



April 7, 2020

Mike Lanenga  
SET Environmental  
450 Sumac Road  
Wheeling, Illinois 60090

RE: 100-211 E. Illinois St. Thorium Monitoring – City of Chicago Department of Water Management / Reliable Contracting  
CDOT Permit: 1045362 & 1045373

Dear Mr. Lanenga:

Stan A. Huber Consultants, Inc (SAHCI) was hired by your firm to provide radiation monitoring during the excavation for the installation of a new water main at 100 – 211 E. Illinois St. in Chicago, Illinois. The monitoring was performed by Mark Dewald, Jeremy Kieser, and Brian Schmidt, SAHCI Health Physics Technicians, from March 2, 2020 to March 25, 2020. All activities were conducted under the guidance of document *SET General Procedure for Thorium Monitoring*.

The excavation work at this project is a continuation of a project that was already in progress. Rather than a single trench being excavated and monitored, most areas were extensions off of an already excavated trench. Some areas were where the upper lifts were already excavated, but were now being dig deeper.

#### Instrumentation

Surface gamma scans were performed using a Ludlum Model 2221 Scaler / Ratemeters with attached Ludlum Model 44-10 2"x2" NaI Detectors (w/ 6" collimated lead shield).

The following detail the serial numbers of the instruments, calibration dates, and US Environmental Protection Agency (USEPA) action level of 7.1 picocuries per gram (pCi/g) total thorium in counts per minute (cpm).

<u>Serial Number</u>	<u>Calibration Date</u>	<u>Action Level</u>
126497	10/18/19	6,197 cpm
126496	10/18/19	7,102 cpm
127242	8/6/19	6,673 cpm
132844	8/7/19	7,299 cpm

The average background count rate for this location ranged from 1,447 cpm to 1,998 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 excavations and recording the highest count rate for the floor and walls to a maximum excavation depth of 8.5 feet below ground surface. Surveys of material excavated below 3 feet of ground surface were surveyed in the excavator bucket as it was removed. All asphalt, concrete, and soil were loaded directly into a truck for disposal.

The maximum gamma count rate for each lift was recorded on the attached Radiation Survey Form. The count rates in the excavation ranged from 1,300 cpm to 2,900 cpm. No count rates were found at any time that exceeded the threshold limits ranging from 6,197 cpm to 7,299 cpm.

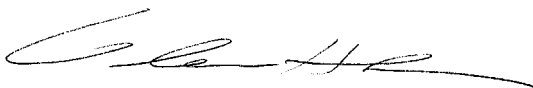
### Additional Monitoring

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.

I will be providing a copy of this report to both the City of Chicago Department of Public Health and US Environmental Protection Agency, 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.



Glenn Huber, CHP  
President

100-211 Illinois Street Survey

March 2-March 25, 2020

By: Jeremy Kieser, Mark Dewald, and Brian Schmidt

Counts in cpm at each location:							
	3/2/2020	3/3/2020	3/4/2020	3/18/2020	3/5/2020	3/5/2020	3/6/2020
Depth:	Area 1 MD	Area 2 MD	Area 3 MD	Area 4 JK	Area 5 JK	Area 6 JK	Area 7 JK
0-1.5'	N/A	N/A	1400	1300	1600	1600	1600
1.5-3'	N/A	N/A	1500	1800	1900	1800	1700
3-4.5'	N/A	N/A	2200	2300	2000	1900	1800
4.5-6'	N/A	N/A	2300	2100	2200	2200	2000
6-7.5'	N/A	N/A	1900	1900	N/A	N/A	N/A
7.5-9'	1400	1700	N/A	N/A	N/A	N/A	N/A

Counts in cpm at each location:			
	3/10/2020	3/10/2020	3/25/2020
Depth:	Area 1 BS	Area 2 BS	Area 3 BS
0-1'	1600	1400	1800
1'-2.5'	1600	1600	2500
2.5'-4'	1700	1700	2400
4'-5.5'	N/A	1900	2900
5.5'-7'	N/A	1800	2700
7'-8.5'	N/A	1800	1800
8.5'-10'	N/A	N/A	1600

### Radiation Survey Form

Location/ Project ID: 100-211 Illinois St

Date: 3/2/2020 - 3/4/2020

Technician: Mark Oswald

Inst Model: Ludlum 2221

Serial No.: 126497

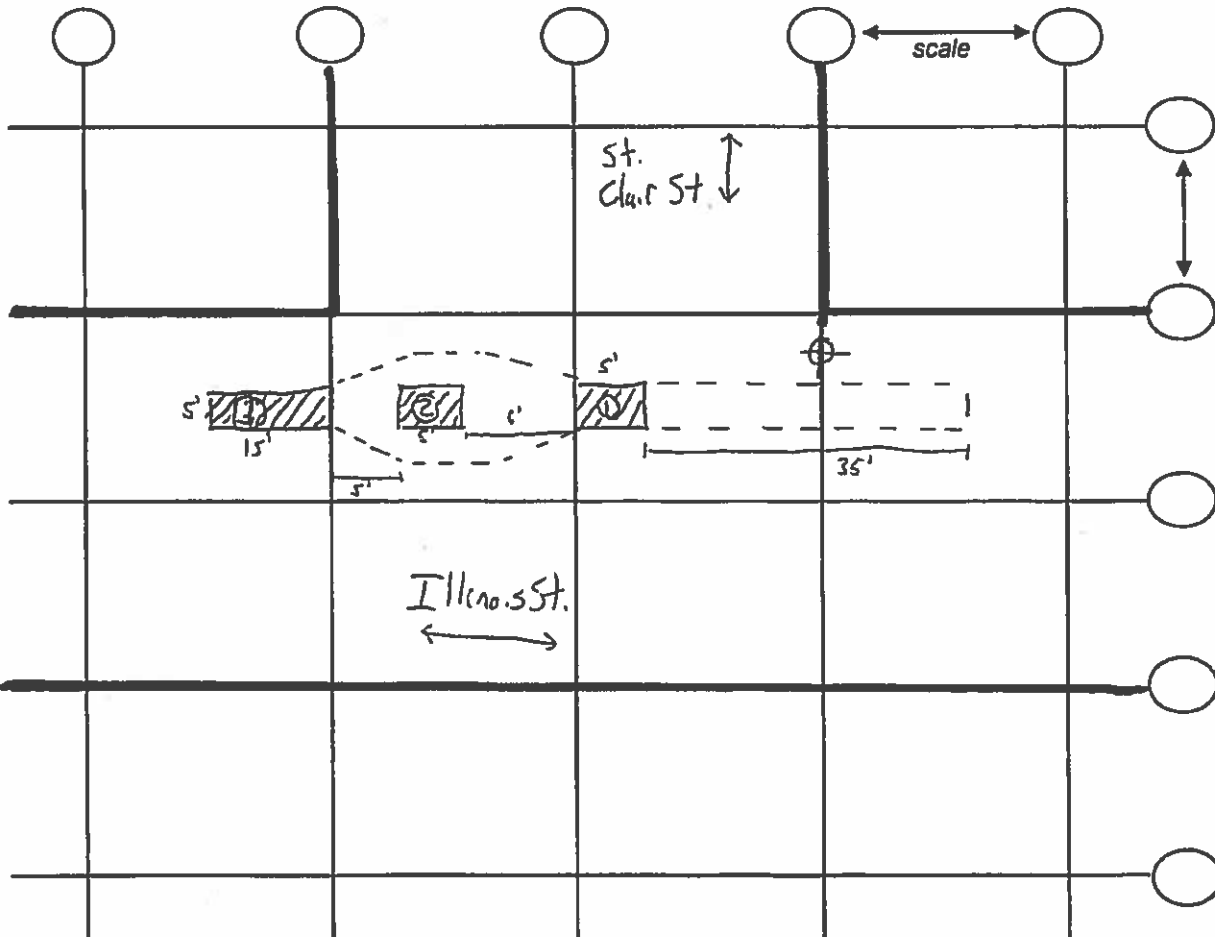
Probe Type: 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded

Lift Elevation: 0-8'

Background 1447 cpm

Action Level: 6179 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.



- previously dug area
- excavated area
- background location

### Radiation Survey Form

Location/ Project ID: 100-211 Illinois St

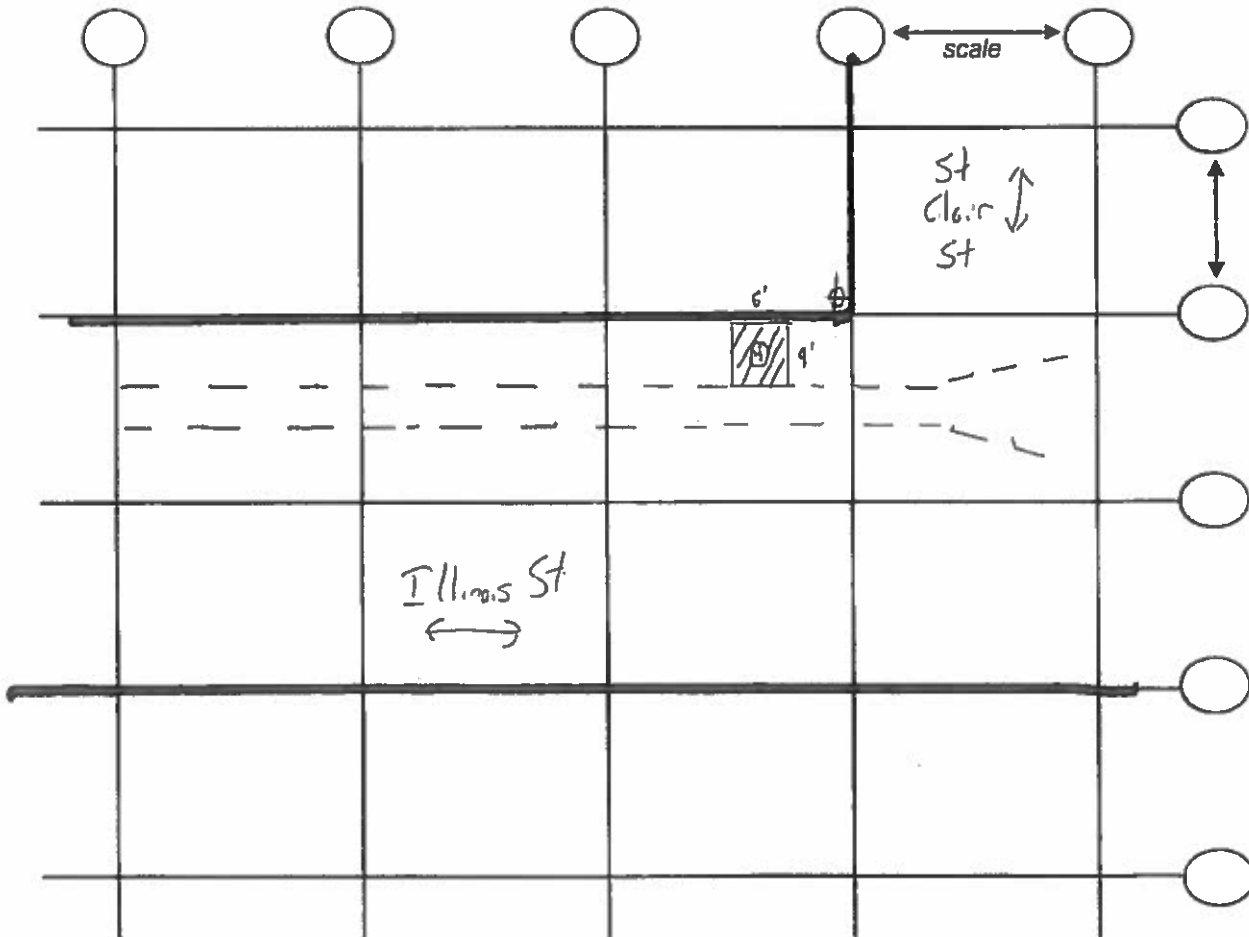
Date: 3/18/2020 Technician: Mark Dewild

Inst Model: Ludlum 2221 Serial No.: 126496

Probe Type: 1"x1" NaI / 2"x2" NaI Lift Elevation: 0-7'  
Shielded / Not Shielded

Background 1606 cpm Action Level: 7102 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.



- previously excavated area
- excavated area
- background location

## Radiation Survey Form

Location/ Project ID: 100-211 Illinois St.

Date: March 5 & 6, 2020

Technician: Jeremy Kieser

Inst Model: Ludlum 2221

Serial No.: 127242

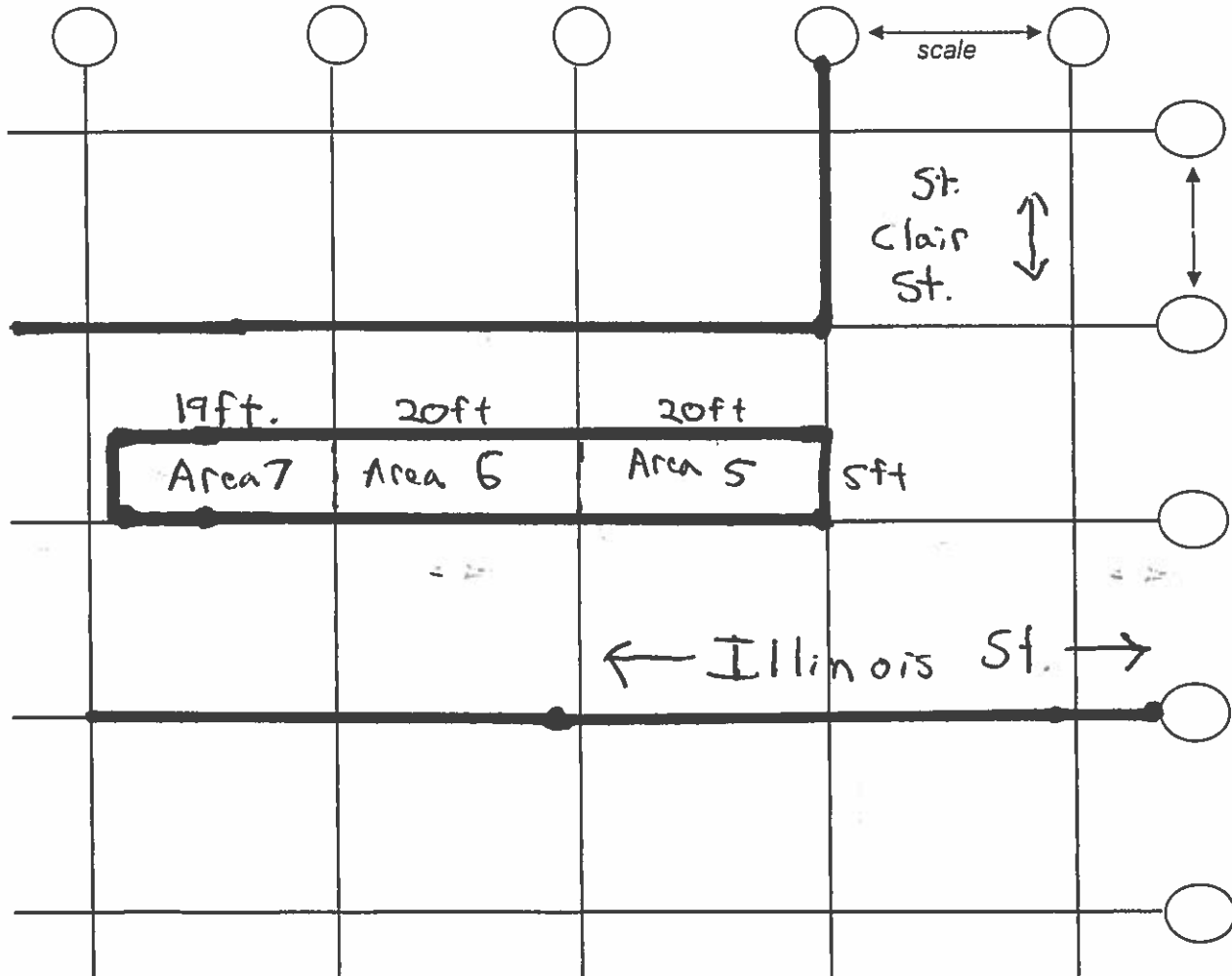
Probe Type: 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded

Lift Elevation: Surface to 6ft

Background 1998 cpm

Action Level: 6673 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.



### Radiation Survey Form

Location/ Project ID: RELIABLE - STORM SEWER REPAIR - ROW RADIOLOGICAL SOIL SURVEY

Date: 3/10/2020

Technician: BRIAN SCHMIDT

Inst Model: LUDELUM-2221

Serial No.: 132844

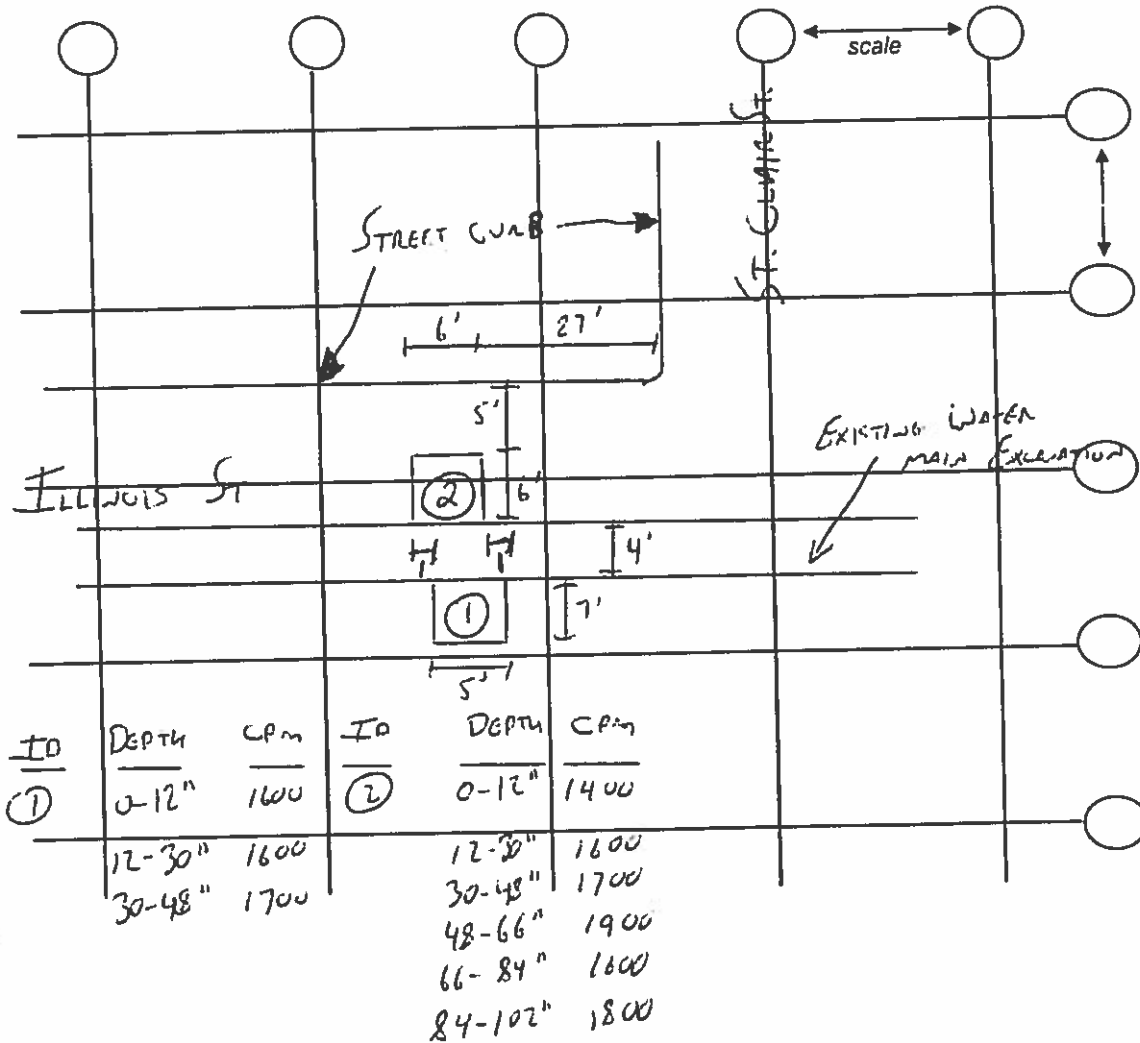
Probe Type: 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded

Lift Elevation: 0-84"

Background 1806 cpm

Action Level: 7299 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.



### Radiation Survey Form

Location/ Project ID: RELIABLE - WATER VALVE REPLACEMENT - ILLINOIS ST + ST. CLAIR ST. - ROW  
RADIOLOGICAL SOIL SURVEY

Date: 3/25/2020 Technician: Brian Schmidt

Inst Model: CVLUM-2221 Serial No.: 132844

Probe Type: 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded Lift Elevation: 0-102"

Background 1806 cpm Action Level: 7299 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.

