

**FREQUENTLY ASKED QUESTIONS (FAQ'S)**  
**Tetra Tech Environmental Study**  
**of the Brandeis-Bardin Campus**

American Jewish University has retained leading environmental engineering firm Tetra Tech Inc. to provide an additional, independent, third-party evaluation of the environmental conditions on the Brandeis-Bardin Campus. Tetra Tech has completed its evaluation, and the full report is available on the AJU website at [www.aju.edu](http://www.aju.edu). Below are the responses to frequently asked questions concerning the Tetra Tech report.

**What is the “bottom line” of Tetra Tech’s evaluation of the Brandeis-Bardin Campus?**

**TETRA TECH’S RISK EVALUATION, LITERATURE REVIEW, AND BACKGROUND COMPARISON ANALYSIS OF ALL AVAILABLE SITE DATA, INCLUDING THEIR OWN TESTING PERFORMED IN FEBRUARY 2016, INDICATE THAT, “ENVIRONMENTAL AND RADIOLOGICAL CONDITIONS AT THE BBC POSE NO UNACCEPTABLE HUMAN HEALTH RISK TO CAMPERS, CAMP COUNSELORS, VISITORS, OR RESIDENTS AT THE SITE.”**

**Who is Tetra Tech?**

Tetra Tech is a leading provider of consulting, engineering, and technical services worldwide. AJU selected Tetra Tech to perform this study not only because Tetra Tech has both the depth and breadth of experience to evaluate a site like the BBC, but also because Tetra Tech has a 50-year reputation for providing environmental engineering services of the highest quality at complex sites around the globe. Tetra Tech performs a full range of services required to remediate hazardous waste sites, inactive waste sites, radioactive waste sites, and low-level radioactive waste sites. Tetra Tech’s projects range from small and simple single objective projects to large, complex multitask and multisite projects, including initial site surveys, site investigations, risk assessments, feasibility studies, remedial design and engineering, remedial construction, site closure, and site restoration. Tetra Tech ranks as the number one environmental management and science firm in the US (Engineering News Record). More information can be found at <http://www.tetrattech.com/en/about>.

**How did Tetra Tech undertake this investigation?**

The objective of this investigation was to evaluate the environmental condition of the BBC property to determine whether contaminants originating from the SSFL pose unacceptable risk to the campers and personnel on the property. This investigation was performed by (1) conducting a critical review of existing environmental, chemical and radiological studies conducted within and outside the BBC property boundary; (2) determining whether any additional testing or improved technologies should be utilized to enhance the study of the BBC (data gap analysis); (3) developing a strategy for further site testing, both to fill in identified data gaps and to verify current site conditions; (4) executing the further site testing; and (5) assessing the risk posed to campers, residents and visitors of the BBC on the basis of both existing and newly-collected data.

### **What existing studies did Tetra Tech review?**

The Brandeis-Bardin Campus has been the subject of multiple environmental investigations over the past 25 years, and Tetra Tech's review focused on (but was not limited to) the studies that most directly measured conditions on the BBC. These included a 1992/1994 multimedia sampling investigation overseen by the EPA; a 1999 study by the Agency for Toxic Substances and Disease Registry; a 2007 off-site data evaluation report undertaken by EPA contractor MWH; a 2012 radiological characterization of the Northern Buffer Zone and part of the SSFL by EPA contractor HGL; a 2014 data gap analysis and go-back soil sample report prepared by DOE contractor CDM Smith; and independent environmental monitoring by AJU consultant Joel Cehn for more than two decades. **To date, no study has ever found harmful levels of radiation or chemical contamination on the Brandeis-Bardin Campus. Both Federal and State regulators have concluded time and again that the Brandeis-Bardin Campus is safe.**

### **Did Tetra Tech identify significant data gaps in the existing studies?**

The 1992/1994 EPA study included a static gamma radiation survey, but new technology has been developed in the past 20 years that allows for more precise and comprehensive gamma radiation readings in environmental assessments. Tetra Tech therefore recommended a new gamma survey using this more modern technology. As a conservative measure, Tetra Tech also recommended that additional soil and sediment samples should be collected from the highest-use areas of the BBC.

### **What new field testing did Tetra Tech undertake?**

After reviewing the existing studies and making recommendations for further field work, Tetra Tech performed a new "continuous" gamma radiation survey focused on the high-use camp area of the BBC, and also along the drainages leading to the Northern Buffer Zone. Tetra Tech also collected soil and sediment samples in a grid pattern from the same locations, and tested these samples for radionuclides, metals, and perchlorate. In addition, Tetra Tech performed a gamma survey and collected soil and sediment samples from background areas near the camp property.

### **What are "background areas," and why are they important?**

Background areas are locations that have similar characteristics as the area being studied, but are not impacted by the potential contaminant source. By comparing a study area to a background area, scientists are able to determine whether sampling results on the subject property reflect contamination from the suspected source, as opposed to conditions that exist in the natural environment. For this study, Tetra Tech used background areas identified by the EPA that are located near the BBC and are part of the same geological formations, but are far enough away to not have been impacted by the SSFL.

### **What does a health risk evaluation measure?**

A health risk evaluation is a way to score the overall health risk posed by environmental contamination on a piece of property. The evaluation looks not only at the condition of the property, but also the way in which the land is used. It considers who is using the property (e.g., children or adults), the ways in which users can come into contact with the environment (e.g., by inhalation, skin contact, or ingestion), and the length of time the exposure can be expected to occur.

The end product of a health risk evaluation is a single number representing site users' carcinogenic risk from exposure. A site with a low health risk number is safer than one with a higher number. EPA guidance states that carcinogenic risks from exposures are considered to be unacceptable at a level greater than  $1 \times 10^{-4}$  (1 in 10,000), whereas risks less than  $1 \times 10^{-6}$  (1 in 1,000,000) are considered safe. With regard to Brandeis-Bardin, Tetra Tech calculated the health risk at  $.043 \times 10^{-6}$  (1 in 23,000,000).

### **What did Tetra Tech's health risk evaluation conclude?**

Tetra Tech used highly conservative assumptions about both the use and characteristics of the property. For example, Tetra Tech assumed that all site users are "residents" (onsite for 350 days per year for 26 years), even though most campers are likely onsite for only a handful of weeks each year. Even with these highly conservative assumptions, Tetra Tech calculated BBC's health risk score to be 0.043 in 1,000,000, which is more than 23 times lower (better) than the acceptable EPA level (1 in 1,000,000). **Tetra Tech concluded that "the environmental and radiological conditions at the BBC pose no unacceptable human health risk to campers, camp counselors, visitors, or residents at the site."**

### **Tetra Tech found some evidence of Strontium-90 on the property. Is that a matter of concern?**

According to the ATSDR (Agency for Toxic Substances and Disease Registry),

"<sup>90</sup>Sr is found nearly everywhere in small amounts from past nuclear accidents and fallout from nuclear explosions. You can be exposed to low levels of <sup>90</sup>Sr by eating food, drinking water, or accidentally eating soil or dust that contains <sup>90</sup>Sr."

(<http://www.atsdr.cdc.gov/PHS/PHS.asp?id=654&tid=120>)

The Tetra Tech report describes Strontium-90 as, "a radionuclide that has become ubiquitous in soil globally due to atmospheric nuclear weapons testing fallout." Because Strontium-90 was detected on the Brandeis-Bardin Campus at no more than trace levels, Tetra Tech concluded that **"environmental and radiological conditions at the BBC pose no unacceptable human health risk to campers, camp counselors, visitors, or residents at the site."** Again, Tetra Tech calculated BBC's health risk score to be 0.043 in 1,000,000, which is more than 23 times lower (better) than the acceptable EPA level (1 in 1,000,000).

**Should we be concerned about future runoff of water from SSFL?**

Storm water diversions have been constructed on the SSFL to ensure that runoff from the SSFL does not flow on or toward the BBC. Furthermore, the SSFL is regulated under a National Pollutant Discharge Elimination System (NPDES) permit that specifies the levels of contaminants that may be discharged to surface water as storm water runoff or treated groundwater that is released from the SSFL. The remediation activities that are being conducted at SSFL do not permit the discharge of storm water with levels of contaminants that are harmful to humans or the environment.

**We know that years ago some contamination did cross over from SSFL to Brandeis-Bardin in an area some two miles from the center of camp. Was that contamination dangerous?**

Studies have never shown harmful levels of contaminants on the BBC. However, studies performed in the mid-1990s showed that the drainages in the strip of land on the border between the BBC property and the SSFL (the Northern Buffer Zone) had slightly elevated contaminant levels. These drainages are in rough terrain that is not generally accessible to campers or other site users, but in an abundance of caution, the Northern Buffer Zone was sold to Boeing in the mid-1990s and is no longer part of the BBC.

**What is the AJU's priority in dealing with this issue?**

Throughout this process, the AJU's top priorities have been the health and safety of the community (students, campers, faculty and staff) and an open communication process. We have made the results of this definitive investigation public, and we will continue to communicate with the community as regular testing proceeds in the future.