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**Groundwater Level Status  
for Portions of  
Mt. Rose and Galena Fan Area  
Washoe County, Nevada**

**WASHOE COUNTY**

**DEPARTMENT OF PUBLIC WORKS**

**UTILITY DIVISION**

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for Portions of  
Mt. Rose and Galena Fan Area  
Washoe County, Nevada**

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## Introduction

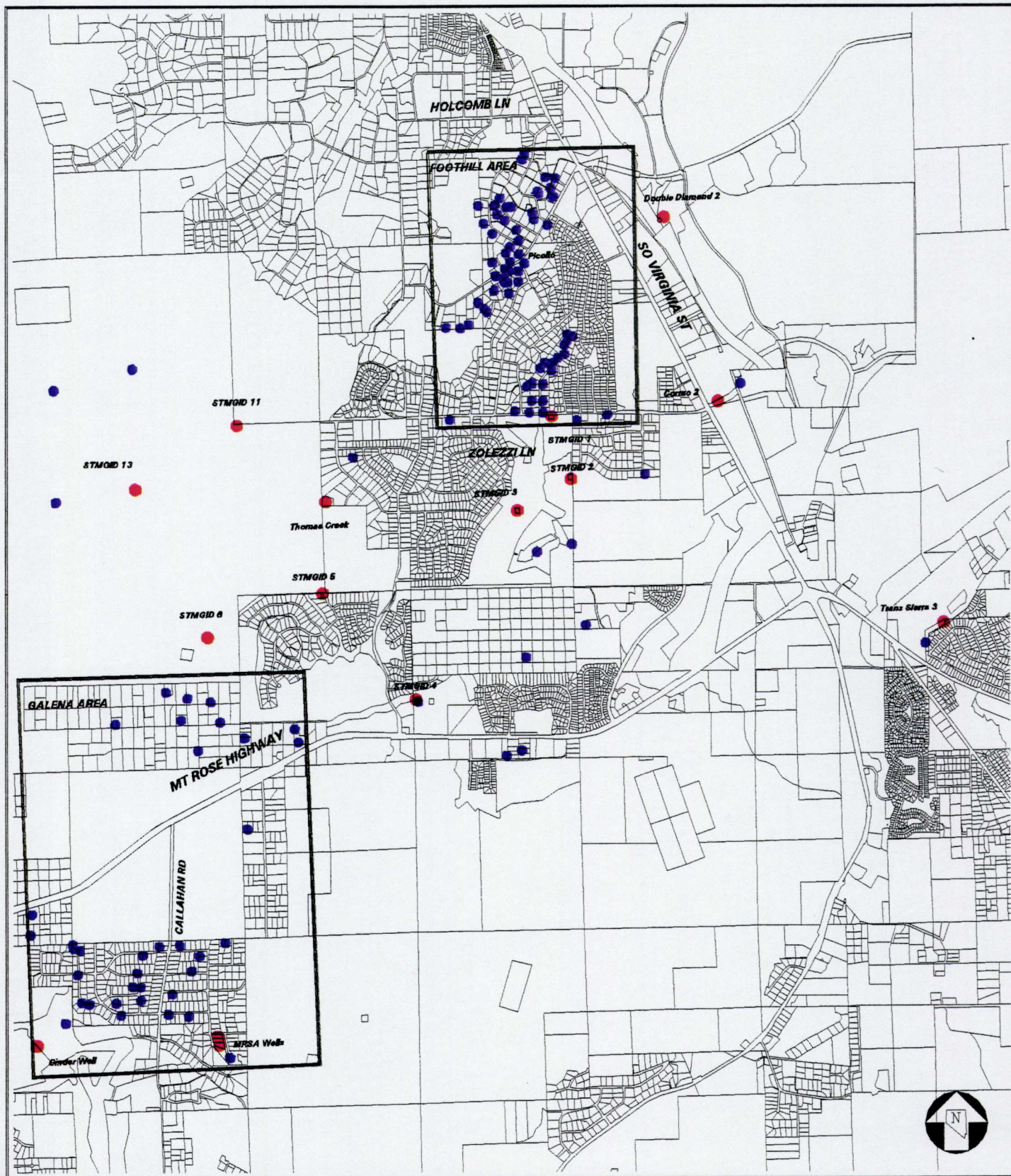
This report documents an ongoing groundwater level monitoring program by the Washoe County Utilities Division, and three previous groundwater level surveys, dating back to 1979. Included are a series of water level difference maps, and other figures useful for illustrating various aspects of a dynamic and complex groundwater system. The purpose of this work is to stay appraised of water level changes over time and any spatial trends. Of particular interest is the effect of the last drought cycle, and the effect(s) of domestic and production well consumption.

The information presented here is more descriptive than interpretive. It is intended as a reference and complement to existing groundwater modeling studies. Limitations of this study largely reflect the consistency of the data available and data synthesis. These issues are discussed further elsewhere. The scope of this study precludes a thorough analysis of the hydrogeology of the area as it may relate to the observed data patterns.

Figure 1 shows the general study area. The two outlined regions, Foothill, and Galena are the areas of focus. These areas contain the greatest concentrations of domestic wells in the south Truckee Meadows, include a number of municipal production wells, and also represent the majority of wells on Washoe County's well monitoring network. All together the current County administered monitoring network consists of approximately 130 wells.

The monitoring network was conceived and initiated in the early 1980's by Washoe County personnel (M. Widmer and others). However, the network was not fully functional in the Foothill area until the mid to late 80's when it became necessary to monitor water level effects from STMGID production wells 1 and 3. These wells were put into production in May of 1985. The Galena area network is concentrated within the Callahan Ranch

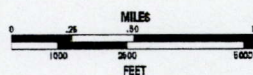




## TRUCKEE MEADOWS MONITORING WELL NETWORK

FIG. 1

- MONITORING WELL
- PRODUCTION WELL





subdivision, and became fully functional in about 1992. A second, but more dispersed, cluster of wells is located on the north side of the Mt. Rose Highway. A few widespread wells are situated south and west of Callahan Ranch within the Montreux and St. James developments. The data sets on these wells are generally less than six years old.

Prior to the early 1980's both areas were primarily served by domestic wells. Since that time new residential developments, have relied on municipal well water supplies. A shift from individual domestic wells to communities served by production wells represents the main change and continuing trend in "water demographics".

### **Procedure**

The elements of this study are data collection, data organization, and data presentation. Data collection consisted of physically measuring various well levels, generally using a steel survey tape, and in certain cases an electric sounder (for unequipped monitoring wells). Wells on the County's monitoring network were GPS surveyed using a Trimble ProXL receiver and a TDC1 data collector. Differential corrections were applied using a second receiver as a base station, and later in the program, a BLM base station. Horizontal accuracy is excellent with errors usually of less than one foot. Vertical accuracy (elevation) is more difficult to achieve, even with the best of equipment. The accuracy depends on the quality of the received satellite signals, which are affected by local objects that cause interference reflections (called "multipathing"). Elevation measurements may be within one foot in open areas, but will deviate significantly, particularly under forest cover. Most of the study area elevations are probably within five feet of true elevation, and are a preferred method for obtaining elevations, which otherwise have to be read from topographic maps. While these errors affect the accuracy of piezometric surface maps, they do not have an impact on difference maps.

This study relies on three other previous groundwater level surveys. The oldest was carried out by the USGS in 1979 and focused on the Callahan Ranch and southern Mt. Rose fan areas. A 1982 survey was conducted by M. Widmer and others of Washoe County Utilities and encompasses the South Truckee Meadows. For purposes of the current presentation, the 1979 and 1982 data have been merged into one data set. An assumption is made that water levels between the two years did not change significantly. The third survey took place in 1991 (Washoe County Utilities) and encompasses the entire regular network area, plus the Geiger Grade/Toll Road region and northward to Huffaker. The 1991 survey tried to repeat as many measurements as possible from the 1982 survey. An attempt was made to remeasure the 1991 survey and remeasuring was done during May through June of 1996, though partially successfully due to GPS equipment malfunction.

#### Data Organization

Most of the network well data had been previously tabulated in older version Lotus spreadsheet files. The alternative database would have been to export or enter the information into a relational database program such as ArcInfo which could offer superior sorting and querying capabilities. This was not a practical alternative at the time due to lack of suitable PC software and the desire to keep the data more accessible (without going to a Unix environment). Consequently, the Lotus files were transferred to Microsoft Excel, which is the current County spreadsheet platform, and supplemental information was compiled and entered. This includes compilation of the 1979/1982 and 1991 data. For the network, four spreadsheets were created, and represent the four main areas or divisions as noted in field books. These are Mt. Rose, Westridge, Picollo, and STMGID. These spreadsheets include, aside from coordinate and water level data, information on well casing stickup, and if known, total depth, pump setting, well completion date, etc.

Various contour maps were generated using the program Surfer (Version 4.15). This program requires a data file that includes an x, y and Z coordinate. In order to create the \*.dat files easily, the key information from the main spreadsheets was used to create "survey" spreadsheets (\*sur.xls). These spreadsheets generally contain a well owner, address, ID number, and an X Y and Z coordinate. This spreadsheet is then saved as a text file and converted to Surfer format using a text editor such as DOS Edit or Kedit. A list of all \*.xls spreadsheets is provided in Appendix A, along with a diskette. Paper copies of the \*sur.xls file are included.

#### Data Presentation

Surfer was used to create the initial piezometric surface contour maps, in this case, water table elevation maps, water level difference maps, and depth to water maps. Some of these maps were then exported to the workstation environment and final maps were prepared using various ArcInfo modules and appropriate geographic coverages available in Washoe County's GIS database. For this report, maps are presented in an 8.5 x 11.5 format. However, custom maps can be computer generated at various scales with desired enhancements, when completed by ArcInfo. Wherever possible, plots represent data collected during the Winter quarter of the year, namely December through March. Thus, as an example, 1996 data may represent measurements collected between December 1995 and March 1996. Most network measurements are attempted quarterly, with winter data collected mainly in January or February. Surfer creates a regularly spaced elevation value grid, from irregularly spaced data points, which is then utilized by the contouring algorithm. Data is extrapolated using statistical methods, with options including a choice of Kriging and inverse distance. For most grids the Kriging method was employed. As with many contouring packages, contouring is not handled well at map boundaries where little or no data is present. This problem was handled in two ways. First, most presentation maps are limited to specific study areas where data

is adequate. Second, Surfer will allow extrapolation search limits to be set. If data density is less than a specified value, no contours will be generated for that area.

Surfer also allows math manipulation of grids. In our case, two different data year grids can be subtracted to create a water level difference map. Difference maps are clearly a usefull tool to study temporal groundwater elevation changes. Where identical data points are available, such as in the area of the network, it is preferable to create difference \*.dat files and simply have the program create a contour map from the data file. The latter approach was chosen to look at the Foothill and Galena area changes between 1995 and 1996.

Difference maps were also attempted for 1996-1982, 1991-1982, and 1996-1991, using the Surfer math option. These data sets were selected because they represent the most complete collection of data. A direct difference file could not be created due to insufficient identical data points. Computer generated potentiometric surface maps, from which difference maps could be generated with Surfer's math option, also suffered from inconsistencies in surface elevation measurement. The resulting product for the Foothill area was fair, but final maps were generated by hand contouring, aided by the computer product and hydrographs from matching data points. For the Galena area, data sets were even more diverse, and the final hand contour maps are considered to be very generalized, but still informative. Well hydrographs were produced for key wells that were monitored in the 1982, 1991 and 1996 surveys and are included as text figures.

## Results

### General

Figure 2 is a potentiometric surface contour map of the Galena/MtRose Fan area at a scale of 1:45000. This particular aquifer is assumed to be unconfined, thus the potentiometric surface represents the water table. The aquifer is composed primarily of alluvial fan material, and as such can be modelled as shallow and coarse-textured on the west (range front side), fining and thickening toward the Truckee Meadows valley. The western part of the fan is considered a recharge area, primarily from winter snowmelt, and the valley floor is a discharge area and contains springs and some artesian wells. Because some wells are flowing, the aquifer system, in part, must be confined or semi-confined. Realistically this particular aquifer is laterally and vertically heterogenous as a function of both lithology and structure. The most striking feature from the map is the steep northwest trending gradient through the central region, separated by gentler gradients both west and east. The fundamental control for this gradient is probably fault related, but probably also involves depth differences to the Tertiary Volcanic bedrock.

Groundwater flow, based on Figure 2, is generally from the southwest toward the northeast. It is perpendicular to the shown contours. At the coarseness of the grid and scale of the map the features appear fairly regular. The consistency of trends is encouraging because the data set represents a diverse group of domestic and monitoring wells with different depths and different screened intervals (partial penetration). Very few wells had to be excluded in order to achieve an acceptable map. The exception is STMGID 4, with the nearby Otten/Wycoff well. Here, the static water level in the shallower Otten/Wycoff well is at 200 feet and the water level in the production well is roughly at 690 feet below ground surface. This clearly suggests a more complex situation than a simple unconfined aquifer.



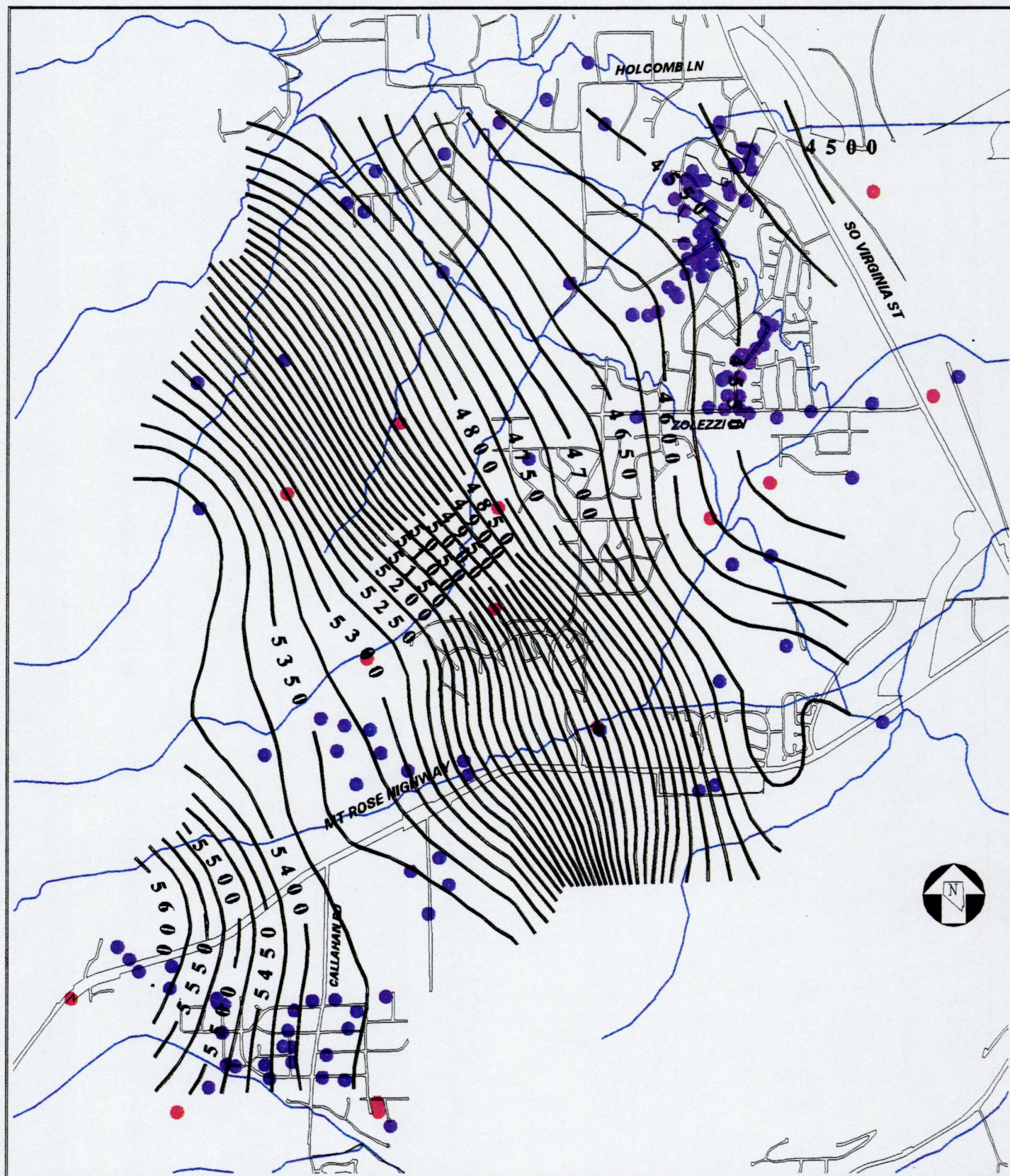


FIG. 2

# GALENA/MT ROSE FAN AREA POTENTIOMETRIC SURFACE CONTOURS



DITCH



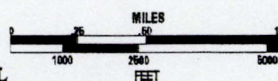
POTENTIOMETRIC SURFACE CONTOURS



MONITORING WELL



PRODUCTION WELL



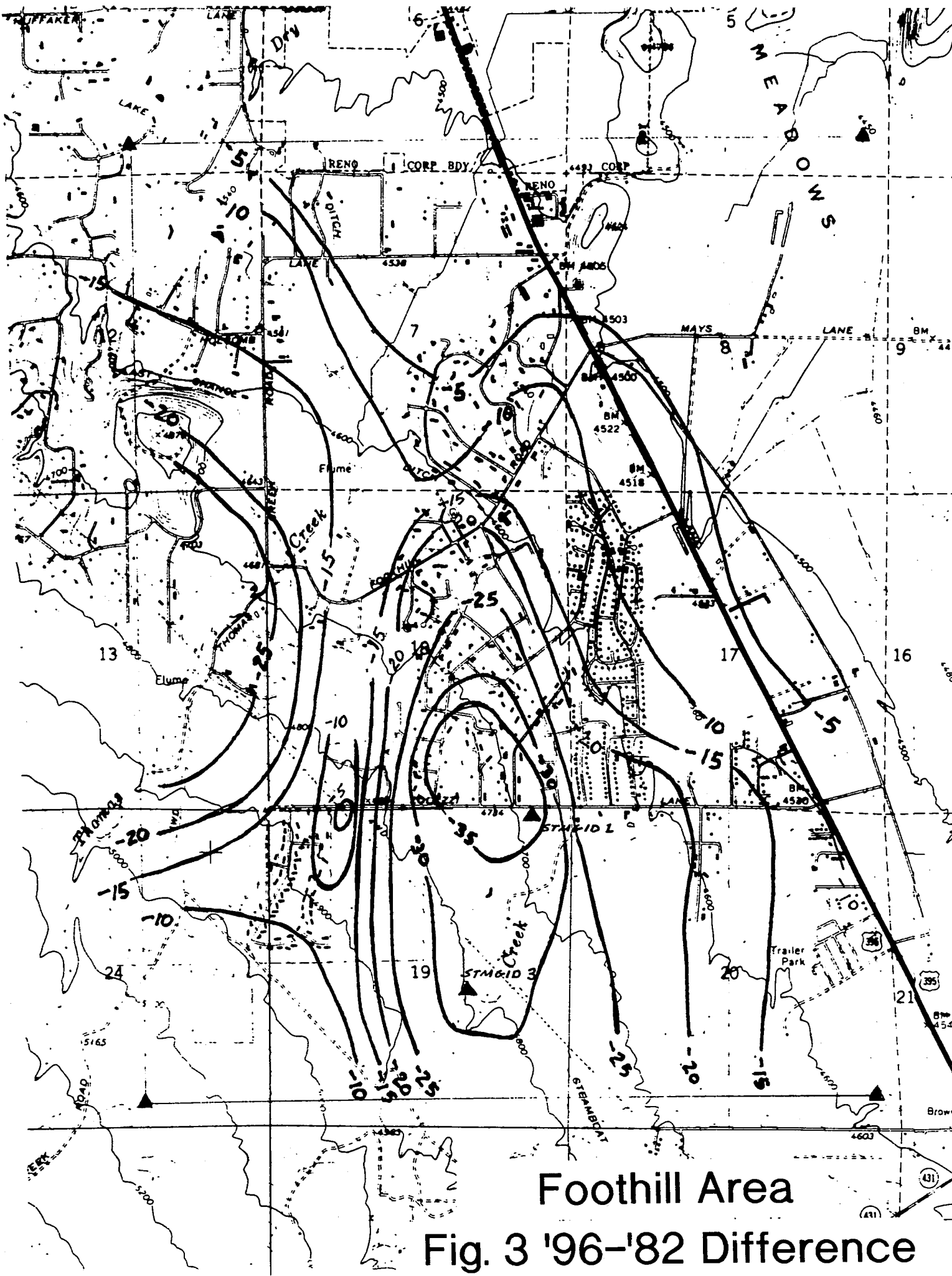


### Foothill Area

Figures 3, 4 and 5 represent, respectively, the hand contoured water level difference maps for the Foothill area between 1996-1982, 1991-1982, and 1996-1991. The 1996-1982 difference map indicates a cumulative drop in the water table of up to 35 feet. The affected area is an elongate north-south depression encompassing the STMGID production wells 1 and 3, and most likely reflects effects of pumping since 1985. However, decreases in the static water level are also a function of drought conditions. Based on a National Weather Service gage at the Christmas Tree restaurant, located just west of the study area, there are two dry periods that could influence the temporal patterns observed. The period from 1972 to 1978 was drier than average. Wet years occurred in 1981 through 1983, and again in 1986. The latest dry period was from 1987 through 1994.

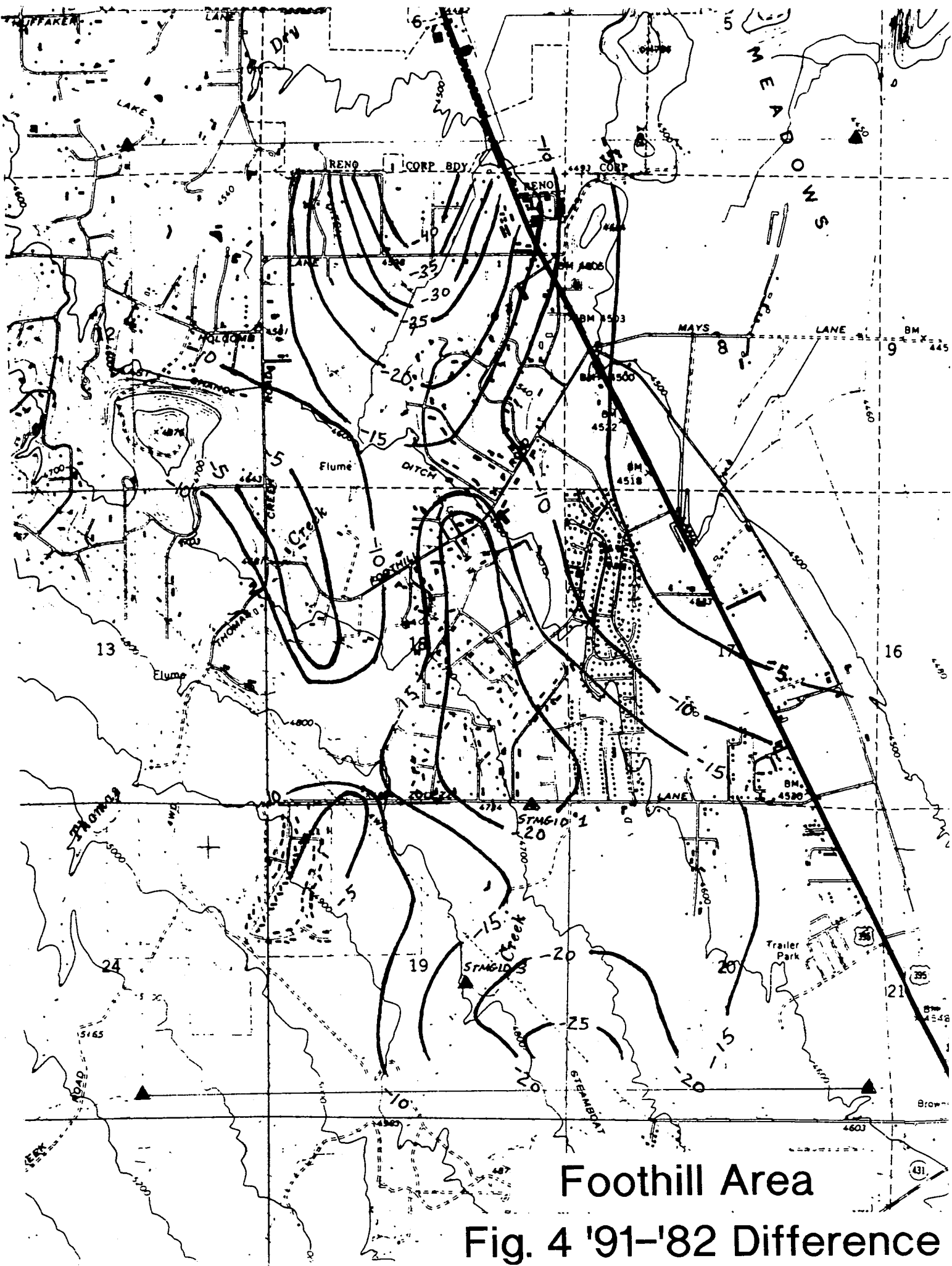
The 1996 to 1982 difference map includes not only effects of pumping, but both influences of the wet early 80's and the last drought cycle. Looking at Figure 4, the 1991-1982 difference map, one again sees the distinct effects of STMGID 1 and 3. The strong decrease in the water table level in the northern area between 1991 and 1982, is somewhat suspect as it is based on only a few data points. This pattern may represent influences of a Sierra Pacific production well located off Holcomb Road.

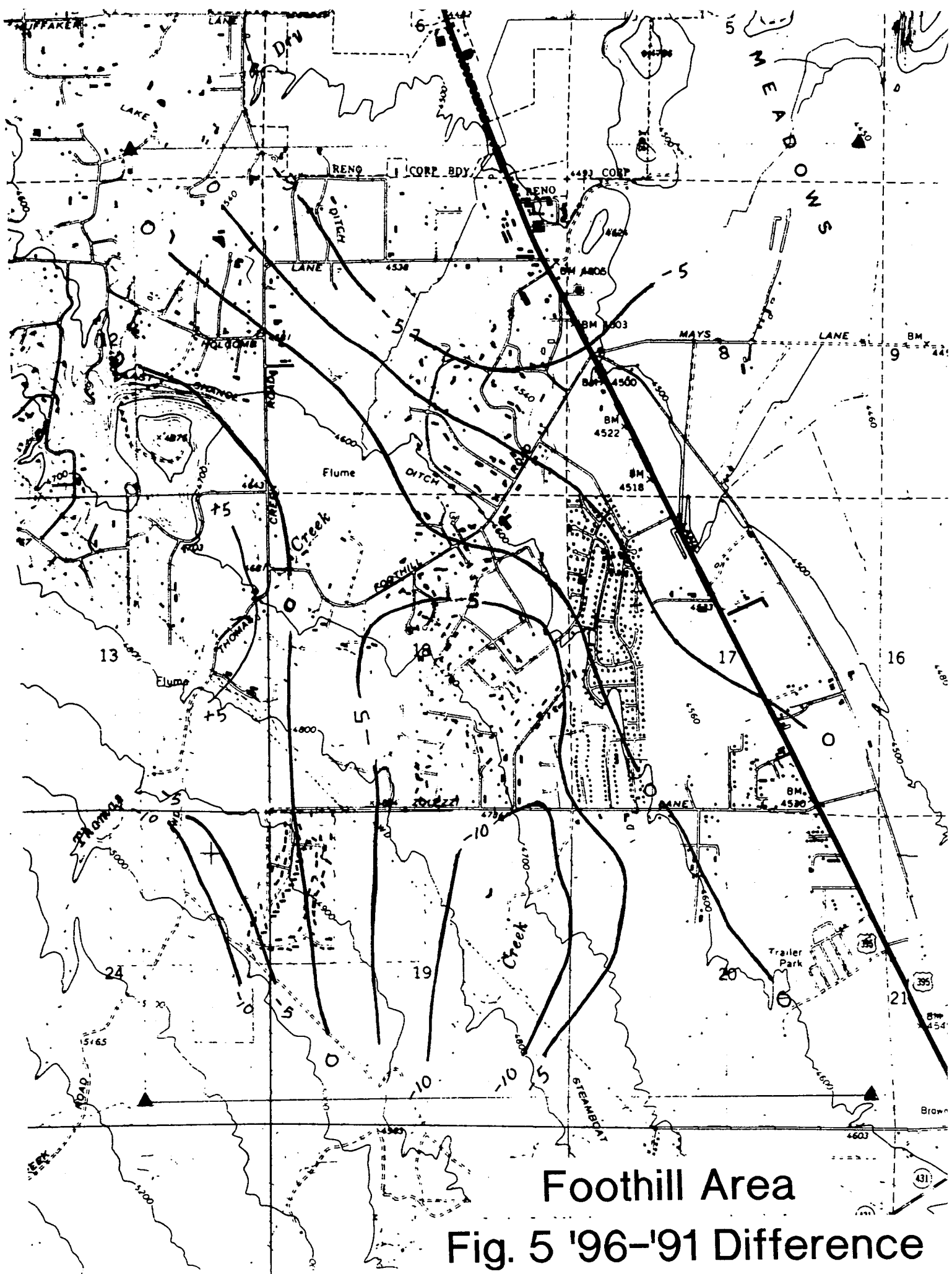
The 1996-1991 map (Figure 5) indicates an additional 5 to 10 feet of drop, representing the tail end of the drought cycle and continued production and domestic pumping. With two back to back wet years in 1995 and 1996, we have noted a significant rise in the groundwater level occurring in the Foothill Rd. area (termed the "Picollo area"). Figure 6 is a computer generated water level difference map showing the change in the water level between 1996 and 1995. This map is based on the same exact data



Foothill Area

Fig. 3 '96-'82 Difference







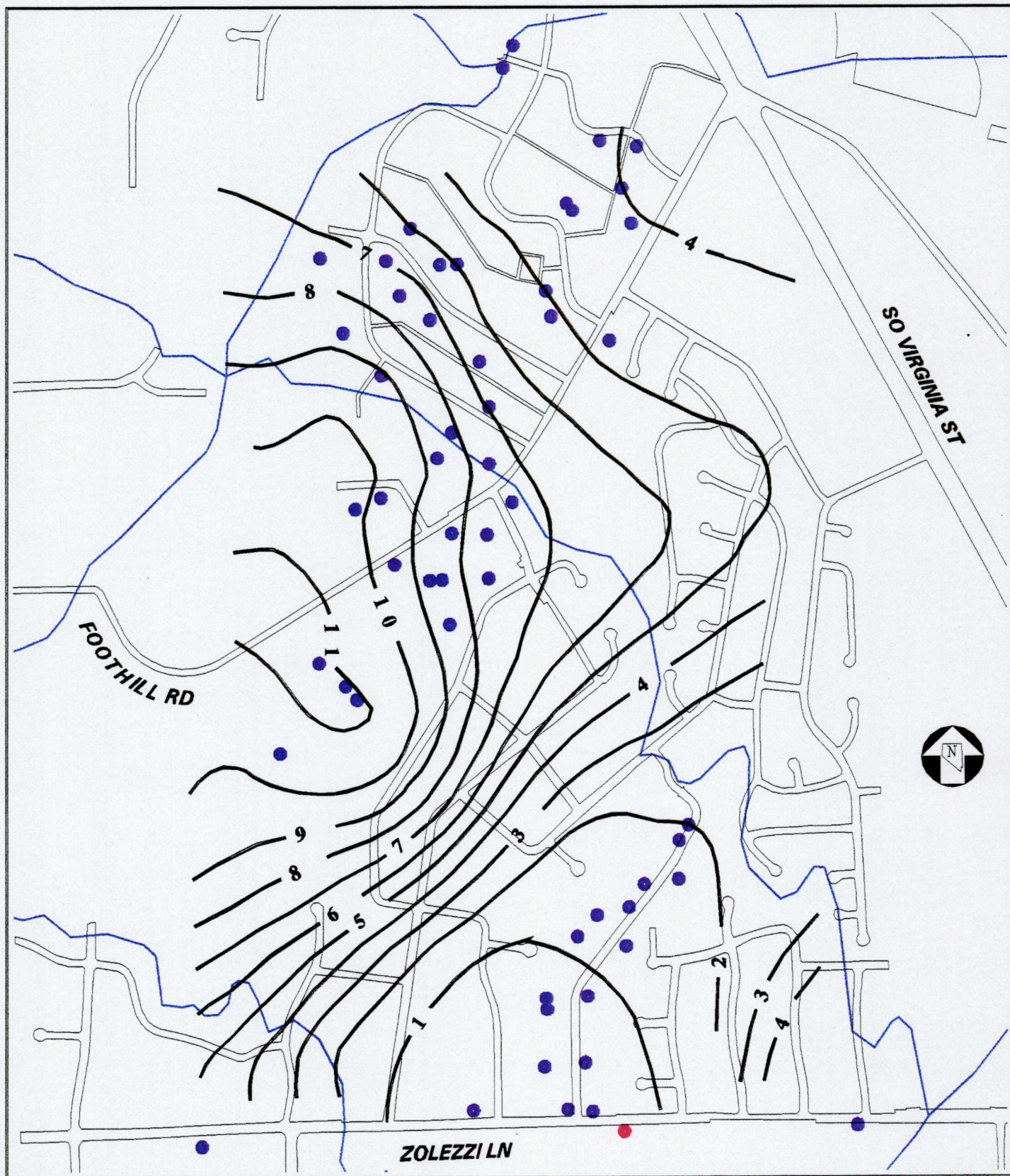


FIG. 6

# FOOTHILL AREA 1996-1995 GROUNDWATER LEVEL DIFFERENCE CONTOURS



DITCH



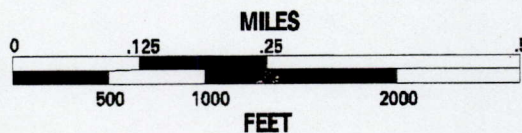
MONITORING WELL



DIFFERENCE CONTOURS



PRODUCTION WELL



points for both years. The recharge extends even to STMGID 1 at Zolezzi Lane, where one foot of rise was observed. One must keep in mind that this one year difference is merely a "snapshot in time", and that a several year or more difference map could show a dissimilar pattern. One clear conclusion from this map is that pumping alone does not dominate the water level changes. During anomalous recharge periods water levels can still rise around the production wells, albeit modestly.

Figures 7 and 8 are domestic well hydrographs for Hinton (located about 1000 feet northeast from STMGID 1) and Olaciregui located off of Foothill road. Both hydrographs show the sharpest drops between 1982 and the Winter of 1991. The wet winters of the early 80's do not seem to have a strong recharge influence on either well, regardless of position with respect to a production well. However, the influence of STMGID 1 could have overshadowed the wet recharge of the early 1980's. What is required (and not available) is a water level measurement from these wells just prior to startup of the production well. Recharge is more pronounced from the Olaciregui well when looking at influences of 1996-1995. The hydrograph is therefore consistent with Figure 6. The maps suggest that Olaciregui is probably only minorly influenced by STMGID production, because of distance, but groundwater level drops are still significant, and in this case, most likely drought related.

A few additional hydrographs are included. STMGID monitoring well 3 and STMGID production well 2 (Figures 9 and 10) both have long term static water level records, and show a consistent decline with mild seasonal increases and decreases. The recharge of 1995 and 1996 does not appear as a significant event on these charts, but rather as a minor blip. Also of interest are hydrographs of wells within visual distance of STMGID 1. Both domestic wells of Pepple and Jones (Figures 11 and 12) begin to show significant seasonal stress events beginning about 1989. The rather abrupt seasonal fluctuation no doubt signify local



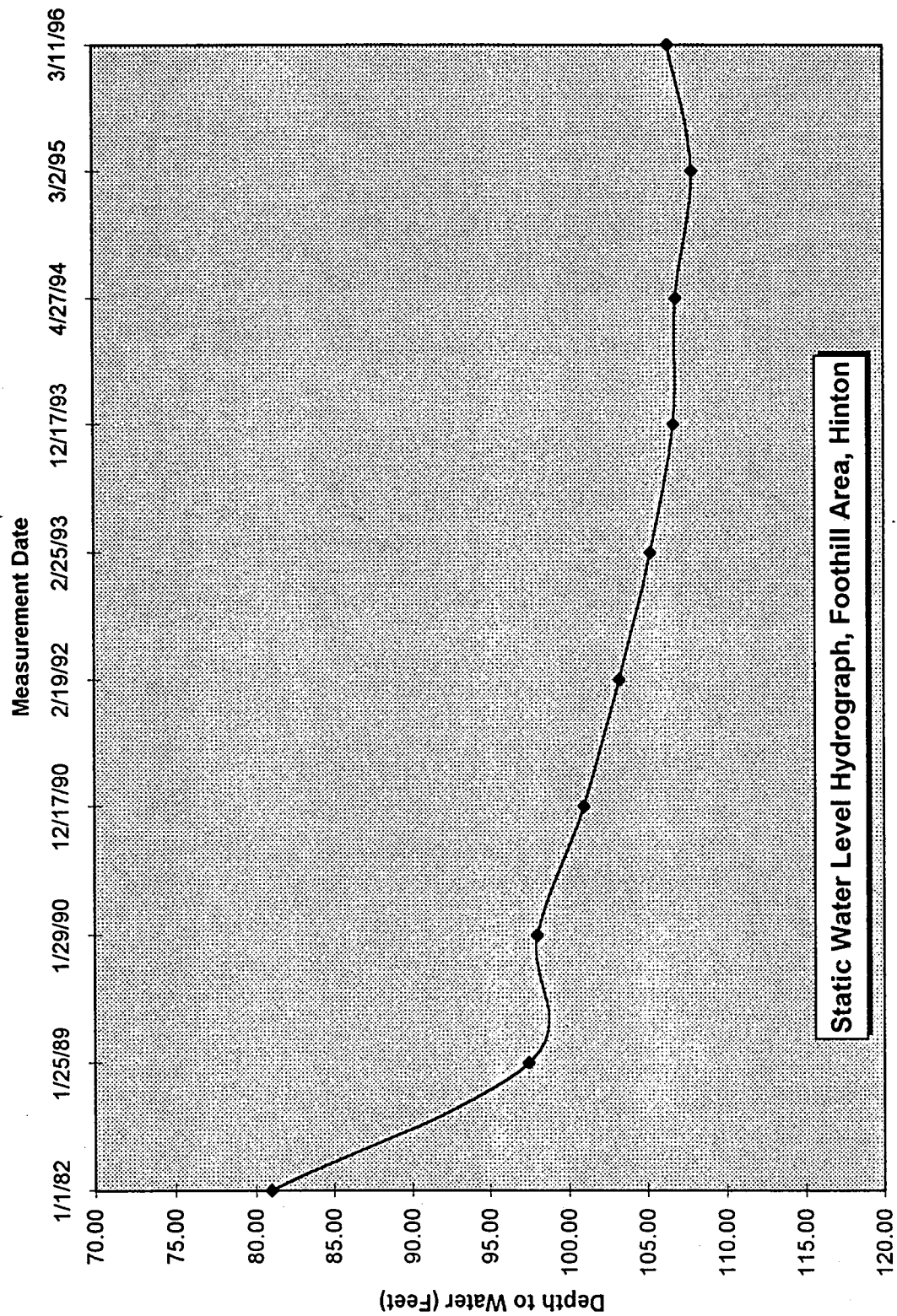


FIG. 7



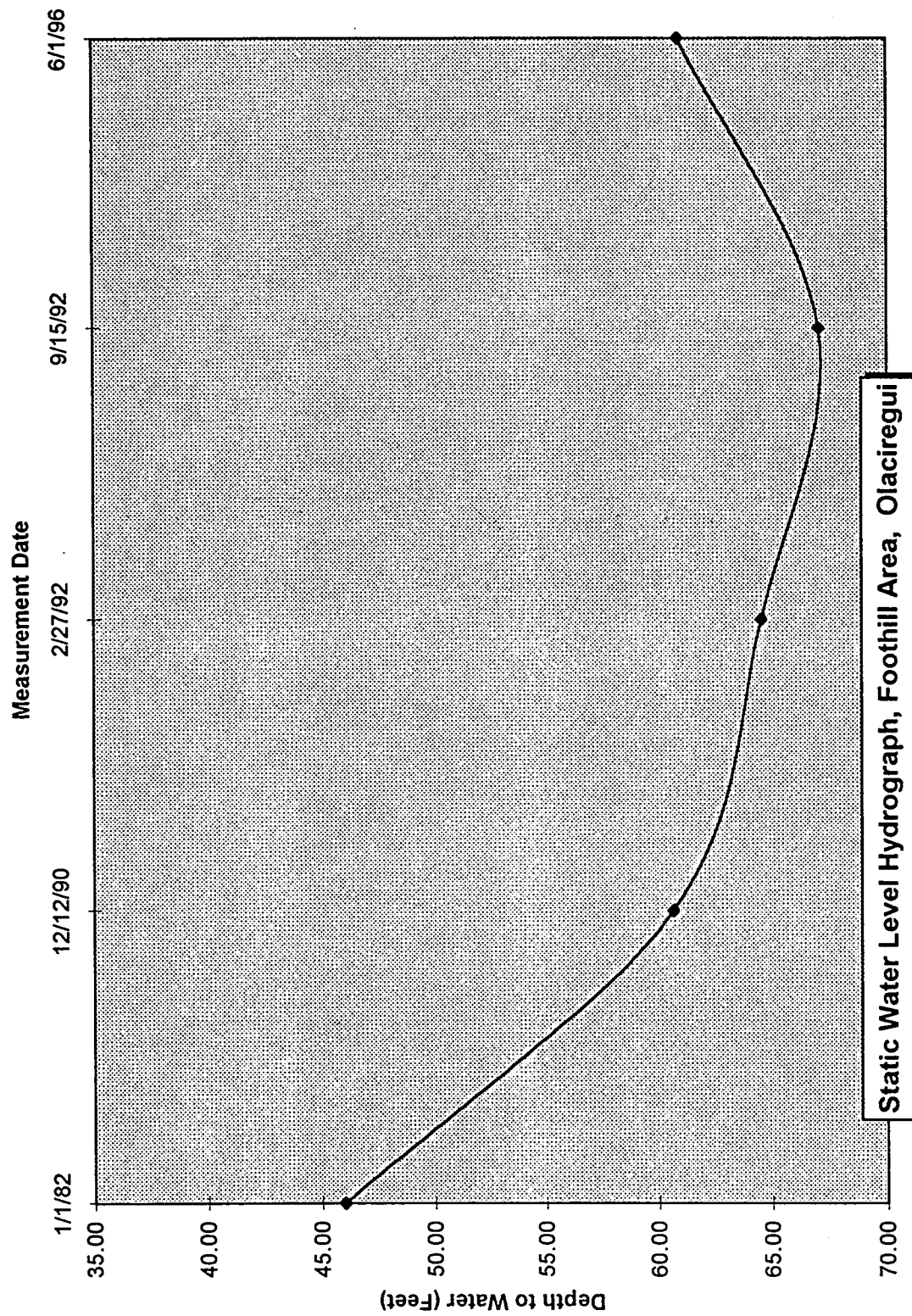


FIG. 8

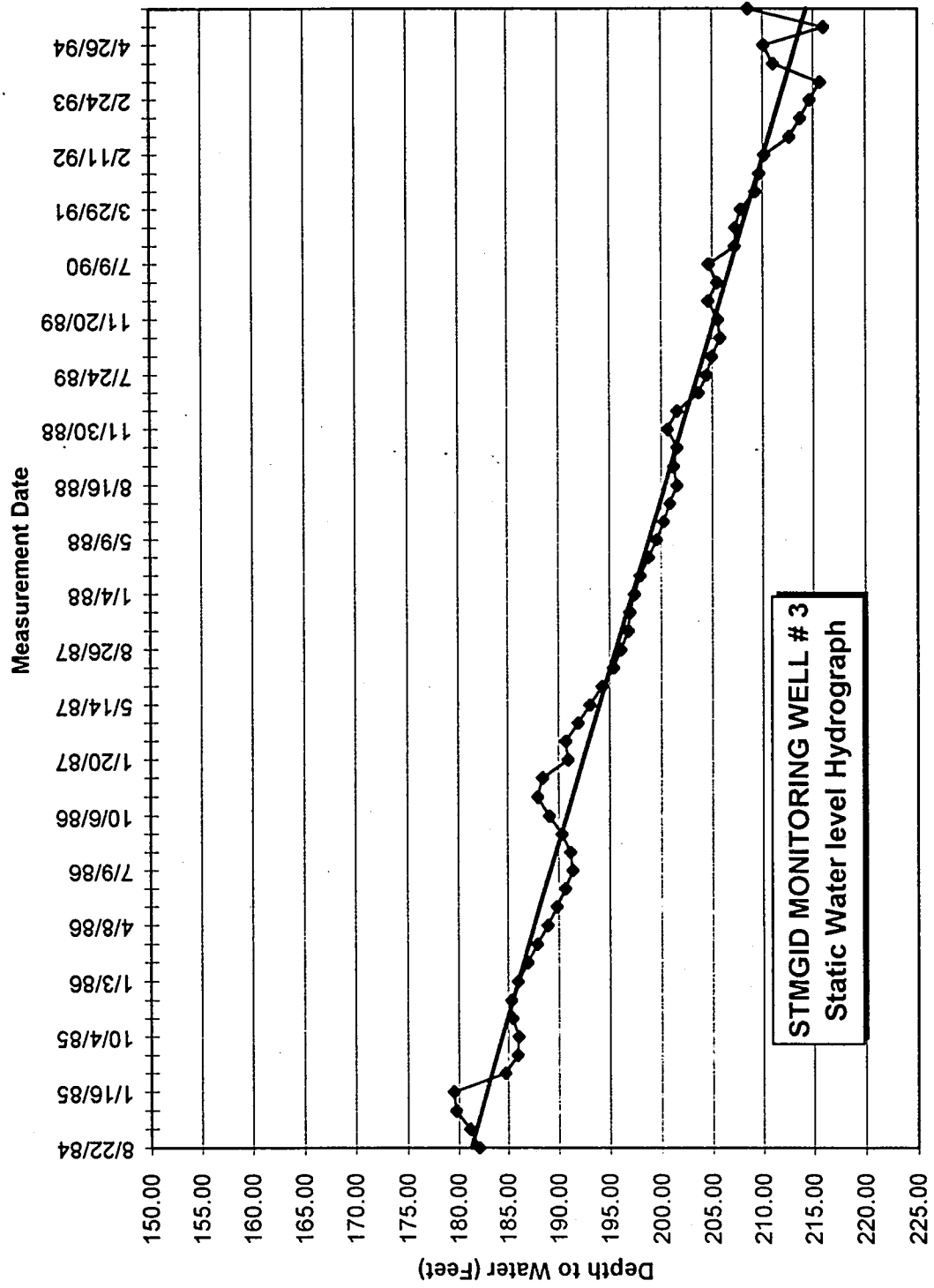


FIG. 9

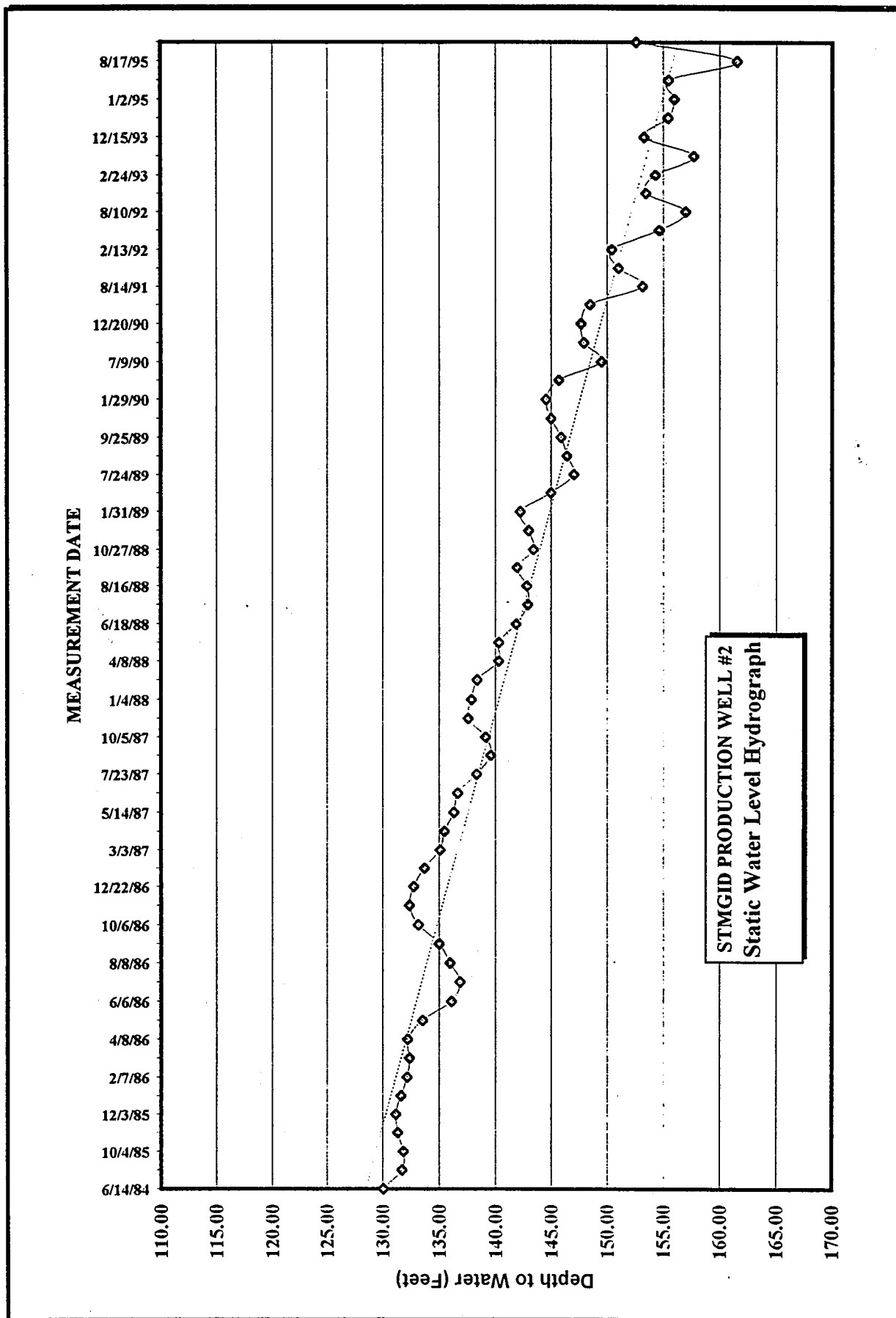


FIG. 10

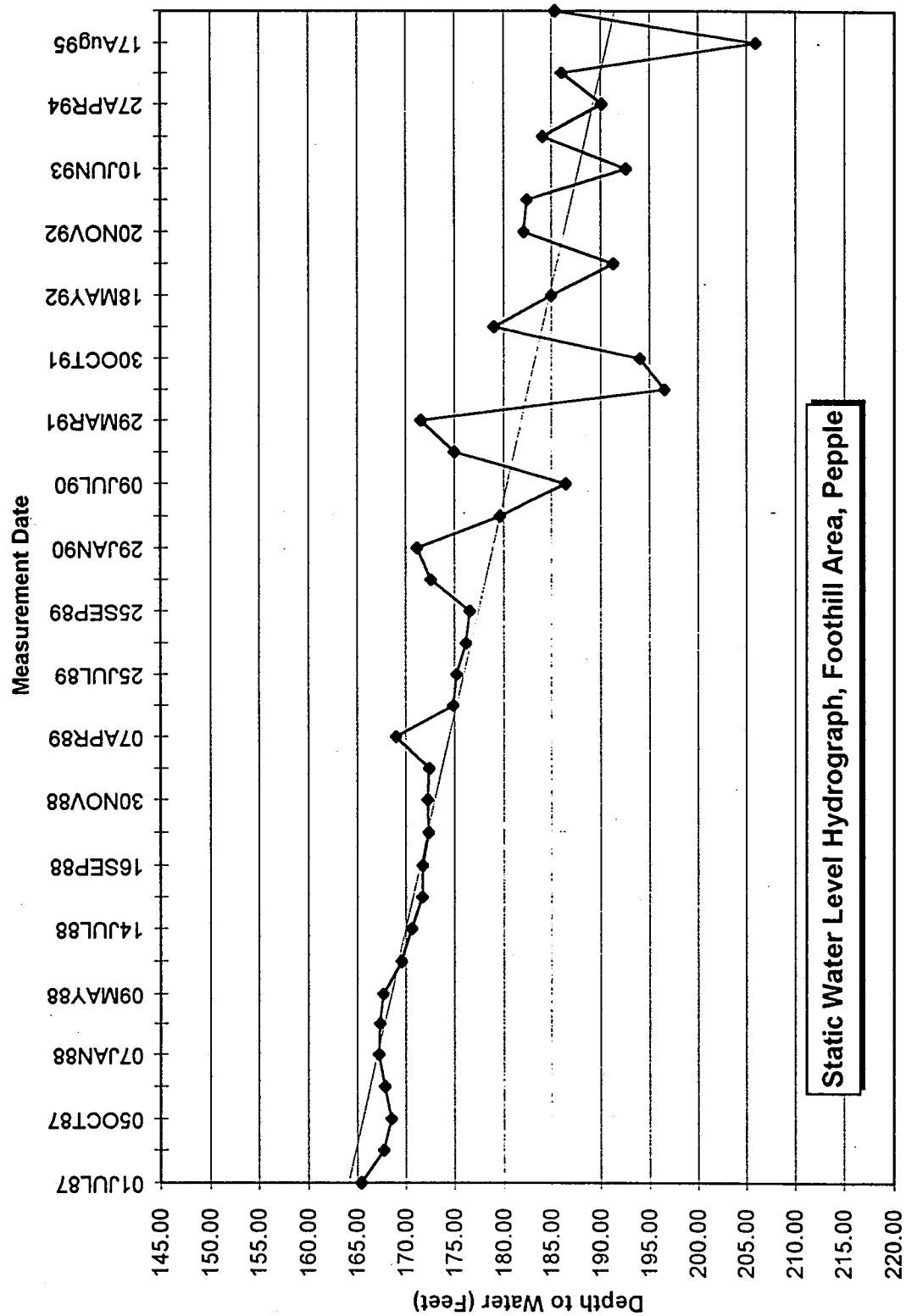


FIG. 11

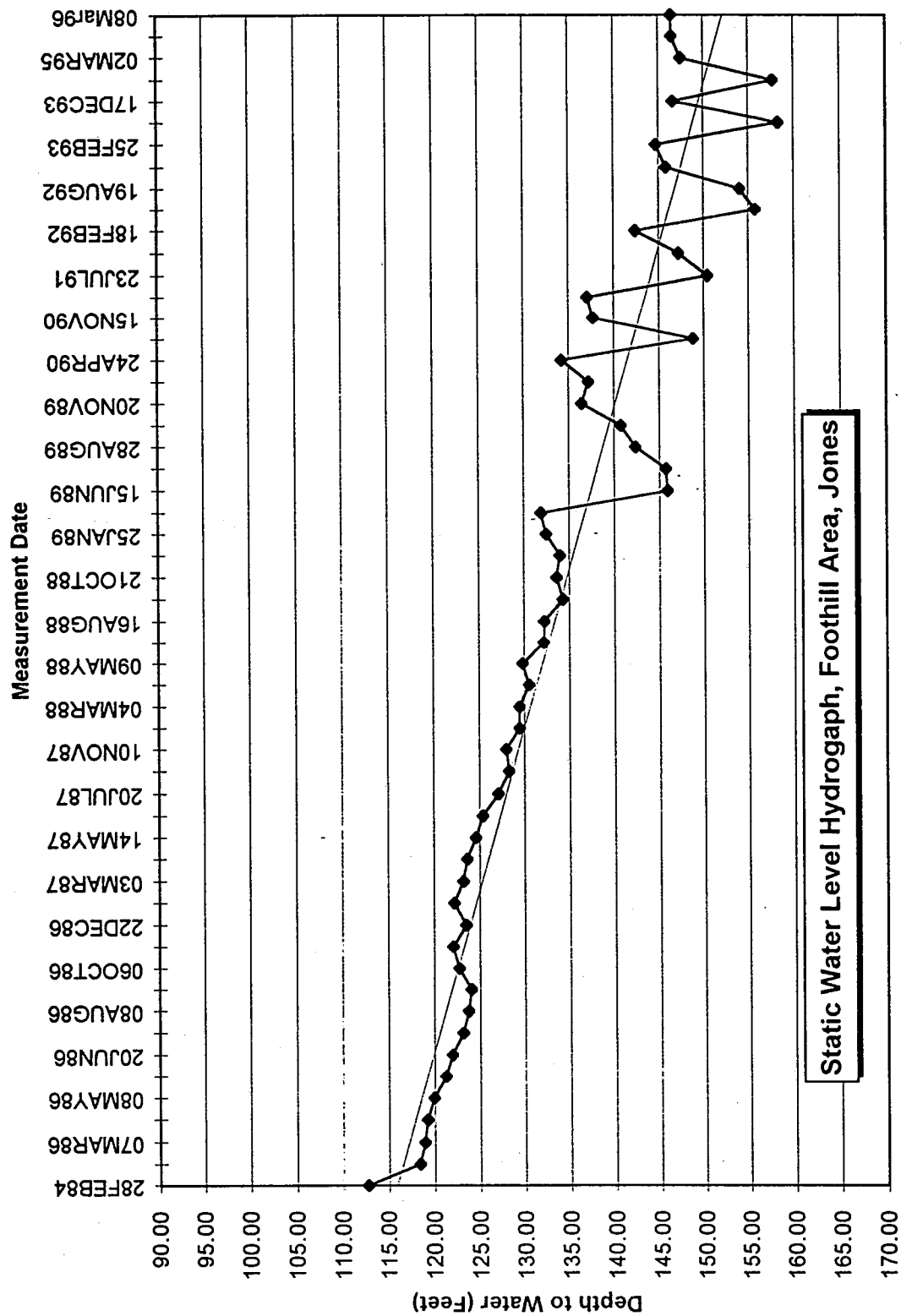


FIG. 12

aquifer dewatering (effect of both domestic and production well?) during the late summer to early fall. The chart also suggests that perhaps the aquifer can "buffer" drought effects for several years before potentially serious effects occur in domestic wells. This may also be related to changes in pumping practices.

Of final note, getting back to spatial trends, there is a clear north to northeast elongation to the contour groupings on many of the figures of the foothill area. Several north-south to northeast faults have been mapped through this area. It is therefore possible that part of the recharge/discharge spatial pattern has less to do with production or domestic well pumpage than with alluvial fan structures.

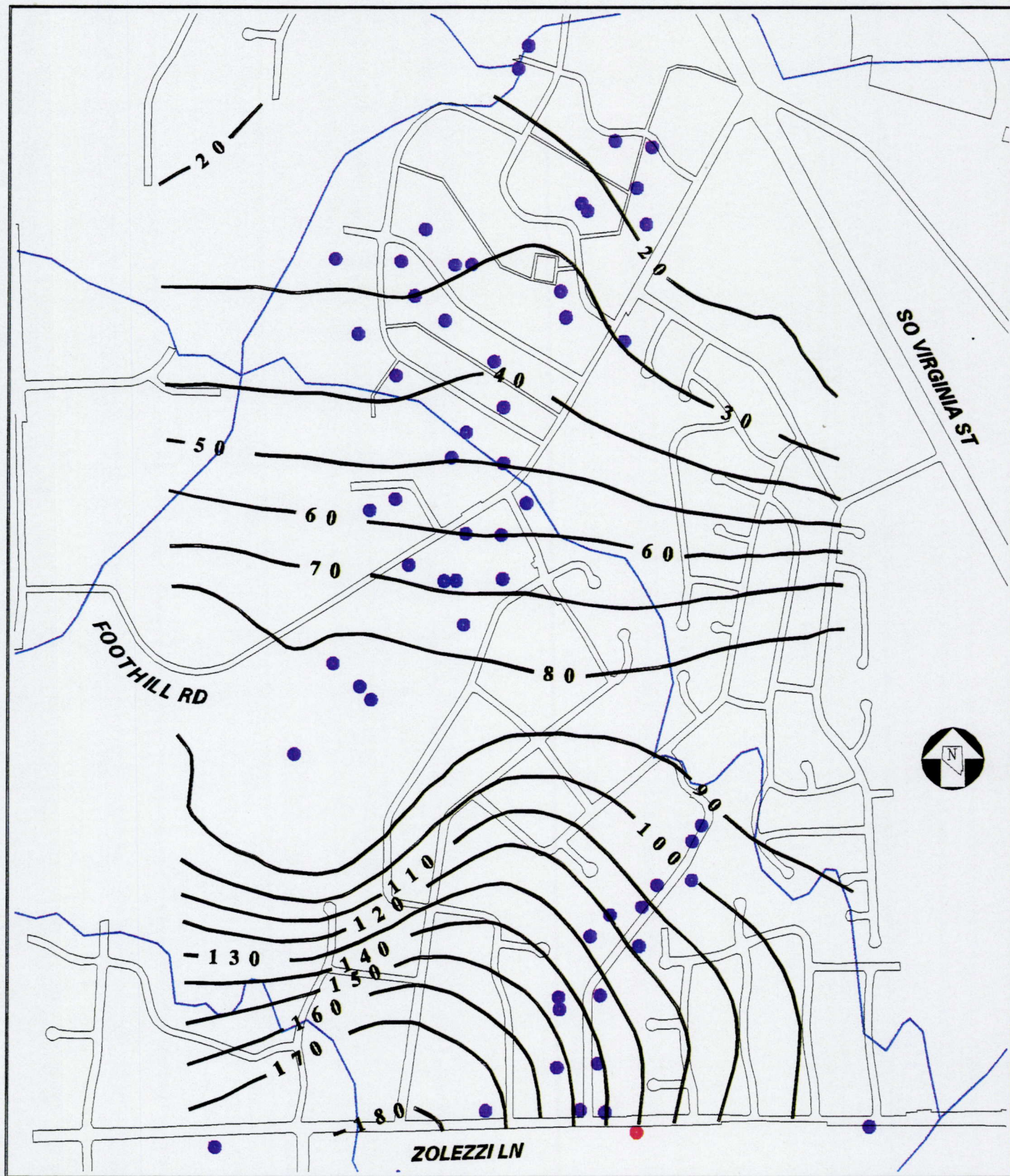
Figure 13 is a depth to water map for the Foothill area, included for illustrative purposes. It could be of general use to the public. Overall, the water depth decrease north-northeast toward the discharge area, and with decreasing elevation, as expected. This map is generally consistent with an unconfined aquifer model, as no significant anomalies are noted in the water level across the area.

#### Galena Area

Going back to figure 2, the Galena area is located on the west side of the steep potentiometric gradient. Currently there exist a cluster of three production wells, the MRSA wells, which are located at the southeast edge of the Callahan Ranch subdivision. The only other production well that would presently influence the system is the Timberline production well located just off of Mt. Rose Highway, along the range front, but it has very low production.

Figures 14, 15, and 16 are water level difference maps, respectively, for 1996-1982, 1991-1982, and 1996-1991. The Galena Fan groundwater system behaves somewhat differently than the Foothill area system. Structurally, it is probably more





**FOOTHILL AREA 1996 DEPTH TO WATER CONTOURS**

FIG. 13



DITCH



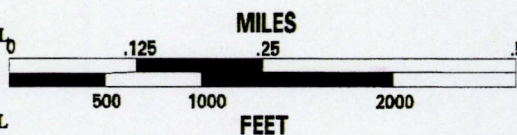
DEPTH TO WATER CONTOURS



MONITORING WELL



PRODUCTION WELL

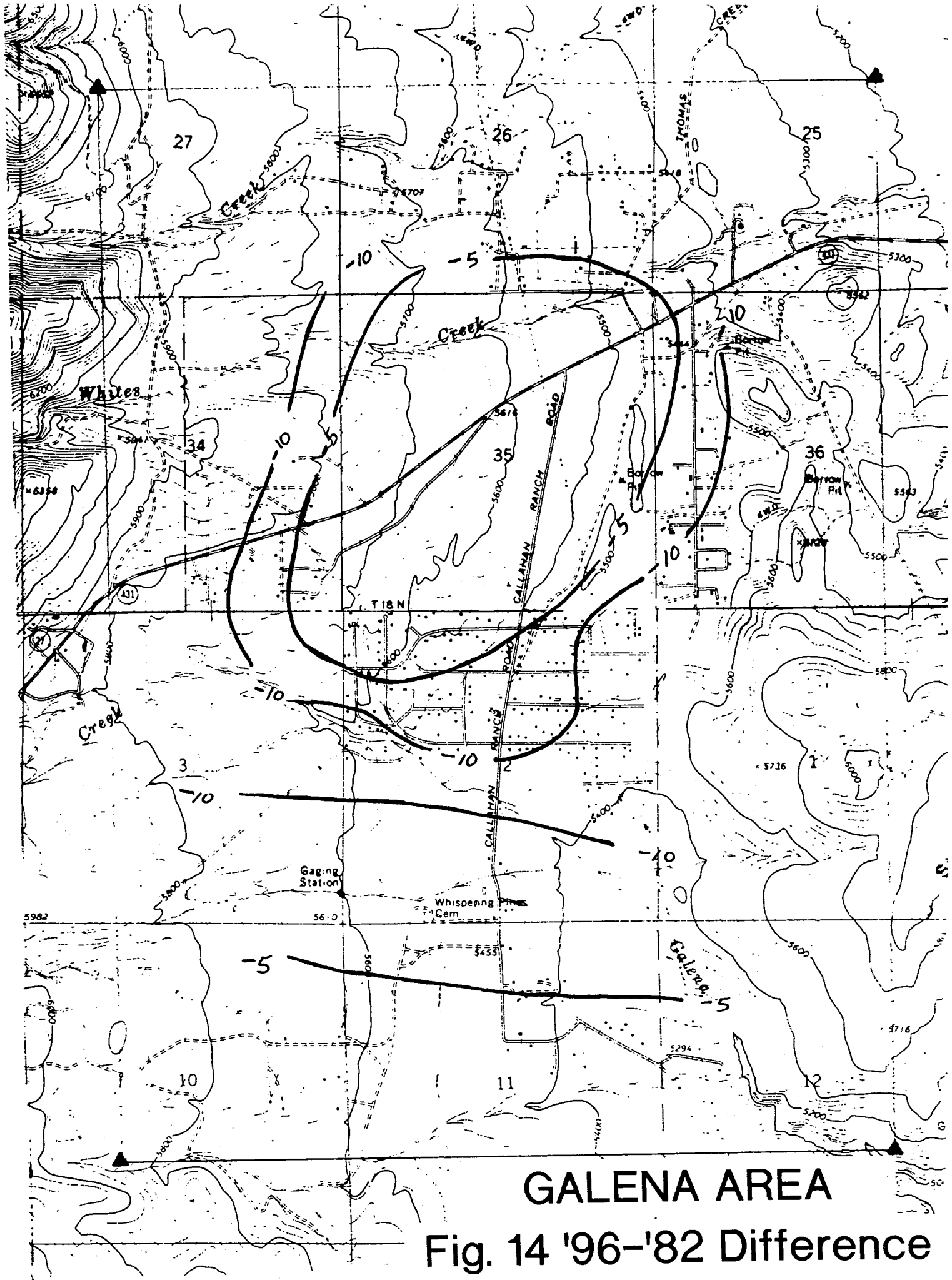


complex, with different areas exhibiting different water level change characteristics. In general, groundwater decline has been less severe, and has mainly affected the southern and eastern sections of the Callahan Ranch subdivision, and, in particular, the eastern Fawn Lane corridor. The Galena data set is rather sparse, therefore difference level interpretation was difficult and contours represent best fit with limited data. Figure 16 indicates a ten to fifteen foot drop in the water table between 1996 and 1991 for the affected southern and eastern area. The 1991-1982 map shows less of a drop. This is explained by an actual groundwater table rise in the period between 1982 and 1991 as shown on Figure 15.

The groundwater level increase noted is somewhat enigmatic. Figures 17, 18 and 19 are domestic well hydrographs from three selected residences along the western edge of Callahan Ranch. All three figures show a five to ten foot rise in the water table during most of the 1980's. This might be explained by noting that 1972 to 1979 were dry years. The '79/82 reading would reflect this dry period, and the higher levels recorded in 1990 or 1991 probably represent recharge effects from the wet years of the early to mid 1980's. An exception to this trend is the constant decline at the Volunteer First Aid monitoring well located north of the Mt. Rose Highway (hydrograph, Figure 20.) Note the recharge between 1995 and 1996.

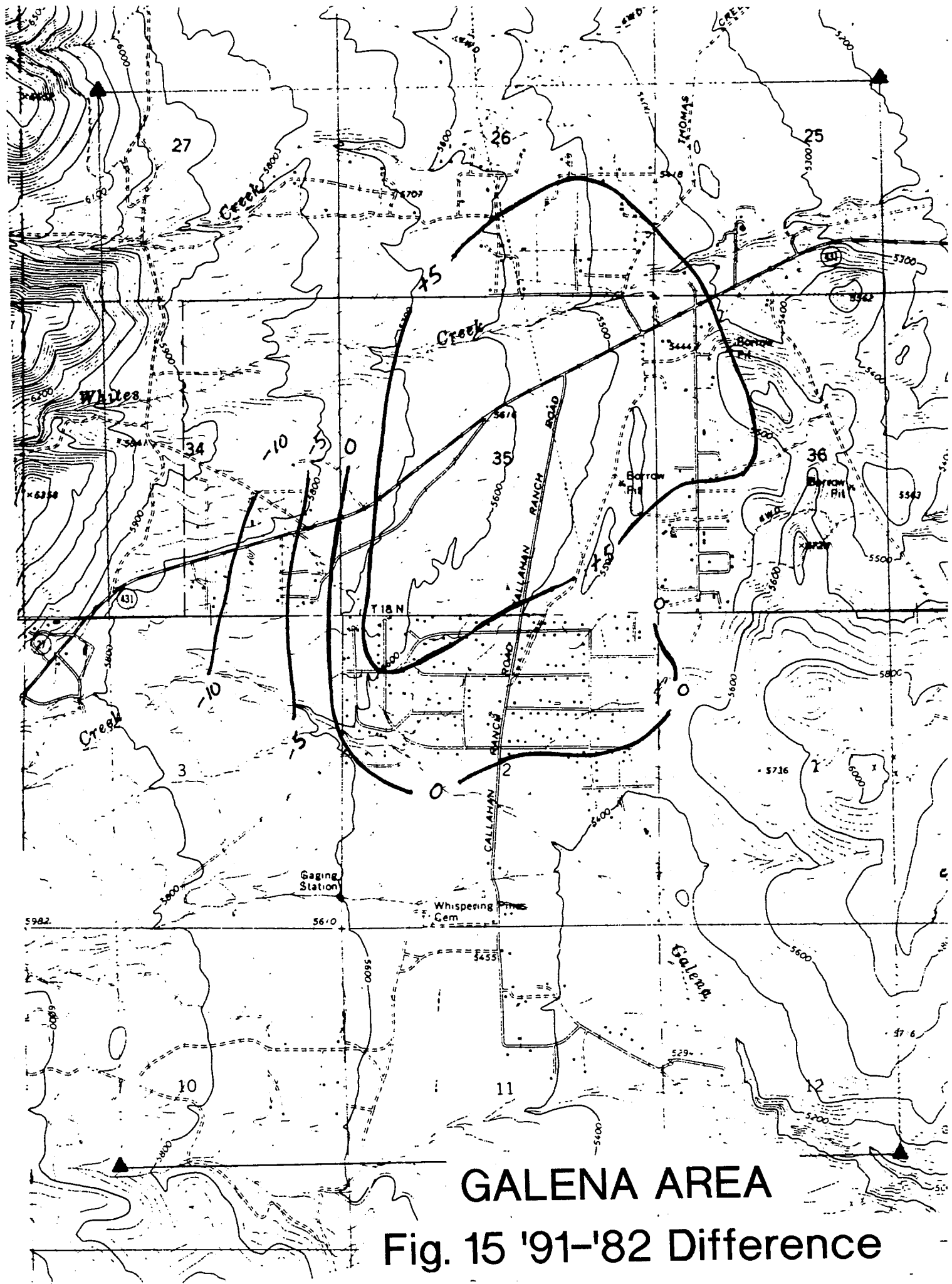
Figures 21 and 22 are well hydrographs of the stressed eastern area. Please note a constant decline, without anomalous recharge effects. Figure 23 is a computer generated groundwater level difference map (1996-1995) of the Galena area. Notable recharge has occurred over much of the Callahan Ranch subdivision. Once again, the contour pattern is influenced by the data (or lack of) density, but it appears that recharge may be influenced by Galena Creek. The cluster of wells on the north side of Mt. Rose Highway have not seen the recharge, nor has the area of Fawn Lane





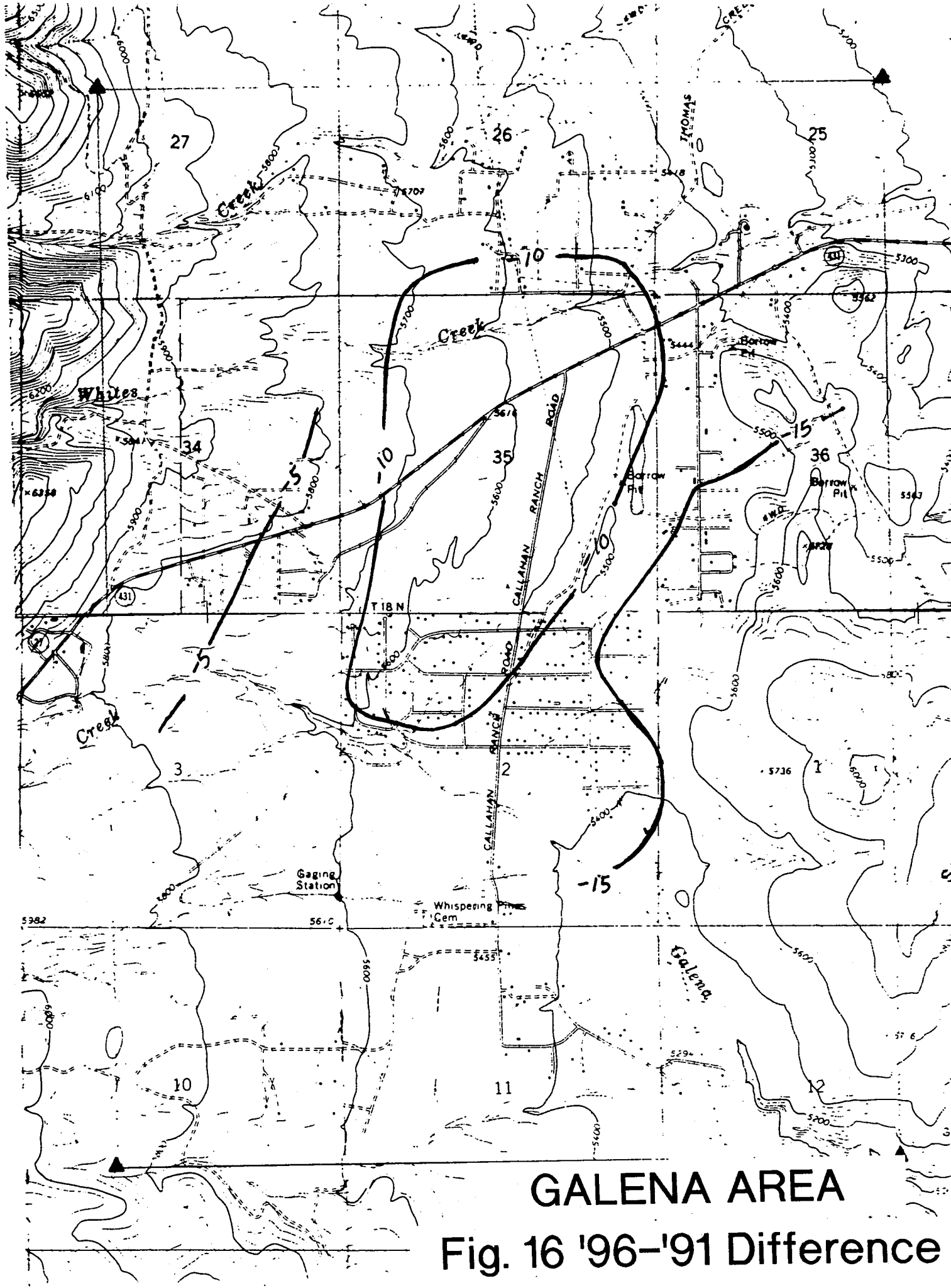
## GALENA AREA

Fig. 14 '96-'82 Difference



GALENA AREA

Fig. 15 '91-'82 Difference



# GALENA AREA

Fig. 16 '96-'91 Difference

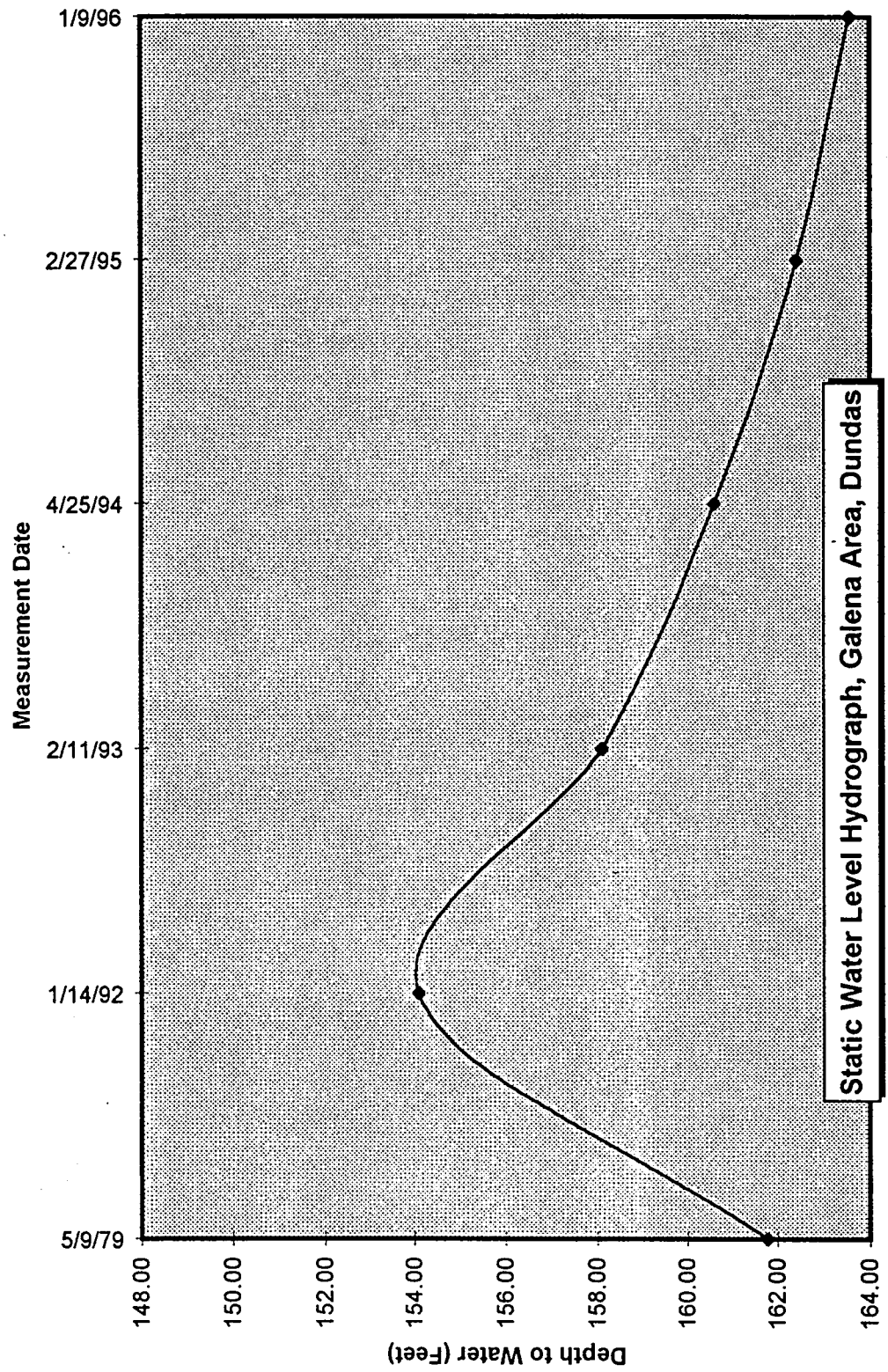


FIG. 17

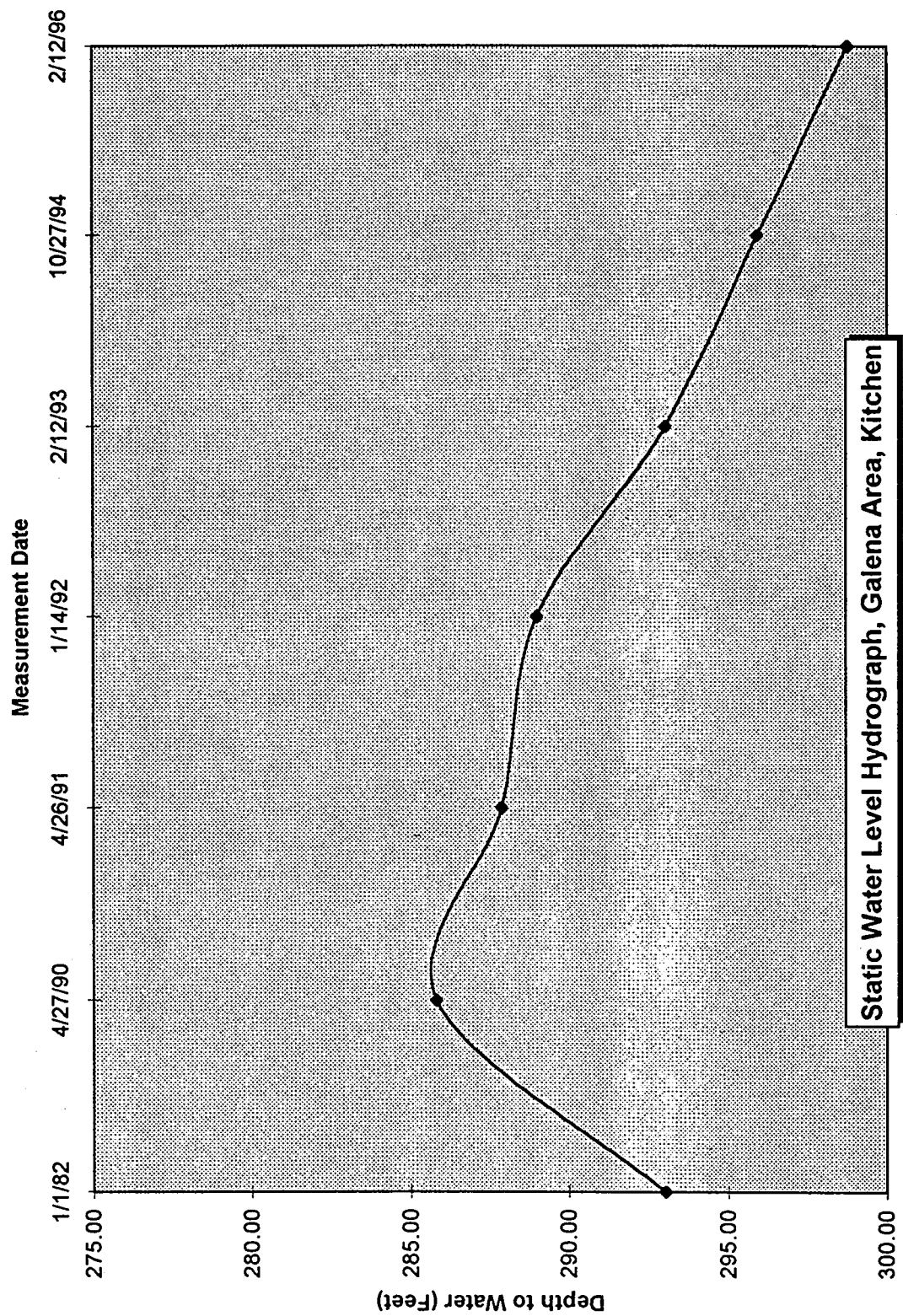


FIG. 18

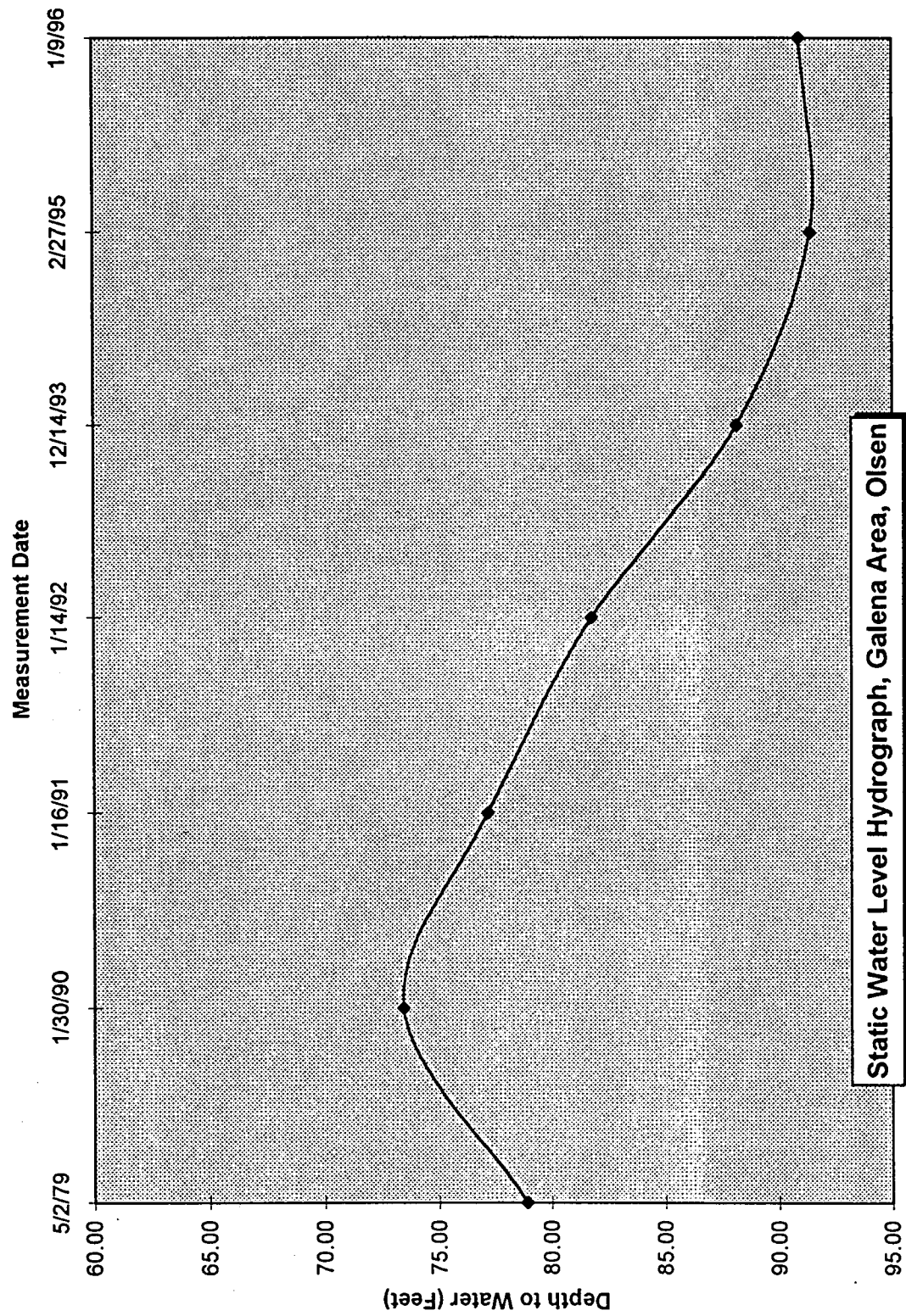


FIG. 19



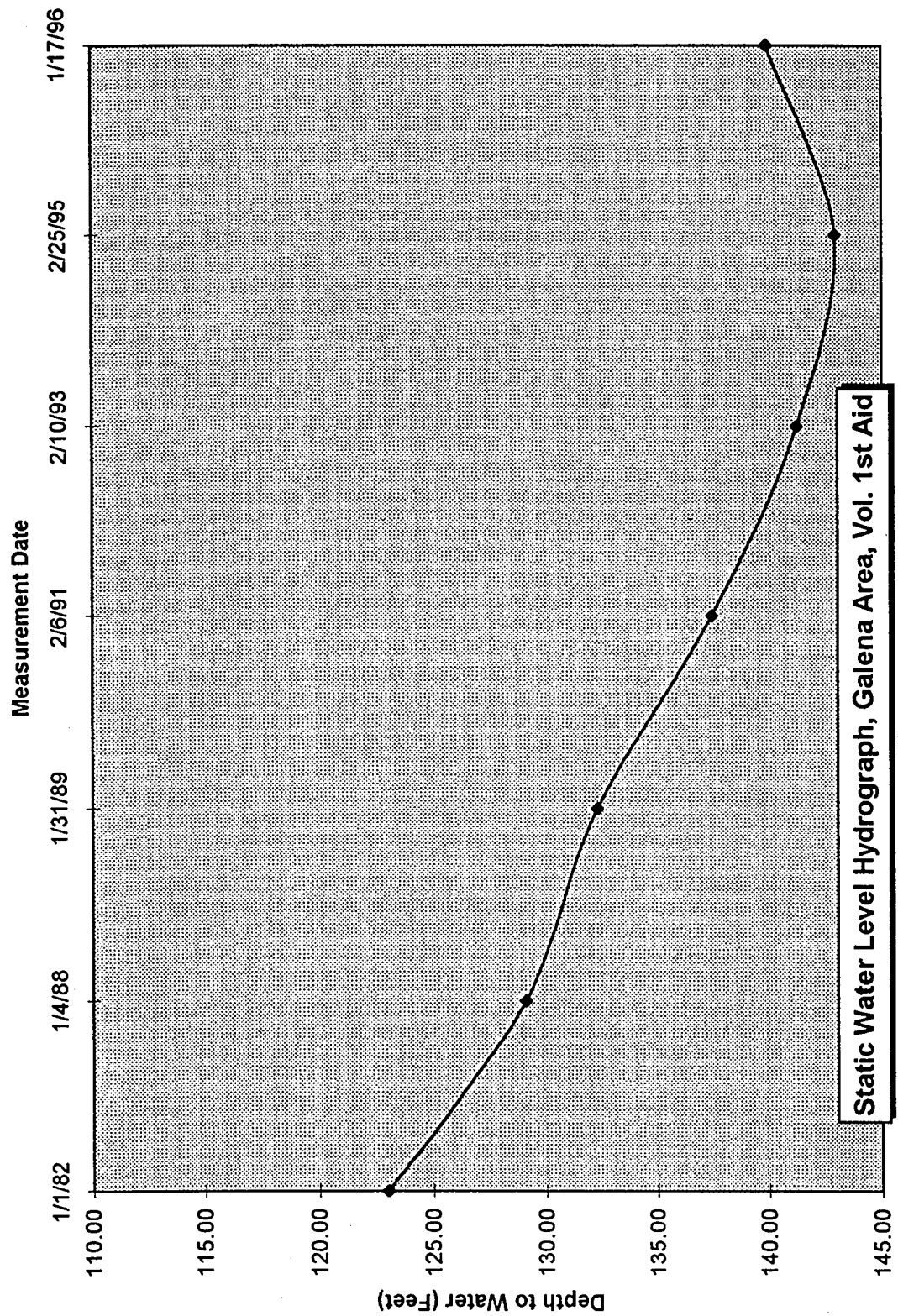


FIG.20

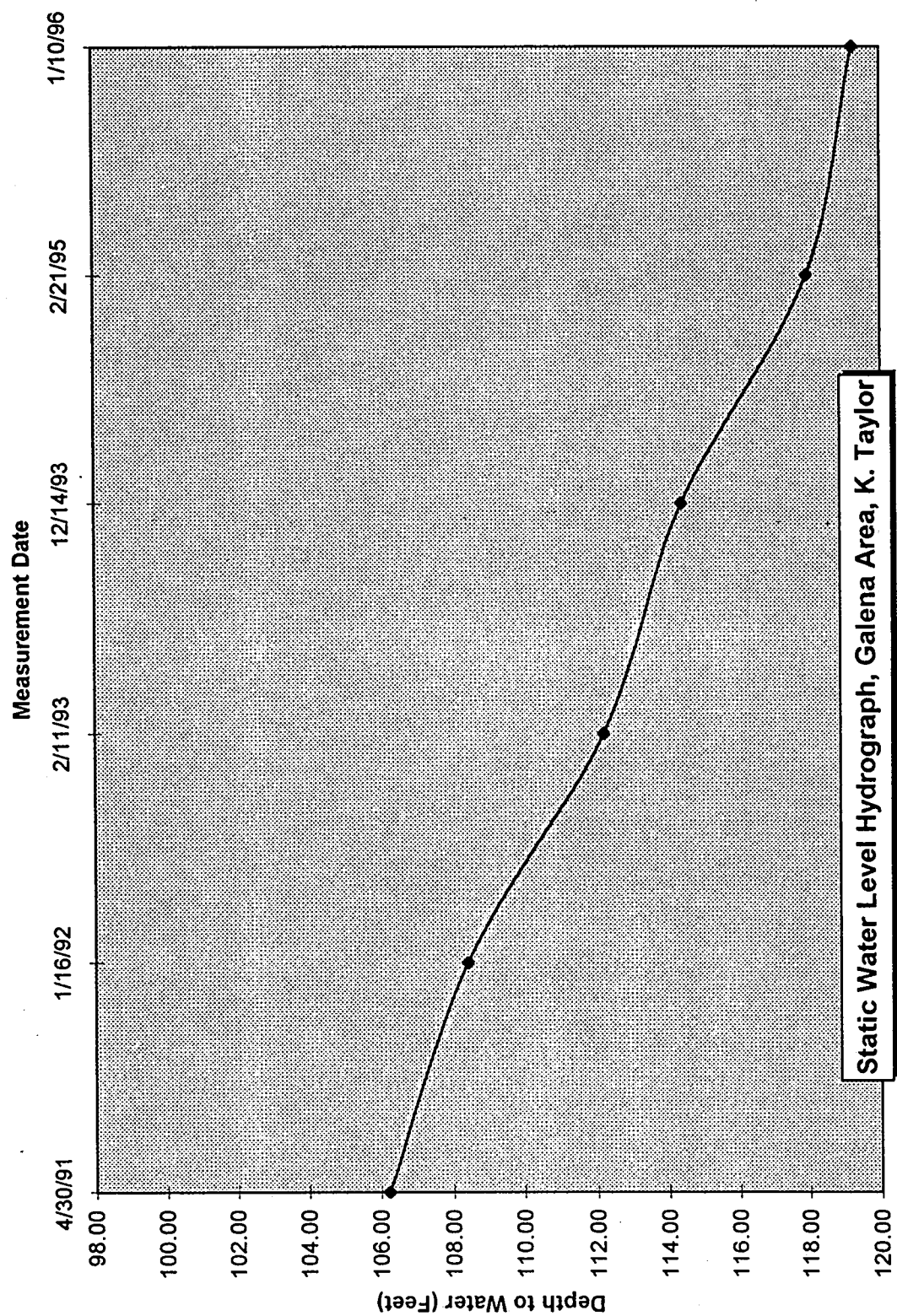


FIG. 21



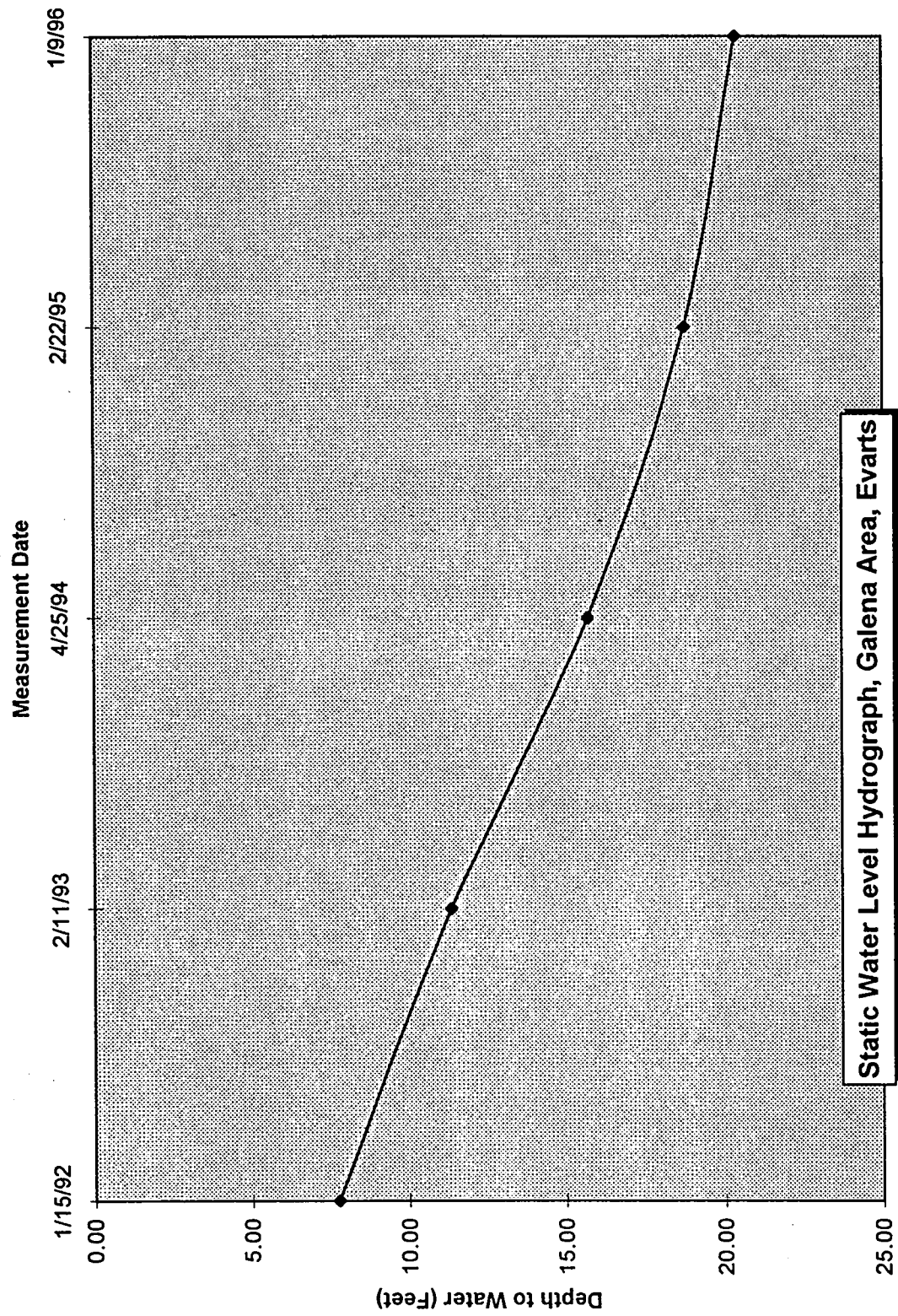


FIG. 22



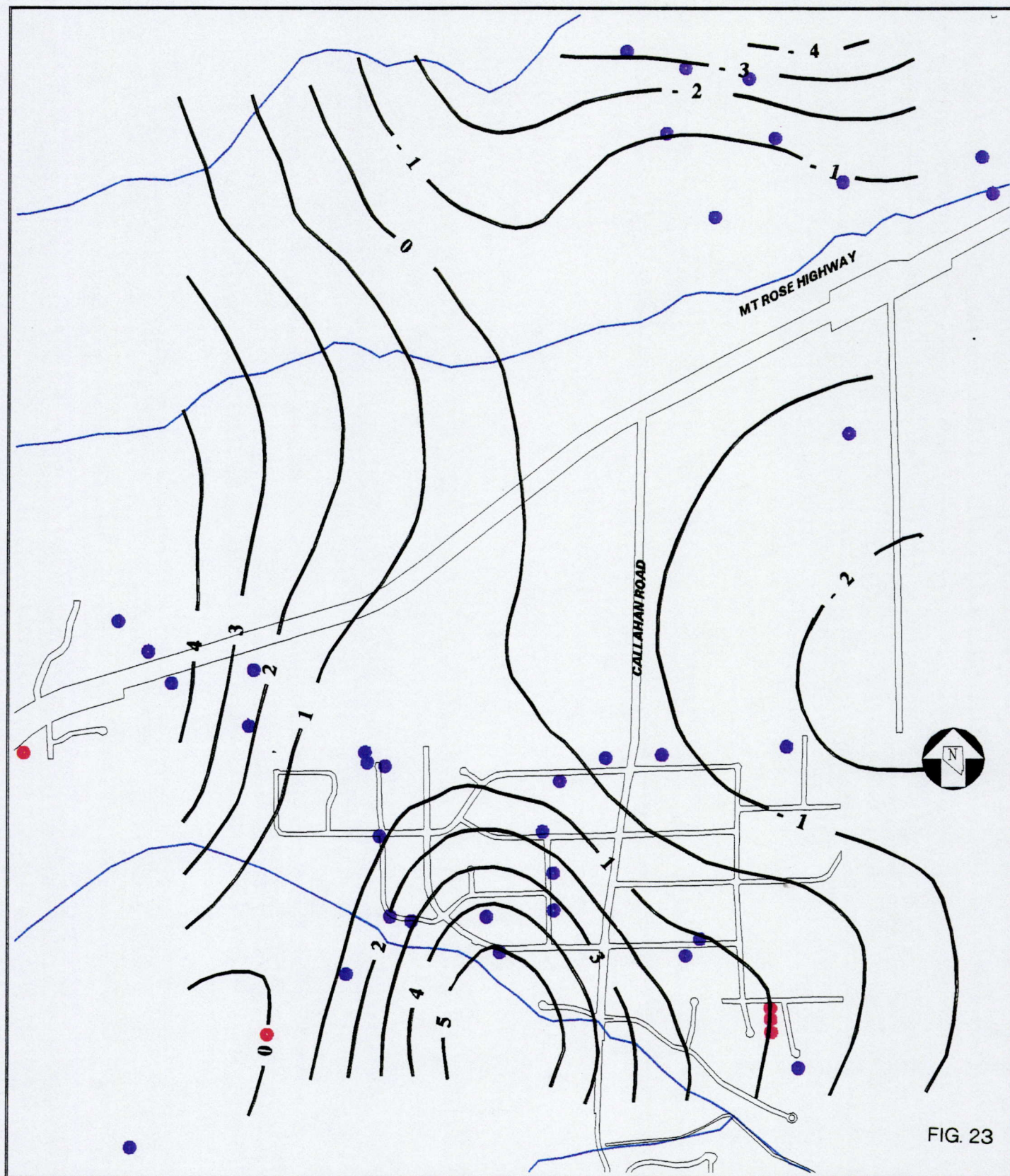
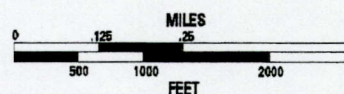


FIG. 23

# GALENA AREA 1996-1995 GROUNDWATER LEVEL DIFFERENCE CONTOURS

- |   |   |
|---|---|
|  DITCH               |  MONITORING WELL |
|  DIFFERENCE CONTOURS |  PRODUCTION WELL |



road. Figure 24 is a depth to water map of the same area. The southeast corner of Callahan Ranch has the shallowest water table (less than 20 feet), with historic springs. The water table is the deepest on the north side of Mt. Rose Highway. Much of the difference is explained by the higher elevation to the north, but the contour patterns suggest possible complex structures through the region. The only structure mapped on the quadangle map is a nearly north-south trending fault zone cutting through the western part of Callahan Ranch. This structure may explain the location of recharge on the 1996-1995 difference map.

### Conclusions

This report has documented various water table features, both spatial and temporal on certain portions of the Mt. Rose and Galena Fan aquifer. Evidence has been presented that the fan is laterally and vertically heterogenous, may locally behave in a confined or semi-confined manner, but overall behaves as an unconfined aquifer. Of importance here is that the monitored wells represent valid data points. Spatial variations (geometry) of the water table and groundwater level changes, from drought, natural recharge, or from well pumping will be influenced by faults and alluvium - bedrock configuration.

Water level difference maps and well hydrographs demonstrate both significant water table lowering due to drought and due (and in combination) to production and domestic well pumpage. Creation of water level difference maps from diverse data sets was a logistical problem, and demonstrates the need for clean and consistent long term data collection.

The area around STMGID 1 and 3 production wells has experienced a water table drop of over 30 feet since 1982. This equates to over 2 feet per year. The cone of depression around STMGID 1 and



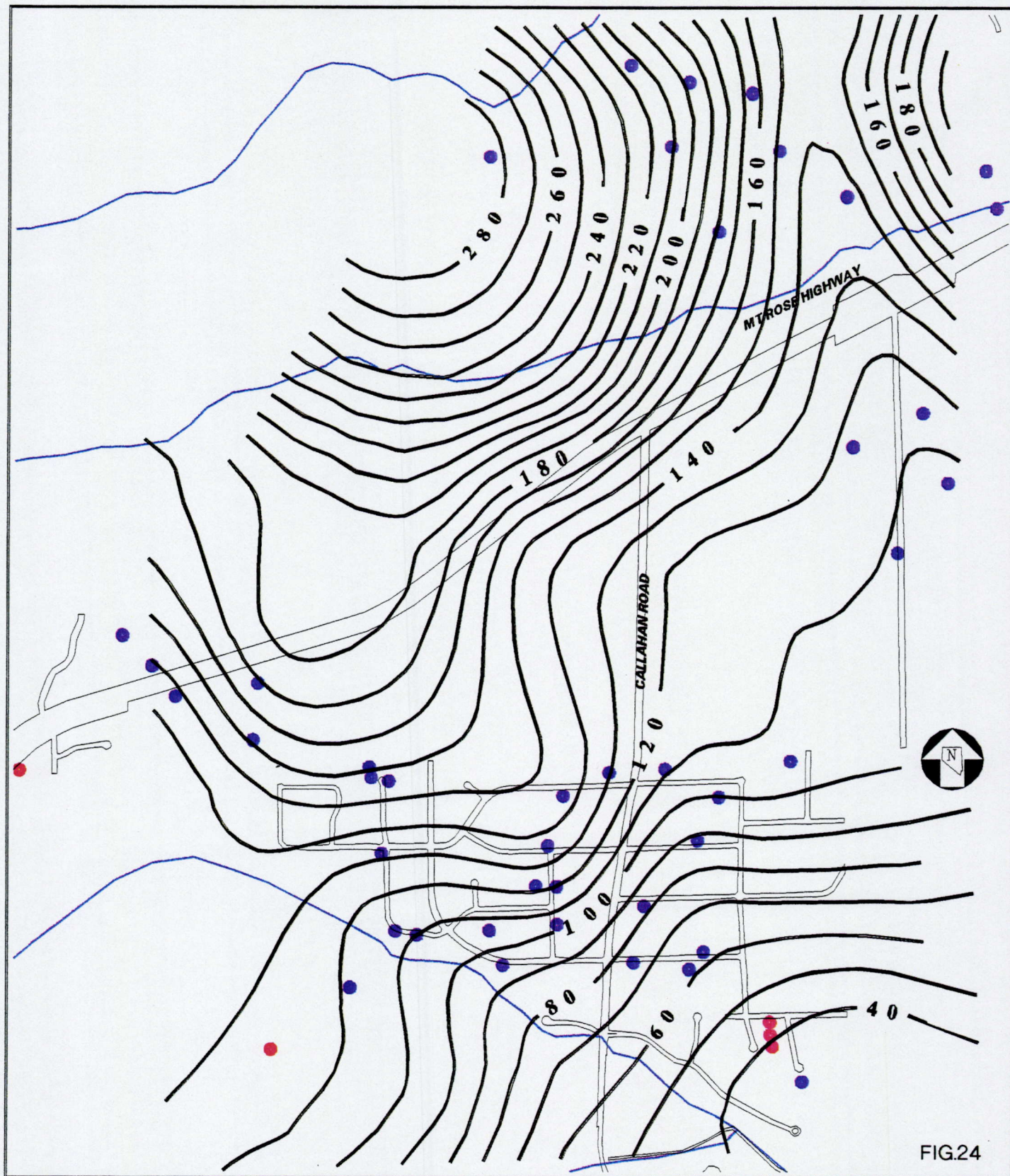






FIG.24

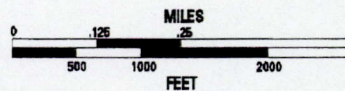
# GALENA AREA 1996 DEPTH TO WATER CONTOURS

 DITCH

 MONITORING WELL

 DEPTH TO WATER CONTOURS

 PRODUCTION WELL



3 is elongate, north-south and probably is a function (both spatially and perhaps also in magnitude) of mapped faults of that same trend. In fact the depressed area follows a mapped graben structure. The good news for this area is that several wet winters can reverse the groundwater lowering trend, or at least slow it down. Both at Foothill and Galena, our measurements indicate significant recharge after wet winters in 1995 and 1996.

At Galena, lesser impact is seen both from drought and from well pumpage, probably due to different aquifer conditions and proximity to recharge areas. However, the eastern most part of Callahan Ranch appears to be stressed and is not recovering adequately. No definite proof is available to suggest that the MRSA wells are significantly impacting this area, but a hypothesis is made that lack of water table rebound may be an early effect of production well activity.

This kind of study and the ongoing groundwater monitoring program is considered invaluable and critical for the mission of Washoe County Utilities Division and Comprehensive Planning. Development has accelerated on the Mt. Rose and Galena Fan, and includes major residential development and golf courses. The County has six new production wells that will come on line within the next several years. Referring back to Figure 1, for the Foothill area these are STMGID 2, 11, and 13 (newly renamed as Southwest Pointe 1 and 2). In the Galena area, SJ-1 and SJ-2 are located above tree line to the southwest of the figure, and are part of the water supply for the Woods subdivision which is under construction. The Cinder Well (Figure 1) is also planned for startup and is part of the Mt. Rose water system.

Careful monitoring and data interpretation of groundwater level trends is a critical tool for groundwater management of this growing area. A sufficient number of County-owned monitoring wells are available for this hydrogeologically complex area. Conversely, continued monitoring, or even expansion of the

network, where possible, in combination with modeling studies and geologic/geophysical investigations is imperative for continued water resource management. Expansion of the network is recommended to include the Holcomb/Huffaker area north of Foothill Road, and areas to the west and up-gradient from Callahan Ranch. This proposed expanded survey could be done on an annual basis, during the winter quarter. I strongly recommend continued studies to determine the yield of the system, and the feasibility of artificial recharge of surface water into the aquifer. The ultimate goal would be to have a water plan, based on a worst-case drought scenario that would govern future land use of this region. Realistic drought modeling scenarios based on best weather data, and a better understanding of range front groundwater recharge is also needed.



## APPENDIX A

### Survey Spreadsheet with Name Address and X,Y,Z Coordinates

7982Sur.xls	1979/1982 Survey
1991Sur.xls	1991 Survey
Tmsur.xls	Regular Network Survey
Galsur.xls	Galena Area Survey
Footsur.xls	Foothill Area Survey

### Other Spreadsheets with amplified information, included as a diskette

1991.xls	1991 Survey
Wells82.xls	1982 Survey
USGS79.xls	1979 USGS Survey
Mtrose.xls	Mt. Rose /Callahan area Survey
Picollo.xls	Picollo School/Foothill area Survey
STMGID.xls	STMGID Well Survey
Westridge.xls	Westridge Area Survey

**Note** -- \*.gra files for Foothill, Galena, and monitoring network included on diskette. These are surfer files and include coordinates of the areas.

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For individual well water level measurement dates see spreadsheet information on diskette.

<b>1979-1982 survey-- 7982sur.xls</b>		<b>Coordinates in feet, NAD-27</b>			
		Note-- most well locations are approximate, and not GPS surveyed			
		1996 Compilation			
<b>Address</b>	<b>Name</b>	<b>ID</b>	<b>X</b>	<b>Y</b>	<b>Water Level Elev.</b>
	Leautier	1	162394	1711744	4516
	Evangelical Church	2	164386	1710497	4500
	Kenny	3	159831	1711557	4541
	Bartley	4	160353	1709983	4566
	Moreth	5	164217	1709080	4519
	Krump	6	162628	1709817	4522
	Wood	7	163027	1707386	4562
	Wash. Co. Obs. Well	8	165875	1706538	4520
	Wash. Co. Obs. Well	9	166089	1705373	4530
	Counter	10	167490	1701974	4543
	Passack	11	168082	1702005	4532
	Wash. Co. Obs. Well	12	164616	1706321	4550
	OLACIREGU1 (1)	13	162819	1706403	4584
	Wash. Co. Obs. Well	14	164643	1705406	4550
	Soule	15	159769	1706374	4630
	McIntosh	16	160293	1704831	4635
	Barnum	17	164705	1704229	4558
	Fehr	18	164324	1703590	4564
	Kinder	19	163871	1701959	4585
	OS #5 (STMGID)	20	162996	1700658	4590
	PW #2 (STMGID)	21	164528	1699588	4560
	Ob #2 (STMGID)	22	161003	1701843	4655
	PW #3 (STMGID)	23	162959	1698849	4620
	Ob #3 (STMGID)	24	164477	1697961	4585
	Ob #4 (STMGID)	25	163453	1697856	4640
	Storrs	26	169284	1699405	4534
	Robinson	27	164891	1701664	4572
	Powell	28	166947	1699892	4552
	Herz	29	169409	1698589	4546
	Gillenwater	30	171283	1698040	4522
	Bianco	31	174273	1695180	4520
	Herz	32	170595	1696047	4550
	STMET SPA	33	170127	1693300	4660
	Peigh	34	168156	1696039	4560
	Dodson	35	168242	1695520	4580
	Cathcart	36	164843	1695999	4665
	Woods	37	164878	1695378	4670
	McKay	38	167461	1693155	4662
	GS-6	39	168931	1691972	4690
	Jones	40	164250	1696462	4635
	Jones	41	162726	1696218	4625
	Marble	42	162468	1695534	4615
	Andrew	43	162638	1694940	4655
	Theime	44	162575	1714875	4470

	DDT1	45	167474	1712367	4465
	DDT2	46	167383	1707591	4495
	CDB1	47	179287	1698406	4547
	CDB2	48	180243	1702136	4482
	CDB4	49	179284	1703518	4465
	Boohers	50	181503	1704368	4467
	Miller	51	181247	1702159	4475
	Conley	52	181814	1700471	4499
	Hill	53	176618	1696265	4511
	Trans Sierra	54	175802	1695076	4520
	Leggit	55	174886	1693535	4518
	Braun	56	180474	1690671	4694
	Boggs	57	179263	1690320	4685
	Norris	58	179080	1689975	4678
	Seigal	59	175967	1690477	4635
	Boatwright	60	176490	1689014	4654
	STMWWTP	61	172383	1716966	4420
	Dyer	62	176650	1687650	4609
	Davis	63	178650	1688575	4709
	Smith	64	175900	1689500	4622
	Radz	65	177625	1687000	4670
	Unknown	66	176675	1688225	4596
	Dempsey	67	180275	1688000	4690
	Shinners	68	178136	1688840	4646
	Barker	69	178900	1686000	4730
	Cail	70	179850	1686000	4773
	Danner	71	179200	1684925	4774
	Feliciano	72	178800	1685325	4775
	Neilson	73	171000	1681250	4647
	Rosadchi	74	170550	1683250	4762
	Loper	75	171050	1681600	4585
	Shellhammer	76	171900	1684075	4627
	Glaser	77	147539	1690233	5670
	Winburn	78	148362	1687842	5490
	Warner	79	146397	1688312	5665
	Legg	80	146445	1687587	5680
	Fire Dept	81	147449	1687758	5590
	Tate	82	148065	1688695	5470
	First Aid	83	146507	1687348	5687
	Kutnock	84	146292	1686918	5686
	Frontier	85	146709	1686354	5620
	House	86	147452	1687079	5610
	Hatoff	87	146674	1686692	5670
	Drew	88	147759	1687285	5595
	Devries	89	147790	1686568	5580
	Scott	90	155964	1691220	5260
	Bush	91	154626	1689803	5375
	Ohmstead	92	154381	1688774	5418
	Brackett	93	155188	1688583	5380
	Martin	94	154615	1688012	5374
	Luconta	95	155306	1687565	5365

	Lemire	96	154613	1686535	5373	
	Solar	97	155227	1686181	5355	
	Kuhnle	98	162822	1694006	4622	
	Mundt	99	164420	1695150	4630	
	Abez	100	159863	1696183	4650	
	Obrien	101	159958	1694838	4600	
	Lancer	102	160768	1693834	4885	
	Otten-Wycoff	103	159726	1693157	4950	
	Shadowridge	104	159573	1693228	4640	
	Kellison	105	160565	1693201	4885	
	Lowman	106	162425	1691725	4786	
	Moore	107	162750	1691700	4758	
	Phillips	108	162075	1689800	4650	
	NT 6	109	167816	1689866	4700	
	NT 4	110	166885	1690299	4775	
	NT 5	111	165783	1690589	4775	
	GS-7	112	167387	1688035	4915	
	Kosich	113	153933	1708726	4674	
	Morrison	114	153195	1708060	4889	
	Lee	115	153539	1707537	4775	
	Mast	116	158470	1712364	4535	
	Palmer	117	156485	1711639	4553	
	Brinsmead	118	155094	1710331	4575	
	Glover	119	155900	1709045	4592	
	Fox	120	156220	1707321	4653	
	Escovar	121	158077	1706380	4660	
	Gonzales	122	157217	1705697	4800	
	STMGID Ob.Well #1	123	157615	1700700	4800	
	Perogolio	124	155281	1692156	5366	
	Diass	125	155200	1691767	5350	
	Stevenson	126	155711	1692585	5137	
	Taylor	127	156484	1692279	5210	
	Malmstadt	128	151453	1693551	5400	
	Kitchen	129	150260	1692986	5400	
	Brownell	130	151419	1693268	5355	
	Manley	131	151432	1692181	5350	
	Quinn	132	151779	1691513	5350	
	Gerbis	133	151967	1693751	5353	
	Monahan	134	152474	1692900	5336	
	Williams	135	154094	1692129	5360	
	Unknown	136	148224	1693278	5680	
	Humphrey	137	148455	1692862	5663	
	Anay	138	148875	1692890	5420	
	Dragoo	139	158049	1716857	4506	
	Hird	140	159300	1715250	4503	
	Short	141	155692	1716279	4547	
	Siegrist	142	156300	1714600	4495	
	Segale	143	157663	1713592	4534	
	McLeod	144	155500	1717150	4547	
	Taylor	145	154873	1713070	4630	
	Melarky	146	158009	1715051	4519	

	Lakner	147	156975	1716046	4527
	Halverson	148	155594	1717085	4547
	Homan	149	152279	1713813	4690
	Capozzi	150	153272	1712726	4700
	Mosser	151	153911	1714047	4652
	Low	152	152739	1717260	4899
	Prutzman	153	153700	1716850	4663
	Pitman	154	158500	1711100	4555
	May	155	158025	1710700	4569
	Ramsey	156	159550	1705750	4649
	Mealsher	157	155850	1706100	4712
5335 Goldenrod*	Hawn, Arthur	158	152483	1683948	5398
	Anderson	159	152654	1683723	5408
	Burke, Randell J.	160	152266	1683758	5394
	Perkins, Dan	161	152654	1683723	5387
	Laca, David	162	150333	1685667	5436
	Miller, James	163	150733	1685183	5405
	Famer, Rod	164	149424	1684076	5461
	Gaither, Susan	165	149360	1685838	5537
5530 Wintergreen*	Northon, Tim	166	149325	1684246	5459
15420 Willowbrook*	Marshall, Bob	167	150888	1684728	5392
	Schetter	168	150738	1683764	5394
	Hale, Lee	169	153350	1683350	5396
	Hale, Lee	170	153350	1683000	5384
	Hale, Lee	171	153250	1682700	5383
	Hale, Lee	172	152875	1682375	5387
16745 Mt. Rose	McCains, Jerry	173	144142	1685981	5928
Mt. Rose Hwy	Forest Svc. Galena Camp	174	140958	1680918	6108
	Gerbig, Arden	175	151967	1693751	5353
4800 Townsite Road	Aytes, Ken	176	151630	1681070	5360
5425 Mt. Meadows Ln.	Griffen, Gerald	177	148876	1683673	5527
5380 Cedarwood*	Borden, Don	178	151850	1684350	5387
15425 Willowbrook Dr.	Hobbs	179	150525	1683850	5365
	Dee, Joe	180	143736	1685496	5860
16805 Mt. Rose Highw	Newton, Shirley	181	143628	1685783	5931
6005 Philoree	Nessler, Ron	182	147193	1681076	5463
"Campfire Girls" see n	Washoe County (?)	183	138711	1677730	6476
2745 Sherwood Place	Landmark Development	184	142606	1680409	6037
Across Frm Maint. Sta.	Landmark Development	185	141088	1678994	6147
No location	Samuels	186	147798	1679016	5463
Off of Callahan -- See	Creps, Terry	187	152733	1678431	5282
15955 Curtis Lane	Perogolio, Joe	188	155281	1692156	5368
5655 Mt. Rose Highwa	Kithchen, Bill	189	150410	1692720	5397
5645 Mt. Rose*	Monahan, Dr. (Murray)	190	152474	1692900	5336
5785 Mt. Rose Hwy	Manley, Charles	191	151743	1692328	5352
5656 Mt. Rose Hwy	Anaya, Ray	192	148692	1693204	5420
	Devries, Jon	193	147790	1686568	5580
16300 Mt Rose	Kutnock	194	146288	1686692	5674
Off of (?) 1675 Mt Ros	Taylor, Jack	195	143987	1686586	5981
16150 Mt. Rose Highw	Tate, Charles	196	148065	1686695	5474
	Martin	197	154675	1687900	5366



15300 Fawn Lane*	Bush, Gary	198	155043	1689733	5375	
15619 Fawn Lane*	Ohmstead, Bill (Hunt)	199	154707	1688729	5418	
15890 Fawn Lane*	Solaro, John	200	155227	1686181	5384	
15890 Fawn Lane	Solaro, John	201	155227	1686181	5380	
15450 Fawn Lane*	Brackett, Don	202	155470	1688817	5378	
16555 Callahan*	Mc Millian, Doug(Rogers)	203	153741	1678864	5286	
16777 Mt. Rose	Barney, Don	204	148575	1678925	5495	
	Galena Volun. Fire Sta.	205	141000	1681950	5954	
16700 Mt. Rose Highw	Barry, Lee	206	144515	1685671	5838	
5550 Wintergreen*	Olsen, Steve	207	148975	1684750	5521	
16000 Callahan Road	Delongchamps, Galen	208	151216	1681048	5378	
5380 Goldenrod*	Mayville, William	209	151716	1683745	5397	
5480 Tannerwood	Mehr	210	150903	1685684	5444	
5360 Tannerwood*	Byington	211	152086	1685757	5397	
5300 Tannerwood*	Dufva, Frank (Robert)	212	152793	1685629	5378	
5345 Wildwood*	Sheehan, Bob (Gregg)	213	152925	1684350	5374	
5709 Tannerwood(?)*	Reynolds	214	149300	1684400	5511	
6020 Wintergreen*	Dundas, Steve	215	148941	1685999	5529	
5545 Goldenrod*	Bratton, Jim	216	149636	1684780	5418	
16225 Callahan*	Griswold, T.	217	151455	1679747	5356	

1991sur.xls	1991 Well Water Level Survey		Note-- coordinate system is NAD-27		
1991 Survey	Collected Dec. '90 to Feb. '91		in feet		
			* indicates GPS surveyed wells		
	Compiled 1996 (KK)				
	Name	Address	Well ID	X	Y
					Meas. Pt. Elev.
* Melarkey	1350 Huffaker Ln.	1	158009	1715051	4538
* Short	1845 Viewcrest	2	155692	1716279	4610
* Lakner	1601 Viewcrest	3	156975	1716046	4575
* Dragoo	460 Mill Drae Ln.	4	158049	1716857	4535
* Most	8505 Dieringer Dr.	5	157752	1712533	4556
* Kent	1700 Davis Lane	6	155594	1717084	4632
* Low	2460 Faretto Ln.	7	152739	1717260	4715
* Mosser	3485 Frost Dr.	8	153911	1714047	4669
* Homan	3725 Frost Dr.	9	152278	1713813	4776
* Halverson	1825 Catalpa Ln.	10	155594	1717085	4632
* Cappozi	3525 Lunsford	11	153272	1712726	4726
* Taylor	8475 Holiday Lane	12	154873	1713070	4639
* Glover	10475 Dryden Dr.	13	155903	1709319	4693
Brinsnead	3601 Fairview Rd.	14	155094	1710331	4690
* Brown	3975 Lamay Dr.	15	153187	1708039	4899
* Leong	3890 Bowers Dr.	16	153655	1707801	4900
* Kosich?	4045 Odile Ct.	17	153993	1708897	4818
* Fox	10981 Dryden Ln	18	156351	1707519	4721
* Hansen	3390 Quilici Rd.	19	155752	1706047	4797
* Segale	9009 Segale	20	157663	1713592	4540
* May	2580 Holcomb Ln.	21	157451	1710130	4583
* Barker	2145 Green Tree Ln.	22	158763	1710700	4560
Williams (formerly Moreth)	360 Vera	23	164217	1709080	4530
Krump	945 Monte Vista	24	162628	1709817	4550
Wood	1550 Monte Vista	25	163027	1707386	4595
Nichols	1940 Foothill	26	160293	1704831	4710
* Olaciregui	1300 Mallory Ln.	27	162812	1706393	4623
* Ramsey	11445 Thomas Creek Rd.	28	159243	1705614	4696
Soule	11500 Thomas Creek Rd.	29	159769	1706374	4665
Mailander	1950 Holcomb Ln.	30	160353	1709983	4570
* Kenny	1200 Mile Circle Dr.	31	159939	1711684	4541
Leautier	9835 Dixon Ln.	32	162394	1711744	4520
* Firehouse	12300 Old Virginia Rd.	33	169742	1702912	4514
* Gillenwater	13905 Old Virginia Rd.	34	171313	1698081	4539
* Heyer	395 W. Zolezzi Ln.	35	167468	1702014	4557
* Robinson	1120 W. Zolezzi Ln.	36	164824	1701714	4651
* Dinger	12575 Westridge	37	163498	1702172	4711
* Hinton (fomerly Fehr)	12375 Westridge	38	164319	1703627	4646
* Well #1	Zolezzi Lane	39	164058	1701869	4677
* Glover	10475 Dryden	40	156153	1709375	4657
MacKay	1600 Mt. Rose HWY (north)	41	167461	1693155	4750
MacKay	1600 Mt. Rose HWY (south)	42	167461	1693155	4750
Woods	1750 White Creek Lane	43	164878	1695378	4790
* Starrs	13109 S. Virginia St.	44	169284	1699405	4550
* Long	14630 Toll Road	45	174879	1693508	4595

* Cail	2815 Ravazza	46	179790	1685558	4842
* Feleciano	2670 Ravazza	47	178806	1685360	4800
* Oppenaheim	15640 Cheryl Ln	48	176444	1687654	4839
* Denpsey	1965 Temple Hill Rd.	49	180220	1688078	4835
* Barker	1685 Murphy Place	50	178827	1686301	4816
Danner	2810 Ramona	51	179480	1684777	4834
?	1195 Scarlett St.	52	176391	1690026	4689
Davis	15512 Toll Road	53	178650	1688575	4740
* Simons, Mike	15050 Pinion Rd.	54	179312	1690860	4735
* ?	15350 Yankee Blade	55	176320	1689362	4750
* Shinnors	15410 Toll Rd.	56	178136	1688840	4741
* Conley	13250 Mira Loma Road	57	181793	1700525	4660
* Hill	14221 Mira Loma	58	177064	1696470	4583
* Miller	12995 Mira Loma	59	181260	1702262	4513
Boohers	12000 Mira Loma Rd	60	181503	1704368	4475
* Brackett	15450 Fawn Lane	61	155349	1689067	5468
* Hunt	15619 Fawn Lane	62	154762	1688298	5477
Bush	15300 Fawn Lane	63	155102	1689840	5459
Brown	5480 Tannerwood	64	150903	1685684	5545
* Byington	5360 Tannerwood	65	152320	1685632	5473
* Gregg	5345 Wildwood Dr.	66	152461	1685188	5461
* Borden	5380 Cedarwood	67	151845	1684481	5464
* Mayville	5380 Goldenrod	68	151711	1683857	5454
Hobbs	15425 Willowbrook Dr.	69	150660	1684750	5521
Olson	5550 Wintergreen	70	148975	1684750	5600
* Robert	5300 Tannerwood	71	152713	1685661	5486
* Roger	16555 Callahan Rd.	72	151398	1679820	5460
Galena Vol. Fire Dpt.	16255 Mt. Rose Hwy	73	141000	1681950	6200
Graves	16770 Dry Creek Rd.	74	147759	1677835	5680
* Solaro	15890 Fawn Ln	75	155115	1686478	5465
Nessler	6005 Philoree	76	147193	1681076	5712
Barry	16700 Mt Rose Hwy	77	144515	1685671	5850
Barry	16700 Mt. Rose Hwy	78	144515	1685671	5850
Taylor	5435 Mt. Rose Hwy	79	143987	1686586	6041
Brown	4765 Mt. Rose Hwy	80	151419	1693268	5610
Curtis	15900 Curtis Ln.	81	155711	1692585	5390
Perogelio	15955 Curtis Ln.	82	155281	1692156	5394
Piper	5845 Mt. Rose Hwy.	83	153598	1692830	5471
Boatghert	5010 Mt Rose Hwy	84	154094	1692129	5451
Savage	5835 Mt. Rose Hwy	85	153353	1693244	5483
* Melarkey	5849 Mt. Rose Hwy.	86	153333	1693449	5497
Monohan	5645 Mt. Rose Hwy	87	152474	1692900	5555
Quinn	15875 Mt Rose Hwy	88	151779	1691513	5602
Manley		89	151432	1692181	5591
Gerbis		90	151967	1693751	5555
Jebb	5875 Jebb Ln	91	151453	1693551	5591
* Kitchen	5655 Mt. Rose Hwy	92	150414	1692844	5697
Fowler	15925 Caseweel	93	146000	1686000	5742
Moseley	15850 Casewell	94	146709	1686354	5757
Artist	16250 Mt. Rose Hwy	95	147452	1687079	5787
Herman	16200 Mt. Rose Hwy	96	147797	1686954	5767

Barrett	15985 Mt. Rose Hwy.	97	147790	1686568	5735
Tate (David Melarkey)	16150 Mt. Rose Hwy.	98	148065	1688695	5825
Warner	16175 Mt Rose Hwy.	99	143397	1688312	5880
Legg	16295 Mt. Rose Hwy.	100	146445	1687587	5835
* Vacent Vol. first aid		101	146506	1687340	5804
* Labahn	6030 Wintergreen	102	148863	1686135	5691
Woods	Section 29	103	164878	1695378	4790
Boyd	Steamboat Valley	104	171250	1685250	4650
ST-5	Steamboat Hills	105	162075	1689800	5000
ST-14	Steamboat Hills	106	164795	1687848	5275

				Note-- Coordinate are NAD-27 in feet		
Foothill Area Survey File -- Footsur.xls				GPS Survey, 1996		
						Z -- Elev. @ top
Address		Name	ID	X	Y	Meas Pt.
12630 Westridge		Cultice	W1	164521	1703723	4640
12325 Westridge		Davis	W2	164536	1704006	4639
1255 Zolezzi		Dible	W3	163395	1702002	4707
12420 Westridge		Dishon	W4	163837	1702842	4681
12305 Westridge		Eaton	W5	164613	1704115	4619
12555 Westridge		Espinosa	W6	163486	1702367	4706
12630 Westridge		Hackbarth	W7	163915	1703477	4666
12375 Westridge		Hinton	W8	164319	1703627	4646
12590 Westridge		Jones	W9	163809	1701988	4702
12630 Westridge		Kolesar	W10	163771	1703323	4675
12250 Westridge		Lee	W11	163812	1702334	4693
12395 Westridge		Maitoza	W12	164153	1703458	4656
12525 Westridge		Nelson	W13	163357	1702799	4702
12560 Westridge		Penrose	W14	164785	1704267	4630
12595 Broili		Pepple	W15	162956	1702062	4739
850 Zolezzi		Peterson	W16	165775	1701856	4626
12410 Westridge		Wise	W18	164118	1703240	4663
		Wood	W19	163495	1702869	4706
12495 Westridge		Jensen	W20	164630	1704336	4621
1201 Foothill		Almos	P1	162512	1706189	4635
405 Foothill		Brown	P2	164288	1708845	4534
320 Vera		Brush	P3	164410	1709144	4521
725 Sierra Manor		Burks	P4	163912	1708693	4555
455 Foothill		Carter	P5	164346	1708579	4533
1425 Eli		Casazza	P6	162056	1708402	4577
11450 Pickins		Chimits	P7	161377	1704662	4702
901 Sierra Manor		Clarke	P8	163701	1708102	4561
935 Sierra Manor		Dilley	P9	163737	1707914	4563
1110 Foothill		Dobyns	P10	162740	1706102	4638
1010 Foothill		Fowler	P11	162945	1706337	4621
425 Sierra Manor		Frey	P12	163443	1709756	4540
600 Foothill		Ginnocchio	P13	164152	1707726	4549
1400 Eli		Gothberg	P14	162931	1708321	4559
1360 Eli		Grey	P15	162543	1708375	4576
1355 Celese		Harrington	P16	162775	1705993	4637
1325 Eli		Judge	P17	162724	1708601	4561
1450 Foothill		Kopko	P18	161948	1705410	4675
1865 Monte Vista		Lorton	P19	163242	1706844	4596
1475 Monte Vista		Mixie	P20	162465	1707521	4607
1631 Eli		Moessner	P21	163201	1707607	4587
1364 Foothill		Munroe	P22	162133	1705237	4673
1455 Mallory		Murphy	P23	162247	1706537	4638
1350 Monte Vista		Paulsen	P24	162627	1708109	4588
1375 Celese		Peck	P25	162904	1705670	4634
1422 Foothill		Pharis	P26	161634	1704758	4695



Piccolo Monitoring Well		P27	163399	1706548	4604
600 Sierra Manor	Pine	P28	163875	1708746	4541
1070 Foothill	Price	P29	162864	1705991	4626
333 Sierra Manor	Ricciardi	P30	163523	1709921	4537
1420 Eli	Schraub	P31	163057	1708322	4551
950 Foothill	Snaza	P32	163208	1706315	4614
1715 Monte Vista	Sprinkle	P33	162974	1707085	4606
1345 Mallory	Tuttle	P34	162437	1706619	4624
1360-B	Celese	P35	162206	1705129	4674
1025 Foothill	Watson	P36	162857	1706901	4614
1800 Monte Vista	Wessel,C	P37	163257	1707257	4590
1345 Celese	Wessel, D	P38	162454	1705752	4662
1050 Foothill	Wiggins	P39	163203	1705993	4633
360 Vera	Williams	P40	164138	1709196	4525
1325 Monte Vista	Wittenberg	P41	162208	1707844	4597
1455 Eli	Zane	P42	162844	1707918	4577
1001 Foothill	Tanis	P43	162960	1706599	4612
11500 Pickins	Wallen	P44	160938	1704693	4720

Galena Area Survey File		Note-- Coordinate are in NAD-27, feet			
Galsur.xls		Note -- includes some wells outside of area	GPS Survey, 1996		Z Elev @
Address	Name	ID	X	Y	Top Meas Pt.
Old well, Galena High School		MR1	162338	1691438	4994
15445 Balsawood	Bartlett	MR2	153513	1686038	5476
5475 Wildwood	Bowling	MR3	150805	1685182	5526
5851 MT. ROSE Hwy	Porter	MR4	151997	1693801	5569
15480 WILLOWBROOK	Butler	MR5	150882	1684310	5496
5460 GOLDENROD	Butz	MR6	150267	1683878	5501
4785 MT. ROSE Hwy	Downs	MR7	155875	1692500	5379
6020 Wintergreen Crcl	Dundas	MR8	148886	1686019	5683
5655-B MT.ROSE HWY	Eigenmann	MR9	152914	1691940	5507
15640 MILLIE LANE	Evarts	MR10	153526	1682467	5379
Pinion to Temple Hill	Fadda Well	MR11	180435	1687850	4841
MT. ROSE HIGHWAY	Vol 1st Aid	MR12	146506	1687340	5804
5590 WINTERGREEN	Frohlick	MR13	149004	1685198	5637
16200 MT. ROSE HIGHWAY	Galantowicz, Pete	MR14	147667	1687103	5766
5340 GOLDENROD	Gledhill	MR15	152319	1683765	5441
Mt. Rose Highway	Hall (abandoned)	MR16	162787	1691582	4976
5335 GOLDENROD DRIVE	Hawn	MR17	152483	1683948	5435
16232 MT. ROSE HIGHWAY	Hilton	MR18	147593	1686472	5733
6035 Wintergreen Cl.	Johnson	MR19	149078	1685975	5674
MT. Rose Hwy	Jones (abandoned)	MR20	162808	1696090	4889
5655 MT. ROSE HIGHWAY	Kitchen	MR21	150414	1692844	5697
6030 WINTERGREEN	Labahn	MR22	148863	1686135	5691
16270 MT. ROSE HIGHWAY	MacLean	MR23	146754	1686988	5777
15420 WILLOWBROOK	Marshall	MR24	150888	1684728	5505
5849 MT.ROSE HIGHWAY	Melarkey	MR25	153333	1693449	5497
5405 TANNERWOOD	Miller	MR26	152129	1685996	5486
Near Cinder Well	MR-1	MR27	148572	1683690	5621
Near Cinder Well	MR-2	MR28	146128	1681851	5802
Shawna Circle	MRSA Repl. Well 4	MR29	153385	1683025	5396
5470 TANNERWOOD	Mueller	MR30	150995	1685738	5539
5645 Mt. Rose Highway	Muray	MR31	152409	1692885	5559
5530 WINTERGREEN LANE	Northon	MR32	149325	1684246	5572
5550 WINTERGREEN LANE	Olsen	MR33	149092	1684303	5588
Nr. STMID 4	OttenWycoff	MR34	159674	1693219	5146
Off Mt. Rose Hwy (Nr. Downs)	Reisenger	MR35	155981	1692092	5378
5250 MT.ROSE HWY	Morris	MR36	152639	1693588	5537
St. James Devel Corp.	SJ-1	MR37	153961	1675594	5414
St. James Devel Corp.	SJ-2	MR38	151796	1675583	5512
St. James Devel Corp.	SJ-3	MR39	148790	1674898	5720
St. James Devel Corp.	SJ-4	MR40	147286	1676451	5653
5425 TANNERWOOD	Suiter	MR41	151511	1685983	5526
	Talbot	MR42	161617	1695009	4958
15435 FAWN LANE	Taylor	MR43	154316	1689490	5481
5845 Mt. ROSE HIGHWAY	Theisen	MR44	153603	1692794	5472
5480 WINTERGREEN	Thornton	MR45	150134	1684265	5519
Mt. Rose Hwy	Timberline MW	MR46	146190	1687682	5828

Mira Loma	Trans Sierra 3	MR47	175802	1695076	4573
Mira Loma, Nr Trans Sierra 3	Unequip. Well	MR48	175231	1694457	4584
4990 MT. ROSE HIGHWAY	Velardi	MR49	154336	1692274	5447
P.O. BOX 12691, Reno	Kessariss	MR50	163002	1694478	4917
	Corrao Monitoring Well 1	ST1	169804	1702769	4507
	Corrao Monitoring Well 2	ST2	169409	1702127	4523
	STMGID 9 Mon Well	ST4	148856	1699737	5580
	STMGID 10 Mon Well	ST5	148904	1703211	5382
	STMGID 11 Mon Well	ST6	154439	1701936	5109
	STMGID 12 Mon Well	ST7	151321	1703752	5234
	STMGID 13 Mon Well	ST8	151276	1700056	5417
	Mon Well @ STMGID 1	ST9	164058	1701869	4677
	STMGID Prod Well 4	ST10	159576	1693278	5150
	STMGID Mon Well 1	ST11	157963	1700797	4976
	STMGID Mon Well 2	ST12	160956	1701874	4821
	STMGID Mon Well 3	ST13	164537	1697879	4761
	STMGID Mon Well 4	ST14	163469	1697685	4812
	STMGID Mon Well 5	ST15	156915	1696640	5203
	STMGID Mon Well 6	ST16	153318	1695432	5414
	STMGID PROD WELL 2	ST17	164579	1699889	4689

TMSUR.XLS-- Washoe County Well Monitoring Network									
		Note-- Coordinate are NAD-27 in feet							
		GPS Survey, 1996							
Address	Name	ID	X	Y	Z -- Elev. @ top	Meas Pt.			
12630 Westridge	Cultice	W1	164521	1703723	4640				
12325 Westridge	Davis	W2	164536	1704006	4639				
1255 Zolezzi	Dible	W3	163395	1702002	4707				
12420 Westridge	Dishon	W4	163837	1702842	4681				
12305 Westridge	Eaton	W5	164613	1704115	4619				
12555 Westridge	Espinosa	W6	163486	1702367	4706				
12630 Westridge	Hackbarth	W7	163915	1703477	4666				
12375 Westridge	Hinton	W8	164319	1703627	4646				
12300 Westridge	Jenson		164630	1704336	4621				
12590 Westridge	Jones	W9	163809	1701988	4702				
12630 Westridge	Kolesar	W10	163771	1703323	4675				
12250 Westridge	Lee	W11	163812	1702334	4693				
12395 Westridge	Maitoza	W12	164153	1703458	4656				
12525 Westridge	Nelson	W13	163357	1702799	4702				
12560 Westridge	Penrose	W14	164785	1704267	4630				
12595 Broili	Pepple	W15	162956	1702062	4739				
850 Zolezzi	Peterson	W16	165775	1701856	4626				
12410 Westridge	Wise	W18	164118	1703240	4663				
12495 Westridge	Wood	W19	163495	1702869	4706				
1201 Foothill	Almos	P1	162512	1706189	4635				
405 Foothill	Brown	P2	164288	1708845	4534				
320 Vera	Brush	P3	164410	1709144	4521				
725 Sierra Manor	Burks	P4	163912	1708693	4555				
455 Foothill	Carter	P5	164346	1708579	4533				
1425 Eli	Casazza	P6	162056	1708402	4577				
11450 Pickins	Chimits	P7	161377	1704662	4702				
901 Sierra Manor	Clarke	P8	163701	1708102	4561				
935 Sierra Manor	Dilley	P9	163737	1707914	4563				
1110 Foothill	Dobyns	P10	162740	1706102	4638				
1010 Foothill	Fowler	P11	162945	1706337	4621				
425 Sierra Manor	Frey	P12	163443	1709756	4540				

600 Foothill	Ginnocchio	P13	164152	1707726	4549
1400 Eli	Gothberg	P14	162931	1708321	4559
1360 Eli	Grey	P15	162543	1708375	4576
1355 Celese	Harrington	P16	162775	1705993	4637
1325 Eli	Judge	P17	162724	1708601	4561
1450 Foothill	Kopko	P18	161948	1705410	4675
1865 Monte Vista	Lorton	P19	163242	1706844	4596
1475 Monte Vista	Mixie	P20	162465	1707521	4607
1631 Eli	Moessner	P21	163201	1707607	4587
1364 Foothill	Munroe	P22	162133	1705237	4673
1455 Mallory	Murphy	P23	162247	1706537	4638
1350 Monte Vista	Paulsen	P24	162627	1708109	4588
1375 Celese	Peck	P25	162904	1705670	4634
1422 Foothill	Pharis	P26	161634	1704758	4695
	Piccolo Monitoring Well	P27	163399	1706548	4604
600 Sierra Manor	Pine	P28	163875	1708746	4541
1070 Foothill	Price	P29	162864	1705991	4626
333 Sierra Manor	Ricciardi	P30	163523	1709921	4537
1420 Eli	Schraub	P31	163057	1708322	4551
950 Foothill	Snaza	P32	163208	1706315	4614
1715 Monte Vista	Sprinkle	P33	162974	1707085	4606
1345 Mallory	Tuttle	P34	162437	1706619	4624
1360-B Celese	Vlasek	P35	162206	1705129	4674
1025 Foothill	Watson	P36	162857	1706901	4614
1800 Monte Vista	Wessel,C	P37	163257	1707257	4590
1345 Celese	Wessel, D	P38	162454	1705752	4662
1050 Foothill	Wiggins	P39	163203	1705993	4633
360 Vera	Williams	P40	164138	1709196	4525
1325 Monte Vista	Wittenberg	P41	162208	1707844	4597
1455 Eli	Zane	P42	162844	1707918	4577
1001 Foothill	Tanis	P43	162960	1706599	4612
11500 Pickins	Wallen	P44	160938	1704693	4720
	Old Well Nr. Galena HS	MR1	162338	1691438	4994
15445 Balsawood	Bartlett	MR2	153513	1686038	5476
5475 Wildwood	Bowling	MR3	150805	1685182	5526
5851 MT. ROSE Hwy	Porter	MR4	151997	1693801	5569
15480 WILLOWBROOK	Butler	MR5	150882	1684310	5496



5460 GOLDENROD	Butz	MR6	150267	1683878	5501
4785 MT. ROSE Hwy	Downs	MR7	155875	1692500	5379
6020 Wintergreen Crcl	Dundas	MR8	148886	1686019	5683
5655-B MT.ROSE HWY	Eigenmann	MR9	152914	1691940	5507
15640 MILLIE LANE	Evarts	MR10	153526	1682467	5379
Pinion to Temple Hill	Fadda Well	MR11	180435	1687850	4841
MT. ROSE HIGHWAY	Vol 1st Aid	MR12	146506	1687340	5804
5590 WINTERGREEN	Frohlick	MR13	149004	1685198	5637
16200 MT. ROSE HIGHWAY	Galantowicz, Pete	MR14	147667	1687103	5766
5340 GOLDENROD	Gledhill	MR15	152319	1683765	5441
Mt. Rose Highway	Hall (abandoned)	MR16	162787	1691582	4976
5335 GOLDENROD DRIVE	Hawn	MR17	152483	1683948	5435
16232 MT. ROSE HIGHWAY	Hilton	MR18	147593	1686472	5733
6035 Wintergreen Cl.	Johnson	MR19	149078	1685975	5674
MT. Rose Hwy	Jones (abandoned)	MR20	162808	1696090	4889
5655 MT. ROSE HIGHWAY	Kitchen	MR21	150414	1692844	5697
6030 WINTERGREEN	Labahn	MR22	148863	1686135	5691
16270 MT. ROSE HIGHWAY	MacLean	MR23	146754	1686988	5777
15420 WILLOWBROOK	Marshall	MR24	150888	1684728	5505
5849 MT.ROSE HIGHWAY	Melarky	MR25	153333	1693449	5497
5405 TANNERWOOD	Miller	MR26	152129	1685996	5486
Near Cinder Well	MR-1	MR27	148572	1683690	5621
Near Cinder Well	MR-2	MR28	146128	1681851	5802
Shawna Circle	MRSA Repl. Well 4	MR29	153385	1683025	5396
5470 TANNERWOOD	Mueller	MR30	150995	1685738	5539
5645 Mt. Rose Highway	Murray	MR31	152409	1692885	5559
5530 WINTERGREEN LANE	Northon	MR32	149325	1684246	5572
5550 WINTERGREEN LANE	Olsen	MR33	149092	1684303	5588
Nr. STMIGID 4	Otten\Wycoff	MR34	159674	1693219	5146
Off Mt. Rose Hwy (Nr. Downs)	Reisenger	MR35	155981	1692092	5378
5250 MT.ROSE HWY	Morris	MR36	152639	1693588	5537
St. James Devel Corp.	SJ-1	MR37	153961	1675594	5414
St. James Devel Corp.	SJ-2	MR38	151796	1675583	5512
St. James Devel Corp.	SJ-3	MR39	148790	1674898	5720
St. James Devel Corp.	SJ-4	MR40	147286	1676451	5653
5425 TANNERWOOD	Suiter	MR41	151511	1685983	5526
	Talbot	MR42	161617	1695009	4958

15435 FAWN LANE	Taylor	MR43	154316	1689490	5481
5845 Mt. ROSE HIGHWAY	Theisen	MR44	153603	1692794	5472
5480 WINTERGREEN	Thornton	MR45	150134	1684265	5519
Mt. Rose Hwy	Timberline MW	MR46	146190	1687682	5828
Mira Loma	Trans Sierra 3	MR47	175802	1695076	4573
Mira Loma, Nr Trans Sierra 3	Unequip. Well	MR48	175231	1694457	4584
4990 MT. ROSE HIGHWAY	Velardi	MR49	154336	1692274	5447
P.O. BOX 12691, Reno	Kessariss	MR50	163002	1694478	4917
	Corrao Monitoring Well 1	ST1	169804	1702769	4507
	Corrao Monitoring Well 2	ST2	169409	1702127	4523
	STMGID 9 Mon Well	ST4	148856	1699737	5580
	STMGID 10 Mon Well	ST5	148904	1703211	5382
	STMGID 11 Mon Well	ST6	154439	1701936	5109
	STMGID 12 Mon Well	ST7	151321	1703752	5234
	STMGID 13 Mon Well	ST8	151276	1700056	5417
	Mon Well @ STMGID 1	ST9	164058	1701869	4677
	STMGID Prod Well 4	ST10	159576	1693278	5150
	STMGID Mon Well 1	ST11	157963	1700797	4976
	STMGID Mon Well 2	ST12	160956	1701874	4821
	STMGID Mon Well 3	ST13	164537	1697879	4761
	STMGID Mon Well 4	ST14	163469	1697685	4812
	STMGID Mon Well 5	ST15	156915	1696640	5203
	STMGID Mon Well 6	ST16	153318	1695432	5414
	STMGID PROD WELL 2	ST17	164579	1699889	4689

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