



100 West Monroe, Suite 300, Chicago, IL 60603

February 29, 2012

Mrs. Rahmat Begum  
Chicago Department of Environment  
33 N. LaSalle Street, Basement  
Chicago, Illinois 60602



Re:

Western Utility  
444 North Michigan (Lower) Ave Radiological Monitoring  
Location: 44,4 North Michigan (Lower) Ave  
Permit Number: 254182062

Dear Mrs. Begum:

Oneida Total Integrated Enterprises (OTIE) was contracted by Western Utilities to conduct environmental health and safety radiological monitoring of the excavation at 444 North Michigan (Lower) Ave in the Streeterville Neighborhood of Chicago, Illinois. The proposed work by Western Utility involved excavating a 9-foot by 9-foot area on 400 Block of North Michigan (Lower) Ave to replace the old manhole structure with a new manhole structure.

Western Utility conducted excavation activities in the evenings on February 21<sup>st</sup> and February 22<sup>nd</sup>, 2012. The initial part of the excavation involved setting up orange traffic cones to divert through traffic. OTIE Babu conducted radiation background surveying of the area surrounding the proposed excavation areas prior to excavation. OTIE followed the US EPA survey procedures listed under the fact sheet titled "Before you Dig – Radioactive Thorium and Construction Activities in the Streeterville Area".

**February 21<sup>st</sup>, 2012**

OTIE conducted radiological surveying using a Ludlum 2221 scaler/ratemeter with a Ludlum 44-10 probe. The 44-10 probe is a 2"x 2" Sodium Iodide (NaI) probe which is recommended by the US Environmental Protection Agency (US EPA) to measure the total gamma and beta radiation contamination or radioactivity. The instrument used during the survey on February 21<sup>st</sup>, 2012 was a Ludlum 2221 with serial number 183983. The Ludlum 2221 was calibrated on March 08, 2011 by EnergySolutions Services, Inc. The scaler/ratemeter has a digital readout capability and measures the radioactivity in counts per minute (cpm). The probe used during the February 21<sup>st</sup>, 2012 survey was a Ludlum 44-10 with serial number 229174. The 2" x 2" probe was calibrated on March 31, 2011 by EnergySolutions Services, Inc with a known source and had a calibrated conversion factor of 1 µR/hr for every 931 cpm. The action level derived for the site was 18,620 cpm, based on the instrument calibration that correlates with the USEPA action level for thorium of 7.1 picocuries per gram (pCi/g).

During OTIE's background survey, background radiation levels ranged from 3,300 cpm (3.54  $\mu$ R/hr) to 5,100 cpm (5.48  $\mu$ R/hr) along 400 Block of North Michigan Avenue (lower). Typical background readings are less than 10  $\mu$ R/hr. However, background readings at an area on E Hubbard Street close to North Michigan were 10,454 cpm (11.23  $\mu$ R/hr). No excavation was planned for this area.

A 9-foot by 9-foot square area close to the median on the northbound lane of North Michigan Avenue (lower) was excavated up to 6-foot depth on February 21<sup>st</sup>, 2012. During the excavations activities, OTIE surveyed soil and concrete excavated from the area. Once the material was surveyed, it was placed into loading trucks. The excavated material radiological survey readings inside the buckets ranged from 3,137 cpm (3.37  $\mu$ R/hr) to 8,599 cpm (9.24  $\mu$ R/hr). Maximum readings found inside the excavation was 10,240 cpm (11.00  $\mu$ R/hr).

**February 22<sup>nd</sup>, 2012**

The equipment used on February 21<sup>st</sup>, 2012 was also used on February 22<sup>nd</sup>, 2012. The action level for this site was still 18,620 cpm, based on the instrument calibration that correlates with the U. S. EPA action level for thorium of 7.1 picocuries per gram (pCi/g).

Excavation continued up to 8-foot depth to remove the old manhole on February 22<sup>nd</sup>, 2012. During the excavations activities, OTIE surveyed soil excavated from the area. Once the material was surveyed, it was placed into loading trucks. The excavated material radiological survey readings inside the buckets ranged from 3,084 cpm (3.31  $\mu$ R/hr) to 5,731 cpm (6.16  $\mu$ R/hr). Maximum readings found inside the excavation was 10,900 cpm (11.71  $\mu$ R/hr).

In addition to the action level of 18,936 a notification limit of three times the background radiation level was also used as a conservative action level for the site. All radiological survey readings collected during the 444 North Michigan (Lower) Avenue excavation activities were below three times the background reading and below the USEPA action levels for thorium. Enclosed with this letter is the Project Radiological Survey Readings (Table 1) in Attachment A. If there are any questions, please contact me by phone at (312) 220-7000 ext. 24 or through an e-mail at [nbabu@otie.com](mailto:nbabu@otie.com).

Sincerely,



Naren Babu  
Staff Engineer  
Oneida Total Integrated Enterprises

Cc:

Verneta Simon, U.S. EPA Region 5

Attachment A: Table 1. Project Radiological Survey Readings

**ATTACHMENT A**  
**Table 1: Project Radiological Survey Readings**

<b>Table 1. Project Radiological Survey Readings</b> <b>444 N. Michigan (Lower Michigan)</b> <b>Radiological Monitoring</b> <b>Chicago, IL</b>		
Date	Area/Direction	Reading (cpm)
2/21/2012	Buckets w/ Concret Blocks	3,971
		4,864
		4,107
		5,605
		6,918
		5,357
		7,912
2/21/2012	Excavator removing the soil and loading onto a haul truck	6,487
		3,240
		3,137
		3,688
		3,503
		4,868
		5,226
		4,724
		4,720
		5,505
		4,913
		3,216
		3,418
		3,639
		3,947
		3,713
		3,354
		3,392
		5,315
		5,011
		4,773
		4,928
		4,710
		4,664
		3,719
		6,757
		5,824
		7,771
		4,458
		8,599
		7,892
		6,433
		5,345
4,186		
3,312		
3,439		
4,081		
3,819		
4,138		
4,178		
3,346		
6,171		
6,428		
5,453		
4,286		
4,686		
4,195		
4,272		
4,569		

<b>Table 1. Project Radiological Survey Readings            444 N. Michigan (Lower Michigan)            Radiological Monitoring            Chicago, IL</b>		
<b>Date</b>	<b>Area/Direction</b>	<b>Reading (cpm)</b>
2/21/2012	Excavator removing the soil and loading onto a haul truck	4,618
		3,863
		3,788
		4,983
		5,091
		3,853
		4,008
		5,833
2/21/2012	Inside Excavation along walls	4,477
		7,700
2/22/2012	Excavator removing the soil and loading onto a haul truck	10,240
		5,177
		5,731
		4,124
		5,684
		4,173
		3,220
		3,084
		3,110
		3,267
		4,058
		3,329
		4,537
		4,862
		3,646
		3,314
		4,055
		4,085
3,856		
3,315		
4,101		
4,083		
3,396		
2/22/2012	Inside Excavation along walls	8,200
10,138		
2/22/2012	Inside Excavation along walls	9,000
10,900		
2/22/2012	Excavator removing the soil and loading onto a haul truck	3,699
		3,723
		3,689
		3,547
		3,408
		3,361
		5,622
		4,678
3,954		
4,287		