adequate to assess, with any degree of certainty, whether waterbodies are impaired for copper. In the summer of 1997, NDEP began utilizing the U.S.EPA lab for analysis of metals samples. Initial results show much lower detection limits and consequently better precision near the water quality standard for softer waters. Very few samples analyzed by the U.S.EPA lab have been above the detection limit for copper. NDEP will postpone listing decisions for copper, until a more complete data set based on the improved analytic results is available.

303(d) List - 1998

CARSON RIVER BASIN

REACH	NAC 445A.	POTENTIAL PROBLEMS	Existing TMDLs	Future TMDLs
Bryant Creek near state line	148	copper[1], iron[1], nickel[1]		
E.Fork at state line to Hwy 395	150	TSS[2], turbidity[2]		
E.Fork at Hwy 395 to Muller Lane	151	TSS[2], turbidity[2]		
E.F. at Muller Ln to Genoa and W.F. at the state line to Genoa Lane.	152	turbidity[2], TP	TP	TP[4]
Genoa Lane to Cradlebaugh	153	turbidity[3], TP	TP	TP[4]
Cradlebaugh to Mexican Gage	154	turbidity[3], TP	TP	TP[4]
Mexican Gage to New Empire	155	turbidity[3], TP	TP	TP[4]
New Empire to Dayton Bridge	156	TP, ***fish consumption advisory***[5, 6]	TP	TP
Dayton Bridge to Weeks	157	TP, mercury[5], ***fish consumption advisory***[5, 6]	TP	TP
Weeks to Lahontan Dam	158	TSS, TP, iron, mercury[5], ***fish consumption advisory***[5, 6]	TP	TP
Stillwater	126	mercury[5], arsenic, boron ***fish consumption advisory***[5, 6]		

[1] The most likely source of contamination is Levithan Mine in California. Since U.S.EPA is now working on technical design options for a long term solution, a TMDL is not needed at this time.

[2] TSS and turbidity exceedances are the result of record high flows in the Carson River in January 1997. Since much damage to the river channel occurred during the flood, TMDLs are not appropriate until the river is given time to recover and it can be determined if non flood related impairment exists.

[3] The water quality standard for turbidity changes from 10 NTU to 50 NTU at Dayton. An evaluation of whether the 10 NTU standard from Genoa to New Empire is appropriate is needed, especially since the existing TSS standard for these reaches does not reflect the same strictness. The beneficial use of a cold water fishery, the basis of the 10 NTU standard, currently is not being sustained and a use attainability analysis should procede any TMDL development.

[4] Revision of the TMDL is linked to Upper Carson Watershed Management Plan. Also, see statewide discussion about phosphorus.

[5] Carson River and Lahontan Reservoir are listed on the National Priorities List because of mercury contamination. Since cleanup is being addressed under the Superfund Program, TMDLs are not necessary at this time.

[6] The latest result of mercury samples from the fillets of walleye, wipers (cross between walleye and striper) and white bass showed a major increase in mercury levels. The increase in mercury levels resulted in an expansion of the fish consumption advisory issued by the Nevada State Health Division.

CARSON RIVER PROBLEMS ON 1996 LIST THAT ARE NOT ON 1998 LIST:

Parameter	NAC 445A.	Reason
lead	152, 155, 157	Water quality standard not exceeded more than 25% of the time during the listing period. Improved sampling procedures probably the reason for decrease in violations of the standard.

CARSON RIVER PROBLEMS NEW ON 1998 LIST:

Parameter	NAC 445A.	Reason
copper, iron, nickel	148	New monitoring data confirms suspected metals problem in Bryant Creek due to Levithan Mine upstream
TSS, turbidity	150, 151	In January 1997 the Carson River experienced severe flooding. Peak discharge was larger than recorded for previous floods at almost all stations on the Carson River. Due to the devastation and associated repair and recovery period following the flood which occurred over at least a six to nine month period, suspended solids and turbidity water quality standards were exceeded.
TSS, iron	158	Same as listed above for 150 & 151
fish consumption advisory	156, 157, 158, 126	Due to elevated levels of mercury in fish, the existing Lahontan Reservoir fish consumption advisory was expanded in September 1997 to include the Carson River below Dayton and all of the waters in Lahontan Valley

303 (d) List - 1998

WALKER RIVER BASIN

REACH	NAC 445A.	POTENTIAL PROBLEMS	Existing TMDLs	Future TMDLs
Topaz Lake	161	TSS[1], TP[1]		
W.F. at state line to Wellington	162	pH[2], TP[1]		
W.F. near Wellington to Nordyke Road	163	pH[2], TP[1]		
Sweetwater Creek	164	TP		
E.F. at state line	165	pH[2], TP		
E.F. at state line to south of Yerington	166	TSS[1], iron[1]	TSS	TSS[3]
From confluence of the west and east forks to inlet to Weber Reservoir	167	TSS[1], iron[1]	TSS	TSS[3]
Weber Reservoir to inlet to Walker Lake	168	pH[2]		

[1] TSS, TP and iron exceedances are most likely the result of record high flows in the Walker River in January 1997. Since much damage to the river channel occurred during the flood, TMDLs are not appropriate until the river is given time to recover and it can be determined if non flood related impairment exists.

[2] The water quality standards are in the process of being revised (from 7.0-8.3 to 6.5-9.0) to reflect U.S.EPA's current criteria. The data indicates that the new standard will not be violated more than 25% of the time.

[3] The existing TMDL will be evaluated as part of the water quality standards review.

WALKER RIVER PROBLEMS ON 1996 LIST THAT ARE NOT ON 1998 LIST:

Parameter	NAC 445A.	Reason
lead	162	Water quality standard not exceeded more than 25% of the time during the listing period. Improved sampling procedures are probably the reason for decrease in violations of the standard.
pH	164, 166, 167	Previous standards violations were at the high end of the acceptable pH range. Increased flow may be the cause for lower pH values during '96-'97 and attainment of the water quality standard.
TP	166, 168	A re-examination of the '94-'95 data revealed that these reaches were listed in error for TP.
copper	166	This reach does not meet the minimum criteria for listing (see statewide copper discussion).

WALKER RIVER PROBLEMS NEW ON 1998 LIST:

Parameter	NAC 445A.	Reason
TSS, TP	161	Standards violations occurred in March and May of both '96 and '97. These violations are most likely a result of an above normal snowpack and large spring runoff in both years.
TP	165	November 1996 had a unusually high TP value. If it were not for this one sample result, this reach would not be listed for TP.
TSS	166	Same as 161 above.
TSS	167	Same as 161 above.
iron	167	Unknown

303(d) List - 1998
TRUCKEE RIVER BASIN

REACH	NAC 445A.	POTENTIAL PROBLEMS	Existing TMDLs	Future TMDLs
E.McCarran to Lockwood	187	TP, TN[1]	TN[4], TP[4], TDS[4]	
Lockwood to Derby Dam	188	TP[2], TN[1] , turbidity[3]		
Derby Dam to Wadsworth	189	TP[2], TN[1], turbidity[3]		
Wadsworth to Pyramid Lake	190	TP[2], TN[1], turbidity[3]		
Lake Tahoe at Sand Harbor	191	TN[5]		

[1] The Truckee Meadows Water Reclamation Facility (TMWRF) has experienced operational problems due to the nitrification towers being invaded by snails which consume the nitrifying biological film. The annual average total nitrogen water quality standard was exceeded in 1996, but was met in 1997.

[2] The TMDLs at Lockwood are intended to ensure that the waters downstream are in compliance with the water quality standards.

[3] Existing water quality standard of 10 NTU is not consistent, in terms of strictness, with the existing TSS standard. Long term trends in turbidity need to be assessed to determine if a TMDL is warranted.

[4] Planned flow augmentation, nonpoint source reduction, river restoration and water quality model enhancement may result in a revision to the existing TMDLs.

[5] Sample is taken in heavily used recreational area; consequently, violations probably represent localized conditions.

TRUCKEE RIVER PROBLEMS ON 1996 LIST THAT ARE NOT ON 1998 LIST:

Parameter	**NAC 445A.**	**Reason**
nitrite	187	Nitrite exceedances seen in ‘94 were a combination of extremely low flows and high levels of ammonia being discharged from TMWRF. Higher flows in ‘96 and ‘97 in addition to improvements to the effluent being discharged from TMWRF has resulted in the river attaining the water quality standard for nitrite.
TDS	190	Data for ‘96 and ‘97 is in compliance with the water quality standard. The improvement is most likely due to significant increases of flow in the river and resulting dilution of nonpoint sources both from surface and ground water.

TRUCKEE RIVER PROBLEMS NEW ON 1998 LIST:

Parameter	**NAC 445A.**	**Reason**
turbidity	187	Possibly due to higher flows in both ‘96 and ‘97

303(d) List - 1998
COLORADO RIVER BASIN

REACH	NAC 445A.	POTENTIAL PROBLEMS	Existing TMDLs	Future TMDLs
Virgin River from Arizona state line to Mesquite	175	TP[1], boron[2]		
Virgin River Mesquite to Lake Mead	177	TP[1], boron[2]		
Muddy River from source to Glendale	210	TP[1], iron[3]		
Muddy River at Overton	211	arsenic[2] , boron[2]		
Colorado River from Hoover Dam to Lake Mohave inlet	193	temperature, pH		

[1] During the next standard's review, it will be determined if the TP standard is appropriate and if TMDLs are required.

[2] Additional data is needed to determine if a TMDL is warranted for boron and arsenic or if standards violations are the result of natural conditions.

[3] Data suggests that iron increases at higher flows, and therefore, may be naturally occurring. An evaluation needs to be made of whether standards violations are the result of natural phenomenon or man caused.

COLORADO R. BASIN PROBLEMS ON 1996 LIST THAT ARE NOT ON 1998 LIST:

Parameter	**NAC 445A.**	**Reason**
iron	175, 177	Only one sample had an iron concentration over the 1000 ug/l standard during the ‘96 - ‘97 review period
TP	211	Water quality standard was not exceeded during ‘96-’97 review period. This reach will be included in TMDL evaluation described above.
pH	192	pH did not meet the minimum criteria for listing during ‘96-’97 review period.

Colorado River Basin problems new on 1998 List: none.

303(d) List - 1998
HUMBOLDT RIVER BASIN

REACH	NAC 445A.	POTENTIAL PROBLEMS	Existing TMDLs	Future TMDLs
Osino to Palisade	204	turbidity[1], TP, iron[3]		
Palisade to Battle Mountain	205	turbidity[1], TP, iron[3]	TP, TSS	TP[2], TSS[2]
Battle Mountain to Comus	206	turbidity[1], TP, iron[3], lead[4,5]	TP, TSS, TDS	TP[2], TSS[2]
Comus to Imlay	207	turbidity[1], TP, iron[3]	TP, TSS, TDS	TP[2], TSS[2]
Above Humboldt Sink	127	iron[5], boron[5]		

[1] Turbidity exceedances appear to be occurring in the winter and spring. It needs to be determined if exceedances are due to natural or man-made conditions.

[2] TMDLs will be reviewed and revised, if necessary, taking into account 1995 standards revisions and 1998 nonpoint source assessment.

[3] The relationship between flow and iron will be evaluated before proceeding with a TMDL.

[4] NDEP has initiated sampling to compare dissolved versus total lead concentrations. The listing is based on total recoverable data; however, the water quality standard is expressed as dissolved. Recent data suggests that lead is below detection limit.

[5] Ongoing and planned studies will better define whether impairment exists, and if TMDLs are needed.

HUMBOLDT RIVER PROBLEMS ON 1996 LIST THAT ARE NOT ON 1998 LIST:

Parameter	NAC 445A.	Reason
lead	205, 207	Lead detected and exceeded water quality standard in only one sample during the ‘96 - ‘97 listing period. Improved sampling procedures is most likely the reason for the decrease in standards violations.
TSS	205, 206, 207	Water quality standard was revised in November 1995. Violations of current standard no longer meet the criteria for listing. The basis for the standard revision was to account for extreme variations in flow that occur annually on the Humboldt River.
arsenic	127	NDEP and USGS data both show no violations of the listing criteria of the aquatic life standard during the listing period.
lead	127	Lead was not detected during the ‘96-’97 listing period

HUMBOLDT RIVER PROBLEMS NEW ON THE 1998 LIST:

Parameter	NAC 445A.	Reason
turbidity, TP, iron	204	High flows in both ‘96 and ‘97 could be the cause of violations of water quality standards

303(d) List - 1998
SNAKE RIVER BASIN

REACH	NAC 445A.	POTENTIAL PROBLEMS	Existing TMDLs	Future TMDLs
Salmon Falls Ck.	216	Temperature		
Shoshone Ck.	217	Temperature		
Owyhee R. above Mill Ck.	222	TSS, turbidity, TP, iron		
Owyhee R. at China Dam	223	TSS, turbidity, TP		
Owyhee R. at Boney Lane	224	TSS, turbidity, TP, iron		

Waters in the Snake River Basin have not been listed in the past because there was not adequate data. During the '96-'97 listing period, there were 6 samples which does meet the minimum number for listing. All TSS and turbidity listings are based on 2 out of 6 exceedances which occurred in March of both '96 and '97 with the exception of one turbidity exceedance in July at China Dam. Based on the small number of samples, NDEP does not feel that there is enough information to determine if TMDLs are warranted at this time.

303(d) List Acronyms:
E.F. = East Fork
NAC = Nevada Administrative Code
TDS = Total Dissolved Solids
TN = Total Nitrogen
TMDL = Total Maximum Daily Load
TP = Total Phosphorus
TSS = Total Suspended Solids
W.F. = West Fork