



DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

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February 18, 2000

Gary Tompkins
HUMBOLDT DRILLING & PUMP CO
4675 WEST WINNEMUCCA BLVD
WINNEMUCCA NV 89445

2075
82/33
5408
Re: Request to waive plugging requirements on four Peri wells in Mason Valley:
NW ¼ NW ¼ Section 4, NE ¼ SW ¼ Section 4, NW ¼ SW ¼ Section 26, T. 13N., R.
25E., MDM., and SW ¼ SW ¼ Section 8, T. 14N., R. 25E., MDM, Lyon County,
Nevada.

84099
5408
Dear Mr. Tompkins:

I have reviewed your request dated February 12, 2000, and have discussed the matter with the State Engineer at length. This office generally agrees to waive some of the casing perforating requirements, set forth in Nevada Administrative Code (NAC) Section 534.420. This waiver will save considerable time and is based on the well construction and the existing perforation information provided. Additional perforating may be required if the actual well construction does not reflect the information on the logs that you have referenced. The near surface perforating and cementing requirement set forth in NAC 534.420 paragraph seven (7), (neat cement 50 feet to surface) remains unchanged.

The plugging material used shall be either neat cement or bentonite grout, as defined in NAC 534.042, 534.150 and 534.420 (5)(b). Your request to use cement/ sand grout is rejected at this time because you have not shown good cause as required in NAC 534.450. As Mr. Turnipseed made clear in his meeting with you, the intent of the Nevada rule for plugging cased wells is that the liquid grout material provides a seal behind the well casing. It has not been demonstrated that material other than neat cement or bentonite grout achieves these goals.

The State Engineer would like to consider approval of some type of filler materials to lessen the quantity of Portland cement per yard of grout. The concern that arises when specifying this rule change is: will the new grout demonstrate the fluid and permeability properties of the present grouts, and will there be adequate quality control over the filler material and water content?

The Nevada regulation already allows for the addition of bentonite to reduce the slurry density and slurry cost. Bentonite, because of its ability to hydrate, permits the use of much higher water concentrations and therefore yields higher slurry volumes per unit of cement. The cement slurries with bentonite have longer setting times but this can be countered with the addition of anhydrous grade calcium chloride. The use of sand in cement slurries will tend to increase the slurry density, (18 pounds per gallon (ppg) or higher depending on ratio), and since the water requirement is about the same as with neat cement, the slurry volume is about the same. This much higher density may cause additional loss of slurry into the formation.

The use of pozzolan as an additive or volume extender for cement slurries will now be considered by this office on a trial basis and will provide lower slurry density and generally lower cost. Pozzolan marketed as a cement additive usually refers to a finely ground pumice or fly ash produced in coal-burning power plants. Portland cement shall meet or exceed the ASTM standard C 150, Type I, and the additive shall meet the ASTM specification for Type C or Type F fly ash, or Type N natural pozzolans. The cement mixture shall meet the compressive strength standard of at least 250 psi at 60°F after 24 hours setting time. One suggested slurry design would be like Modified Halliburton Light Cement, with a slurry weight of about 13 ppg and a slurry yield of about 1.7 cubic feet per sack of mix. The ratio of cement, fly ash and bentonite will be further specified. The State Engineer may require a better quality of cement mixture to be used in any well if evidence of local conditions indicates it is necessary to prevent contamination.

This office has been working closely with many different well drilling contractors in Northern Nevada, and recently in Las Vegas, and with the bentonite company representatives, and we remain focused on what and how different bentonite grouts and cements are working in the field. Large diameter dewatering wells and other wells are being plugged with these materials on a regular basis in Nevada, and this office is looking forward to continuing the successful work with the grouts allowed in the regulation. As a reminder, all plugging work must be scheduled so that it can be done under completely static conditions. We look forward to working with the operator and contractor to insure the most effective well abandonment is realized. If you have any questions, please call me at 775-687-3861, or send a fax to 775-687-1393.

Very truly yours,



Thomas K. Gallagher, P.E.

Senior Ground Water Engineer

cc: Bruce Scott, P.E., Resource Concepts
Robert Thompson, NDWR, Las Vegas
Jason King, P.E., Chief, Engineering and Dam Safety, NDWR