

SUBSURFACE GEOLOGIC CONDITIONS IN THE
VINTON AREA SIERRA VALLEY GWMD

Two subsurface geologic cross sections were previously prepared by Kenneth D. Schmidt and Associates (KDSA) extending to near Vinton in Sierra Valley. Cross Section A-A' extended from the south at Sierra Brooks to the north to Lucky Herford Well No. 10 (T23N/R16E-32K). Well No. 10 is about one and three quarter miles west-southwest of Vinton. Cross Section B-B' extended from near the Beckwourth Airport to the east to Lucky Herford Well No. 5 (T23N/R16E-25G). Well No. 5 is about two miles northwest of Vinton. These cross sections (Attachment A) show the shallow water producing zone within the uppermost 100 feet of the subsurface, the major confining bed (up to about 500 feet thick), and the deep confined water producing zone (generally below about 500 to 600 feet in depth). These sections and other information indicated that both water producing zones were present in Sections 29, 30, 31, and 32 of T23N/R16E.

For this evaluation, drillers logs for wells in Sections 20-23, 26-28, and 33-35 were reviewed in terms of the three major subsurface geologic units. Figure 1 shows the locations of wells with logs. Following is a discussion of the subsurface units by section. Water levels have been relatively shallow in the area, usually less than ten feet deep.

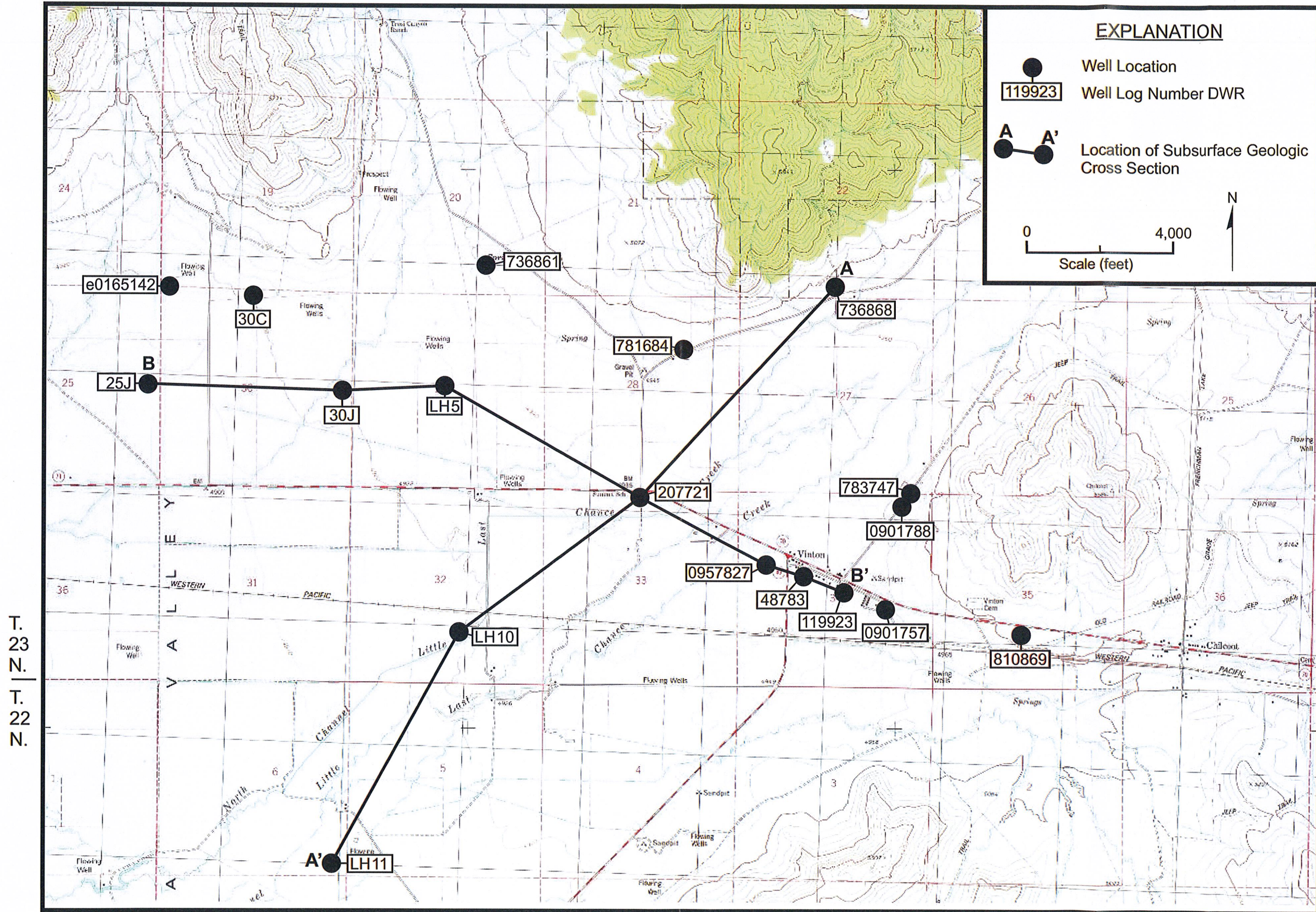


FIGURE 1 - LOCATIONS OF WELLS WITH LOGS AND SUBSURFACE GEOLOGIC CROSS SECTIONS

The log for Well 20Q (736861) indicates that this is one of the deepest water wells in Sierra Valley (1,013 feet deep). The shallow water producing zone extends from about 8 to 25 feet deep. The major confining bed extends from 25 to 401 feet in depth. The deep water producing zone extends to the bottom of the well, except for another confining bed between about 840 to 870 feet in depth. The well casing was perforated from 384 to 1,012 feet in depth and tapped only the deep zone. The shallow water producing zone was sealed off. The well produced 1,900 gpm. Other logs are not available for Section 20, but considering conditions at Well 20Q and the topographic contours, it appears that all of Section 20, except for about 120 acres to the west, is underlain by both water producing zones.

No logs are available for Section 21, but considering the logs for the closest other wells and topographic conditions, the western part of Section 21 is indicated to be underlain by both water producing zones.

A log (736868) is available for a well near the south quarter corner of Section 22. This log indicates an upper zone from about 8 to 115 feet in depth. The confining bed extended from about 115 to 130 feet in depth. The lower zone extends from about 130 to 430 feet in depth. Hardrock was indicated below a depth of 430 feet. Thus both water producing zones are present at this well. The well was perforated from 60 to 80 feet and 160 to 360 feet in

depth (opposite both water producing zones), and produced 500 gpm. Based on the log for this well and topographic conditions, the south 100 acres in Section 22 is indicated to be underlain by both water producing zones.

No logs are available for Section 23. However, based on topographic conditions and logs for the closest wells, the southern half of this section is indicated to be underlain by both production zones.

No logs are available for Section 26, but based on topographic conditions and logs for the closest wells, this section is not underlain by either of the two water producing zones.

For Section 27, the previously discussed log (736868) is for a well immediately to the north. There is also a log (781684) for a well in the northeast quarter of Section 28. This log indicates neither water producing zone is present at this well. Decomposed granite was indicated from the surface to a depth of 100 feet, and this was underlain by hardrock. A well was completed with perforations from 280 to 340 feet in depth (opposite the hardrock). The well produced 45 gpm. There are logs for two other wells in the northeast quarter of Section 34. The log for the first well (901788) indicates the upper zone from 6 to 17 feet in depth, the confining bed from 12 to 210 feet in depth, and the deep zone from 210 to 220 feet in depth. An open-bottomed well, cased to a depth of 220 feet was completed. The well tapped the deep zone and pro-

duced 45 gpm. The second well (log 783747) indicates no shallow zone, the confining bed from 12 to 135 feet in depth, the lower zone from 135 to 270 feet in depth, and the hardrock below a depth of 270 feet. The casing was perforated from 21 to 318 feet in depth and the well produced only about 5 gpm. Based on these logs, most of Section 27 is indicated to be underlain by both water producing units, except for the southeastern most 160 acres.

For Section 28, there is a log (781684) for the well in the northwest quarter and a log (207721) for a well near the south quarter corner. The first of these logs was previously discussed for Section 27. For the second log, the upper zone was indicated from near the land surface to a depth of 70 feet and the confining bed from 70 to 290 feet in depth. The upper part of the lower zone was indicated from 290 to 292 feet in depth. Based on these and other logs, both water producing zones are present beneath Section 28.

For Section 33, there are logs for Lucky Herford Well No. 10 to the west in Section 32, the previously discussed log (207721) for the well near the north quarter corner of Section 33, and logs for several wells in or near Vinton to the east in Section 34. The wells with logs near Vinton (957827, 48783, and 111923) are less than 400 feet deep. The upper zone is indicated to be about 40 to 60 feet thick and this is underlain by the confining bed.

Based on these logs, Section 33 is underlain by both water producing zones.

For Section 34, there are logs for wells west of Vinton (957827), in Vinton (48783), northeast of Vinton (901778 and 783747), and east of Vinton (901757 and 119923). These logs indicate that both water producing zones are present beneath most of Section 34, except for about 200 acres to the northeast and east.

Attachment B contains the extended Subsurface Geologic Cross Sections A-A' and B-B'. Cross Section A-A' indicates that the confining bed pinches out north of the well with log 207721, and hardrock was encountered at the well with log 736868. The upper zone extends north of Well 736868. Cross Section B-B' indicates that several wells to the east tap the upper part of the deep zone. In addition, the shallow zone pinches out to the east northwest of Vinton.

Figure 2 shows the areas where there is significant production indicated for the water producing zones. This is the area recommended for not allowing new large capacity wells, in addition to the area that was previously delineated.

R. 15 E.
R. 16 E.

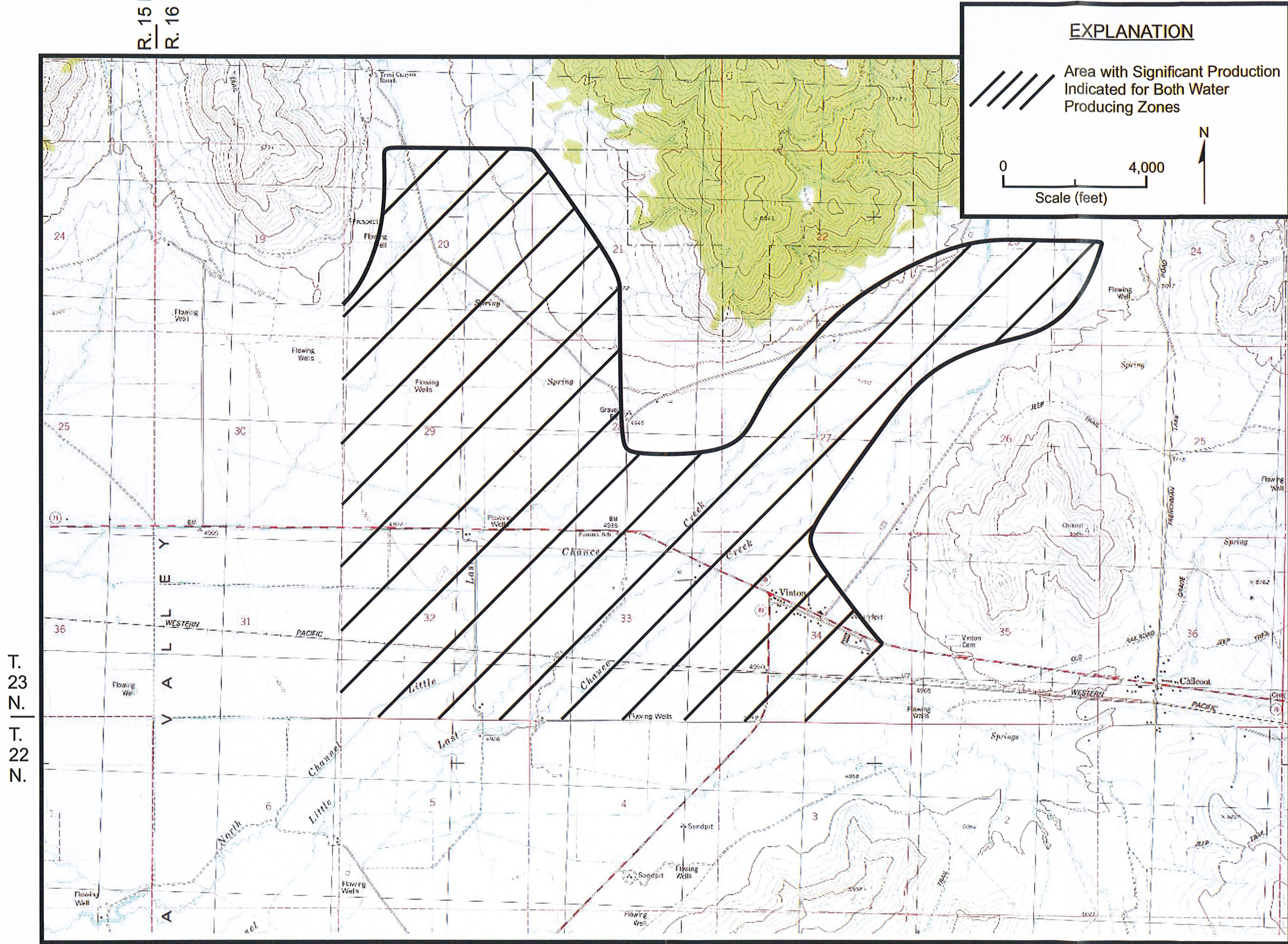


FIGURE 2 - AREAS WHERE THERE IS SIGNIFICANT PRODUCTION INDICATED

ATTACHMENT A

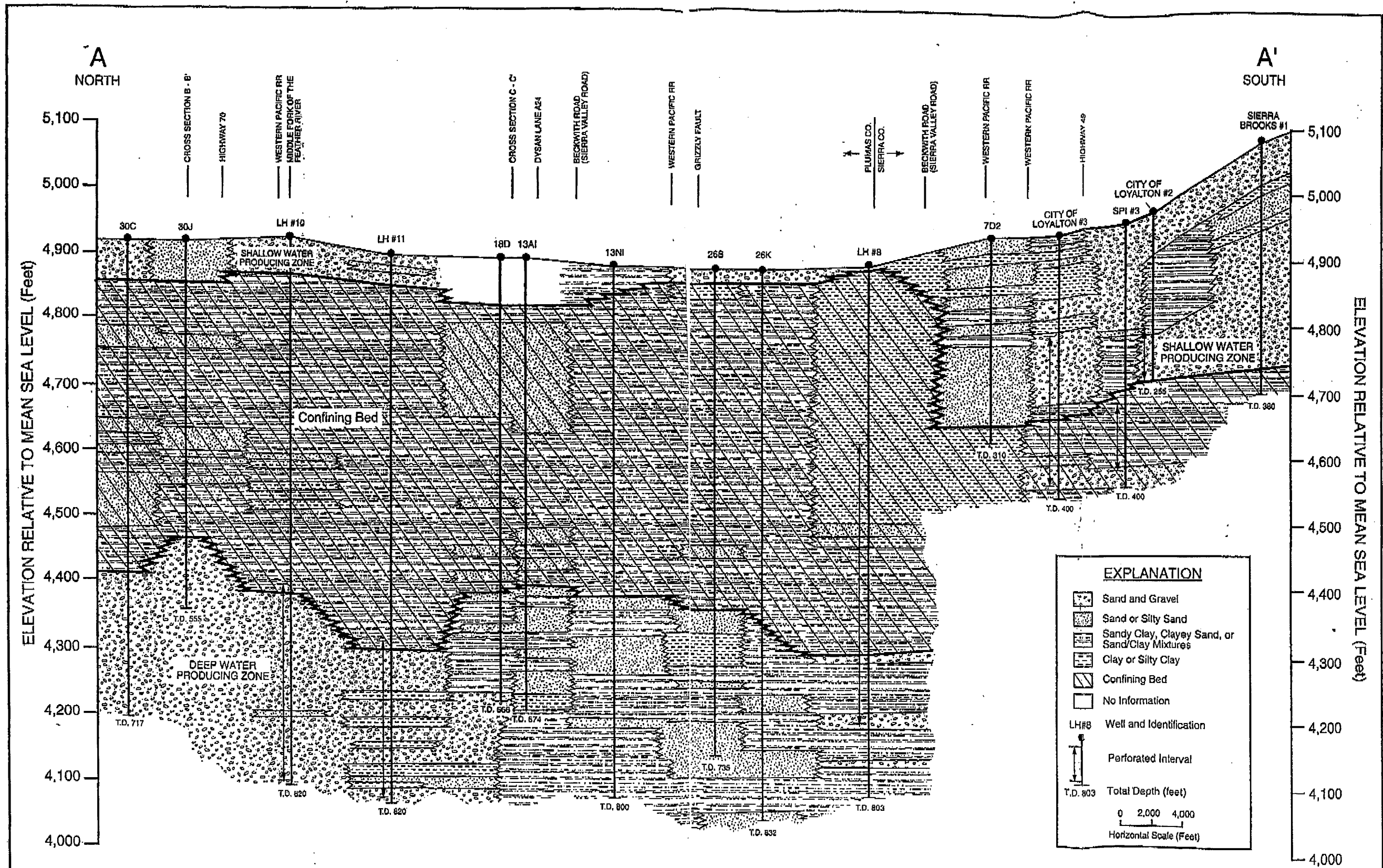
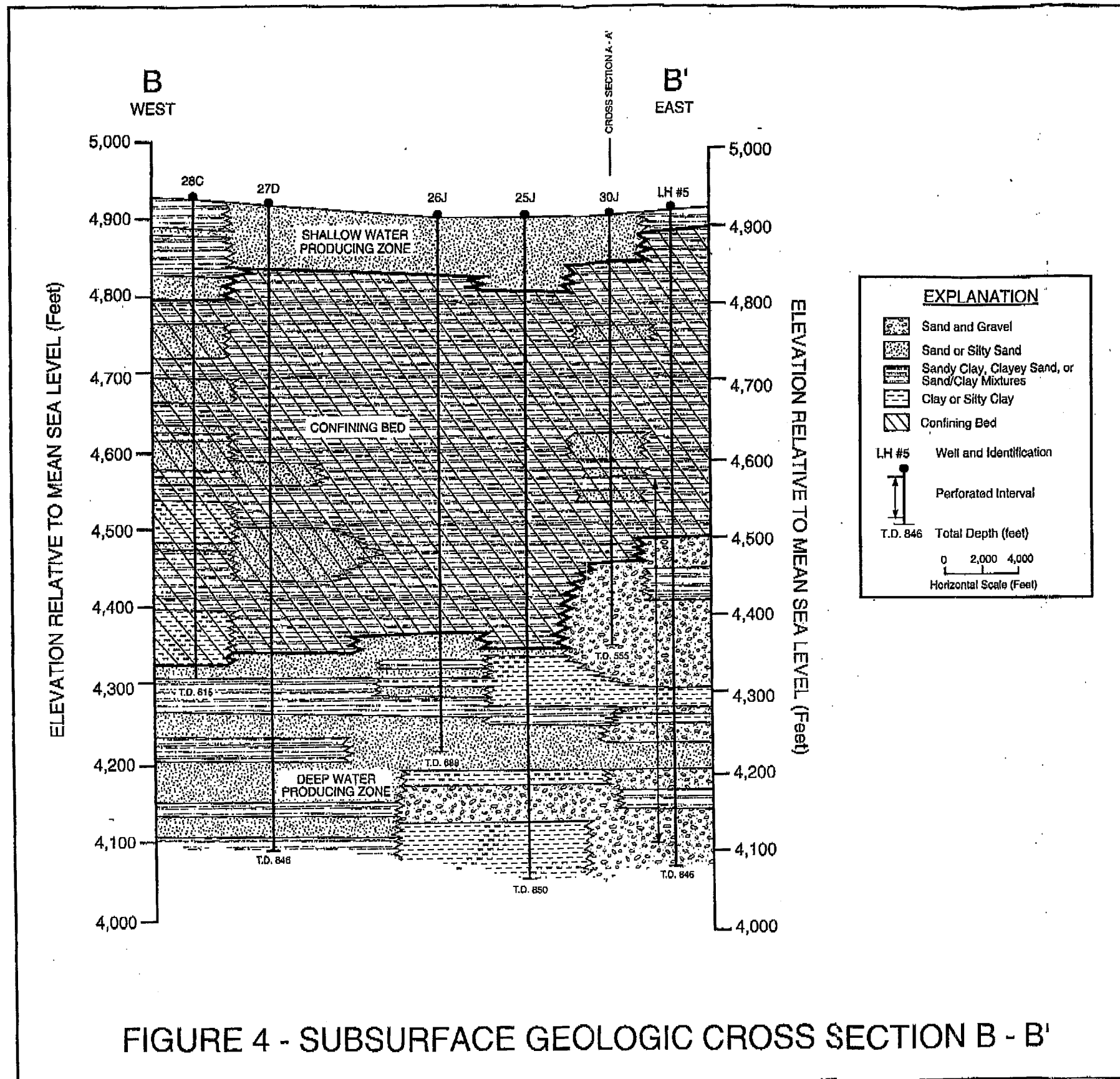
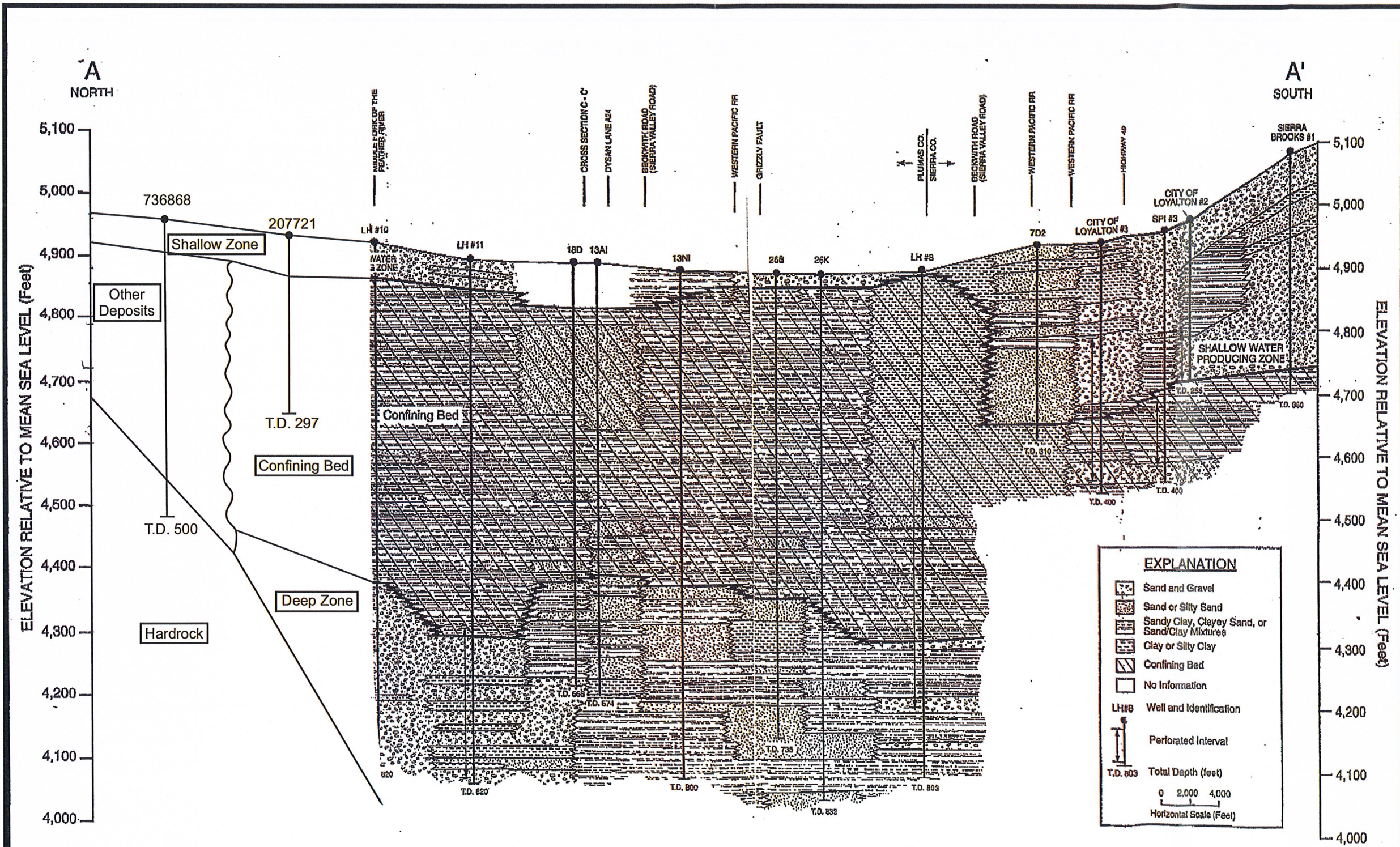


FIGURE 3 - SUBSURFACE GEOLOGIC CROSS SECTION A - A'



ATTACHMENT B



EXTENDED SUBSURFACE GEOLOGIC CROSS SECTION A-A'

