Title

Major Ground-Water Flow Systems in the Great basin region of Nevada Utah, and adjacent states. Hydrologic atlas of Nevada with table of major flow systems. Technical reference document.

Author

Harrill, James R., Joseph S. Gates, and James M. Thomas

100985

Document Date

1/1/88

ERC Index number

05.09.029

Document Type

Report

Box Number

1684-1

Recipients

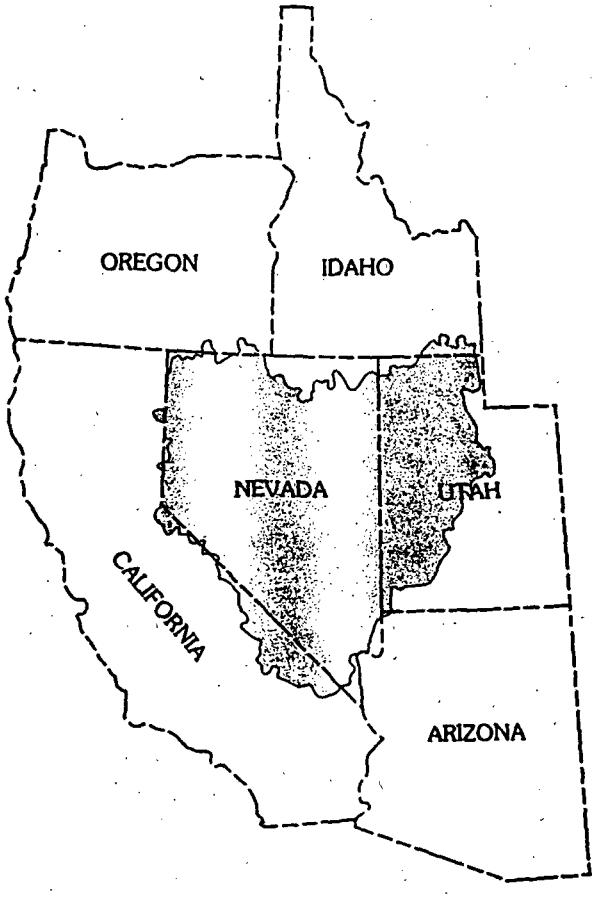
Hydrologic Investications Atlas (HA-694-C)

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MAJOR GROUND-WATER FLOW SYSTEMS IN THE GREAT BASIN REGION OF NEVADA, UTAH, AND ADJACENT STATES

By James R. Harrill, Joseph S. Gates, and James M. Thomas

REGIONAL AQUIFER SYSTEMS OF THE GREAT BASIN

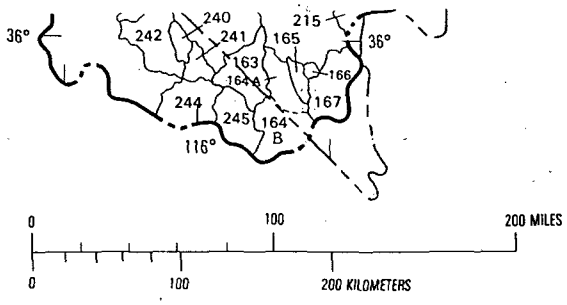


HYDROLOGIC INVESTIGATIONS ATLAS
Published by the U.S. Geological Survey, 1988

HARRILL AND OTHERS—GROUND-WATER FLOW SYSTEMS, GREAT BASIN REGION OF NEVADA, UTAH, AND ADJACENT STATES 1:1,000,000 ATLAS

OF MAJOR FLOW SYSTEMS

Map No.	Flow-system name	Area (square miles)	Number of hydrographic areas or subareas included	Ground-water recharge (acre-feet)	Ground-water storage (acre-feet per foot)	System characteristics	References
23	Monte Cristo Valley	284	1	500	7,200	Consolidated rock is volcanic, metasedimentary and metavolcanic, with some intrusives. Is an arid single-basin flow system (playa altitude about 5,268 ft).	R52
24	South Central Marshes	6,790	12	65,000	190,000	Consolidated rock is primarily volcanic and intrusive, with some areas of carbonate and clastic sedimentary. Is an arid area with interbasin flow through fractured rocks. Terminal discharge area includes five individual areas situated in topographic lows along the Walker Lane structural zone. Clayton Valley playa (altitude about 4,265 ft) is lowest point in system.	B41, R12, R28, R45, R52, R58
25	Grass Valley	595	1	12,000	16,000	Consolidated rock is primarily volcanic, with some siliceous sedimentary. Is a single-basin system (playa altitude about 5,620 ft).	R29
26	Northern Big Smoky Valley	1,320	1	65,000	50,000	Consolidated rock is primarily volcanic, intrusive, clastic sedimentary, and carbonate. Is a single-basin system (playa altitude about 5,620 ft); however, south boundary is formed by a ground-water divide in alluvium.	B41
27	Diamond Valley system	3,120	6	58,000	88,000	Consolidated rock is primarily volcanic, siliceous sedimentary, and carbonate. Area contains a large Pleistocene drainage area from which present day runoff is ephemeral. Interbasin flow is primarily through basin fill, with minor leakage through consolidated rock into Diamond Valley. Diamond Valley playa (altitude about 5,775 ft) is terminus of system. Significant discharge occurs in upgradient basins. Area may contribute some flow to Fish Springs in adjacent Newark Valley system. Several large springs are present in Diamond Valley.	B35, R6, R30, R31,
28	Death Valley system	15,800	30	98,000	380,000	Consolidated rock is predominantly carbonate and volcanic, which is commonly fractured intensively by structural deformation along regional-scale shear zones within Walker Lane. System is characterized by major interbasin flow and large regional springs. The Death Valley playa (altitude about 200 ft below sea level) is terminus of system. System includes several subsystems that discharge at intermediate points. Most prominent of these is Ash Meadows flow system. Character of northeast boundary is not well understood.	B5, B6, OF77-728, OF80-569, OF81-635, OF83-542, P494-B, P712-B, P712-C, P927, R10, R14, R45, R54, W1832
29	Newark Valley system	1,450	3	22,000	17,000	Consolidated rock is volcanic, clastic sedimentary, and carbonate. Interbasin flow is	R1, R38



numbers are those shown in fig
with subareas in more than one

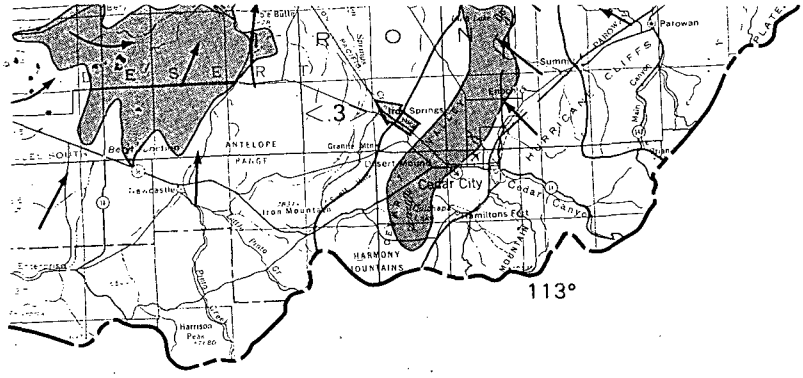
---------- HYDROGRAPHIC-SUBAREA BO

——— MAJOR FLOW-SYSTEM BOUND

——— STUDY-AREA BOUNDARY

CONTINENTAL LAKE SYSTEM (1)
2 Continental Lake Valley
3 Gridley Lake Valley
4 VIRGIN VALLEY (2)
7 SWAN LAKE VALLEY (3)
LONG VALLEY SYSTEM (4)
8 Massacre Lake Valley
9 Long Valley
12 Mosquito Valley
15 Boulder Valley
16 DUCK LAKE VALLEY (5)
BLACK ROCK DESERT SYSTEM (6)
19 Dry Valley
20 Sano Valley
21 Smoke Creek Desert
22 San Emidio Desert
23 Granite Basin
24 Hualapai Flat
25 High Rock Lake Valley
26 Mud Meadows
27 Summit Lake Valley
28 Black Rock Desert
29 Pine Forest Valley
30 Kings River Valley
A. Rio King Subarea
B. Sod House Subarea
31 Desert Valley
32 Silver State Valley
33 Quinn River Valley
A. Orovada Subarea
B. McDermitt Subarea
C. Oregon Canyon Subarea
HUMBOLDT SYSTEM (7)
42 Marys River Area
43 Starr Valley Area
44 North Fork Area
45 Lamoille Valley
46 South Fork Area
47 Huntington Valley
48 Tenmile Creek Area
49 Elko Segment
50 Susie Creek Area
51 Maggie Creek Area
52 Marys Creek Area
53 Pine Valley
54 Crescent Valley
55 Carico Lake Valley
56 Upper Reese River Valley
57 Antelope Valley
58 Middle Reese River Valley
59 Lower Reese River Valley
60 Whirlwind Valley
61 Boulder Flat
62 Rock Creek Valley
63 Willow Creek Valley
64 Clovers Area
65 Pumpernickel Valley
66 Kelly Creek Area
67 Little Humboldt Valley
68 Hardscrabble Area
69 Paradise Valley
70 Winnemucca Segment
71 Grass Valley
72 Imlay Area
73 Lovelock Valley
A. Oreana Subarea
B. Upper & Lower Valley Areas
74 White Plains
131 BUFFALO VALLEY (8)
129 BUENA VISTA VALLEY (9)
GRANITE SPRINGS SYSTEM (10)
78 Granite Springs Valley
79 Kumiva Valley
80 WINNEMUCCA LAKE VALLEY (11)
TRUCKEE SYSTEM (12)
81 Pyramid Lake Valley
82 Dodge Flat
83 Tracy Segment
84 Warm Springs Area
85 Spanish Springs Valley
86 Sun Valley
87 Truckee Meadows
88 Pleasant Valley
89 Washoe Valley
LEMMON VALLEY (13)
92 Lemmon Valley
A. Western Part
B. Eastern Part
93 Antelope Valley
100 COLD SPRING VALLEY (14)
FERNLEY SINK SYSTEM (15)
75 Bradys Hot Springs Area
76 Fernley Area
77 Fireball Valley
CARSON SYSTEM (16)
101 Carson Desert
A. Packard Desert
B. Lahontan Valley
102 Churchill Valley
103 Dayton Valley
A. Carson Plains
B. Stagecoach Valley
104 Eagle Valley
105 Carson Valley
WALKER SYSTEM (17)
106 Antelope Valley
107 Smith Valley
108 Mason Valley
109 East Walker Area
110 Walker Lake Valley
A. Schurz Subarea
B. Lake Subarea
C. Hawthorne Whiskey Flat
121 Soda Spring Valley
B. Western Part
C. Central Part
DIXIE VALLEY SYSTEM (18)
124 Fairview Valley
125 Stingaree Valley
126 Cowkick Valley
127 Eastgate Valley Area
128 Dixie Valley
130 Pleasant Valley
132 Jersey Valley
133 EDWARDS CREEK VALLEY (19)
134 SMITH CREEK VALLEY (20)
123 RAWHIDE FLATS (21)
122 GABBS VALLEY (22)
136 MONTE CRISTO VALLEY (23)
SOUTH-CENTRAL MARSHES (24)
113 Huntoon Valley
114 Teels Marsh Valley
117 Fish Lake Valley
118 Columbus Salt Marsh Valley
119 Rhodes Salt Marsh Valley
120 Garfield Flat
121 Soda Spring Valley *
B. Eastern Part
135 Lone Valley
137 Big Smoky Valley *
A. Tonopah Flat
141 Ralston Valley
142 Alkali Spring Valley
143 Clayton Valley
149 Stone Cabin Valley
138 GRASS VALLEY (25)
137B NORTHERN BIG SMOKY VALLEY (26) *
DIAMOND VALLEY SYSTEM (27)
139 Kobeh Valley
140 Monitor Valley
A. Northern Part
B. Southern Part
151 Antelope Valley (Eur & Nye)
152 Stevens Basin
153 Diamond Valley
DEATH VALLEY SYSTEM (28)
144 Lida Valley
145 Stonewall Flat
146 Sarcobatus Flat
147 Gold Flat
148 Cactus Flat
157 Kawich Valley
158 Emigrant Valley
A. Groom Lake Valley
B. Papoose Lake Valley
159 Yucca Flat
160 Frenchman Flat
161 Indian Springs Valley
162 Pahrump Valley
168 Three Lakes Valley (Northern Part)
169 Tikapoo Valley
A. Northern Part
B. Southern Part
173 Railroad Valley *
A. Southern Part
211 Three Lakes Valley (Southern Part)
225 Mercury Valley
226 Rock Valley
227 Fortymile Canyon
A. Jackass Flats
B. Buckboard Mesa
228 Oasis Valley
229 Crater Flat
230 Amargosa Desert
240 Chicago Valley
241 California Valley
242 Lower Amargosa Valley
243 Death Valley
244
245
154
155
150
155
156
173
170
177
188
176
178
164
165
166
167
171
172
174
175
180
181
182
183
198
199
200
201
202
203
204
205
206
207
208
209
210
212
215
216
217
218
219
220
221
222

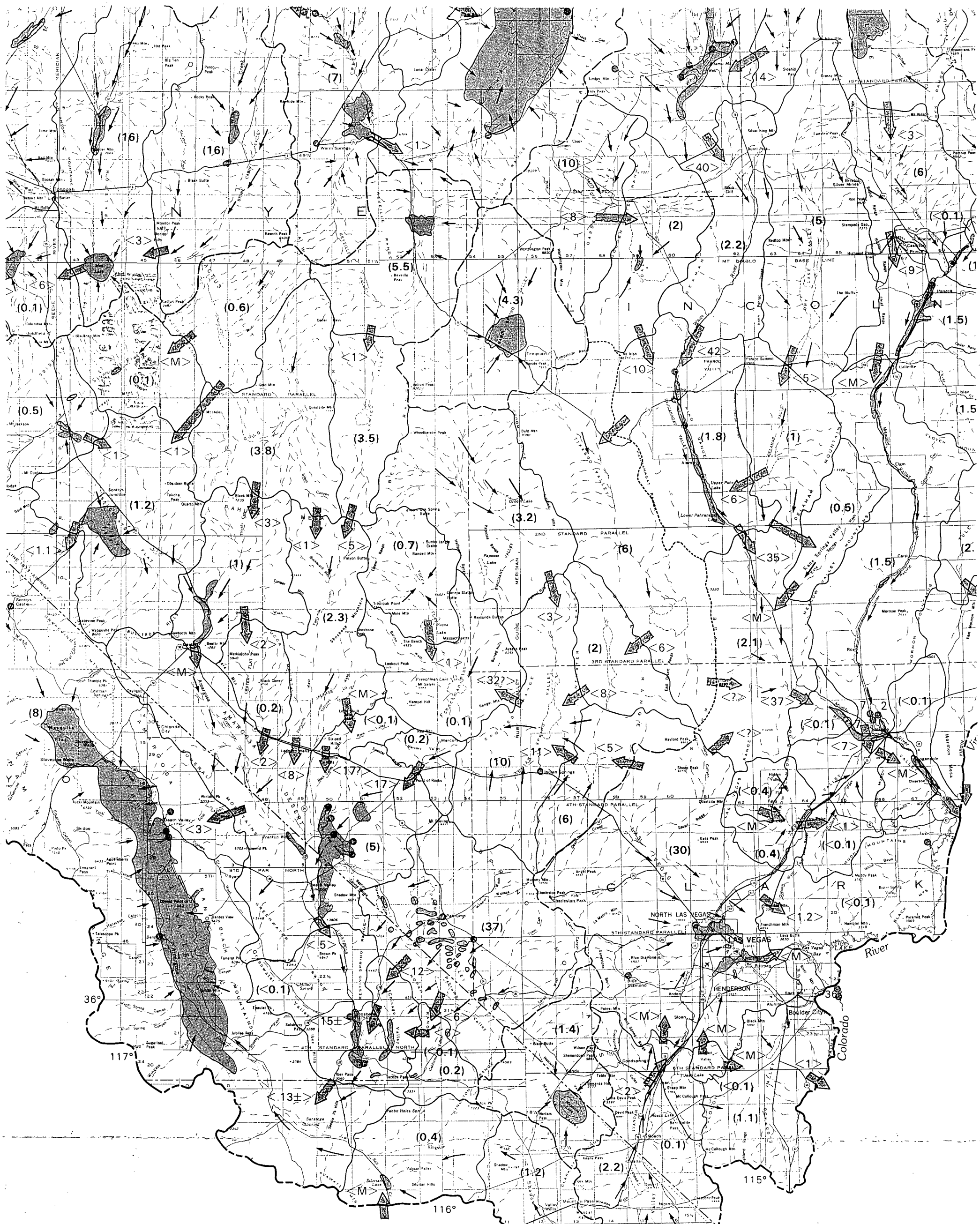
***Figure 3.*—Hydrographic areas**



37°

EXPLANATION

- AREA WHERE SHALLOW GROUND WATER IS CONSUMED BY EVAPOTRANSPIRATION
- LAKES AND RESERVOIRS
- MAJOR FLOW-SYSTEM BOUNDARY—Dotted where uncertain. Coincides with hydrographic-area or subarea boundary
- HYDROGRAPHIC-AREA BOUNDARY WITHIN MAJOR FLOW SYSTEM
- GENERAL DIRECTION OF GROUND-WATER FLOW IN BASIN-FILL DEPOSITS
- LARGE PERENNIAL STREAM OR RIVER IN HYDRAULIC CONTINUITY WITH ADJACENT AQUIFERS
- <M> / <14> FLOW ACROSS HYDROGRAPHIC-AREA BOUNDARY—Number is rate of flow, in thousands of acre-feet per year; M indicates that flow is minor. Solid arrow indicates that flow is primarily through basin fill or alluvium; dashed arrow indicates that flow is primarily through permeable consolidated rock
- *Bear River* LOCATION WHERE FLOW FROM HEADWATER AREA OR MAJOR RIVER ENTERS THE STUDY AREA
- (11) NATURAL GROUND-WATER RECHARGE TO A HYDROGRAPHIC AREA—Estimated rate, in thousands of acre-feet per year
- 5 LARGE SPRING—Discharge is generally greater than 1,000 gallons per minute in Utah and most of Nevada; in more arid parts of Nevada and in California, springs with discharges greater than 200 gallons per minute are shown where they are considered to have regional significance. Number indicates number of springs where more than one is indicated by a single symbol
- STUDY-AREA BOUNDARY



JOR GROUND-WATER FLOW SYSTEMS IN THE GREAT BASI
OF NEVADA, UTAH, AND ADJACENT STATES

By

James R. Harrill, Joseph S. Gates, and James M. Thomas

1988