



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Environmental
Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated sites Program

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File: 2323.38.055

December 21, 2015

Jason Goodwin, P.G.
Baker Hughes Oilfield Operations, Inc.
795 East 9th Avenue
Anchorage AK 99515

Re: Baker Oil Tools - Delores Drive
ADEC Hazard ID: 25935
Baker Hughes Nikiski Completions Facility
ADEC Review comments on Phase II Site Characterization Report October 15, 2015 and
Progress Report – Routine Ground Water Monitoring November 6, 2015

Dear Mr. Goodwin:

The Alaska Department of Environmental Conservation Contaminated Sites Program (ADEC), would like to thank you for submitting the October 15, 2015, Phase II Site Characterization Report and the November 6, 2015 Progress Report – Routine Groundwater Monitoring for the Baker Oil Tools – Delores Drive site located in Nikiski, Alaska. These reports were prepared by dnaENVIRONMENTAL, LLC.

We have reviewed these two documents and provide the following comments at this time:

In examining the monitoring well drilling logs, we observed that native soil cuttings were used in backfilling the borehole. ADEC's Monitoring Well Guidance document includes conflicting information on this practice. It is our position that monitoring wells within areas of contaminated soils should be constructed with sealing grout surrounding the well casing from two feet above the screen to just below ground surface in order to impede vertical migration of contaminants in the borehole. At the time of well abandonment, we will require that monitoring wells located within any zone of contamination have the well screen broken out, the casing pulled, and that the well be

grouted from the water table to within two feet of the ground surface, in order to seal the borehole with material less permeable than the native soils.

We have observed a pattern of TCE contamination in soil that could indicate surface to groundwater contamination in some locations. Your consultant contends that the contamination pattern is due to volatilization of TCE from the water table to the surface. The concentrations in soil are so low that there's no definitive answer, in our opinion. Contaminant concentrations from borings SB-1, SB-2 and SB-3 do not show a concentration gradient in soil indicating an upward migration of chlorinated solvent vapors, though solvents are present at the water table. The soil sample data also indicates that there may have been multiple sources for the TCE contaminated soils on the property; from injection wells, septic system disposal, and surface disposal.

The unusually flat water table gradient of this aquifer may be influenced by the Nikishka Bay Utilities production wells. These wells withdraw groundwater at high rates, and may drawdown the water table in a manner that creates concentric groundwater elevation contours around the pumping wells. This was identified in the 1989 Hart Crowser investigation. The Hart Crowser elevation survey included additional groundwater elevation data points collected across greater distances, encompassing a larger area. This allows small groundwater gradients to be measured with greater certainty and accuracy. Their survey includes ADEC's MW-1, former MW-4, and the original McGahan Utilities' well.

The water level contour maps presented in your reports show a southerly groundwater gradient. This may be a consequence of the high pumping rates of groundwater withdrawal from the Nikishka Bay Utilities production wells, however our understanding of the regional groundwater flow in the area, is that groundwater most likely flows to the north.

ADEC's primary site assessment objective at this time is the identification of the perimeter of the groundwater contaminant plume where TCE concentrations exceed the current ADEC groundwater cleanup level of 0.005 mg/L. More precisely, we need to demonstrate that impacted groundwater is not leaving the property. Our position is that additional monitoring wells are required in order to further refine the assessment of this groundwater contaminant plume. We have identified two areas in red on Figure 2, Groundwater Elevation and Inferred Contours. A monitoring well should be installed in both of these areas in order to further define the groundwater contaminant plume. If this assessment work confirms contamination exceeding the TCE groundwater cleanup level extends beyond the Baker Hugh's property boundaries, additional investigation may be necessary.

If you have questions about this letter, or any other aspect of this project, please contact me at (907) 262-3412, or via e-mail at peter.campbell@alaska.gov

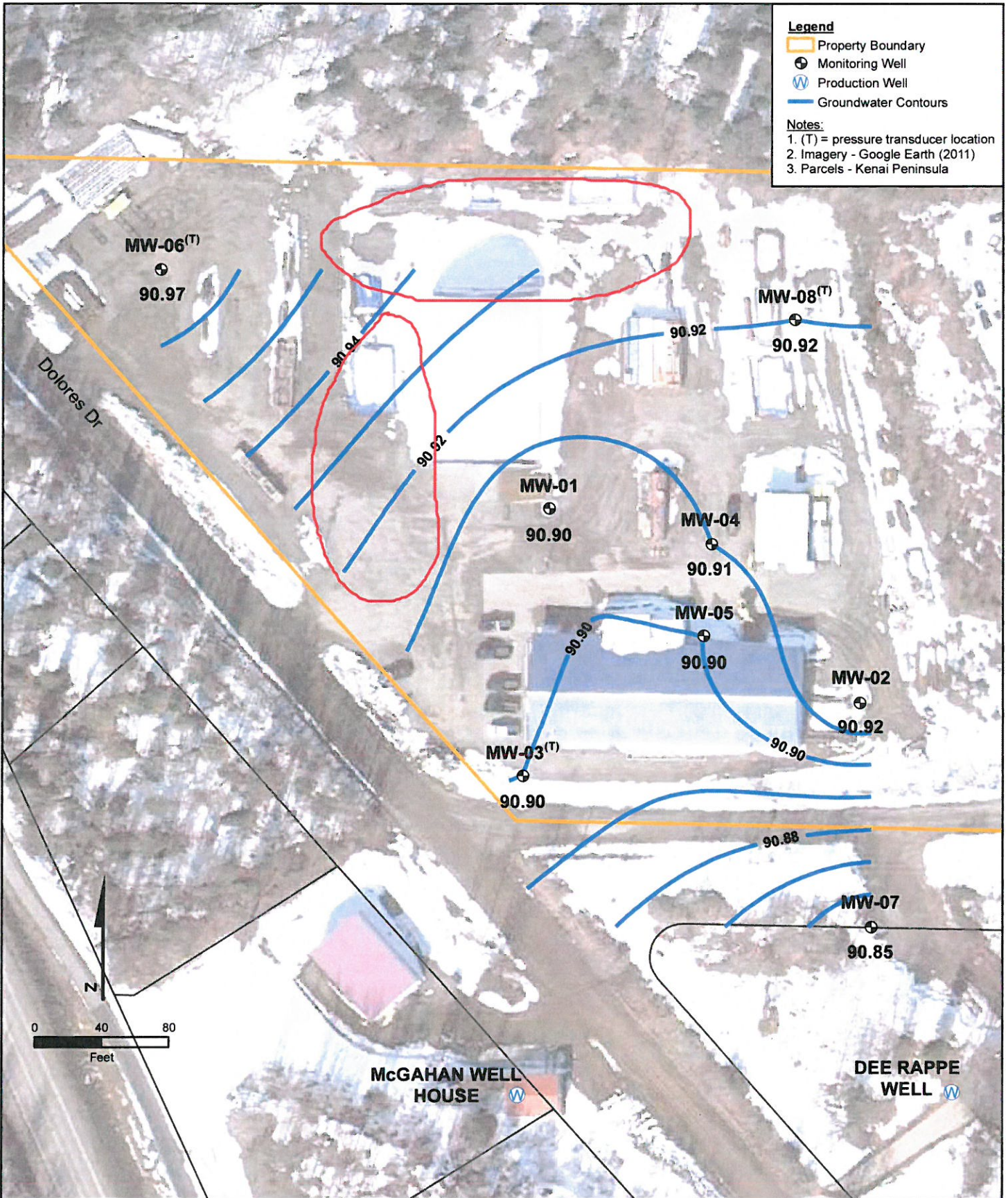
Sincerely,



Peter Campbell
Environmental Program Specialist

Attachment: Figure 2 Groundwater Elevations and Inferred Contours with ADEC modifications

Cc: Chris Clodfelter, Baker Hughes Oilfield Operations, Inc.
Dan Frank, dnaENVIRONMENTAL, LLC.
Derek Schruhl, EPA Region 10



	August 2015 Quarterly Groundwater Monitoring Baker Hughes Nikiski Completions Facility Nikiski, Alaska	Groundwater Elevations and Inferred Contours		Figure
	1 inch = 80 feet	November 16, 2015 DRAWN: CDH	AES.5001.01 CHKD: DJF	2

