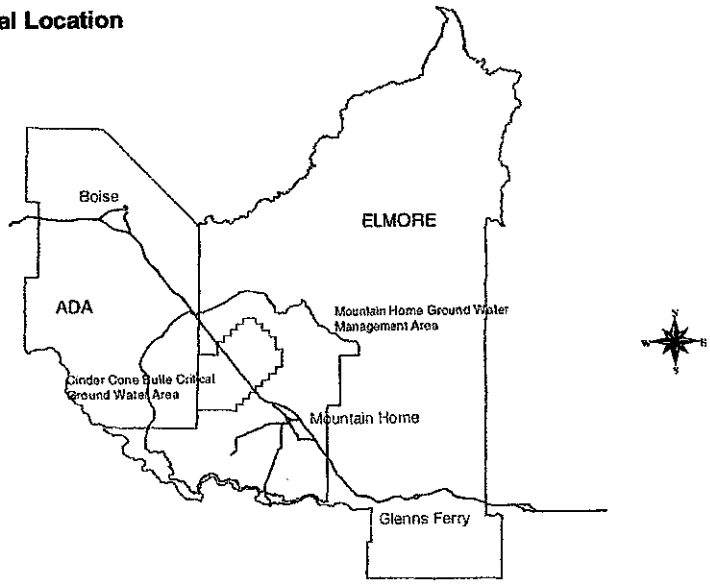
Mountain Home Plateau

Ground Water Status and Management

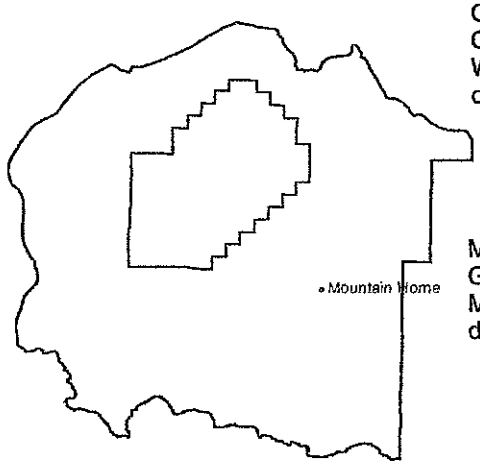
Helen Harrington,
Idaho Department of Water Resources
July 31, 2001

General Location



IPC 1 4

Management Designations



CINDER CONE BUTTE CRITICAL GROUND WATER AREA designated May 7, 1981

MOUNTAIN HOME GROUND WATER MANAGEMENT AREA designated November 9, 1982

Designations

- **Critical Ground Water Area:** an area which does not have sufficient ground water to provide a reasonably safe supply for irrigation of cultivated lands or other uses at current or projected rates of withdrawal
- **Ground Water Management Area:** an area approaching a critical ground water area

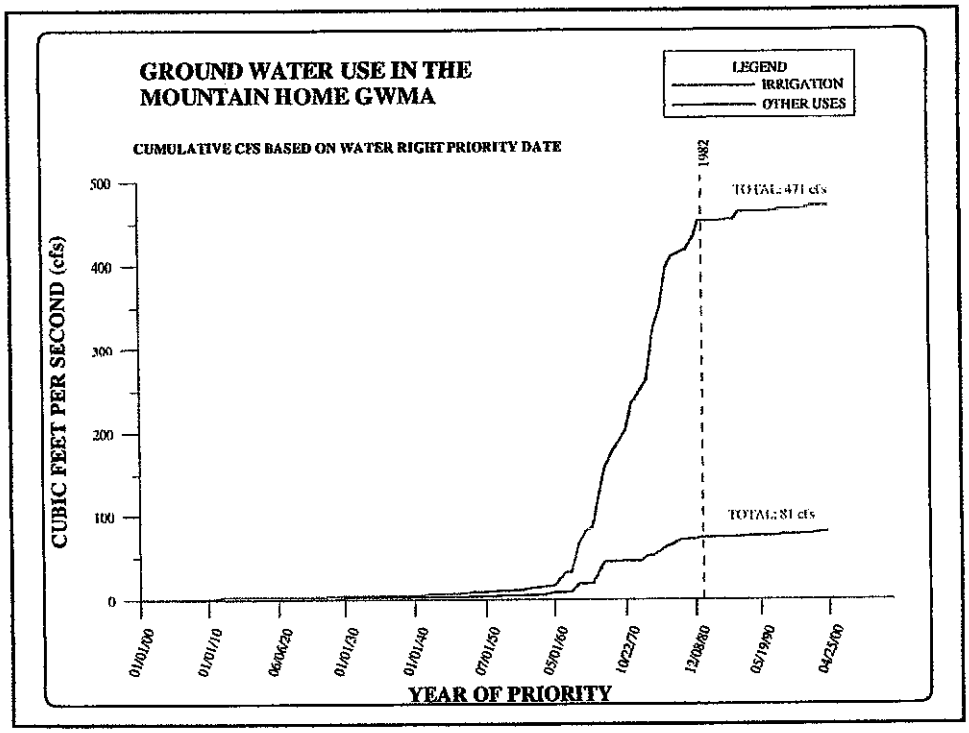
Reasons for Designation

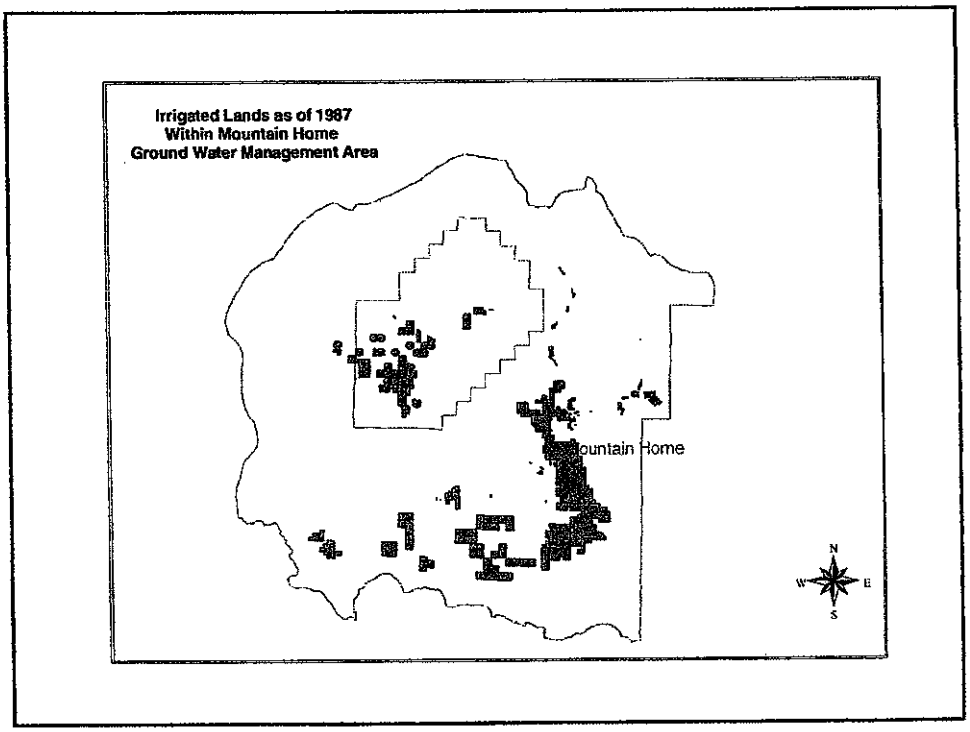
- Rapid agricultural development
- Declines in ground water levels
- Further information showed declines over a larger area
- Pending applications for additional development of ground water

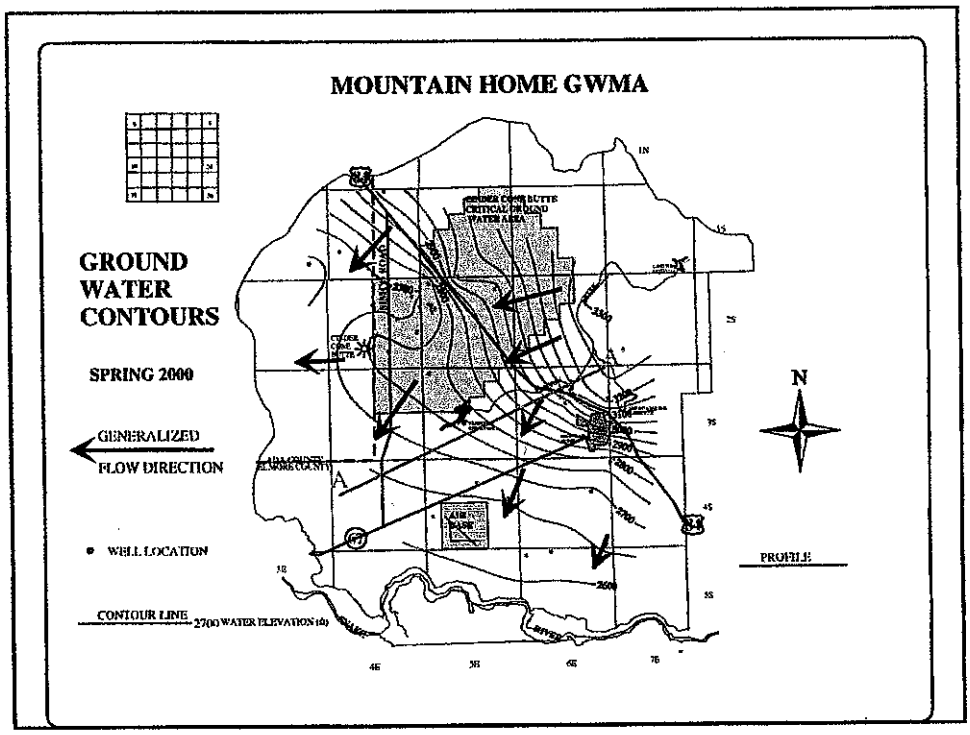
Administrative Restrictions

- Cinder Cone Butte CGWA
  - No new appropriations
- Mountain Home GWMA
  - New appropriations allowed if it is determined that sufficient supply is available and prior water rights will not be injured

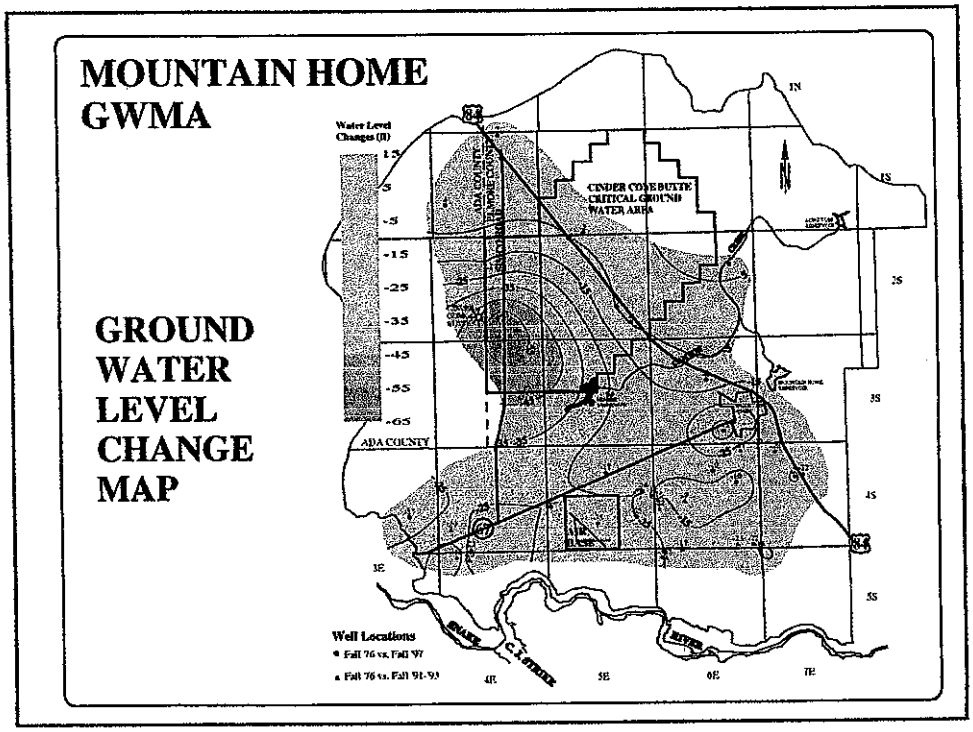
Exception: Domestic uses and associated domestic irrigation


GROUND WATER USE IN THE
MOUNTAIN HOME GWMA
LEGEND
IRRIGATION
OTHER USES
CUMULATIVE CFS BASED ON WATER RIGHT PRIORITY DATE
1982
TOTAL: 471 cfs
TOTAL: 81 cfs
CUBIC FEET PER SECOND (cfs)
500
400
300
200
100
0
01/01/00
01/01/10
06/04/20
01/01/30
01/01/40
07/01/50
05/01/60
10/22/70
12/08/80
05/19/90
04/25/00
YEAR OF PRIORITY

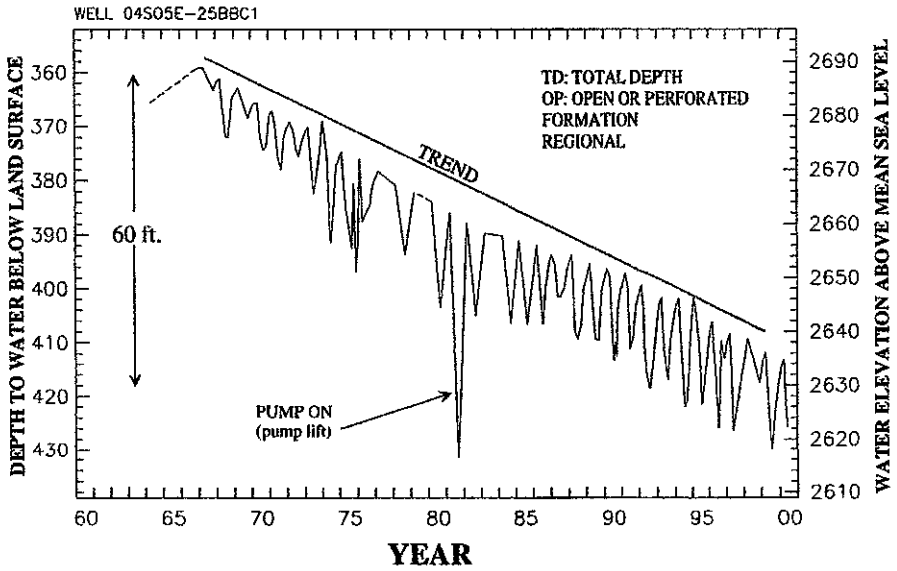

Irrigated Lands as of 1987
Within Mountain Home
Ground Water Management Area
ountain Home
N
W
E
S

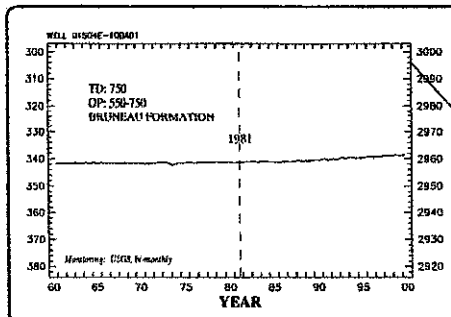


$\phi = 0.066$ 1/1
Dec 10

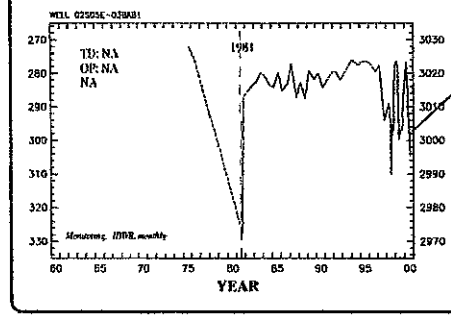


GROUND WATER HYDROGRAPH

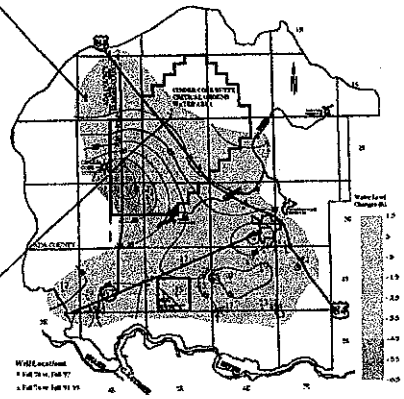


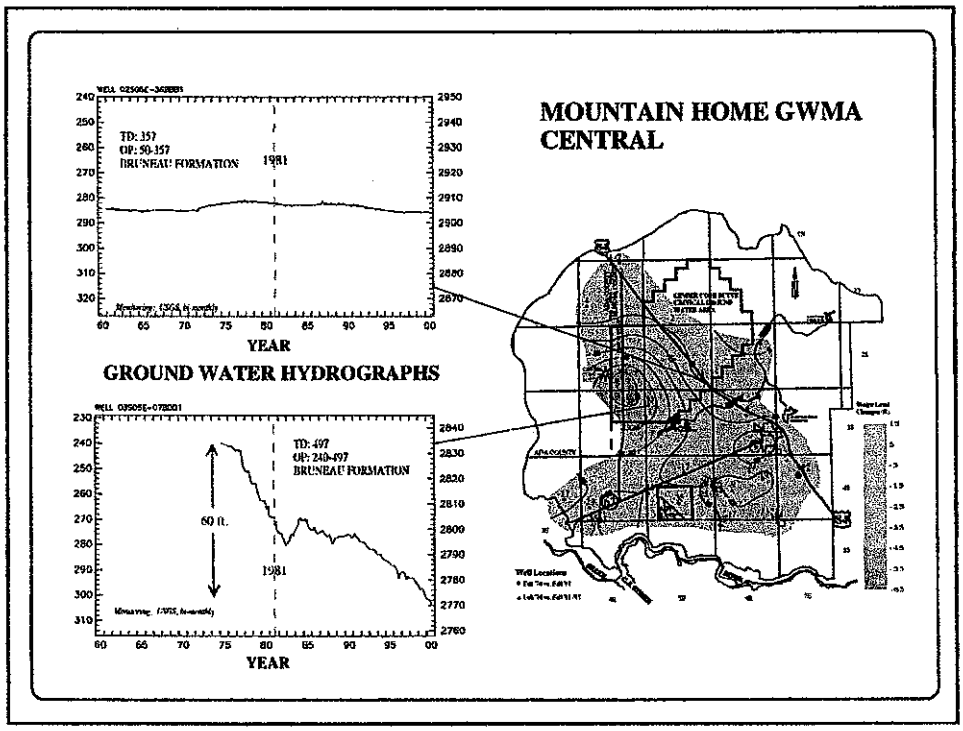


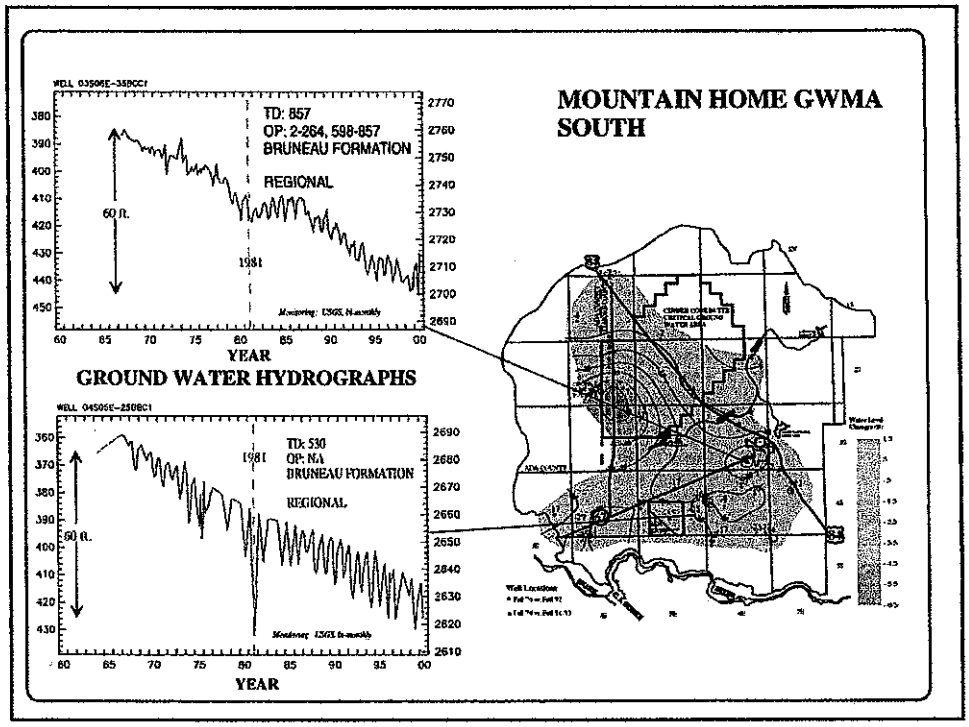
GROUND WATER HYDROGRAPHS

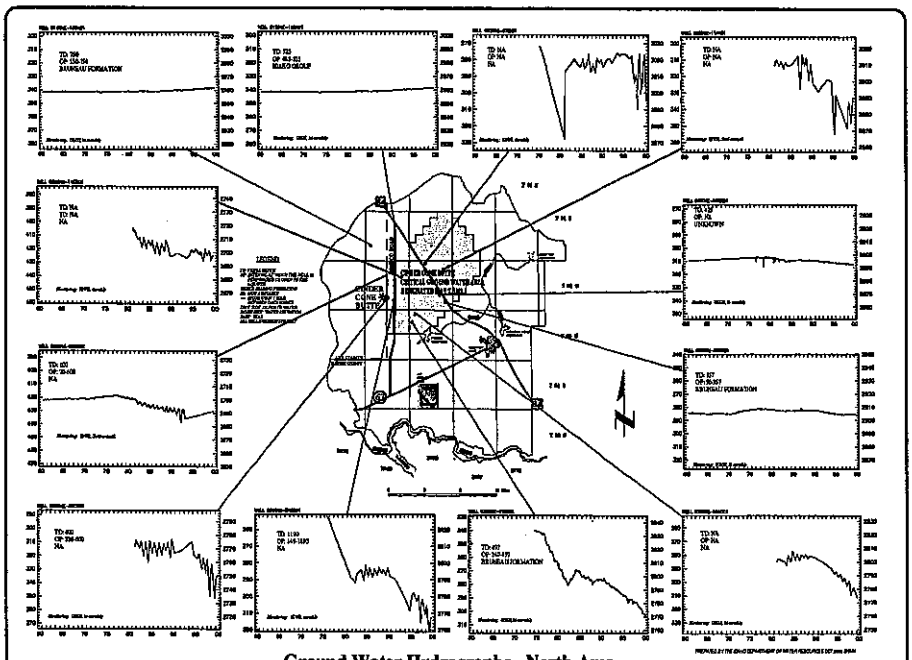


MOUNTAIN HOME GWMA NORTH

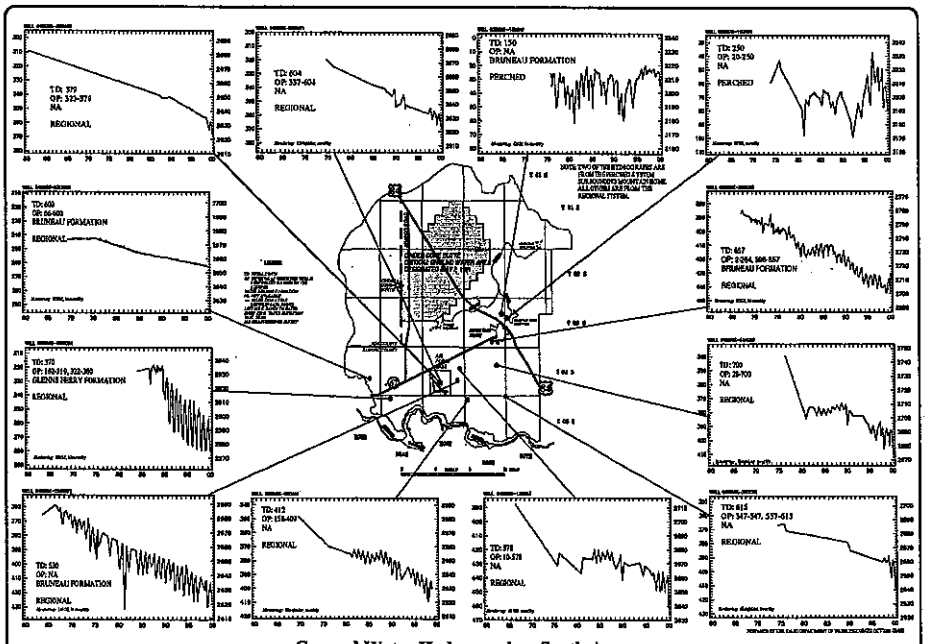



MOUNTAIN HOME GWMA
CENTRAL
TD: 357
OP: 50-357
BRUNEAU FORMATION
1981
YEAR
GROUND WATER HYDROGRAPHS
TD: 497
OP: 240-497
BRUNEAU FORMATION
60 ft.
1981
YEAR


MOUNTAIN HOME GWMA
SOUTH
TD: 857
OP: 2-264, 598-857
BRUNEAU FORMATION
REGIONAL
60 ft.
1981
YEAR
GROUND WATER HYDROGRAPHS
TD: 530
OP: NA
BRUNEAU FORMATION
REGIONAL
60 ft.
1981
YEAR



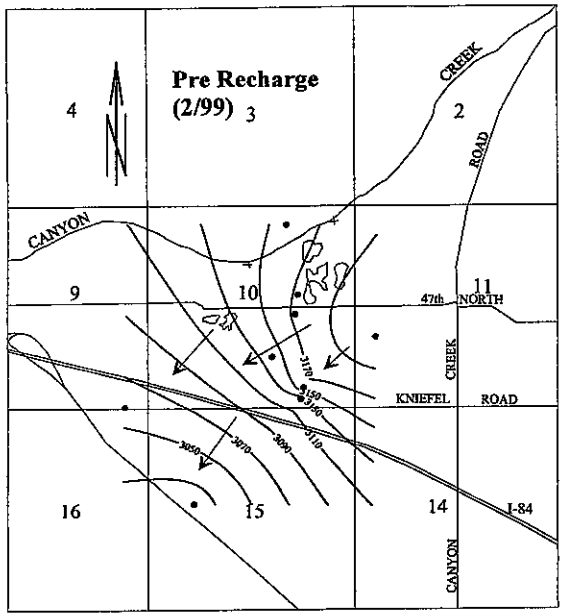
Ground Water Hydrographs - North Area



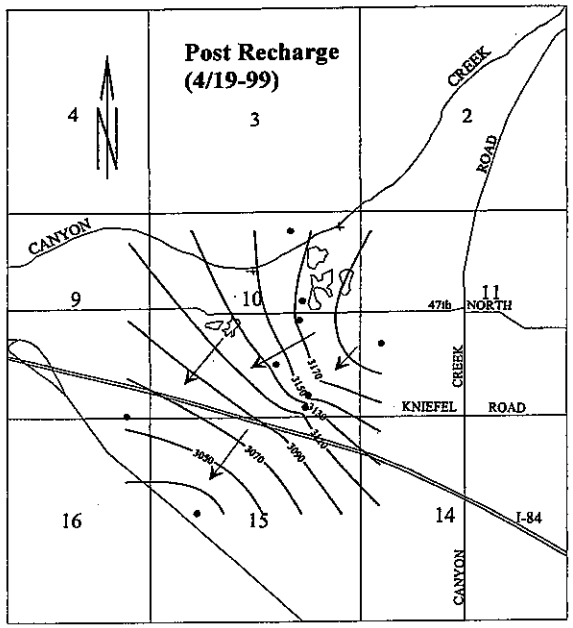
Ground Water Hydrographs - South Area

HYDR0LOGIC DATA

MOUNTAIN HOME AREA



GROUND WATER ELEVATIONS

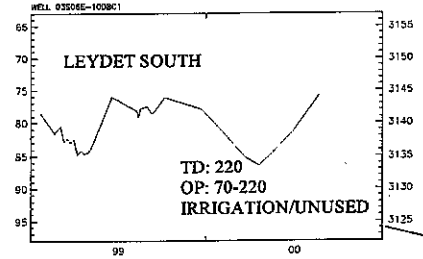


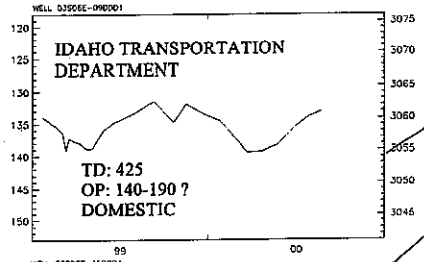
MONITORING WELL LOCATION

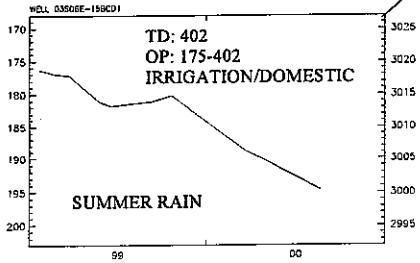
GENERALIZED FLOW DIRECTION

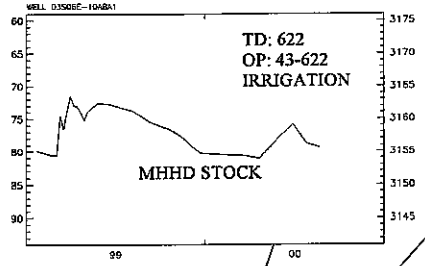
GRAVEL PITS

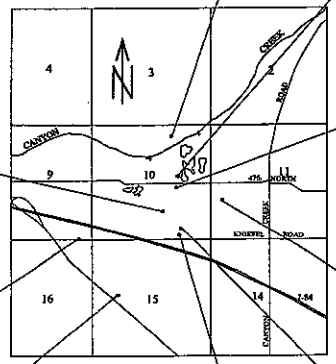
TD: TOTAL DEPTH
OP: INTERVAL AT WHICH THE WELL IS PERFORATED OR OPEN TO THE AQUIFER.
LEFT SIDE: DEPTH TO WATER
RIGHT SIDE: WATER ELEVATION
BASE: YEAR
ALL MEASUREMENTS IN FEET
CURRENT TO FALL 1999



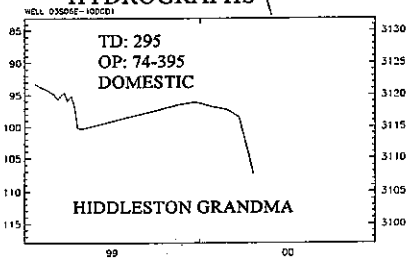


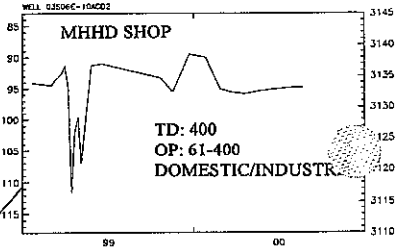


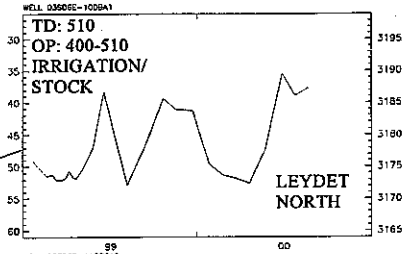


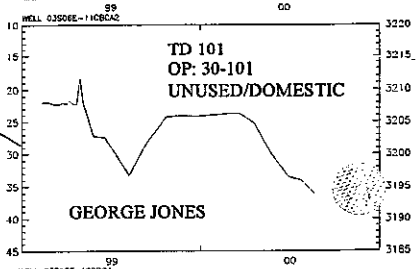


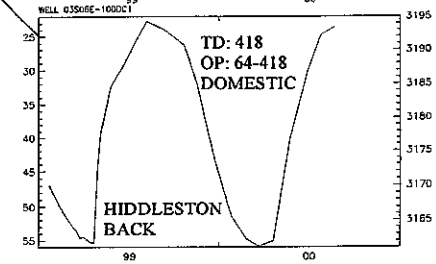
GROUND WATER HYDROGRAPHS



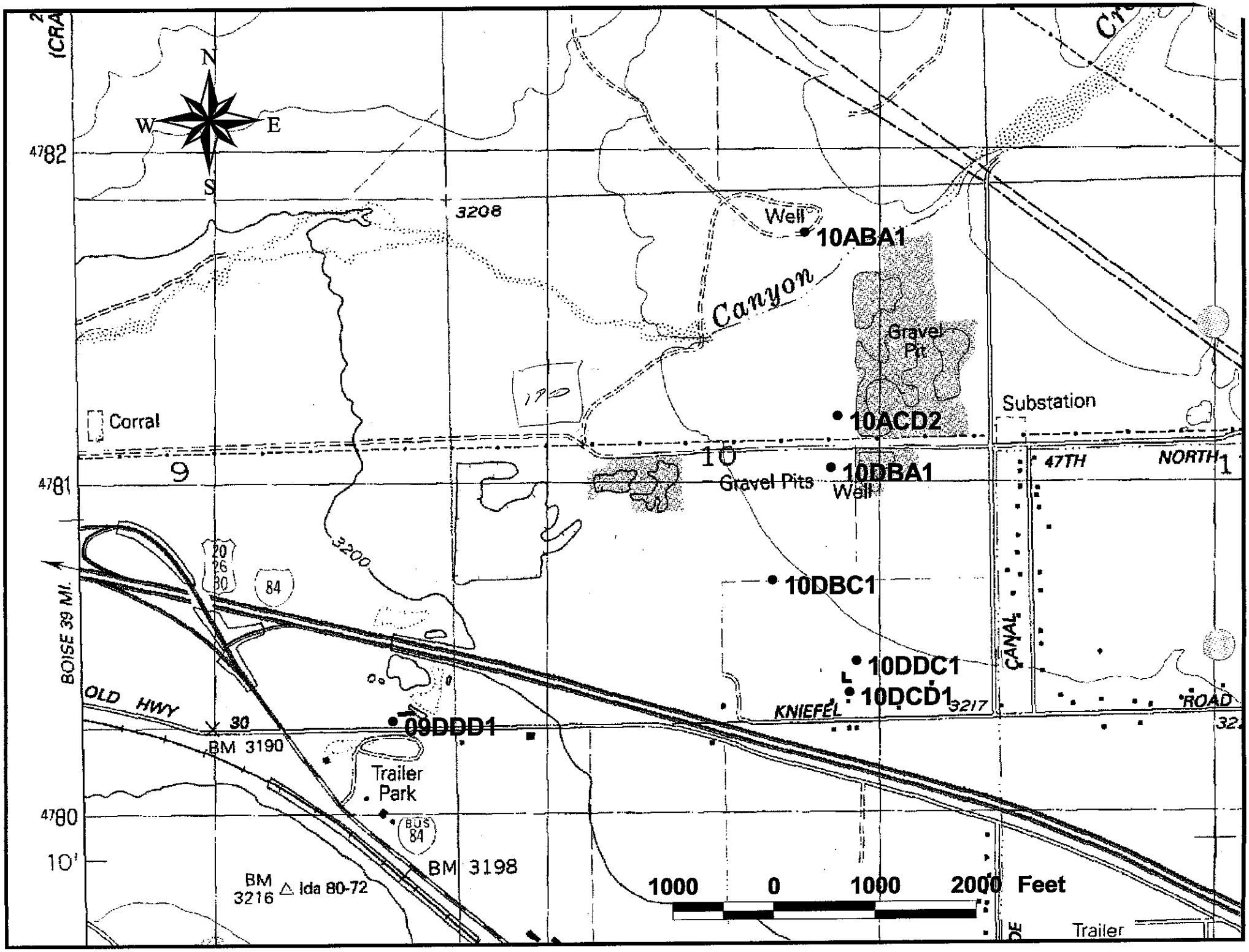








PREPARED BY THE IDAHO DEPARTMENT OF WATER RESOURCES 12/1/99 SB



N
W
E
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4782
4781
4780
10'
3208
Well
10ABA1
Canyon
Gravel Pit
Substation
Corral
10ACD2
10
9
47TH
NORTH
1
10DBA1
Gravel Pits
Well
3200
20
26
30
84
10DBC1
BOISE 39 MI.
CANAL
10DDC1
10DCD1
OLD HWY
30
KNIEFEL
3217
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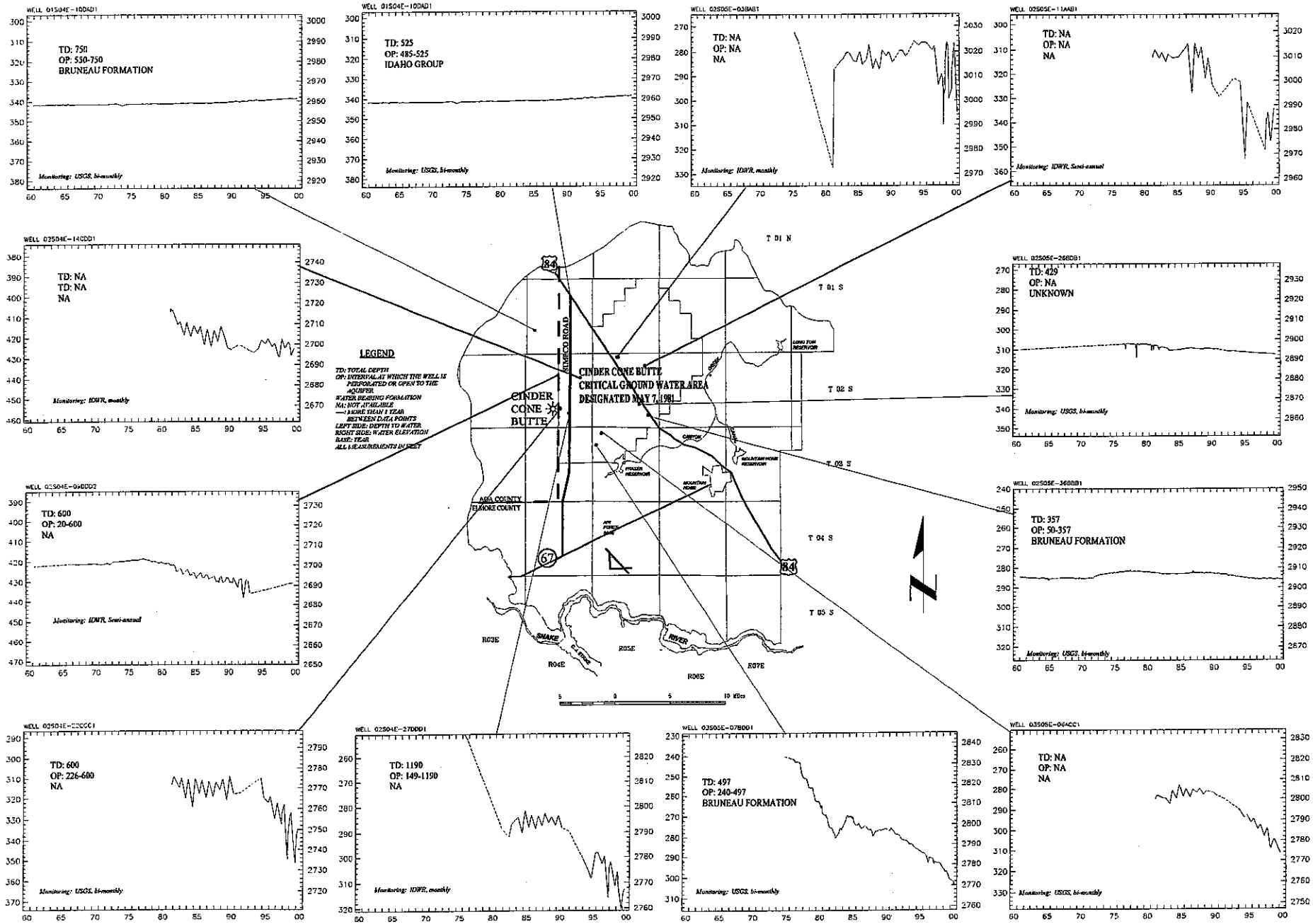
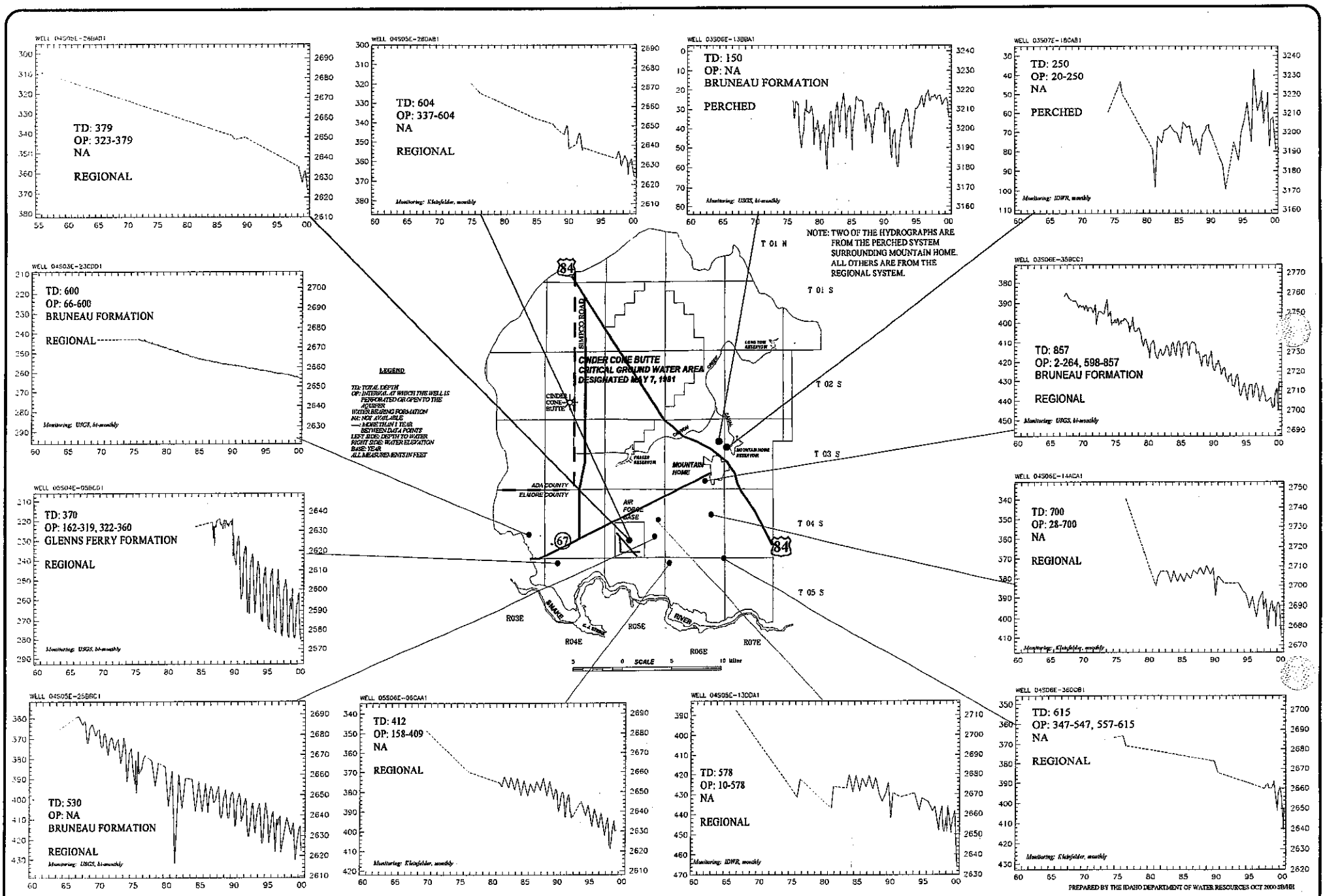
1000
0
1000
2000
Feet
Trailer



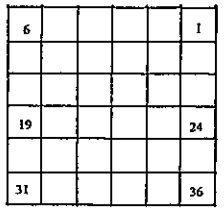
PREPARED BY THE IDAHO DEPARTMENT OF WATER RESOURCES OCT 2000 SHI-H

Ground Water Hydrographs - North Area



Ground Water Hydrographs - South Area

MOUNTAIN HOME GWMA



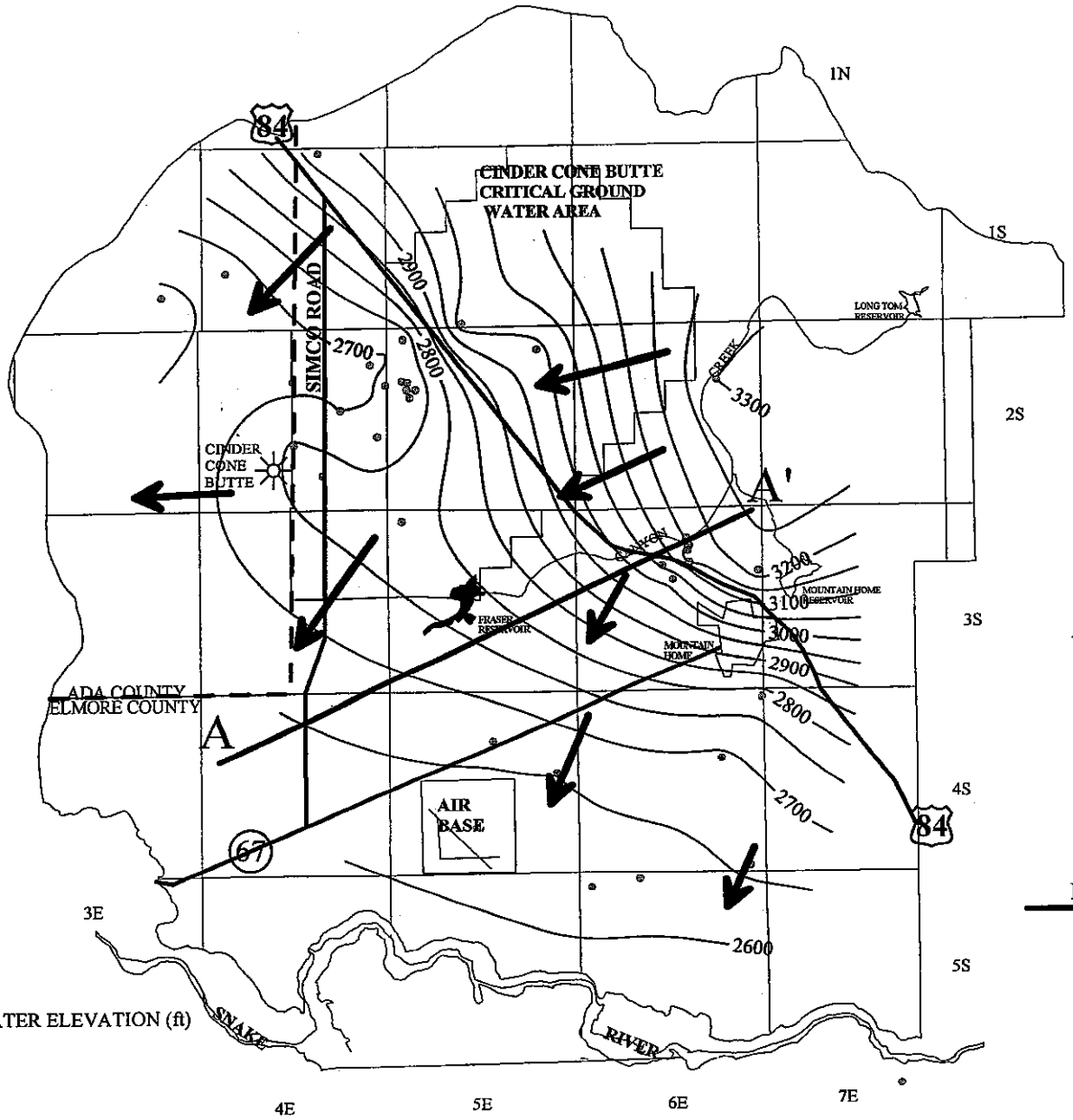
GROUND WATER CONTOURS

SPRING 2000

GENERALIZED FLOW DIRECTION

WELL LOCATION

CONTOUR LINE 2700 WATER ELEVATION (ft)



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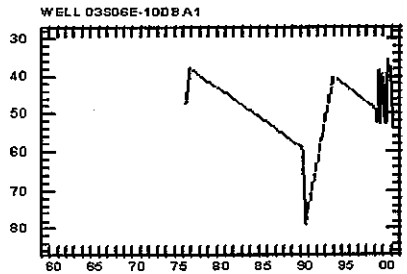
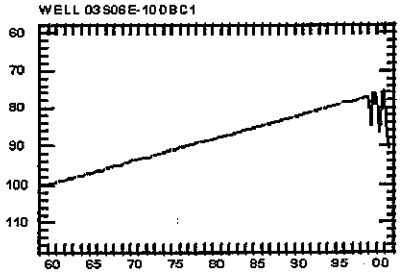
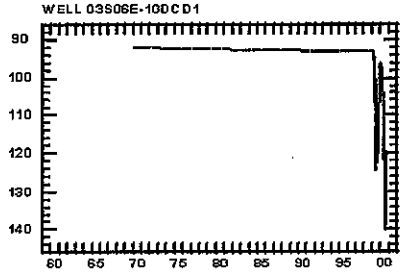
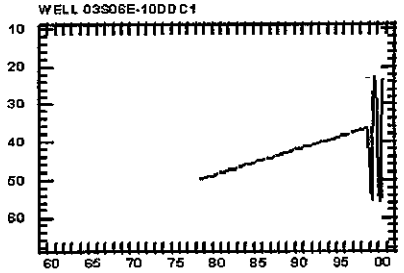
PROFILE

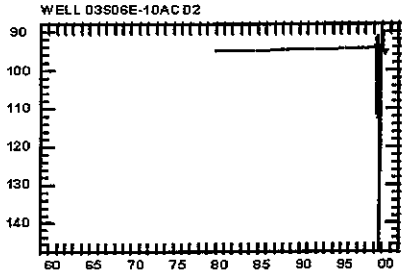
GROUND WATER DATA
Hydrographs of Observation Well Network

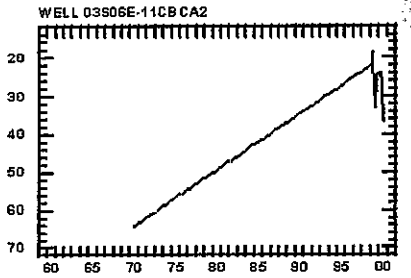


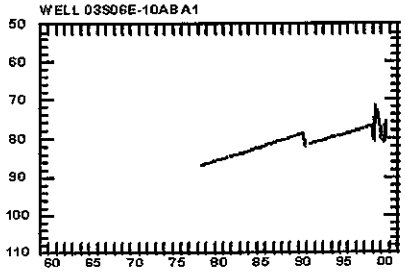


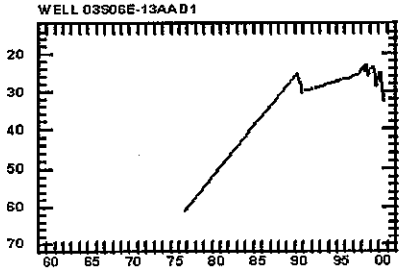


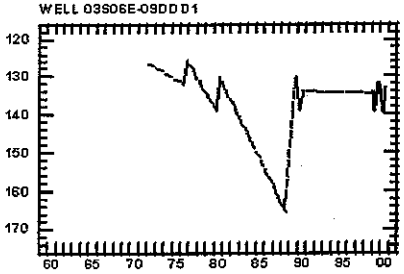


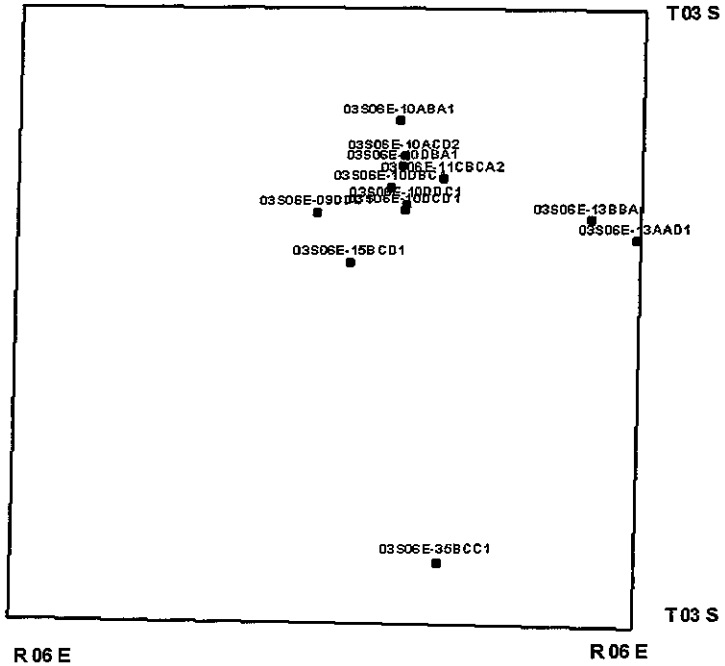


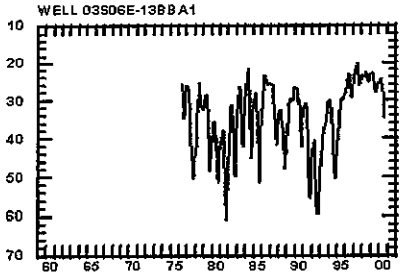




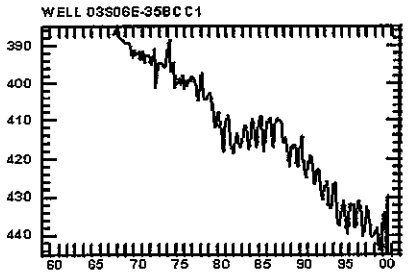


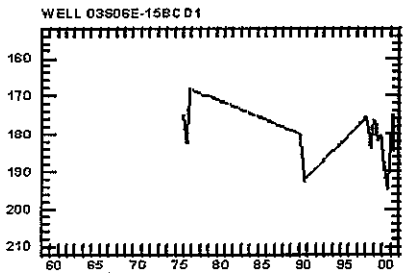


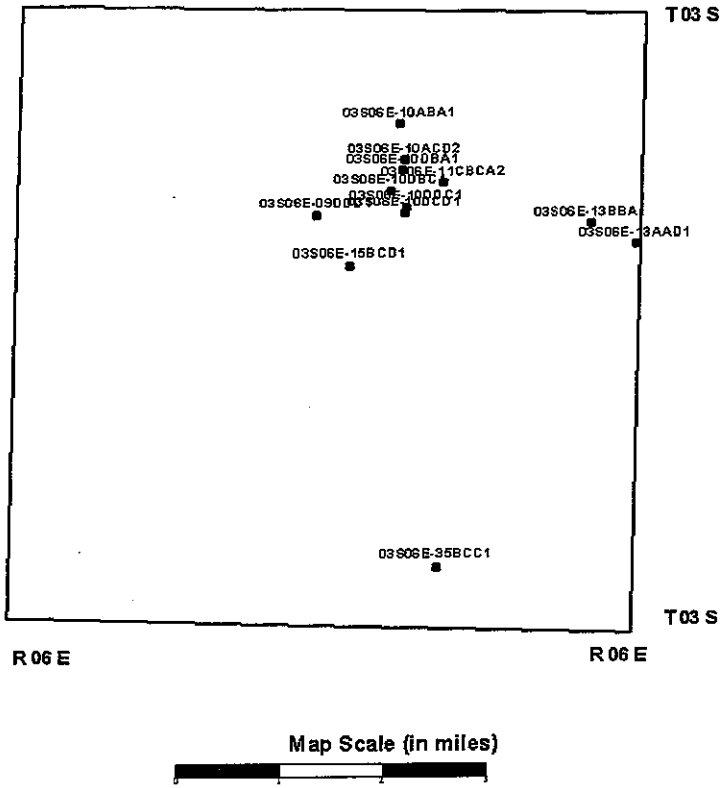




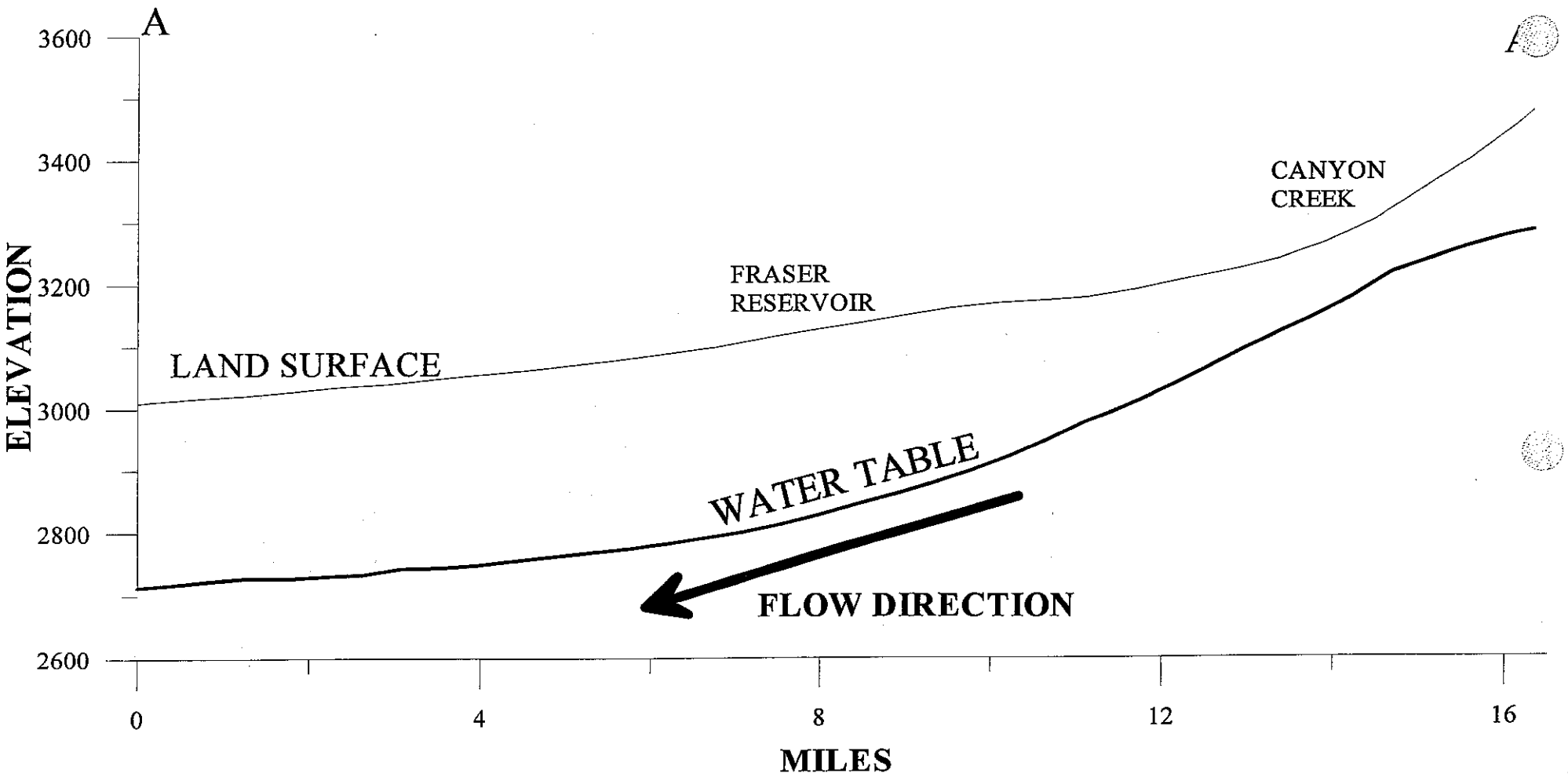
GROUND WATER DATA
Hydrographs of Observation Well Network







GENERALIZED PROFILE
ACROSS MOUNTAIN HOME PLATEAU



MEMORANDUM

TO: File
FROM: Helen Harrington
RE: Mountain Home Plateau Acreage Count
DATE: August 22, 2001

A determination of irrigated acres based on 1998 conditions was made using several databases and satellite imagery. The purpose of this project was to provide initial information to update the water budget developed by Norton et al based on 1980 conditions. This report explains the information used to make this irrigated acreage estimation.

The boundary for the study was developed with Scott Urban. The western boundary is designed to match the eastern boundary of the TVHP. The northern boundary is the base of the foothills; the eastern and southern edges are based on the GWMA. Lands below the rim along the Snake River on the southern boundary were excluded from the study area. ArcView 3.1 was used to bring together the information and all data layers were clipped to the selected boundary. Background imagery was obtained from IDWR GIS Section. This imagery was a compilation of satellite imagery from 1997/1998 (Bill Kramber). A number of data layers were evaluated to determine their usefulness.

Data layers were available from several sources. Data from the 1980 water budget was not available in digital format. Data was available from the Snake River Basin Adjudication (SRBA), IDWR Water Allocation Section, and IDWR/USBOR 1992 Land Use Coverage (McAndrews). Each data source was evaluated to determine accuracy, completeness and usability.

Data layers from SRBA proved to be inadequate because data did not include water from inter-basin transfers. Water from Administrative Water Basin 63 (Boise Drainage) and Water Basin 02 (Snake River) are not included SRBA Basin 61 Place of Use data layers. Also, the SRBA data is based on 1987 conditions. Water right records from the Water Allocation Section do not account for multiple water rights on acreage, creating a difficulty in counting the same acre multiple times.

The data layer developed by McAndrews in 1992 is more complete for the Mountain Home Plateau because it includes all irrigated lands regardless of the source or water but is less accurate than the SRBA information. The final decision was made to use the 1992 McAndrews data layer then digitize changes and additional polygons to correct for inaccuracies and irrigation shown on the satellite imagery not included in the McAndrews data. The McAndrews data was used because it was found to compare better with the satellite imagery than the SRBA data. Overlap of water rights proved to be a difficult issue in ArcView. Overlapping polygons were identified and deleted by hand.

The McAndrews data, however, lacked source water information. SRBA data and McAndrews data were linked in ArcView. Linking of tables between the SRBA Claims

Place of Use table and McAndrews data provided source information to be included in the final data layer thereby providing information for differentiating ground and surface water in the McAndrews data.

Another difficulty was determining acres irrigated by multiple sources. Lands irrigated from both ground and surface water will cause an error in determining water consumption because they may be counted multiple times. Linking of tables again proved to be useful in identifying polygons which had matching acres with different sources (e.g., 85.447 acres listed twice, once with surface water and once with ground water). This method was used to identify lands with supplemental water. This method, however, is only useful for exact matches; if the acres weren't exact, the polygons weren't identified. There is a large margin for error.

The lands irrigated from the Snake River have been identified separately because of their location and connection to the water budget for the plateau. These lands are in the southern extreme of the area. The 1980 water budget included these irrigated lands. However, the recharge from these lands is not a part of the larger plateau and it is felt that the inclusion of this water in the overall water budget is misleading and, if included, does not accurately determine the balance on the plateau.

The error in these numbers is expected to be at least 10% according to Bill Kramber.

Irrigated Acres Based on 1998 Conditions

Ground Water	33,924
Surface Water	14,552
Duplicate Acres	2,208
Snake River Source	10,199

Comparison with 1980 Water Budget

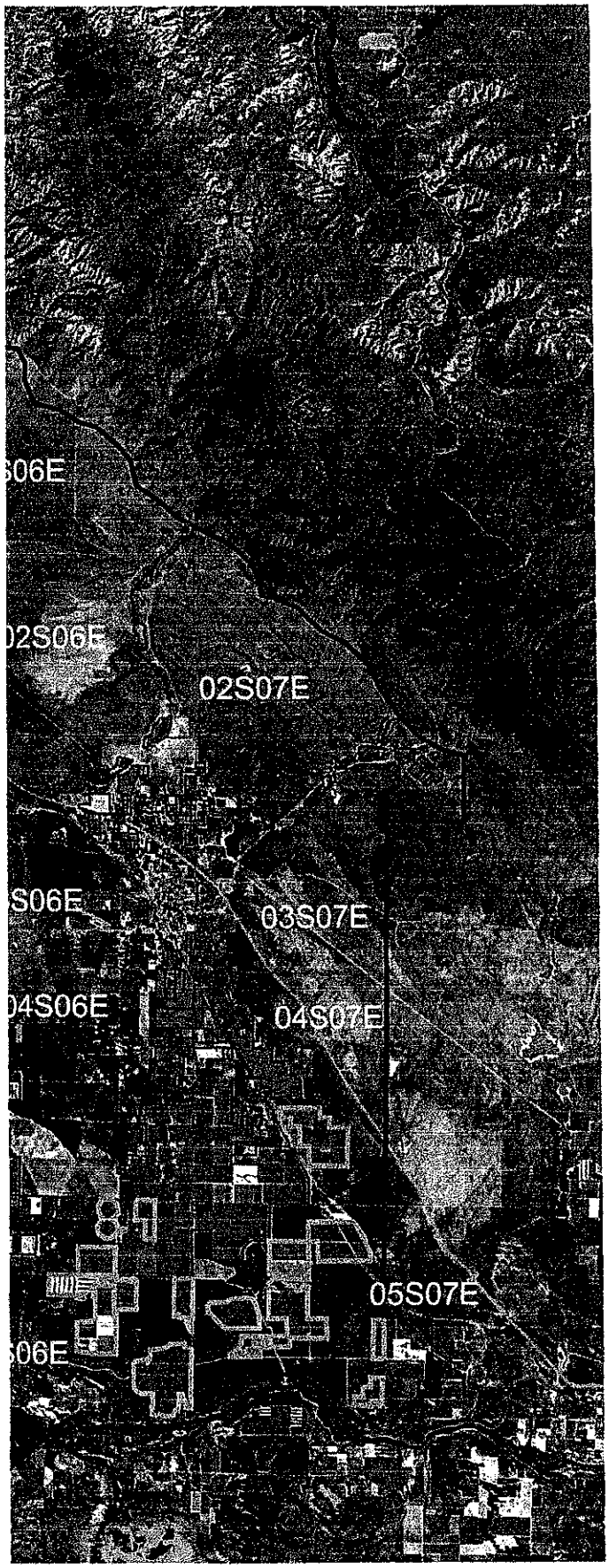
	1980	**1998**
Ground Water	21,367	33,924
Surface Water	18,698	14,552
Snake River	(14,653)	(10,199)
Total Acres (minus Snake River)	**25,412**	**38,277**
Duplicate (Supplemental)	1,845	2,208

Some of the differences can be accounted for, although not all. The difference in the surface water total is likely due to a change in the boundary, rather than any actual change in irrigation from surface water. When Snake River water is subtracted from the

total surface water, the difference is small (1980-4,045 acres; 1998-4,353 acres). An additional difference is the exclusion of irrigation within the City of Mountain Home. ArcView did not handle the detail of lawn and garden irrigation. Norton et al found approximately 1,500 acres within Mountain Home and the Air Base. This count does include irrigation on the Air Base, which is approximately 560 acres. This could account for a difference of almost 1,000 acres of surface irrigation (from Mountain Home Irrigation District).

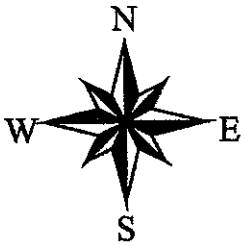
The change in irrigated acres from ground water may be accounted for through the development of lands which were undeveloped as of 1980. Norton et al identified 15,517 acres as undeveloped ground water permits. Although some Desert Land Entry applications were never finalized, many acres were put into production and licenses were perfected. Some change may be due to Crop Reserve Program contracts, however, these were begun in the mid-1980s after the Norton study and, according to the USDA Farm Service Agency, almost all lands which went into CRP returned to production. The 1998 imagery show those lands after the completion of CRP contracts with lands returned to production (or not).

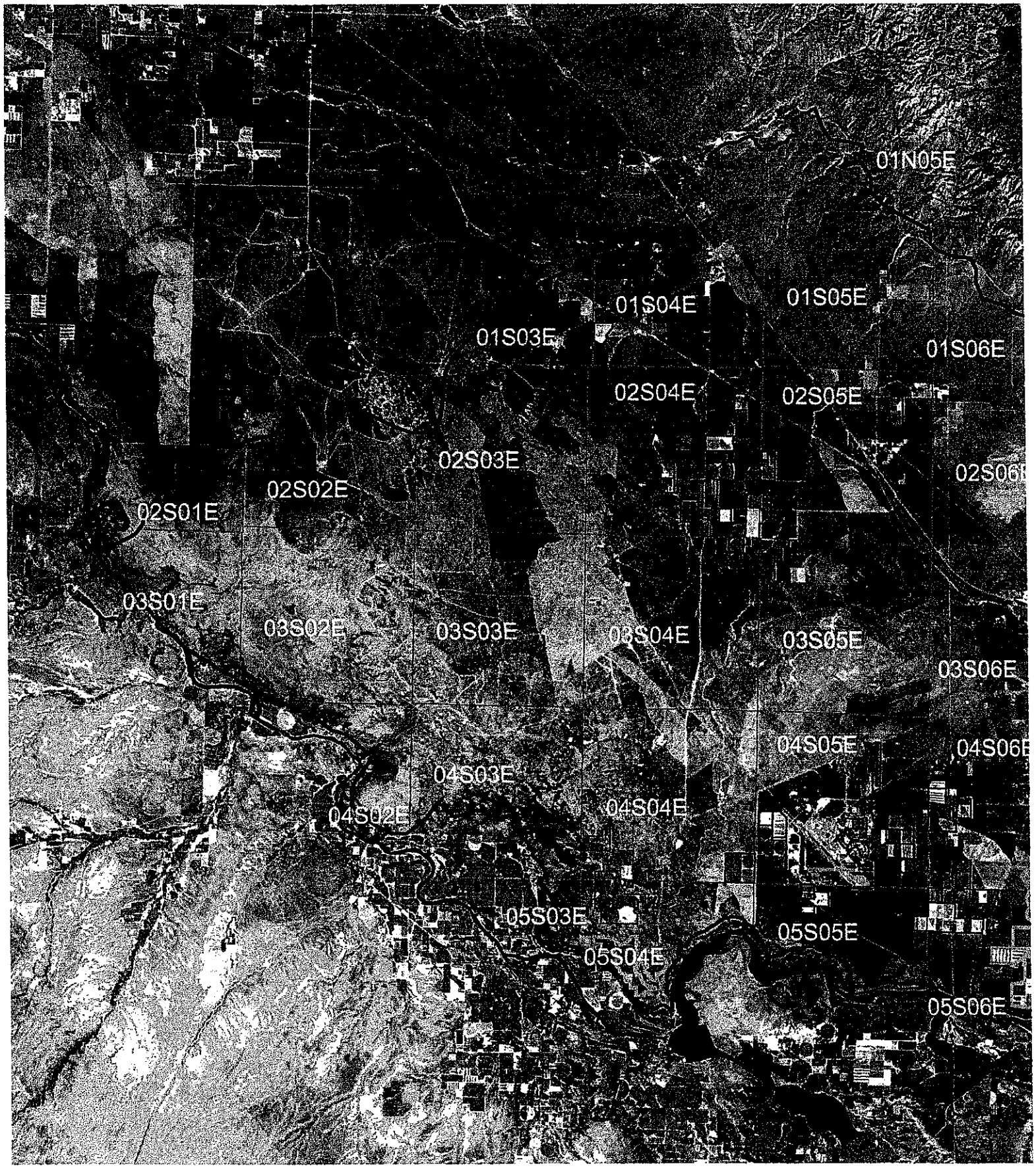
Supplemental water differences are probably a result of the error in the current method for determining supplement water.



Mountain Home Plateau
Irrigated Acres as of 1998

- Acres Irrigated from Snake River
- Irrigated Acres (1998)
- Supplemental Acres
- Study Boundary
- Township/Range

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