

© Spiegel, Zane, 2003, Ground-water level contours and springs: E-mail to Jack Frost and Peggy Johnson discussing their Abstract (Frost and Johnson, 2003).

“Jack Frost, NMOSE, and Peggy Johnson, NMBG:

030321

“After 51 years of editing USGS/NMOSE,/NMBOGMR and numerous other government and private reports, plus "Ground Water" for nearly a decade (the first as an employee and then as NMOSE liaison and report reviewer) I can't resist the temptation to edit your recent Abstract ("Preliminary Pre-Development Water Level Map in the Santa Fe Area with Water Level Trends and Zones of Influence").

“(A) Re "...this map differs locally from previous interpretations in using surface water body elevations as control points.", USGS WSP 1525, Pl. 6 & 7 (based on data from 1951-2) very consciously used spring and PERENNIAL reaches of streams as controls, taking into account that some springs and stream reaches that had been thought to be perennial weren't.

“(B) Two decades later, W. E. Hale, and the late Alex Nicholson (when Alex made the mistake at his editing desk at NMBOG of allowing me to see draft maps of USGS County GW reports), and the late Al Clebsch, were all reminded by me (on my own time) that "springs are ground water too", and therefore it was unacceptable to have ignored spring elevations in the production of water-level contour maps for De Baca County and others nearby. Earlier, Hale and I had taken great care to use spring elevations in contouring ground-water levels in his Rattlesnake Springs report,--published by NMOSE.

“(C) Re your statement about "...flattening [of water-level contours] in the La Cienega discharge area.", the flattening is primarily due to the influence of NATURAL DISCHARGE TO LA CIENEGUILLA SPRINGS DUE TO high transmissivity in Ancha Formation sediments in A BURIED VALLEY ALONG THE SANTA FE RIVER THAT IS NOT WELL-CONNECTED TO THE LA CIENEGA AREA (Spiegel, 1975, updating, on the basis of many more well logs, earlier mapping and conclusions about several buried valleys in what should properly be called the La Cienega/Cieneguilla discharge area).

“Several years ago, when I brought to Tom Morrison's attention some problems of false assumptions of model Boundary Conditions (BC) and other aquifer system-characteristics in the Santa Fe area, he gave me a copy of Andrew Core's memo that had independently changed some BC, but had failed to recognize that La Cieneguilla spring (elev. 6120) was entirely different from the La Cienega springs (see my 1975 memo in NMOSE files on Santa Fe Downs), because of the influence of the thicker and more permeable Ancha-filled buried valley along Santa Fe River and the separation of the northern spring system from La Cienega springs (which discharge from Ancha Formation in another buried valley separated by a buried ridge of less permeable (not

quite "impermeable") Tesuque Formation.

“(D) In a later discussion, Tom tried to defend NMOSE's neglect of consideration of La Cieneguilla springs, but he failed to understand that La Cieneguilla Spring, or its remnant, is still there, submerged by sewage effluent, which will become apparent if Santa Fe is allowed to follow the recommendations of CDM, in which case another "Beanfield War", with all the facts displayed on my favorite website, may erupt, this time against Santa Fe and whomever is the State Engineer at that time.”

“Happy reading of ancient history, Zane Spiegel
POB 8527, Santa Fe NM 87504-8527; tel/fax 505-984-

2530”

NRC-3

[<blmEAnrcP3>]

REVIEW BY ZANE SPIEGEL , Ph.D. (March 19, 2003) of
US Bureau of Land Management [USBLM] Environmental Assessment
for Buckman Supplementary Well[s]

Prepared by TetraTech Inc.

<blmEAnrc>

APPENDIX NRC. NEW REFERENCES CITED

[Visit <www.environmentalsafeguards.com> for earlier references]

Spiegel, Zane, 2003a, Review by Zane Spiegel, 020818/0303, of LANL report LA-UR-02-2750 (Analysis of Capture Zones of the Buckman Wellfield and a Proposed Horizontal Collector Well North of the Otowi Bridge) by V.V.Vesselinov and E. H. Keating, May 2002. [gigo0303]. Visit [www.environmentalsafeguards.com>] for a detailed, conceptually and terminologically correct, evaluation of this work of science-fiction.

Spiegel, Zane, 2003b, Statement by Zane Spiegel, 030304/1020 (introduced and requested by John Hawley after summary by Scott Baldrige of "Summer of Applied Geophysical Experience (SAGE)" at Second Annual Espanola Basin Workshop, March 4, 2003, Santa Fe, NM). An expansion of the brief statement follows. [<blmEAeval>]

"The previous summary talk, 'Summer of Applied Geophysical Experience (SAGE)' by Scott Baldrige, illustrated four modern methods of geophysical exploration that were used in last year's 'SAGE' program, all of which have some use in determining characteristics of subsurface geology, particularly in evaluating ground-water conditions. However, nothing was said or shown about a fifth geophysical method of evaluating the subsurface, particularly those conditions that affect the flow of ground water. This fifth method, unlike the other methods, uses data about the ground water itself to identify subsurface features and characteristics that affect its movement. Surely it deserves a name of its own, such as "HYDROGEOPHYSICAL EXPLORATION.

Since this method has not had the benefit of a formal name, nor tens or hundreds of professional papers extolling its virtues--although some features of the method have been discussed in journal articles and some textbooks, many of which have serious errors and other deficiencies--it's value is not generally known or appreciated. The most extensive use of the method that I know was in the early 1950's, by myself, Brewster Baldwin, Frank Kottowski, Wayne Bundy, and H. A. Winkler in USGS Water Supply Paper 1525 (see especially Pl. 6 and 7), conjunctively with gravimetric, magnetic, electrical resistivity, and seismic methods." A formal name for the hydrogeophysical method is needed for it to be generally adopted and refined in subsurface exploration."

At the conclusion of the above statement, an unknown person at the back of the room added the suggestion that the name "HYDROGEOPHYSICAL EXPLORATION" be adopted by the attendees of this session, but no further action was taken.

Additional references to specific recent papers that are also useful for upgrading the EA to current historical and scientific knowledge follow on page NRC-2.

NRC-1

[<blmEAnrc>], App. NRC , continued, p. NRC-2.

Borchert, Claudia I., 2003, Ground-Water Flow near Tesuque Village, Santa Fe County, New Mexico. [Poster Presentation, 030304; Abstract on p. 16 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM).]

Caine, Jonathan S., et al., 2003, Fault Zone Properties and Potential for Compartmentalization of Groundwater (sic) Aquifers in Poorly Lithified, Rio Grande Rift Related, Santa Fe Group Sediments, New Mexico. [Poster Presentation, 030304; Abstract on p. 3 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM).]

Frost, Jack P, and Peggy S. Johnson, 2003, Preliminary Pre-Development Water Level Map in the Santa Fe Area with Water Level Trends and Pumping Zones of Influence. [Poster Presentation, 030304; Abstract on p. 22 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM).]

Koning, Daniel J., 2003, Depositional Trends of the Upper Tesuque Formation, Espanola Basin, N. M. and Inferred Tectonic and Climatic Influences on Aggradation. [Poster Presentation, 030304; Abstract on p. 7 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM).]

Koning, Daniel J., and Florian Maldonado, 2003, Geology of the Horcado Ranch 7.5-Minute Quadrangle, Santa Fe County, North-Central New Mexico. [Poster Presentation, 030304; Abstract on p. 9 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM).]

Spiegel, Zane, 2003c, Ground-water level contours and springs: E-mail to Jack Frost and Peggy Johnson re their Abstract for “Preliminary Pre-Development Water Level Map in the Santa Fe Area with Water Level Trends and Pumping Zones of Influence” of Poster Presentation, 030304; see p. 22 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM). [See copy on p. NRC-3 appended.]

Update on use of elevation data on springs, especially La Cieneguilla Spring (elev. 6120 ft.) and Rio Grande and other perennial streams, in USGS WSP 1525; history of editorial revisions (to include effects of spring and stream elevations) in some subsequent USGS reports; effect of 1951 La Cieneguilla Spring and the deep, Ancha-filled, buried valley under the Santa Fe River, which caused much of the “...flattening [of water-level gradients] in the La Cienega discharge area; and the need for NMOSE to further upgrade the boundary conditions and other

features of their current ground-water model to recognize the separate nature of the La Cieneguilla Spring area, so that protection of water rights in that area will be given due consideration in current and future application for additional wells nearby, especially to the north.

Thomsen, Davis R., and Yuri Fialko, 2003, Subsidence at the Buckman Well Field Observed by Interferometric Synthetic aperture Radar. [Poster Presentation, 030304; Abstract on p. 18 of Program Notes for Second Annual Espanola Basin Workshop, Mar. 4-5, 2003, Santa Fe, NM].]

NRC-2