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April 20, 2005

4858.01

Humboldt County Department of Public Health
Division of Environmental Health
100 H Street, Suite 100
Eureka, California 95501

Attention: Mr. Mark Verhey

Subject: Monitoring Well MW5 Destruction
Pete's Service, 1409 Main Street, Fortuna, California
LOP No. 12517

Dear Mr. Verhey:

LACO ASSOCIATES (LACO) is pleased to present this letter report of findings to the Humboldt County Division of Environmental Health (HCDEH) for the destruction of monitoring well MW5 at the above-mentioned site. The pressure-grouting method was used with neat cement to close monitoring well MW5.

The pressure-grouting method used a pump to move sealing materials into the bore hole to be abandoned. The bore hole was sealed to prevent the movement of fluids across aquitards and/or infiltration of surface water into the subsurface. The sealing material consisted of water and cement, mixed as a slurry of no more than 6 gallons of water per 94-pound bag of cement. The slurry was pumped until 45 pounds per square inch was reached and held for 5 minutes. Because monitoring well MW5 is in the area of a forthcoming overexcavation and will be removed during the overexcavation activities, the well box was cemented in place, and the lid was bolted down into the wet cement, sealing the monitoring well until overexcavation activities are completed.

In correspondence dated March 2, 2005 (Attachment 2), the HCDEH concurred with using the pressure grout method to close monitoring well MW5, but specified "the grout must be applied under a minimum of 10 psi, and the pressure must be sustained for a minimum of 10 minutes." LACO's standard operating procedure (SOP) for pressure grouting, which was created in consultation with the HCDEH and is included as Attachment 1, specifies that cement slurry be pumped into the well to a minimum of 25 psi for a minimum of 5 minutes. The pumping time of 5 minutes is specified in our SOP because cement slurry begins curing at approximately 10 minutes, and there is a risk of equipment damage should grout pumping exceed 10 minutes. LACO requests confirmation that the methods specified in our SOP are in conformance with HCDEH standards.

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www.lacoassociates.us

Please call if you have any questions or require additional information.

Sincerely,
LACO ASSOCIATES

Timothy D. Nelson, PG
P.G. 7579 Exp. 05/31/05

VTS:lnm

Attachments

cc: Pete Perdew

P:\4800\4858 Pete Perdew\Correspondence\HCDEH\4858 ltr MW5 destruction.doc

Attachment 1

PRESSURE GROUTING METHOD FOR MONITORING WELL DESTRUCTION

Refer to the drilling file for depth(s) of wells and construction specifications. Well volumes will be calculated to determine the minimum amount of cement slurry needed to properly close each well. The drill rig operator shall possess, or work for a company that possesses, a valid, current C-57 Well Driller's License. Destruction and closure of monitoring wells shall be in accordance with Bulletins 74-81 and 74-90, California. Variations from the California Well Standards must be authorized by the Oversight Agency, in advance.

Pressure Grouting

Pressure grouting uses a pump to move sealing materials in to the bore hole to be abandoned. The purpose is to seal off a bore hole to prevent the movement of fluids across aquitards and or infiltration of surface water into the subsurface. Sealing material will consist of water and cement, mixed as a slurry of no more than 6 gallons of water per 94-pound bag of cement.

Calculate the volume of slurry required: Depth of sand pack times diameter of annulus plus the volume of the casing and screen.

Attaching Pressure Head Fitting to Monitoring Well

Clean all foreign material from PVC casing and glue threaded adaptor to casing.

Tremie Neat Cement Slurry

Cement slurry will be tremied into the casing for wells with casings larger than 2-inches. Treming will proceed from the bottom up to displace water in the well casing prior to pumping slurry.

Pressure Grouting

After the pressure head fitting is threaded onto the casing adaptor attached to the well, cement slurry is pumped into the well to a minimum of 25 psi for a minimum of 5 minutes.

1. Attach grout pump hydraulic lines to the auxiliary connection on the Geoprobe.

2. Open auxiliary connection valve no more than one half turn.

3. Thread pressure head fitting to well casing.

4. Mix cement slurry. Water to cement ratio maximum: 6 gallons per 94 pounds of cement.

5. Pump at least the minimum volume of grout into the well. Continue pumping until a minimum of 25 psi is reached and held for at least 5 minutes. If pressure cannot be held for 5 minutes, continue pumping until at least 1 ½ well volumes has been injected into the well.

DO NOT EXCEDE 70 psi FOR 2-INCH OR LARGER WELLS AND NO MORE THAN 40 psi FOR 1 ½-INCH WELLS

6. When pressure and time or volume parameters have been met, release the pressure from the relief valve on the pressure head fitting and remove the fitting from the well casing.

7. Destroy concrete around well box, remove well box and cut well riser off approximately 1 foot below grade.

8. Back fill void left after well box removal with aggregate base, concrete, soil or asphalt to match existing grade.

R:\Environmental\Std Operating Procedures\PRESSURE GROUTING METHOD FOR MONITORING WELL DESTRUCTION.doc

Attachment 2

Humboldt County Department of Health and Human Services
DIVISION OF ENVIRONMENTAL HEALTH
100 H Street - Suite 100 - Eureka, CA 95501
Voice: 707-445-6215 - Fax: 707-441-5699 - Toll Free: 800-963-9241
envhealth@co.humboldt.ca.us

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LDB LDB

File Regulatory
Project # 4858.01

March 2, 2005

Pete's Service
Attn: Peter Perdew
639 14th Street
Fortuna, California 95540

Subject: Pete's Service, 1409 Main Street, Fortuna, California
LOP # 12517

Dear Mr. Perdew:

It has been brought to our attention MW-5 is in the area of the proposed excavation. LACO recommends abandoning this well prior to the proposed excavation. We concur with abandoning this well prior using a pressure grout method. The grout must be applied under a minimum of 10 psi, and the pressure must be sustained for a minimum of 10 minutes.

In addition, please calculate the volume of pore space (inside diameter of pipe and pores within the annular space) and ensure a minimum of one total volume is applied. Please submit the details of the abandonment when completed.

Please contact me at (707) 268-2208 if you have any questions.

Sincerely,

Mark Verhey, Geologist
Humboldt County Local Oversight Program

MAV: swb

cc: Kasey Ashley, North Coast Regional Water Quality Control Board
David R. Gervan, LACO Associates.

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