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February 1, 2017

RECEIVED
By Alameda County Environmental Health 1:43 pm, Feb 03, 2017

SUBMITTED ELECTRONICALLY

Mr. Mark E. Detterman, P.G., CEG
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Re: Status of Inactive Irrigation Well and Update to the Site Conceptual Model Regarding the Potential Migration of Vapors from Groundwater to Unsaturated Zone Soils – David D. Bohannon Organization Site Located at 575 Paseo Grande, San Lorenzo, California – Case # RO167

Dear Mr. Detterman:

Enclosed for your review is the *Status of Inactive Irrigation Well and Update to the Site Conceptual Model Regarding the Potential Migration of Vapors from Groundwater to Unsaturated Zone Soils* letter prepared by y Stantec Consulting Services Inc. (Stantec) on behalf of David D. Bohannon Organization (Bohannon) for the property located at 575 Paseo Grande in San Lorenzo, California (the Site).

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge. If you have any questions regarding the enclosed report, please contact me at (650) 345-8222.

Sincerely,

Robert L. Webster, Chairman

cc: Mr. Chris Maxwell, Stantec Consulting Services Inc.
Mr. Andrew A. Bassak, Manatt, Phelps, and Phillips LLP

Stantec Consulting Services Inc.
1340 Treat Boulevard, Suite 300, Walnut Creek CA 94597-7966

January 31, 2017
File: 185702848

Mr. Mark E. Detterman, P.G., CEG
Hazardous Materials Specialist
Alameda County Health Care Services Agency
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Dear Mr. Detterman,

Stantec Consulting Services Inc. (Stantec), on behalf of the David D. Bohannon Organization (Bohannon) is submitting to the Alameda County Health Care Services Agency (ACHCSA) this letter providing: (1) the status of an inactive irrigation well down-gradient of the above-referenced site; and, (2) an update to the Site Conceptual Model (SCM) regarding the potential for migration of hydrocarbons in soil vapor to the west of the above-referenced Site. The SCM was presented to the ACHCSA by Bohannon in the *Presentation of Site Data in Support of a No Further Action Determination under the State of California Low Threat Closure Policy* (Stantec, April 2016). This letter requests that the AHCSA reconsider its request for submittal of a Data Gaps Investigation Work Plan as put forth in a June 17, 2016 response letter to Bohannon.

Status of Inactive Irrigation Well

Based on previous reconnaissance efforts by Bohannon, there appears to be an inactive irrigation well on a property located down-gradient of the above-referenced Site. The ACHCSA June 2016 letter requests information on the status of this well. Please see attached a letter from Bohannon to the current property owner. In summary, Bohannon has made multiple attempts to contact the owner including a visit to the residence. We will keep your agency apprised of our efforts. If ACHCSA insists Bohannon obtain information on the status of this well, we likely will solicit the assistance of your agency in contacting the owner if our outreach efforts continue to be unsuccessful.

Overview of the SCM with Respect to Contaminants in Soil Vapor

Residual contaminants remain in groundwater beneath and immediately down-gradient of the Site. Subsurface investigations have confirmed the presence of a clay layer between the depth interval of approximately seven (7) and 12 feet below ground surface (bgs). The clay layer is key element of the SCM. Based on the existing Site data, the SCM put forth by Bohannon concludes that the clay: (1) acts as a semi-confining unit for the underlying groundwater; and, (2) limits the

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potential for movement of contaminants in vapor into the unsaturated sediments above the clay (sourced by contaminants in saturated sediments and groundwater below the clay).

In the June 2016 response letter to Bohannon the ACHCSA expressed concern regarding residual contaminants in saturated soil and groundwater which "*has the potential to impose restrictions on the normal use of private residential property across the street*." In review of the SCM, the ACHCSA letter cites existing Site data which indicates the presence of "*petroleum odor or staining throughout the clay unit*" concluding that the "*evidence of hydrocarbon contamination within competent clay contradicts the existing SCM*."

As discussed with you during a follow-on conference call, there appears to be a misunderstanding regarding the function of the clay unit with respect to its role in mitigating the potential for upward migration of contaminants in vapors. The presence of hydrocarbons in the clay as noted in the June 2016 letter is not unexpected; the lower portion of the clay is saturated by groundwater as it "pushes upward" against this semi-confining unit. The source of the hydrocarbons in the clay to the west of the Site is the contaminants in the underlying groundwater. The absence of a defined groundwater unit (i.e., perched zone) above the clay confirms the confining nature of the clay.

A key element of the SCM is the ability of the saturated clay to prevent upward movement of vapors. Saturated clay has little to no capacity to allow movement of soil vapor. Movement of soil vapor in a soil media requires interconnected pore space (i.e., transmissivity). Clays typically have relatively high porosity but limited transmissivity. Further, soil vapor cannot move through saturated clay because the pore space is filled with water. The transmissivity of the saturated clay for groundwater is limited and for vapor is negligible.

The relatively low to non-detectable concentrations of hydrocarbons in soil vapor collected above the clay beneath Paseo Largavista to the west of the Site (SV-16, -18, -19), despite the presence of hydrocarbons in groundwater beneath the clay in this same area, confirms the accuracy of the SCM. The saturated clay, which in some areas contains hydrocarbons sourced by the underlying groundwater, mitigates the potential for upward movement of hydrocarbons in soil vapor.

ACHCSA Data Gaps Investigation Work Plan Request

The ACHCSA June 2016 letter requests submittal of a Data Gaps Investigation Work Plan and Focused SCM. As part of this request, the letter requests the submittal of maps depicting the extent of soil and groundwater contamination, citing results from within and below the clay unit on the west (down-gradient) side of Paseo Largavista. Bohannon concurs that the existing data beneath Paseo Largavista does not define the exact western limit of contaminants in saturated soil and groundwater to the non-detectable level.

The intent of collecting soil vapor samples above the clay beneath Paseo Largavista in 2015 was to evaluate the SCM with respect to the potential for vapor migration into shallow unsaturated zone soils. Bohannon developed the work scope collectively with the ACHCSA. There was an understanding among all parties that the soil and groundwater dataset at that time suggested

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the presence of contaminants in saturated soil and groundwater further to the west. There was also an acknowledgement that these contaminants were present at depth (i.e., within and below the clay) and the only potentially complete exposure pathway under current land use conditions would be the upwards migration of vapors from the groundwater. The intent of collecting shallow soil vapor data from beneath Paseo Largavista in 2015 was to evaluate the SCM as described above under a possible "worse case condition" for the areas further to the west. Contaminant concentrations in saturated soil and groundwater are reasonably expected to decrease in the down-gradient direction.

The ACHSA's June 2016 letter does not provide specific objectives for the Data Gaps Investigation Work Plan. Bohannon is not aware of additional data which could be collected on the Site or beneath Paseo Largavista which could further our understanding of the subsurface conditions, refine the SCM, or improve upon the risk evaluations completed to date. The soil vapor data collected beneath Paseo Largavista confirm the SCM. Residual contaminants in saturated soil and groundwater which may be present west of Paseo Largavista does not pose a threat to human health or the environment. The drawing of figures depicting the extent of contaminants in saturated soil and groundwater in these areas would be conjecture. The collection of additional data in these areas for the purposes of further risk evaluations would be redundant.

Bohannon respectively requests that the ACHSCA reconsider its request for a Data Gaps Investigation Work Plan. We look forward at your convenience to discussing the appropriate next steps towards the prompt closure of this site.

Regards,

STANTEC CONSULTING SERVICES INC.

REGISTERED GEOLOGIST
CHRIS R. MAXWELL
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Att: Letter from Bohannon to Resident Regarding Inactive Irrigation Well

cc: Mr. Andrew A. Bassak, Manatt, Phelps, and Phillips LLP
Mr. Robert L. Webster, David D. Bohannon Organization

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January 25, 2017

Resident At
15962 Via Del Sol
San Lorenzo, CA 94580

RE: Abandoned Landscape Irrigation Well

To Whom It May Concern:

My name is Scott Bohannon. My grandfather built your home in the 1940's. Our records indicate there is an abandoned landscape irrigation well on your property. At the request of Alameda County, we would like to permanently decommission the irrigation well, which includes removing any old piping and pumps and filling the well as soon as possible. We will repair and remodel any affected landscaping and leave your yard improved and in better condition.

I stopped by last week, but the people who answered the door did not speak English, and I could not communicate with them. I left my card on the car windshield in the driveway, but I have not heard back from anyone. If you need an interpreter, we will provide one at no cost to you.

Please contact me at your earliest convenience at (650) 345-8222.

Thank you,

Scott E. Bohannon,
Senior Vice President

SEB/lzp