

Mr. Steve Senna
National Development
2310 Washington Street
Newton Lower Falls, MA 02462

February 4, 2016
File No. 3888.02

Mr. Scott Dale
AvalonBay Communities, Inc.
51 Sleeper Street, Suite 750
Boston, MA 02210

Re: Proposed Redevelopment Project
528 Boston Post Road, Sudbury, MA
RTNs 3-03037, 3-17106, and 3-27243

Dear Steve and Scott:

Sanborn, Head & Associates, Inc. (Sanborn Head) has prepared this letter to describe the environmental conditions at the former Raytheon facility located at 528 Boston Post Road in Sudbury, MA (the Site) in the context of National Development/AvalonBay's proposed redevelopment. The Site is the location of three previously reported Massachusetts Contingency Plan (MCP) Release Tracking Numbers (RTNs), the status of which are described herein.

Raytheon has performed numerous rounds of sampling over the past 20 years and the results of these investigations have been filed with the Massachusetts Department of Environmental Protection (DEP) in accordance with the MCP. As a result, the environmental conditions at the Site have been thoroughly studied and are well understood. Specifically, 43 soil samples have been collected at the Site by Raytheon, and no residual contamination in soil that would pose a health risk to future users/residents has been identified. In addition, approximately 40 groundwater monitoring wells have been advanced at the Site by Raytheon, as shown on the attached figure. Currently, only three of these monitoring wells contain concentrations of constituents above applicable MCP standards. These wells are highlighted in yellow on the attached figure. The years of monitoring data show that the concentrations present in groundwater are decreasing over time. The groundwater containing concentrations above MCP standards represents about 5% of the total Site area.

In addition to the work previously performed by Raytheon, Sanborn Head also performed a Phase I Environmental Site Assessment with Subsurface Investigation for the Site in August 2015. This included advancement of ten soil borings and installation of two monitoring wells. Six soil samples and seven groundwater samples were collected (one from each of the new wells and five from existing wells). Based on the data collected, Sanborn Head did not identify any new Recognized Environmental Conditions at the Site.

During demolition and construction within the RTN area, we will implement a Release Abatement Measure (RAM) Plan which will identify the policies and procedures that will be followed in the event additional contamination is encountered. This plan will include a condition to stop work and contact the Licensed Site Professional (LSP) if suspected contamination is detected.

Additional details regarding the MCP status, current conditions and the proposed redevelopment project are provided below.

Massachusetts Contingency Plan (MCP) Status

The three MCP RTNs associated with the Raytheon facility are summarized below:

- Release Tracking Numbers (RTNs) 3-27243 and 3-3037 are related to the presence of chlorinated volatile organic compounds (CVOCs) in groundwater in the northeastern portion of the property. The presence of CVOCs in groundwater, primarily trichloroethylene (TCE), was first identified between 1990 and 1991, and the Site was initially assigned RTN 3-3037. RTN 3-3037 achieved regulatory closure with DEP (Pending No Further Action status) in 1997. Raytheon continued to monitor groundwater quality at the Site, and in 2007 provided an additional notification to DEP under the MCP. While the groundwater concentrations had remained consistent with those detected during earlier studies, Raytheon provided notification as a conservative approach to assure regulatory compliance. That notification was assigned RTN 3-27243. In November 2008, Raytheon submitted a Class C Response Action Outcome (RAO) for RTN 3-27243, which concluded that a Temporary Solution had been achieved, active remediation was not required and that regulatory compliance would be maintained through monitored natural attenuation (MNA) and periodic groundwater monitoring. Raytheon has retained responsibility for performing ongoing monitoring activities related to this release.
- A 1987 spill of about 35 gallons of no. 2 heating oil occurred during filling of an underground storage tank (UST) associated with the former Boresite Building in the west-central portion of the Site. Documentation of the cleanup activities was provided in the DEP files for RTN 3-3037. The UST and impacted soil near the tank were removed for off-Site disposal. The UST closure report states that DEP concurred that sufficient soil removal had been performed. The report concluded that the site did not necessitate being listed on DEP's Location to be Investigated list for potential disposal sites in 1990, indicating that there is not a significant risk to human health and the environment related to this spill.
- A 1998 spill of 15 to 20 gallons of hydraulic oil, resulting from an overturned crane, was assigned RTN 3-17106. Absorbent materials were applied to remediate the spill, and approximately 1.5 cubic yards of impacted soil were also removed for off-site disposal. A Class A-2 RAO was filed with DEP for the release in September 1998, demonstrating that a Permanent Solution (i.e. regulatory closure) has been achieved for this release.

Current Conditions

The most recent groundwater sampling round was performed in March 2015. Based on this most recent data set, concentrations of TCE in groundwater have continued to decrease over time. TCE was only detected in two monitoring wells located on the eastern side of the property in 2015. These wells are screened from approximately 59 to 91 feet below ground surface in deep groundwater, and their locations are highlighted in yellow on the attached figure. While the concentrations detected slightly exceed the MCP GW-2 standards that are protective of vapor intrusion potential, TCE was not detected above laboratory reporting limits in shallower groundwater at the Site. DEP has concluded that the TCE contamination is too deep to cause vapor intrusion concerns and we agree.

Freon 7 was also detected in one groundwater well (GZ-106) at a concentration of 45 µg/L in 2015. GZ-106 is also highlighted in yellow on the attached figure. Although this concentration slightly exceeds the previously derived Method 2 GW-2 standard of 13 µg/L, this concentration is significantly lower than the Freon 7 level detected in GZ-106 during prior sampling rounds performed in 2013. Freon 7 has not been detected above the Method 2 GW-2 standard in the wells surrounding GZ-106. This data further supports that the residual groundwater concentrations in GZ-106 are localized and naturally decreasing over time.

Proposed Redevelopment Project

The proposed project will include demolition of the existing buildings and construction of a mix of retail and residential buildings. There are no plans to install drinking water wells at the Site and all buildings will be connected to the public water supply.

The lack of detectable TCE in shallow groundwater indicates that the potential for vapor intrusion of TCE into future Site buildings is not a concern. The presence of Freon 7 in one groundwater well on the eastern edge of the property does not indicate a potential for vapor intrusion as no buildings are currently planned in the vicinity of GZ-106. Should design plans change, Sanborn Head will provide a LSP evaluation of the potential for Freon 7 vapor intrusion in this area of the Site. Should a vapor intrusion potential be identified, appropriate and commonly used mitigation measures (e.g. vapor barriers and/or sub-slab venting systems) will be included in the design for the potentially affected building.

During redevelopment, Sanborn Head will provide monitoring and LSP services, and the work will be performed in accordance with MCP requirements. Specifically, the work performed within RTNs 3-27243 and 3-3037 will be performed under a RAM Plan. The RAM Plan will include requirements for soil management, construction dewatering, dust control and air monitoring. Provisions will also be included in the RAM Plan for addressing unanticipated conditions, should evidence of soil contamination be encountered beneath existing buildings or elsewhere. If such conditions are discovered, they will be addressed by the development team in accordance with the MCP and relevant local, state and federal regulations.

The 20 years of monitoring data available for the Site indicate that the groundwater constituents are not significantly impacting off-Site receptors, including the Town public water supply wells. Based on the data, it is our opinion that water infiltration related to demolition of Site buildings (e.g., a temporary reduction in impervious surface) or related to changes in the on-Site waste water treatment and disposal system will not affect the residual contamination due to its depth below ground surface and/or the size of the Site. No impacts to neighboring properties or the Town public water supply wells are expected.

We understand that DEP performed a recent review of the available files for the Site, which they summarized in a letter addressed to Mr. Bob Haarde, dated January 22, 2016. The conclusions described in DEP's letter are consistent with those described herein. We note that more recent data was collected in 2015 which showed even lower concentrations than reported in DEP's letter, as described above. A copy of the letter is attached for reference.

Conclusions

Current Site conditions indicate relatively low-level concentrations of TCE in two deep groundwater wells and Freon-7 in one shallow groundwater well. These concentrations continue to decrease with time. No drinking water wells are planned for the Site, and impacts to off-Site properties from Site redevelopment activities are not anticipated. Based on the current development plans, potential vapor intrusion issues are also not a concern.

No contamination in soil that would pose a health risk to future users/residents has been identified. Regardless, procedures will be implemented to appropriately address unanticipated conditions in soil, should they arise during construction. Construction activities performed within RTNs 3-27243 and 3-3037 will be performed under a RAM Plan in accordance with the MCP. Based on the above information, it is our opinion that the proposed redevelopment project will not pose a health, environmental or natural resource risk to future residents, neighbors or the community.

Please contact the undersigned if you have any questions.

Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.



Patricia M. Pinto, P.E., LSP
Vice President

PMP/KPS: pmp

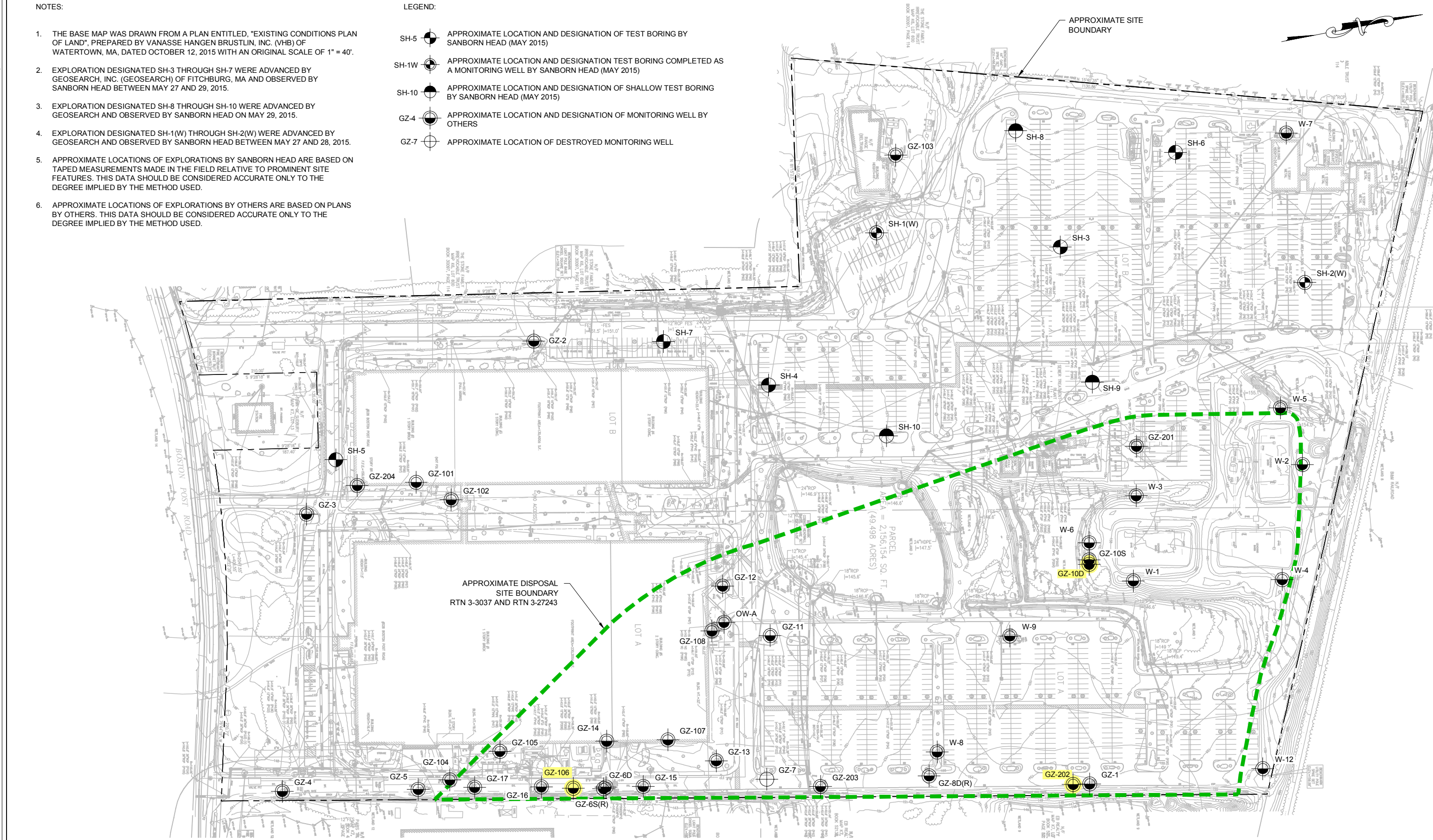
Encl: Figure 1, Exploration Location Plan
Letter from DEP to Bob Haarde, dated January 22, 2016

NOTES:

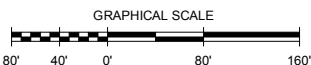
1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXISTING CONDITIONS PLAN OF LAND", PREPARED BY VANASSE HANGEN BRUSTLIN, INC. (VHB) OF WATERTOWN, MA, DATED OCTOBER 12, 2015 WITH AN ORIGINAL SCALE OF 1" = 40'.
2. EXPLORATION DESIGNATED SH-3 THROUGH SH-7 WERE ADVANCED BY GEOSearch, INC. (GEOSearch) OF FITCHBURG, MA AND OBSERVED BY SANBORN HEAD BETWEEN MAY 27 AND 29, 2015.
3. EXPLORATION DESIGNATED SH-8 THROUGH SH-10 WERE ADVANCED BY GEOSearch AND OBSERVED BY SANBORN HEAD ON MAY 29, 2015.
4. EXPLORATION DESIGNATED SH-1(W) THROUGH SH-2(W) WERE ADVANCED BY GEOSearch AND OBSERVED BY SANBORN HEAD BETWEEN MAY 27 AND 28, 2015.
5. APPROXIMATE LOCATIONS OF EXPLORATIONS BY SANBORN HEAD ARE BASED ON TAPED MEASUREMENTS MADE IN THE FIELD RELATIVE TO PROMINENT SITE FEATURES. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
6. APPROXIMATE LOCATIONS OF EXPLORATIONS BY OTHERS ARE BASED ON PLANS BY OTHERS. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

- SH-5 APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING BY SANBORN HEAD (MAY 2015)
- SH-1W APPROXIMATE LOCATION AND DESIGNATION TEST BORING COMPLETED AS A MONITORING WELL BY SANBORN HEAD (MAY 2015)
- SH-10 APPROXIMATE LOCATION AND DESIGNATION OF SHALLOW TEST BORING BY SANBORN HEAD (MAY 2015)
- GZ-4 APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL BY OTHERS
- GZ-7 APPROXIMATE LOCATION OF DESTROYED MONITORING WELL



SANBORN HEAD



NO.	DATE	DESCRIPTION	BY

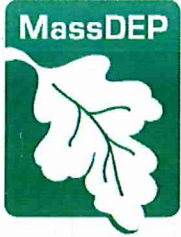
DRAWN BY: C.GREEN
 DESIGNED BY: L.NORTON
 REVIEWED BY: P.PINTO
 PROJECT MGR: L.NORTON
 PIC: P.PINTO
 DATE: FEBRUARY 2016

ENVIRONMENTAL CONSULTING SERVICES
 528 BOSTON POST ROAD
 SUDBURY, MASSACHUSETTS

EXPLORATION LOCATION PLAN

PROJECT NUMBER:
3888.02

SHEET NUMBER:
1



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Matthew A. Beaton
Secretary

Karyn E. Polito
Lieutenant Governor

Martin Suuberg
Commissioner

January 22, 2016

Bob Haarde, Selectman
37 Belcher Drive
Sudbury, MA 01776
Delivered via email to rhaarde@comcast.net

RE: Sudbury
528 Boston Post Road
Raytheon Facility
RTNs 3-03037, 3-17106, 3-27243

Dear Mr. Haarde,

In response to your inquiry of October 9, 2015, the Massachusetts Department of Environmental Protection (MassDEP) has reviewed our files for the Raytheon site located at 528 Boston Post Road in Sudbury. The review focused on potential risks to future residents, from the presence of oil and hazardous materials at the property. A summary of the review is presented in the attached memorandum.

While investigations at the site began in 1984, the most pertinent information is presented in a Comprehensive Site Assessment and a Periodic Review submitted to MassDEP in 2008 and 2013, respectively. The majority of environmental work focused on the presence of solvents in groundwater.


Based on the presence of solvent contamination remaining in groundwater, MassDEP recommends that a Licensed Site Professional evaluate any proposal to install drinking water wells in the contaminated areas, and the possible need for treatment.

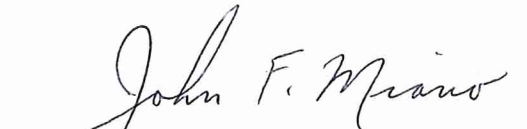
MassDEP's evaluation found that the potential for exposures due to solvent vapor migration into buildings is generally not a concern for the current proposed locations of residential buildings, because at those locations the groundwater contamination is deep below the ground surface. However, one particular location of concern is monitoring well GZ-106, which has Freon contamination in groundwater. This monitoring well is located on the eastern edge of the property. Buildings constructed near GZ-106 should be evaluated for the possibility of Freon vapor intrusion to indoor air.

Limited soil testing has been performed at the property. Although the soil testing is limited, the information submitted to MassDEP does not indicate any contamination in soil that would pose a health risk to future residents. However, given the past uses of the facility and associated use of hazardous materials, further assessment is recommended to evaluate the soil beneath the buildings, if redevelopment of the site creates the potential for exposure to untested soils.

If you have any questions regarding this letter or the attached memorandum, please contact Andrew Friedmann at (978) 694-3217 or andrew.friedmann@state.ma.us.

Sincerely,


Andrew Friedmann
Site Management
Bureau of Waste Site Cleanup


John Miano
Chief, Site Management Section
Bureau of Waste Site Cleanup

cc (electronically):

Joanne Lynch (jjmlynch@gmail.com)

Bill Murphy, Board of Health, email: health@sudbury.ma.us

Rebecca McEnroe, Sudbury Water District, email: customerservice@sudburywater.com

Attachments:

Memorandum to File



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Matthew A. Beaton
Secretary

Karyn E. Polito
Lieutenant Governor

Martin Suuberg
Commissioner

MEMORANDUM

To: File

By: Andrew Friedmann, Ph.D., Site Management Section *AF*
Bureau of Waste Site Cleanup, Northeast Regional Office (BWSC/NERO)
Massachusetts Department of Environmental Protection (MassDEP)

Through: Jack Miano, Chief, Site Management Section, BWSC/NERO/MassDEP *JFM*
Stephen Johnson, Deputy Regional Director, BWSC/NERO/MassDEP

Subject: 528 Boston Post Road, Sudbury
MassDEP Release Tracking Numbers (RTN) 3-27243, 3-17106 & 3-3037
Evaluation of Site Investigation and Risk Assessment

Date: January 22, 2016

This memorandum was prepared in response to an inquiry regarding the possible human health risks related to the proposed residential redevelopment at this Site. The proposed development may include about 300 units of residential housing, a supermarket, retail stores and a 50 unit Alzheimer's care center.

MassDEP reviewed the site investigation reports and the Risk Characterization, and conducted a combined Method 1 and Method 2 Risk Characterization for the vapor intrusion pathway, as this pathway often has the greatest potential to pose risk to future residents of sites contaminated with volatile organic compounds. The vapor intrusion risk characterization was performed using groundwater and soil data that are presented in a Phase II Comprehensive Site Assessment, dated November 13, 2008, and a Periodic Review of the Temporary Solution (Periodic Review), dated November 8, 2013. The Phase II Comprehensive Site Assessment and the Periodic Review were written by GZA GeoEnvironmental, Inc. (GZA) on behalf of Raytheon Company.

Groundwater

According to the Periodic Review, groundwater samples collected from forty-four groundwater monitoring wells, obtained between 1990 and 2013, were analyzed for Volatile Organic Compounds (VOCs). A summary of the analytical results for VOC compounds detected in the groundwater investigation (obtained directly from the Periodic Review) are presented in Table 1 of this memo. A subset of samples collected in 2008 were also analyzed for metals. Of the three samples analyzed for metals, only zinc was detected. Zinc was present in monitoring well GZ-204 at 0.016 mg/L, well below the Method 1 Risk Assessment Standard. The following chlorinated VOCs were detected in groundwater samples:

- Trichlorofluoromethane (Freon 7)
- cis-1,2-Dichloroethene (cis-1,2-DCE)
- Chloroform
- Trichloroethene (TCE)

Tetrachloroethene (PCE) was not detected in the groundwater investigation, according to the Periodic Review.

The concentrations of three of the four Site contaminants in groundwater were compared to MassDEP's Method 1 GW-2 Standards. GW-2 Standards are designed to be protective of exposure to VOC vapors that can migrate from groundwater to indoor air. MassDEP has not developed a Method 1 GW-2 Standard for Freon 7. A Method 2 GW-2 Standard for Freon 7 (13 µg/L) was developed by GZA in accordance with MassDEP regulations.

Freon 7 was detected in one well, GZ-106, above the Method 2 GW-2 Standard. The well screen for GZ-106 is 14 to 19 feet below ground surface (bgs). Concentrations of Freon 7 in this well were detected up to 410 µg/L, greater than ten times the estimated Method 2 GW-2 Standard.

Cis-1,2-DCE and chloroform were both detected in one well each, GZ-202 and GZ-108, respectively. Both were detected at levels below the Method 1 GW-2 Standards. The Method 1 GW-2 Standard for cis-1,2-DCE is 20 µg/L, and the maximum detected concentration was 4.0 µg/L. The Method 1 GW-2 Standard for chloroform is 50 µg/L, and the maximum chloroform concentration detected was 1.5 µg/L.

In the most recent sampling rounds, TCE was detected in three wells at concentrations above the GW-2 Standard of 5 µg/L. These levels were detected in GZ-8D (screened at 98 to 108 feet bgs), GZ-10D (screened at 59 to 69 feet bgs), and GZ-202 (screened at 86.7 to 91.7 feet bgs). Contamination in these three wells is too deep to cause concern for vapor migration into indoor air. However, if private potable water wells were to be installed at this site in the future, a potential exposure pathway may exist.

Soil

In July 1998, a hydraulic oil release occurred as a result of an overturned crane that was performing work at the Raytheon facility. Approximately 15 gallons of hydraulic oil was released to a gravel parking area and a paved surface immediately east of the pavement. MassDEP assigned RTN 3-17106 for the hydraulic oil release. During an Immediate Response Action, impacted soil and gravel was removed from the Site. Two soil samples were collected from the excavation. The soil samples contained up to 5.8 mg/kg of C9-C18 Aliphatic Petroleum Compounds, 21.3 mg/kg of C19-C36 Aliphatic Petroleum Compounds, and 12.9 mg/kg of C11-C22 Aromatic Petroleum Compounds. These concentrations are well below the residential Method 1 Standards, indicating that a Condition of No Significant Risk has been established for soils impacted by the hydraulic oil release.

Soil samples were also obtained during the installation of soil borings and monitoring wells. Soil testing by photo-ionization detector (PID) field screening, and laboratory analysis, indicated that VOC levels in soil are very low. Field screening indicated the presence of VOCs in two soil samples. Therefore, two samples, from borings GZ-108 and GZ-202, were analyzed for chlorinated VOCs, and the laboratory results were "none detected". Based on the lack of detectable VOCs in soils from the vadose zone, there is no indication of a Significant Risk from exposures related to soil at the Site.

Historic Site Use

The following language from a 1990 study describes the past use of the site. "Only limited scale prototype production occurs at the Sudbury Equipment Development Laboratories (EDL) which is mainly occupied by office space. Small quantities of solvents and other process chemicals are used at the EDL. Chemical wastes are collected and disposed off-site in accordance with applicable RCRA regulations. Sanitary wastes are treated on site and discharged to sand filters (leaching beds) in the northern portion of the site."

The Periodic Review report notes a number of areas where VOCs were likely used. According to the Periodic Review, the buildings on the property are primarily used for office space, but that "... some research and development of microwave and radar components has historically been performed at the Site in the past" and that a "Test Area affiliated with these former activities is located in the northwest corner of the Property, which was used to test microwave and radar equipment." A sanitary waste water treatment plant and leaching fields are located on the north central part of the property. The Periodic Review also states that a "Former Bore Site Building" is located on the western property boundary. Presumably some industrial activities occurred in this building. Figure 1, from the 2013 report indicates other industrial use areas including:

- A "Chemical Receiving and Storage" area in Building No. 1;
- "Former Assembly and Lab Areas" in Building No. 1;
- A "Former Plated Wire Lab" in Building No. 2;
- A "Former Chemical Storage" area adjacent to Building No. 5; and
- A former "Waste Water Treatment Plant" in Building No. 5.

Shallow groundwater samples (e.g., 0 to 15 feet below ground surface) obtained downgradient of these areas where hazardous materials were likely used did not contain levels of VOCs above the GW-2 Standards, with the exception of Freon in GZ-106.

Recommendations

With the exception of the location of GZ-106, available groundwater and soil data from this Site indicate that vapor intrusion is not likely to be a pathway of concern for future residents at the property. However, given the possible presence of soil contaminated with VOCs beneath the buildings, if residential development occurs in the areas where buildings are/were present, further assessment is recommended to evaluate the soil beneath the buildings. Future private potable water wells could become contaminated with volatile organic chemicals present in deep groundwater, and if installed, an evaluation should be made to determine whether treatment of the water is needed.

LIMITATIONS

MassDEP's review of this site was intended to ascertain whether the response actions taken, as presented, appeared to be protective of public health and environmental interests, and consistent with pertinent MassDEP regulations, policies, and accepted engineering practices. MassDEP's findings in this matter are based upon

the information contained in MassDEP's files. MassDEP's findings would be subject to further review if MassDEP becomes aware of material omissions or misstatements.

Data Summary Tables, Prepared by MassDEP

Table 1

Groundwater Concentrations (ug/l)

	Maximum	GW-1 Standards	GW-2 Standards
Tetrachloroethene	ND	5	50
Trichloroethene	63	5	5
Cis-1,2-dichloroethene	4.0	70	20
Chloroform	1.5	70	50
Trichlorofluoromethane	410	Not Applicable	13 (estimated)
Zinc	16	5000	Not Applicable

Table 2

Soil Concentrations

	Maximum (mg/kg)	S1/GW1 Standard (mg/kg)
C9-C18 Aliphatic Petroleum Compounds	5.8	1000
C19-C36 Aliphatic Petroleum Compounds	21.3	3000
C11-C22 Aromatic Petroleum Compounds	12.9	1000

Notes:

ND=Not Detected

GW-1 & 2 Standards are 2014 values (To evaluate potential future exposures)

*Trichloroethene exceeds the GW-2 standard at several locations, but the contamination is deep below the ground surface, and therefore is not likely to pose a risk of exposure by vapor intrusion.