



February 20, 2018

Chuck Hutton  
Pepper Construction Company  
643 N. Orleans St.  
Chicago, IL 60654

RE: 646 N. Michigan Ave. Thorium Monitoring on 2/19/18  
CDOT Permits # 909641 and #907967

Dear Mr. Hutton:

Stan A. Huber Consultants, Inc (SAHCI) was hired by your firm to provide radiation monitoring during excavation for a temporary electrical line at 646 N. Michigan Ave. in Chicago, Illinois. The monitoring was performed by Glenn Huber, SAHCI Health Physicist, on February 19, 2018.

#### Instrumentation

Surface gamma scans were performed using a Ludlum Model 2221 Scaled / Ratemeter (serial no. 134542) with attached Ludlum Model 44-10 2"x2" NaI detector (w/ 6" collimated lead shield). The instrument was calibrated on August 9, 2017. The US Environmental Protection Agency (USEPA) action level of 7.1 picocuries per gram (pCi/g) total thorium for this instrument is 6,415 counts per minute (cpm).

The average background count rate for this location was determined to be 1,844 cpm.

#### Soil Gamma Scans

Gamma surface scans were performed using the Ludlum Model 2221 Scaler / Ratemeter described above. Survey data was collected by entering the excavation after each 18-inch lift and recording the highest count rate for the floors and walls to an excavation depth of 40 inches below ground surface. All fill material was loaded directly into a truck for disposal. The excavation took place in a previously excavated area and all removed fill material was sand.

The maximum gamma count rate for each lift was recorded on the attached Radiation Survey Form. The count rates in the excavation ranged from 1,700 cpm to 2,400 cpm. No count rates were found at any time that exceeded the threshold limit of 6,415 cpm.

### Additional Monitoring

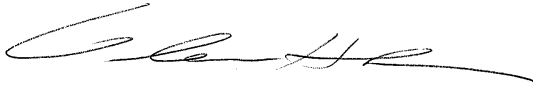
Since no count rates were identified above the 7.1 pCi/gram threshold limit, no additional soil sampling, air monitoring, or personnel monitoring were performed.

### Regulatory Notification of Survey Completion

I will be providing a copy of this report to both the City of Chicago Department of Public Health and USEPA, as required.

Thank you for your assistance with this project. If you have any questions or need additional information, please call me at (815) 485-6161.

Sincerely,  
Stan A. Huber Consultants, Inc.

A handwritten signature in black ink, appearing to read 'Glenn Huber', with a long horizontal flourish extending to the right.

Glenn Huber, CHP  
President

## Radiation Survey Form

Location/ Project ID: Pepper Construction 646 N. Michigan Ave.

Date: 2/19/18

Technician: Glen Huber

Inst Model: Ludlum 2201

Serial No. : 134542

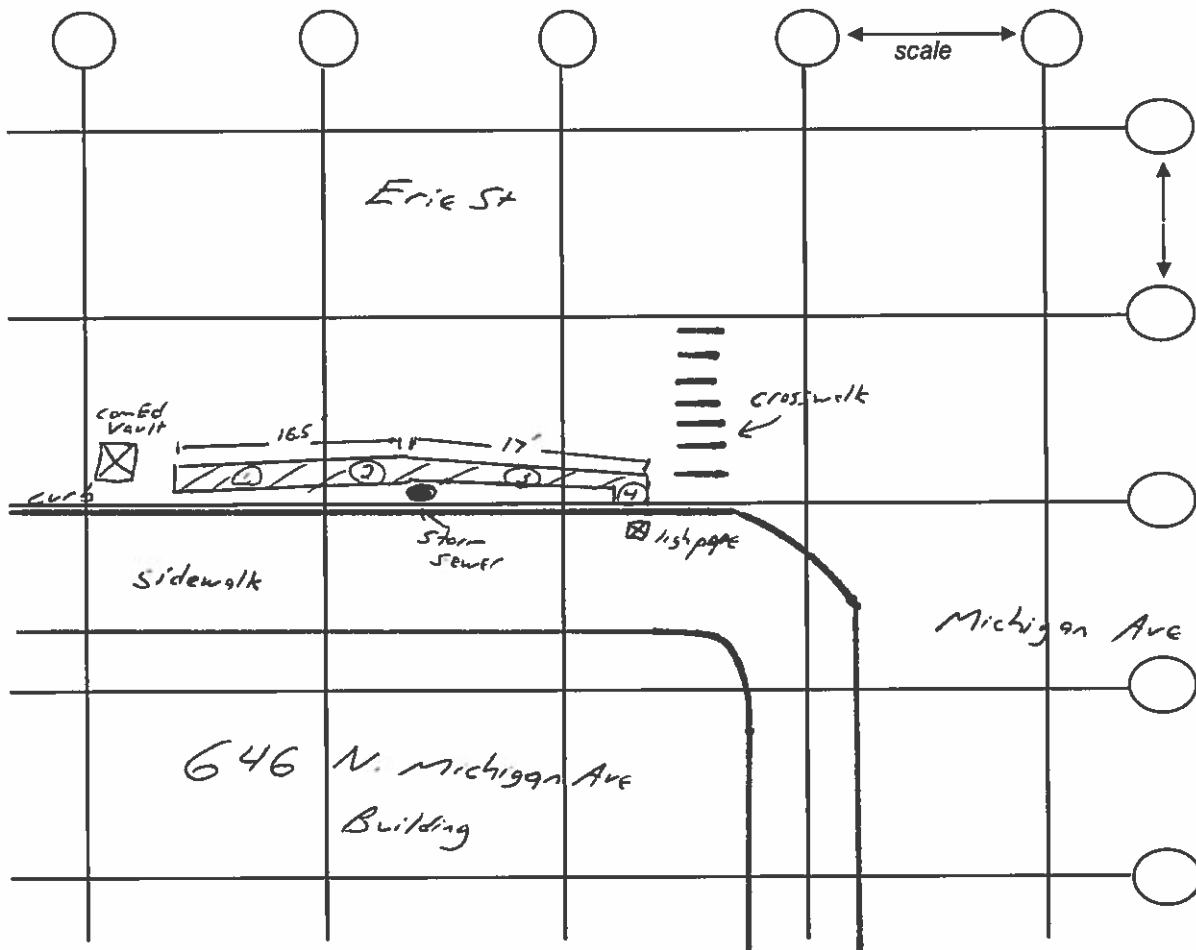
Probe Type: 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded

Lift Elevation: 40" below ground surface

Background 1844 cpm

Action Level: 6,415 cpm

Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm.



X = Excavated Area

<p>① Surface <u>cpm</u> 1700 -1.5' 1900 -3.0' 2200</p>	<p>② Surface <u>cpm</u> 1800 -1.5' 2000 -3' 2200</p>	<p>③ Surface <u>cpm</u> 1800 -1.5' 2200 -3' 2300</p>	<p>④ Surface <u>cpm</u> 2000 -1.5' 2400 -3' 2100</p>
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\* Existing concrete duct @ -40". Entire trench = clean sand