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8 September 2025

Mr. Joseph T. Martella II,
Environmental Engineer III
Office of Land Revitalization & Sustainable Materials Management
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02903

RE: Order of Approval Amendment Request
Dr. J. Alvarez High School, 333 Adelaide Avenue, Providence, Rhode Island
RIDEM Case No. 2005-029
EA Project No. 15066.12

Dear Mr. Martella:

On behalf of the Providence Public School District (PPSD), EA Engineering, Science, and Technology, Inc. (EA) is providing this letter to request a revision to the current version of the Amended Order of Approval [14 July 2009] for the above referenced Dr. J. Alvarez High School site (the Site). The requested revisions are in response to recommendations from the Rhode Island Department of Health (RIDOH) that were made in a March 2025 Letter Health Consultation Letter (LHC) for the site. A summary of site data collected is provided below and is intended to provide support for our request.

Project Monitoring History

The Dr. J. Alvarez High School (formerly Adelaide High School) is constructed upon one parcel of land, referred to as "Parcel B", and surrounded by three additional parcels (Parcels "A", "C" and "D") that together were formerly occupied by Gorham Manufacturing. Industrial processes were reportedly conducted at the site and included the manufacture of sterling and plated silverware, as well as bronze castings. The former plating and degreasing operations reportedly contributed to the presence of soil and groundwater impacted by chlorinated solvents on Parcel "A". Table 1 provides a list of contaminants of concern (COC) at the property, identified during historical site investigations of the site, reportedly due to the former Gorham Manufacturing operations.

Table 1: Contaminants of Concern for Former Gorham Manufacturing Site

Soil	Groundwater
Tetrachloroethene	Tetrachloroethene
Trichloroethene	Trichloroethene
1,1,1-Trichloroethane	1,1,1-Trichloroethane
1,1-Dichloroethane	Vinyl Chloride
Benzo(a)anthracene	1,1-Dichloroethane
Benzo(a)pyrene	cis-1,2-Dichloroethene
Benzo(b)flouranthene	

Arsenic	
Lead	

The current primary environmental concern of the Alvarez High School parcel is the potential for contaminants from within the groundwater and/or soil volatilizing and "flowing" through cracks/seams of the concrete foundation and/or floor of the school and affecting indoor air. This process is commonly referred to as soil vapor intrusion.

Soil vapor intrusion is mitigated at the Alvarez High School via the presence of a sub-slab depressurization (SSD) system. The SSD system consists of three fans that are connected to a series of interconnected polyvinyl chloride (PVC) pipes constructed beneath the school's concrete floor that terminate at eight vapor suction pits. The fans then draw the vapor from these pits through solid pipes and discharge the vapor above the roof of the building to ambient air. This process creates a negative pressure, or vacuum, beneath the school, and the vapor will follow the "path of least resistance," which is through the SSD system.

The SSD system has been in operation at the Alvarez High School continuously since 16 March 2007. EA has completed regular sampling of the sub-slab vapor, ambient outdoor air, and indoor air in accordance with the Order of Approval and subsequent amendments (Amended OA) for this Site since March 2007. Indoor air and soil vapor samples have been collected on a quarterly basis following the approvals of the 3rd Amended OA in July 2009. Monitoring has included inspections of the rooftop fans to ensure proper operation. In addition, continuous electronic monitoring of each of the three SSD system fans has been, and continues to be, ongoing.

Rhode Island Department of Health – Letter Health Consultation

The PPSD and RIDEM requested the assistance of the RIDOH in September 2023 following a notable increase of TVOC and PCE/TCE above the historic trends in the subslab environment beneath the Site. RIDOH provided PPSD with initial recommendations in response to the request. RIDOH's March 2025 LHC included updated Public Health Assessment Guidance published by the Agency for Toxic Substanced and Disease Registry (ATSDR) in 2022. RIDOH's LHC made the following recommendations:

1. *There are no data to suggest that any rooms at Alvarez High School should be closed now because of health concerns. Multiple measurements below the level of concern have been reported for Room 116 over several months (January-October 2024). This indicates that the conditions that led to the high level of TCE in July 2023 are no longer present.*

2. *RIDOH no longer recommends keeping that room closed from a health perspective.*

3. *PPSD should continue to investigate conditions that are leading to higher than expected indoor and sub-slab VOC concentrations and report the results of those investigation activities and any proposed mitigation system adjustments or repairs to RIDEM. Without a clear understanding of why VOCs are entering the building, it isn't possible to know whether conditions are likely to deteriorate in the future.*

4. *It is currently unclear why the sub-slab depressurization system failed originally. EA engineers should determine the root cause and work to prevent that at Alvarez High School.*

5. *PPSD should continue to monitor VOCs in select rooms on a more frequent (bi-weekly) basis until there is a clearer understanding of why VOCs were entering the building at potentially concerning levels.*

6. *If biweekly monitoring detects levels of TCE at or above 2 µg/m3 for 2 consecutive measurements or at or above 6 µg/m3 in a single measurement, that room should be closed. Additional monitoring should also be performed in adjacent rooms.*

7. *If monitoring consistently shows TCE levels at or above 0.21 µg/m^3 or PCE levels at or above 2 µg/m^3 for six months or longer even with inclusion of all available mitigation options, PPSD should investigate options to move Alvarez High School classes to another building at the start of the next school year.*

8. *In addition to the sub-slab depressurization to prevent VOCs, PPSD can further reduce potential indoor air contaminants by bringing in as much outdoor air as possible, including air purifiers with carbon filters in classrooms, and opening windows if the building design and weather allows.*

Parcel A Data Review

Parcel A was formerly the site of a Stop & Shop/retail plaza, and is now developed as a Tesla facility. RIDEM hosts an informational website to present data from Parcel A (along with data from Parcel B, C, and D). In the December 2006 ATSDR Health Consultation for the Alvarez High School site (Parcel B), ATSDR made the following recommendation:

- The City of Providence should continue to take the necessary actions to ensure that groundwater contaminant sources, concentrations, and migration patterns at and near Parcel A continue to be monitored. Measures should be taken to carefully evaluate and document any potential changes in groundwater flow dynamics, especially those that might result from underground utility work (e.g., relining the sewer), as such actions could influence Parcel B groundwater conditions.

A review of data from the three closest subslab soil gas extraction wells (EW-5, EW-6, and EW-7) indicate that untreated soil gas effluent containing CVOCs is regularly discharged to the roofline of the Parcel A complex, with concentrations of TCE in March 2023 at 11,000 ug/m^3 (EW-5), 5,700 ug/m^3 (EW-6), and 160 ug/m^3 (EW-6). Due to the proximity of the school, concentrations of CVOCs in ambient air affected by this effluent may regularly reach the adjacent school above site thresholds.

Proposed SSD Improvements and Modifications

PPSD initiated visual SSD system pipe inspections and improvements to the system in December 2023. The improvements to the fan network increased flow by 40% at the rooftop. Additional system improvements through installation of larger regenerative vacuum pumps would result in increased flow rates. At the property boundary with Parcel A, a vapor extraction system is being considered as a means to intercept vapors before they migrate to the Alvarez High School foundation and SSD system.

Proposed Monitoring Modifications

During the period between 2008 and 2025, nearly 90 sampling events have collected over 810 indoor air samples and approximately 1,000 sub slab samples for laboratory analysis. The comprehensive overall body of data collected to date, RIDEM's oversight of the four Parcels comprising the Former Gorham Manufacturing Site, and the RIDOH's recently proposed recommendations demonstrates a continued commitment to implementing a management program to ensure long-term operations and maintenance of the SSD for the Alvarez High School.

The following proposed amendments, in conjunction with all other elements of the Order of Approval and subsequent Amended OA, collectively comprise an Operations and Maintenance (O&M) Program that meets or exceeds all state guidance policies and incorporates State agency recommendations, notably from the RIDOH. , The requested O&M Program amendments are presented below:

- No changes are proposed to:
    - the current annual schedule of rooftop fan effluent sampling;
    - the field inspection and monitoring currently performed on a monthly basis;
    - the continuous monitoring frequency for SSD system operation;
    - any of the quarterly summary reporting requirements; or
    - any of the Amended OA provisions regarding emergency response, document repository maintenance, and verbal/written RIDEM notifications.
- Monthly TVOC monitoring and quarterly analytical sampling of indoor air will now include Room 116 in addition to the existing list of rooms (Rooms 110, 118, 145, 152, Cafeteria, Gym, Entrance Hallway, and the Kitchen.)
- Based on the data presented on RIDEM's website for the O&M of the Parcel A groundwater treatment and SSD, EA is of the opinion that PPSD should continue to take the necessary actions to ensure that groundwater contaminant sources, concentrations, and migration patterns at and near Parcel A continue to be monitored.

- Based on the RIDOH's LHC, the updated guidance released in 2022 by ATSDR recommends amending the site criteria for PCE and TCE, reflecting the best science on the impacts of these contaminants in indoor air. The following revisions to the site's RAL are recommended:
    - The site criteria for PCE is recommended to be 2.0 ug/m^3 ; and
    - The site criteria for TCE is recommended to be 0.21 ug/m^3

- Based on the RIDOH's LHC, the updated guidance released in 2022 by ATSDR has been factored into the development of policy recommendations regarding chronic and acute exposure to PCE and TCE in indoor air at the J. Alvarez H.S. These policy recommendations are outlined below:

Compound	Level of Concern for Non-Cancer Health Effects	Chronic Exposure Risk	Updated Site-Specific Remedial Action Level	RIDOH/RIDEM Policy Recommendations	
				Temporary Room Closure	Consider Moving Classes for the Next School Year
Tetrachloroethylene (PCE)	40 ug/m^3	3.8 ug/m^3	2.0 ug/m^3	Measurements Exceed 40 ug/m^3 in a Single Measurement.	Measurements Exceed 2.0 ug/m^3 for 6 months or longer
Trichloroethylene (TCE)	2.1 ug/m^3	0.21 ug/m^3	0.21 ug/m^3	Measurements Exceed 2.0 ug/m^3 for 4 Weeks; or 6.0 ug/m^3 in a Single Measurement.	Measurements Exceed 0.21 ug/m^3 for 6 months or longer

- In the event that a Remedial Action Level (RAL) is detected at an indoor air sampling location, the PPSD shall conduct an evaluation to determine the source of the exceedance. In the event that the source of the exceedance cannot be determined, or is detected to be resultant from soil vapor intrusion, then the sampling frequency for the non-compliant indoor air sampling location and the two (2) closest sub-slab sampling locations shall be adjusted to bi-weekly sampling until the problem is resolved and the concentrations measured at the non-compliant indoor air sampling location are demonstrated to be compliant with the RALs for a period of three (3) months.

- In the event that a RAL is detected at an indoor air sampling location and the outdoor ambient air concentrations collected contemporaneously were greater than, or within 15% of the highest indoor air result, the indoor air sampling results for the non-compliant indoor air sampling location will be adjusted to bi-weekly until the results are compliant

with the RALs.

- Based on the overwhelming supporting data and SSD system effectiveness and reliability, continuation of the current sub slab laboratory analysis is excessive, disproportionately costly to PPSD, and not necessary to demonstrate ongoing safety to building occupants. EA proposes to revise the laboratory analysis to only monitor the indoor air spaces on a quarterly basis and collect both an upgradient ambient air (at grade) and a rooftop location quarterly to assess air that may enter the school's HVAC system and interior spaces through open windows. Monthly monitoring of TVOCs with a PID will continue for all sub-slab monitoring "MP" and interior "MP" points.

- The lack of measurable methane, as measured across a network of sub-slab sensors and alarm monitors, indicates that a methane condition did not develop since the school was constructed. The methane system is also a potential source of fugitive emissions since each unit vents to the interior spaces after running through the individual meters. The methane monitoring is considered excessive, disproportionately costly to PPSD, and not necessary to demonstrate ongoing safety to building occupants. Therefore, it is recommended to remove the requirement to operate/monitor this system.

EA is confident this approach will satisfy all involved parties to ensure the well-being of the attendants of Alvarez High School, while mitigating some financial impact to the City. EA looks forward to your response on this matter and will continue adhering to the current Amended Order until a response to this request is received. If you have any questions or require additional information, please contact me at 401-287-0364.

Sincerely,

EA ENGINEERING, SCIENCE,
AND TECHNOLOGY, INC.

Jonathan D. Alvarez, CPG
Project Manager