

Radiological Survey  
160 N. Columbus Drive Lower Level  
Chicago, Il 60601

Performed on  
MARCH 29<sup>TH</sup>, 2013

FOR

BENCHMARK CONSTRUCTION CO.  
3349 S. KEDZIE AVENUE  
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BY

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APRIL 2<sup>nd</sup>, 2013

## I. INTRODUCTION

In the early 1900s, Lindsay Light and Chemical Company used thorium in industrial operations between Illinois Street and Grand Avenue east of Michigan Avenue, in Chicago's Streeterville area. Thorium is naturally radioactive. The predominate isotope of thorium, thorium-232 (Th-232), decays to radium-228 (Ra-228). Another isotope, thorium-230 (Th-230), decays to radium-226 (Ra-226).

The US Environmental Protection Agency (EPA) reported that the material from Lindsay Light and Chemical Company operations may have been in fill used in the 100 block of North Columbus drive, Chicago, Illinois. The EPA has set a standard of 5 picocuries per gram (pCi/g) of Ra-226 plus Ra-228 above background concentrations. Background concentrations in the Streeterville area are assumed to be 2.1 pCi/g total resulting in an action level of 7.1 pCi/g combined Ra-226 and Ra-228.

## II. METHODOLOGY

On March 29, 2013, RSSI performed radiological surveys of an unpaved section of dirt on the lowest level of the 100 block of Columbus drive. Radiation levels were measured in an approximately ten-foot by six-foot area that contained two manholes, using a 2 inch by 2 inch thallium doped sodium iodide (NaI(Tl)) detector attached to a Ludlum Model 193 survey meter (Model 193).

The Ludlum Model 193 is a general purpose portable survey instrument with a fixed alarm point and a quick deviation alarm. The quick deviation alarm enables detection of subtle changes in radiation levels. The Model 193 is used with a Ludlum Model 44-10 2" X 2" that is highly sensitive to gamma radiation. The detector was shielded to minimize the response to background radiation. The instrument response was approximately 700 counts per minute (cpm) per pCi/g of Ra-226 and Ra-228.

## III. RESULTS

The background radiation levels in the area were recorded being between 3,000 and 3,500 cpm. Radiation levels at the surface of soil in the approximately 60 square-foot area interest were measured between 3,000 and 4,000 cpm, not significantly different from background.