



## Department of Toxic Substances Control




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### MEMORANDUM

**TO:** Lynn Nakashima, Project Manager  
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**FROM:**   
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**INTERNAL  
REVIEW**

**BY:**   
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**DATE:** December 08, 2014

**SUBJECT:** GSU Report of Completion of a Magnetometer Survey at the University of California (UC) Richmond Field Station, Richmond, CA

Project No. 11018/201605-00      GSU WR: 20026229

In response to your request, the Sacramento Geological Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) completed a magnetometer survey at the UC Berkeley, Richmond Field Station. This memorandum summarizes activities associated with implementing the survey and interpreting the resulting data.

The survey was conducted on September 30, 2014 DTSC by Environmental Scientist Patrick Hsieh, and Engineering Geologists, Lora Jameson, P.G. and Stephen Sterling, P.G., P.GP. at the Field Station in the area referred to as the Bulb (Figures 1 and 2). The purpose of the survey was to confirm and more precisely locate an area containing a magnetic anomaly that was identified during a November 2006 reconnaissance magnetometer survey. The magnetic anomaly identified in 2006 was possibly associated with reported disposal of drums containing unknown waste. The 2014 survey confirmed the occurrence and location of the anomaly reported in 2006.

DTSC Staff, UC Staff and UC's consultant, Tetra Tech, arrived at the site on the morning of September 30, 2014 and proceeded to set up a grid of data collection points at the location of the previously identified magnetic anomaly. Each grid location was measured and recorded using a Tremble, 2005 Series, Pocket PC, Global Positioning System; the grid was established with a 5-foot X 5-foot spacing of data collection points. The magnetometer was used to measure the strength of the earth's total magnetic field at each location on the grid; the presence of ferrous metals in the nearby surface or subsurface disrupts the earth's magnetic field, produces a magnetic anomaly, and allows for prediction of the ferrous metal object(s) location. An EG&G Geometrics G-856 proton precession magnetometer was used to conduct the survey.

Prior to collection of any data points, the magnetometer was tuned to the maximum signal strength reading to increase instrument sensitivity to buried ferrous metal objects. Background magnetic readings ranged between 48,590.9 and 48,661.29 gammas (or nanoteslas). Per the National Ocean and Atmospheric Administration, National Geophysical Data Center, the area of the Richmond Field Station should have had an approximate total magnetic field intensity value of 48,756 gammas for September 30, 2014 (<http://www.ngdc.noaa.gov/geomag-web/#igrfwmm>). The lowest magnetic field reading recorded by GSU in the surveyed area was 48,140 gammas while the highest reading recorded was 49,376 gammas.

Based on the completed survey, GSU concluded that the center of mass of a ferrous metallic object (or objects) is located in the subsurface at the location identified on Figures 1 and 2. The exact depth and nature of the ferrous object indicated by the anomaly has been revealed based on recently completed excavation conducted by UC at the location indicated by the magnetic surveys. The source of the anomaly appears to have been an inert steel object (see Photo 1, below) associated with historical, miscellaneous disposal at the Bulb.

If you have any questions or comments regarding this matter, please contact me at (916) 255-3739 or [stephen.sterling@dtsc.ca.gov](mailto:stephen.sterling@dtsc.ca.gov) or Mark Vest at (916) 255-3692 or [mark.vest@dtsc.ca.gov](mailto:mark.vest@dtsc.ca.gov).



Photo 1. Excavated steel object causing magnetic anomaly identified by magnetometer survey.

