IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

IN THE MATTER OF APPLICATION NUMBER 53987
FILED BY LAS VEGAS VALLEY WATER DISTRICT
ON OCTOBER 17, 1989, TO APPROPRIATE THE
WATERS OF UNDERGROUND

PROTEST

Comes now Owen R. Williams, on behalf of the United States Department of the Interior, National Park Service, whose post office address is 301 S. Howes Street, Room 353, Fort Collins, Colorado, 80521, whose occupation is Chief, Water Rights Branch, Water Resources Division, National Park Service, and protests the granting of Application Number 53987, filed on October 17, 1989, by Las Vegas Valley Water District to appropriate the water of Underground Basin 180, CAVE VALLEY, situated in LINCOLN County, State of Nevada, for the following reasons and on the following grounds, to wit:

See Exhibits A through D attached.

THEREFORE the protestant requests that the application be denied (See Exhibit E, attached).

Signed O. R. Williams
Agent or protestant

Owen R. Williams
Printed or typed name, if agent

Address 301 South Howes St., Room 353
Street No. or P.O. Box No.

Fort Collins, CO 80521
City, State and Zip Code No.

Subscribed and sworn to before me this 5th day of July, 1990.

Notary Public

State of Colorado

County of Larimer

My Commission expires 3/10/91.

OK
gm

IN THE MATTER OF APPLICATION 53987

EXHIBIT A

Protest by Owen R. Williams, on behalf of
the United States Department of the Interior,
National Park Service

I. The mission of the National Park Service (NPS) may be paraphrased from 16 U.S.C. 1, as conserving scenery, natural and historic objects, and wildlife, and providing for enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations. The public interest will not be served if water and water-related resources in the nationally important Death Valley National Monument (Death Valley NM) and Lake Mead National Recreation Area (Lake Mead NRA) are diminished or impaired as a result of the appropriation proposed by this application.

II. Death Valley NM was created by Presidential Proclamation in 1933 to preserve unusual features of scenic, scientific, and educational interest. The proclamation gives warning to unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument. Springs and water-related resources are important features of the Monument. The NPS is entitled to Federal reserved water rights for reserved lands within Death Valley NM. The priority dates for these reserved rights are the dates when the lands were reserved and are senior to the appropriation sought by this application. These rights have not been judicially quantified.

A. In the eastern part of the Monument, Grapevine, Keane Wonder, Nevares, Texas, Travertine and Saratoga Springs provide water for park facilities, domestic use, public campgrounds, resorts, vegetation, wildlife, public enjoyment, scenic value and other related needs. Nevares, Texas, and Travertine Springs collectively discharge about 2,000 gallons per minute (about 3,200 acre-feet per year) and are critical for domestic and commercial use.

Public visitation to Death Valley NM for the past 5 years is approximately as follows:

1985 - 601,000
1986 - 611,000
1987 - 693,000
1988 - 721,000
1989 - 692,000

The Monument supplies water for visitors from the above-named springs. For example, during 1988, water from these springs supported approximately 275,000 overnight campers in Death Valley NM campgrounds, 98,000 people at resorts within the Monument,

200 NPS employees and families (at the height of the season), 410 resort employees, a population of 50 Native Americans, and 32 other residents.

B. The springs mentioned above, in addition to more than 350 others in Death Valley NM, support vegetation and critical wildlife habitat. For example, two species of snails, which are candidates for threatened or endangered species listing, are found within Death Valley NM and live at certain springs. The Badwater snail (Assiminea infima) is found at Travertine and Nevares Springs and the Amargosa tryonia snail (Tryonia variegata) occurs at Saratoga Springs. Six other species of snails are endemic to Death Valley springs and are not found outside the Monument.

Desert bighorn sheep are also dependent upon the springs in Death Valley NM. Approximately 25 herds concentrate around Monument springs during the summer, rarely straying more than two miles away.

If approved, the appropriation and diversion proposed by this application will eventually reduce or eliminate the flows from springs at Death Valley NM which are discharge areas for regional ground-water flow systems. The NPS's senior appropriative and Federal reserved water rights, water resources, and water-related resource attributes will thus be impaired. Such impacts are not in the public interest.

III. A unique and endangered species of pupfish exists in a pool at Devil's Hole, a detached unit of Death Valley NM in Nevada. Ground-water withdrawals near the unit previously caused a decline in the water level of the pool, exposing a rock shelf vital to the spawning of the pupfish (Dudley and Larson, 1976). Subsequently, the U.S. Supreme Court (later refined by the U.S. District Court) determined that a Federal reserved water right exists at Devil's Hole for the purpose of maintaining a water level sufficient to inundate the shelf on which the pupfish spawns (Cappaert v. United States, 1976). In addition, the Endangered Species Act and its amendments impose obligations on Federal agencies to conserve endangered species such as the Devil's Hole pupfish. The appropriation and diversion proposed by this application will, eventually, cause the water level at Devil's Hole to fall, thereby impairing the senior Federal reserved water right for Devil's Hole.

IV. Lake Mead NRA was established in 1964 to be administered for "...general purposes of public recreation, benefit, and use, and in a manner that

will preserve, develop, and enhance, so far as practicable, the recreation potential, and in a manner that will preserve the scenic, historic, scientific, and other important features of the area...". Springs and water-related resource attributes are important features of the National Recreation Area. The NPS is entitled to Federal reserved water rights for reserved lands within Lake Mead NRA. The priority dates for these reserved rights are the dates when the lands were reserved and are senior to the appropriation sought by the Las Vegas Valley Water District (LVVWD). These rights have not been judicially quantified.

A. Numerous springs provide water for vegetation and wildlife habitat and create an environment that many visitors use and enjoy. Most springs are not fed by water from Lake Mead, and will be affected by up-gradient diversions.

   Springs include Blue Point, Rogers, Corral, Kelsey's and Tassi Springs, and other smaller, unnamed springs. Visitation to Blue Point and Rogers Springs has been estimated at 5,000 visitors/year for each spring.

   Desert bighorn sheep are also dependent upon the springs in Lake Mead NRA. A herd of approximately 150 use springs in the northern part of the National Recreation Area, while a herd of nearly 400 sheep use springs in the southern part.

B. Thermal springs are found within Lake Mead NRA. Two of the larger and more frequented--Boy Scout and Nevada Hot Springs--have water temperatures of about 127°F throughout the year. Several smaller thermal springs of recreational and scientific interest also exist within Lake Mead NRA boundaries.

C. The Muddy River, which originates from large discharge springs located northeast of Moapa, Nevada, flows into Lake Mead NRA at the north end of the lake's Overton Arm. The State of Nevada, Department of Wildlife, is leasing a portion of Lake Mead NRA adjoining the Muddy River for the purposes of the Overton Wildlife Management Area. This area supports a variety of waterfowl and vegetation.

If approved, the appropriation and diversion proposed by this application will eventually reduce or eliminate the flows of springs (including thermal springs) and the Muddy River within Lake Mead NRA

which are discharge areas for regional ground-water flow systems. The NPS's senior water rights, water resources, and water-related resource attributes would thus be impaired. Such impacts are not in the public interest.

V. Lake Mead NRA has Nevada State appropriative water rights for the following, which will be impaired by the appropriation and diversion proposed by this application.

Name	Point of Diversion	Certificate Number
Kelsey's Springs	SW1/4 NW1/4, Sec 20, T16S, R68E MDBM	296
Rogers Spring	SE1/4 SE1/4, Sec 12, T18S, R67E MDBM	4476
Muddy Creek (River)	NW1/4 SE1/4, Sec 19, T16S, R68E MDBM	5126

VI. The diversion proposed by this application is located in the carbonate-rock province of Nevada. The carbonate-rock province is typified by complex interbasin regional flow systems that include both basin-fill and carbonate-rock aquifers (Harrill, et al., 1988, Sheet 1). Ground water flows along complex pathways through basin-fill aquifers, carbonate-rock aquifers, or both, from one basin to another. Ground-water flow system boundaries, and thus interbasin ground-water flows, are poorly defined for most of the carbonate-rock province (Harrill, et al., 1988, Sheet 1). The proposed diversion is expected to reduce interbasin flows and modify the direction of ground-water movement in adjoining hydraulically connected basins, reduce or eliminate spring and stream flows, and cause land subsidence and fissuring.

A central corridor of the carbonate-rock aquifers in southern Nevada (Dettinger, 1989) occurs within the carbonate-rock province. The corridor consists of a north-south "block" of thick, laterally continuous carbonate rocks and probably contains the principal conduits for regional ground-water flow from east-central Nevada into southern Nevada, with flow ultimately discharging through springs at Ash Meadows (including Devil's Hole), Death Valley, and Lake Mead (Dettinger, 1989, p. 13). Parts of east-central Nevada are a recharge area for the central corridor of the carbonate-rock and basin-fill aquifers in southern Nevada (Dettinger, 1989; Mifflin, 1988).

The major ground-water flow systems of southern and east-central Nevada described by Harrill, et al. (1988, Sheets 1 and 2) include Death Valley, Penoyer Valley, Railroad Valley, Newark Valley, and Colorado.

These ground-water flow systems are within or tributary to the central corridor. The Death Valley flow system of Harrill, et al. (1988), includes the Ash Meadows flow system described by Winograd and Thordarson (1975). The Ash Meadows flow system discharges from springs at Ash Meadows and Death Valley NM and maintains the water level of Devil's Hole. The Colorado flow system of Harrill, et al. (1988) includes the White River flow system described by Eakin (1966). Winograd and Thordarson (1975) indicate that ground water flows from the White River flow system to the Ash Meadows flow system, ultimately discharging from springs at Ash Meadows and Death Valley, and maintaining water levels at Devil's Hole. Harrill, et al. (1988, Sheet 2) also show areas where ground water is transmitted from one flow system to another. Essington (1990) discusses several of the major flow systems mentioned above and their relationships to the water resources of Death Valley NM. The White River flow system discharges from the Muddy River springs and springs at Lake Mead NRA (See Eakin, 1966; Harrill, et al., 1988, Sheet 2; Dettinger, 1989, Figure 6).

The diversion proposed by this application is located within a basin which may be part of the central corridor, the recharge area for the central corridor and/or other parts of regional ground-water flow systems which discharge in the Ash Meadows, Death Valley and Lake Mead areas (Harrill, et al., 1988, Sheet 1, Figure 5; and Sheet 2). Thus, the diversion is expected to reduce the flow from springs at Death Valley NM and Lake Mead NRA and/or cause the water level at Devil's Hole to decline.

Some zones within the central corridor are highly transmissive, and act as large-scale drains which ultimately transmit much of the flow that discharges from large springs such as those at Ash Meadows, Death Valley NM and Lake Mead NRA. It has been hypothesized (Dettinger, 1989, p. 16) that the highly transmissive zones may stay highly transmissive only if large volumes of water continue to flow through them. Otherwise, openings in the rocks gradually fill with minerals and the rocks resolidify. The appropriation and diversion proposed by this application is expected to reduce the volume and velocity of ground water flowing through the drains which could begin the process of closing connected fractures and solution cavities, substantially impairing the capacity of the aquifer to transmit water.

Available scientific literature is not adequate to reasonably assure that the ground-water appropriation and diversion proposed by this application will not impact the senior water rights, water resources and

water-related resources of Death Valley NM and Lake Mead NRA, and thereby impair the senior NPS water rights. Scientific literature indicates that Devil's Hole, and springs within Death Valley NM and Lake Mead NRA are hydraulically connected to regional ground-water flow systems and can be affected by an up-gradient ground-water diversion.

VII. It should be noted also, that the LVVWD has submitted a total of 102 applications which propose the appropriation of 824 cubic feet per second (596690 acre-feet per year) of ground water from the central corridor of the carbonate-rock aquifer or a basin hydraulically connected to the central corridor (Exhibit B). A substantial overdraft of ground-water resources is expected to occur. The overdraft will cause ground-water levels to decline, alter the directions of ground-water flow, dry up playas, reduce or eliminate spring flows, and cause land subsidence and fissuring. The cumulative effects of these diversions are expected to cause impacts at Death Valley NM and Lake Mead NRA more quickly and/or to a greater degree than diversions under this application alone and thereby impair the senior NPS water rights. The impacts described above are not in the public interest. The diversions proposed by LVVWD in these basins exceed the water available for appropriation. These conclusions are supported by the following.

A. Harrill, et al. (1988, sheet 2) have estimated an annual ground-water recharge of 221400 acre-feet for basins with proposed diversions as listed in Exhibit B (Exhibit D).

B. The cumulative diversion proposed by these applications, when developed, will be approximately 596960 acre-feet per year (Exhibit D). This diversion rate exceeds the estimated cumulative recharge rate in the basins by 375560 acre-feet per year. A substantial overdraft of ground-water resources will occur as a result.

C. As of December 1988, the latest available estimate of committed diversions and perennial yield were 203884 and 343750 acre-feet per year, respectively, for these basins (Nevada Department of Conservation and Natural Resources, 1988; Exhibit C).

D. The sum of the committed diversions and the diversion rate proposed by these applications exceeds the estimated perennial yield by 457094 acre-feet per year (Exhibit C) and the estimated recharge rate in the basins by 579444 acre-feet per year (Exhibit D).

IN THE MATTER OF APPLICATION 53987

EXHIBIT A (Continued)

Protest by Owen R. Williams, on behalf of
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VII. In this application, the points of discharge for return flow (treated effluent) have not been specified. The possibility exists that the return flow may be discharged into a hydrologic basin other than the basin of origin. This being the case, depletions to springs in Death Valley NM and Lake Mead NRA and a drop in the water level at Devil's Hole would occur more quickly and in greater magnitude than if treated effluent were returned to the basin of origin.

IX. According to NRS 533.060, "Rights to the use of water shall be limited and restricted to so much thereof as may be necessary, when reasonably and economically used for irrigation and other beneficial purposes..." Further, NRS 533.070 states that "The quantity of water from either a surface or underground source which may hereafter be appropriated in this state shall be limited to such water as shall reasonably be required for the beneficial use to be served." Implicit in these statements is a prohibition against waste and unreasonable use of water. It is unclear whether the quantity of water contemplated by this application, individually and in combination with applications 53947 through 54036, 54038 through 54066, 54068 through 54076, 54105, and 54106 by the LVVWD, is necessary and is an amount reasonably required for municipal and domestic purposes. Past open and notorious practices would indicate otherwise. wd

X. The application does not clearly indicate the place of use, the description of proposed works, estimated cost of works, number and type of units to be served or annual consumptive use. Nor, as described in IX. above, is it clear that the appropriation sought is necessary and is in an amount reasonably required for the beneficial uses applied for. Therefore, the application is defective and should be summarily rejected by the State Engineer. wd

XI. In sum, the NPS protests the granting of Application Number 53987, submitted by the LVVWD to appropriate and divert ground water, on the following grounds.

A. The public interest will not be served if water and water-related resources in the nationally important Death Valley NM including Devil's Hole, and Lake Mead NRA, are diminished or impaired as a result of the diversion proposed by this application.

IN THE MATTER OF APPLICATION 53987

EXHIBIT A (Continued)

Protest by Owen R. Williams, on behalf of
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National Park Service

B. The diversion proposed by this application will reduce or eliminate the flows of springs in Death Valley NM which are discharge areas for regional ground-water flow systems, thereby impairing the senior NPS water rights.

C. The diversion proposed by this application will cause the water level at Devil's Hole to fall, thereby impairing the senior Federal reserved water right for Devil's Hole.

D. If approved, the appropriation and diversion proposed by this application will eventually reduce or eliminate the flows of springs and the Muddy River within Lake Mead NRA which are discharge areas for regional ground-water flow systems. The NPS's senior water rights, water resources, and water-related resource attributes would thus be impaired. Such impacts are not in the public interest.

E. Lake Mead NRA has Nevada State appropriative water rights for Kelsey's Springs, Roger's Spring, and Muddy Creek (River) which will be impaired by the appropriation and diversion proposed by this application.

F. Available scientific literature is not adequate to reasonably assure that the ground-water appropriation and diversion proposed by this application will not impact the senior water rights of Death Valley NM and Lake Mead NRA. The State Engineer will, therefore, be unable to make a determination that injury will not be manifest upon other water users, including the NPS.

G. The cumulative effects of the diversion proposed by this application and other applications within the regional ground-water flow systems (Exhibit B) will impair the senior water rights of Death Valley NM and Lake Mead NRA more quickly and/or to a greater degree than the diversion under this application alone. The diversions proposed by LVVWD in these basins exceed the water available for appropriation.

H. Depletions to regional ground-water flow systems, and hence springs in Death Valley NM and Lake Mead NRA, and a drop in the water level at Devil's Hole will occur more quickly and/or in greater magnitude if return flow (or treated effluent) is not discharged in the basin of origin.

IN THE MATTER OF APPLICATION 53987

EXHIBIT A (Continued)

Protest by Owen R. Williams, on behalf of
the United States Department of the Interior,
National Park Service

I. It is unclear whether the quantity of water claimed by this application, individually and in combination with applications 53947 through 54036, 54038 through 54066, 54068 through 54076, 54105, and 54106 is necessary and is an amount reasonably required for municipal and domestic purposes.

J. The application does not clearly indicate the place of use, the description of proposed works, estimated cost of works, number and type of units to be served, or annual consumptive use. Nor is it clear that the diversion sought is necessary and in an amount reasonably required for the beneficial uses applied for. Therefore, the application is defective and should be summarily rejected by the State Engineer.

XIII. The NPS reserves the right to amend this exhibit as more information becomes available.

IN THE MATTER OF APPLICATION 53987

EXHIBIT B

Protest by Owen R. Williams, on behalf of
the United States Department of the Interior,
National Park Service

The following applications were submitted by the Las Vegas Valley Water District for appropriations in basins within the central corridor, the recharge area for the central corridor, and/or other parts of the regional flow system (Nevada Division of Water Resources, 1990).

Application no.	Basin no.	Basin Name	Proposed diversion rate, ft^3/s
54060	168	THREE LAKES VALLEY (NORTHERN PART)	6
54061	168	THREE LAKES VALLEY (NORTHERN PART)	10
54068	168	THREE LAKES VALLEY (NORTHERN PART)	6
54069	168	THREE LAKES VALLEY (NORTHERN PART)	10
53947	169A	TICKAPOO VALLEY (NORTHERN PART)	6
53948	169A	TICKAPOO VALLEY (NORTHERN PART)	10
53949	169A	TICKAPOO VALLEY (NORTHERN PART)	10
53950	169B	TICKAPOO VALLEY (SOUTHERN PART)	6
53951	169B	TICKAPOO VALLEY (SOUTHERN PART)	10
53952	169B	TICKAPOO VALLEY (SOUTHERN PART)	10
54062	211	THREE LAKES VALLEY (SOUTHERN PART)	6
54063	211	THREE LAKES VALLEY (SOUTHERN PART)	6
54064	211	THREE LAKES VALLEY (SOUTHERN PART)	10
54065	211	THREE LAKES VALLEY (SOUTHERN PART)	10
54066	211	THREE LAKES VALLEY (SOUTHERN PART)	10
54106	211	THREE LAKES VALLEY (SOUTHERN PART)	10
53953	170	PENOYER VALLEY	6
53954	170	PENOYER VALLEY	10
53955	170	PENOYER VALLEY	10
53956	171	COAL VALLEY	6
53957	171	COAL VALLEY	6
53958	171	COAL VALLEY	10
53959	171	COAL VALLEY	10
53960	172	GARDEN VALLEY	6
53961	172	GARDEN VALLEY	6
53962	172	GARDEN VALLEY	6
53963	172	GARDEN VALLEY	10
53964	172	GARDEN VALLEY	10
53981	173A	RAILROAD VALLEY (SOUTHERN PART)	6
53982	173A	RAILROAD VALLEY (SOUTHERN PART)	6
53983	173A	RAILROAD VALLEY (SOUTHERN PART)	10
53984	156	HOT CREEK VALLEY	10

IN THE MATTER OF APPLICATION 53987

EXHIBIT B (Continued)

Protest by Owen R. Williams, on behalf of
the United States Department of the Interior,
National Park Service

Application no.	Basin no.	Basin Name	Proposed diversion rate, ft^3/s
53965	173B	RAILROAD VALLEY (NORTHERN PART)	6
53966	173B	RAILROAD VALLEY (NORTHERN PART)	6
53967	173B	RAILROAD VALLEY (NORTHERN PART)	6
53968	173B	RAILROAD VALLEY (NORTHERN PART)	6
53969	173B	RAILROAD VALLEY (NORTHERN PART)	6
53970	173B	RAILROAD VALLEY (NORTHERN PART)	6
53971	173B	RAILROAD VALLEY (NORTHERN PART)	6
53972	173B	RAILROAD VALLEY (NORTHERN PART)	6
53973	173B	RAILROAD VALLEY (NORTHERN PART)	6
53974	173B	RAILROAD VALLEY (NORTHERN PART)	6
53975	173B	RAILROAD VALLEY (NORTHERN PART)	10
53976	173B	RAILROAD VALLEY (NORTHERN PART)	10
53977	173B	RAILROAD VALLEY (NORTHERN PART)	10
53978	173B	RAILROAD VALLEY (NORTHERN PART)	10
53979	173B	RAILROAD VALLEY (NORTHERN PART)	10
53980	173B	RAILROAD VALLEY (NORTHERN PART)	10
53985	173B	RAILROAD VALLEY (NORTHERN PART)	6
53986	173B	RAILROAD VALLEY (NORTHERN PART)	6
53998	174	JAKES VALLEY	6
53999	174	JAKES VALLEY	6
54000	174	JAKES VALLEY	6
54001	174	JAKES VALLEY	10
54002	174	JAKES VALLEY	10
53987	180	CAVE VALLEY	6
53988	180	CAVE VALLEY	10
53989	181	DRY LAKE VALLEY	6
53990	181	DRY LAKE VALLEY	10
53991	182	DELAMAR VALLEY	6
53992	182	DELAMAR VALLEY	10
53993	183	LAKE VALLEY	6
53994	183	LAKE VALLEY	6
53995	183	LAKE VALLEY	6
53996	183	LAKE VALLEY	10
53997	183	LAKE VALLEY	10
54038	207	WHITE RIVER VALLEY	6
54039	207	WHITE RIVER VALLEY	6
54040	207	WHITE RIVER VALLEY	6

IN THE MATTER OF APPLICATION 53987

EXHIBIT B (Continued)

Protest by Owen R. Williams, on behalf of the United States Department of the Interior, National Park Service

Application no.	Basin no.	Basin Name	Proposed diversion rate, ft^3/s
54041	207	WHITE RIVER VALLEY	10
54042	207	WHITE RIVER VALLEY	10
54031	202	PATTERSON VALLEY	6
54032	202	PATTERSON VALLEY	6
54033	202	PATTERSON VALLEY	10
54034	202	PATTERSON VALLEY	10
54035	205	LOWER MEADOW VALLEY WASH	6
54105	205	LOWER MEADOW VALLEY WASH	10
54043	208	PAHROC VALLEY	6
54044	208	PAHROC VALLEY	6
54045	208	PAHROC VALLEY	10
54046	208	PAHROC VALLEY	10
54047	208	PAHROC VALLEY	10
54048	208	PAHROC VALLEY	10
54049	208	PAHROC VALLEY	10
54050	209	PAHRANAGAT VALLEY	6
54051	209	PAHRANAGAT VALLEY	6
54052	209	PAHRANAGAT VALLEY	6
54053	209	PAHRANAGAT VALLEY	10
54054	209	PAHRANAGAT VALLEY	10
54055	210	COYOTE SPRINGS VALLEY	6
54056	210	COYOTE SPRINGS VALLEY	6
54057	210	COYOTE SPRINGS VALLEY	6
54058	210	COYOTE SPRINGS VALLEY	10
54059	210	COYOTE SPRINGS VALLEY	10
54070	212	LAS VEGAS VALLEY	10
54071	212	LAS VEGAS VALLEY	10
54072	212	LAS VEGAS VALLEY	10
54073	216	GARNET VALLEY	10
54074	217	HIDDEN VALLEY (NORTH)	10
54075	218	CALIFORNIA WASH	10
54076	218	CALIFORNIA WASH	10
54036	220	LOWER MOAPA VALLEY	10
		Total	824

IN THE MATTER OF APPLICATION 53987

EXHIBIT C

Protest by Owen R. Williams, on behalf of
the United States Department of the Interior,
National Park Service

Committed diversions, perennial yields, and available and proposed diversions for basins within the central corridor, the recharge area for the central corridor, and/or other parts of regional flow systems (Nevada Division of Water Resources, 1990; Nevada Department of Conservation and Natural Resources, 1988).

Basin No.	Basin Name	Committed Diversions, A-ft/yr	Estimated Perennial Yield, A-ft/yr	Available Diversion, A-ft/yr	No. of LVVWD Appli-cations	Proposed LVVWD Diversion Rate, A-ft/yr	Available Diversion Less Proposed Diversion, A-ft/yr
156	HOT CREEK VALLEY	1890	5500	3610	1	7245	-3635
168	THREE LAKES VALLEY (NORTHERN PART)	0	4000	4000	4	23183	-19183
169A	TICKAPOO VALLEY (NORTHERN PART)	0	2600	2600	3	18836	-16236
169B	TICKAPOO VALLEY (SOUTHERN PART)	0	3400	3400	3	18836	-15436
170	PENOYER VALLEY	5670	4000	-1670	3	18836	-20506
171	COAL VALLEY	45	6000	5955	4	23183	-17228
172	GARDEN VALLEY	377	6000	5623	5	27530	-21907
173A	RAILROAD VALLEY (SOUTHERN PART)	5188	2800	-2388	3	15938	-18326
173B	RAILROAD VALLEY (NORTHERN PART)	24575	75000	50425	18	95629	-45204
174	JAKES VALLEY	32	12000	11968	5	27530	-15562
180	CAVE VALLEY	31	14000	13969	2	11591	2378
181	DRY LAKE VALLEY	175	2500	2325	2	11591	-9266
182	DELAMAR VALLEY	120	1000	880	2	11591	-10711
183	LAKE VALLEY	22656	12000	-10656	5	27530	-38186
202	PATTERSON VALLEY	1216	4500	3284	4	23183	-19899
205	LOWER MEADOW VALLEY WASH	22915	5000	-17915	2	11591	-29506
207	WHITE RIVER VALLEY	21183	37000	15817	5	27530	-11713
208	PAHROC VALLEY	19	2000	1981	7	44917	-42936
209	PAHRANAGAT VALLEY	6678	25000	18322	5	27530	-9208
210	COYOTE SPRINGS VALLEY	0	18000	18000	5	27530	-9530
211	THREE LAKES VALLEY (SOUTHERN PART)	256	5000	4744	6	37672	-32928
212	LAS VEGAS VALLEY	81773	25000	-56773	3	21734	-78507
216	GARNET VALLEY	1651	400	-1251	1	7245	-8496
217	HIDDEN VALLEY (NORTH)	18	50	32	1	7245	-7213
218	CALIFORNIA WASH	510	36000	35490	2	14489	21001
220	LOWER MOAPA VALLEY	6906	35000	28094	1	7245	20849
	Totals	203884	343750	139866	102	596960	-457094

IN THE MATTER OF APPLICATION 53987

EXHIBIT D

Protest by Owen R. Williams, on behalf of
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National Park Service

Committed diversions and recharge rates for basins within the central corridor, the recharge area for the central corridor, and/or other parts of the regional flow systems (Nevada Division of Water Resources, 1990; Harrill, et al., 1988; and Nevada Department of Conservation and Natural Resources, 1988).

Basin No.	Basin Name	Committed Diversions, A-ft/yr	Proposed LVVWD Diversions, A-ft/yr	Total Diversion, A-ft/yr	Estimated Recharge Rate, A-ft/yr	Recharge Less Total Diversion, A-ft/yr
156	HOT CREEK VALLEY	1890	7245	9135	7000	-2135
168	THREE LAKES VALLEY (NORTHERN PART)	0	23183	23183	2000	-21183
169A	TICKAPOO VALLEY (NORTHERN PART)	0	18836	18836	2600	-16236
169B	TICKAPOO VALLEY (SOUTHERN PART)	0	18836	18836	3400	-15436
170	PENOYER VALLEY	5670	18836	24506	4300	-20206
171	COAL VALLEY	45	23183	23228	2000	-21228
172	GARDEN VALLEY	377	27530	27907	10000	-17907
173A	RAILROAD VALLEY (SOUTHERN PART)	5188	15938	21126	5500	-15626
173B	RAILROAD VALLEY (NORTHERN PART)	24575	95629	120204	46000	-74204
174	JAKES VALLEY	32	27530	27562	17000	-10562
180	CAVE VALLEY	31	11591	11622	14000	2378
181	DRY LAKE VALLEY	175	11591	11766	5000	-6766
182	DELAMAR VALLEY	120	11591	11711	1000	-10711
183	LAKE VALLEY	22656	27530	50186	13000	-37186
202	PATTERSON VALLEY	1216	23183	24399	6000	-18399
205	LOWER MEADOW VALLEY WASH	22915	11591	34506	1500	-33006
207	WHITE RIVER VALLEY	21183	27530	48713	38000	-10713
208	PAHROC VALLEY	19	44917	44936	2200	-42736
209	PAHRANAGAT VALLEY	6678	27530	34208	1800	-32408
210	COYOTE SPRINGS VALLEY	0	27530	27530	2100	-25430
211	THREE LAKES VALLEY (SOUTHERN PART)	256	37672	37928	6000	-31928
212	LAS VEGAS VALLEY	81773	21734	103507	30000	-73507
216	GARNET VALLEY	1651	7245	8896	400	-8496
217	HIDDEN VALLEY (NORTH)	18	7245	7263	400	-6863
218	CALIFORNIA WASH	510	14489	14999	100	-14899
220	LOWER MOAPA VALLEY	6906	7245	14151	100	-14051
	Totals	203884	596960	800844	221400	-579444

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EXHIBIT E

Protest by Owen R. Williams, on behalf of
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National Park Service

The National Park Service (NPS) requests that the application be denied. Further, none of the information which follows should be construed to indicate that the NPS asks for anything less than denial of the application.

If the application is approved, the NPS requests the following.

I. The NPS does not wish to impede any legitimate ground-water development in the State of Nevada, which will not impair the water resources and water-related attributes of Death Valley National Monument (Death Valley NM) and Lake Mead National Recreation Area (Lake Mead NRA). However, available scientific literature (Eakin, 1966; Mifflin, 1988; Winograd and Thordarson, 1975; Harrill et al., 1988; Dettinger, 1989; and Essington, 1990) indicates that major ground-water flow systems transmit ground water to Death Valley NM and Lake Mead NRA.

Based on this information, the NPS, requests that the State Engineer establish the following ground-water basins as one designated ground-water basin.

Basin No.	Basin Name
157	KAWICH VALLEY
158A	EMIGRANT VALLEY (GROOM LAKE VALLEY)
158B	EMIGRANT VALLEY (PAPOOSE LAKE VALLEY)
159	YUCCA FLAT
160	FRENCHMAN FLAT
161	INDIAN SPRINGS VALLEY
162	PAHRUMP VALLEY
168	THREE LAKES VALLEY (NORTHERN PART)
169A	TICKAPOO VALLEY (NORTHERN PART)
169B	TICKAPOO VALLEY (SOUTHERN PART)
173A	RAILROAD VALLEY (SOUTHERN PART)
211	THREE LAKES VALLEY (SOUTHERN PART)
225	MERCURY VALLEY
226	ROCK VALLEY
227A	FORTYMILE CANYON (JACKSON FLATS)
227B	FORTYMILE CANYON (BUCKBOARD MESA)
230	AMARGOSA DESERT
150	LITTLE FISH LAKE VALLEY
155C	LITTLE SMOKY VALLEY (SOUTHERN PART)
156	HOT CREEK VALLEY
173B	RAILROAD VALLEY (NORTHERN PART)

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EXHIBIT E (Continued)

Protest by Owen R. Williams, on behalf of
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National Park Service

Basin No.	Basin Name
170	PENOYER VALLEY
171	COAL VALLEY
172	GARDEN VALLEY
174	JAKES VALLEY
175	LONG VALLEY
180	CAVE VALLEY
181	DRY LAKE VALLEY
182	DELAMAR VALLEY
183	LAKE VALLEY
198	DRY VALLEY
199	ROSE VALLEY
200	EAGLE VALLEY
201	SPRING VALLEY
202	PATTERSON VALLEY
203	PANACA VALLEY
204	CLOVER VALLEY
205	LOWER MEADOW VALLEY WASH
206	KANE SPRINGS VALLEY
207	WHITE RIVER VALLEY
208	PAHROC VALLEY
209	PAHRANAGAT VALLEY
210	COYOTE SPRINGS VALLEY
212	LAS VEGAS VALLEY
215	BLACK MOUNTAINS AREA
216	GARNET VALLEY
217	HIDDEN VALLEY (NORTH)
218	CALIFORNIA WASH
219	MUDDY RIVER SPRINGS AREA
220	LOWER MOAPA VALLEY
154	NEWARK VALLEY
155A	LITTLE SMOKY VALLEY (NORTHERN PART)
155B	LITTLE SMOKY VALLEY (CENTRAL PART)

The designation would assist in protecting the interests of the NPS, the Las Vegas Valley Water District (LVVWD), the people of the United States, and the people of the State of Nevada. If this request is denied, the NPS requests that the State Engineer establish the above-mentioned basins as separate designated ground-water basins.

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EXHIBIT E (Continued)

Protest by Owen R. Williams, on behalf of
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II. The NPS further requests that, if the application is approved, the permit be conditioned by the following.

A. The LVVWD shall conduct a scientific ground-water investigation of basin-fill, volcanic, and carbonate-rock aquifers in east-central and southern Nevada to determine the hydrologic relationship between Basin 180, CAVE VALLEY, and the water resources of Death Valley NM and Lake Mead NRA.

B. The LVVWD shall establish and operate a long-term monitoring program designed to detect any potential impacts to the water resources of Death Valley NM and Lake Mead NRA, directly or indirectly incident to the appropriation sought by the application.

C. The LVVWD plans for monitoring and investigating ground-water resources shall be subject to the approval of the NPS and the State Engineer and shall include quality assurance protocol acceptable to the above-mentioned parties.

D. The LVVWD shall quarterly, or at another mutually acceptable frequency, provide all data collected and analyses completed to the NPS and the State Engineer.

E. The LVVWD shall cease pumping ground water, or reduce the level of pumping to the no impact level, in the event that analyses by the NPS or the State Engineer create a reasonable expectation that the senior water rights of Death Valley NM and/or Lake Mead NRA will be impaired by pumping under the permit issued under this application.

III. The NPS reserves the right to amend this exhibit as more information becomes available.

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REFERENCES CITED

Protest by Owen R. Williams, on behalf of
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