



August 17, 2017

Luke Wells  
Electric Conduit Construction  
816 Hicks Drive  
Elburn, IL 60119

RE: 450-515 N. Columbus Dr. Thorium Monitoring 7/13/17 – 8/11/17  
CDOT Permit #814882

Dear Mr. Wells:

Stan A. Huber Consultants, Inc (SAHCI) was hired by your firm to provide radiation monitoring during excavation for a conduit installation at 450-515 N. Columbus Dr. in Chicago, Illinois. The monitoring was performed by Brian Schmidt and Glenn Huber, SAHCI Health Physics Technicians, on July 13, 2017 through August 11, 2017.

#### Instrumentation

Surface gamma scans were performed using Ludlum Model 2221 Scaler / Ratemeters (serial no. 126496 and 134542) with attached Ludlum Model 44-10 2"x2" NaI detectors (w/ 6" collimated lead shields). The average background count rate at this location was determined to be approximately 1,800 cpm.

- Serial number 126496 was calibrated on October 14, 2016. The USEPA action level of 7.1 picocuries per gram (pCi/g) total thorium for this instrument is 7,029 counts per minute (cpm).
- Serial number 134542 was calibrated on August 8, 2016. The USEPA action level of 7.1 picocuries per gram (pCi/g) total thorium for this instrument is 6,338 counts per minute (cpm).

#### Soil Gamma Scans

Gamma surface scans were performed using the Ludlum Model 2221 Scaler / Ratemeters described above. Survey data was collected by entering the trench excavation after each 18-inch lift and recording the highest count rate for the floors and walls to a maximum excavation depth of 48 inches below ground surface. All soil was loaded directly into a truck for disposal.

The maximum gamma count rate for each lift was recorded on the attached Radiation Survey Forms. The count rates in the excavation ranged from 1,400 cpm to 6,300 cpm. No count rates were found at any time that exceeded the threshold limits of 7,029 cpm and 6,338 cpm.

Elevated readings were observed as the trench reached N. Park. Drive, heading east. Extensive surveys were performed in Survey Units 13-15 in this area with instrument #126496. Count rates ranging from 5,600 cpm – 6,300 cpm were observed at approximately 3 feet below ground surface, but at no time was the threshold count rate exceeded.

#### Additional Monitoring

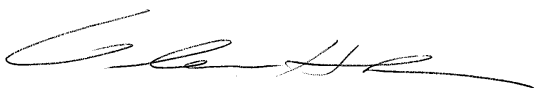
Since no count rates were identified above the 7.1 pCi/gram threshold limit, no additional soil sampling, air monitoring, or personnel monitoring were performed.

#### 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 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.

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: ELECTRIC CONDUIT - ILLINOIS ST. & COLUMBUS ST - CHICAGO, IL - FIBER OPTIC ROW INSTALLATION

Date: 7/13-14/2017

Technician: PAUL SCHMIDT

Inst Model: LUDLUM-2221

Serial No.: 126496

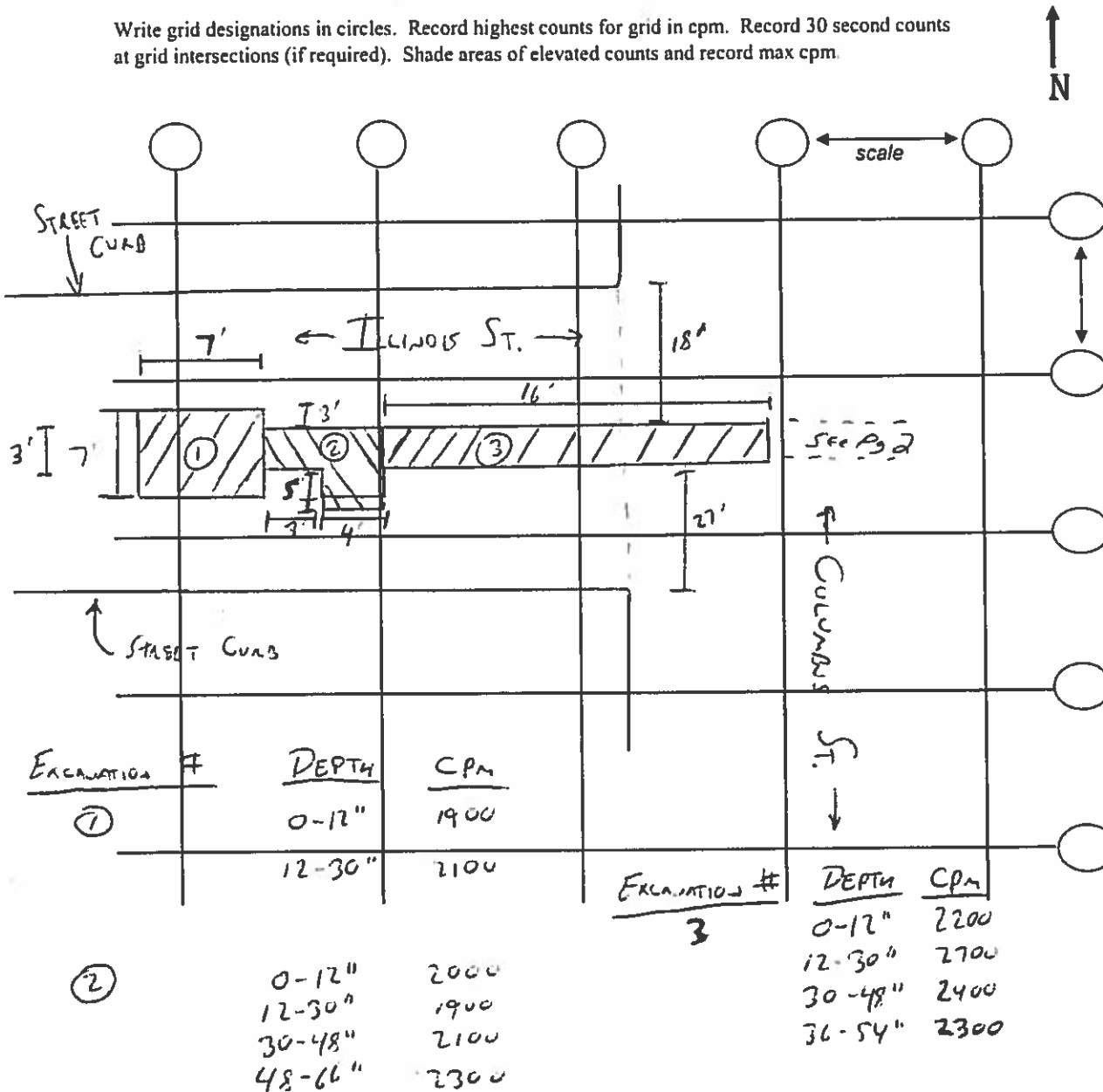
Probe Type: 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded

Lift Elevation: 0-48"

Background 1829 cpm

Action Level: 7024 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: Electric Conduit Construction - Illinois & Columbus Dr Fiber Optic

Date: 7/17/17 - 7/19/17 Technician: Glenn Huber

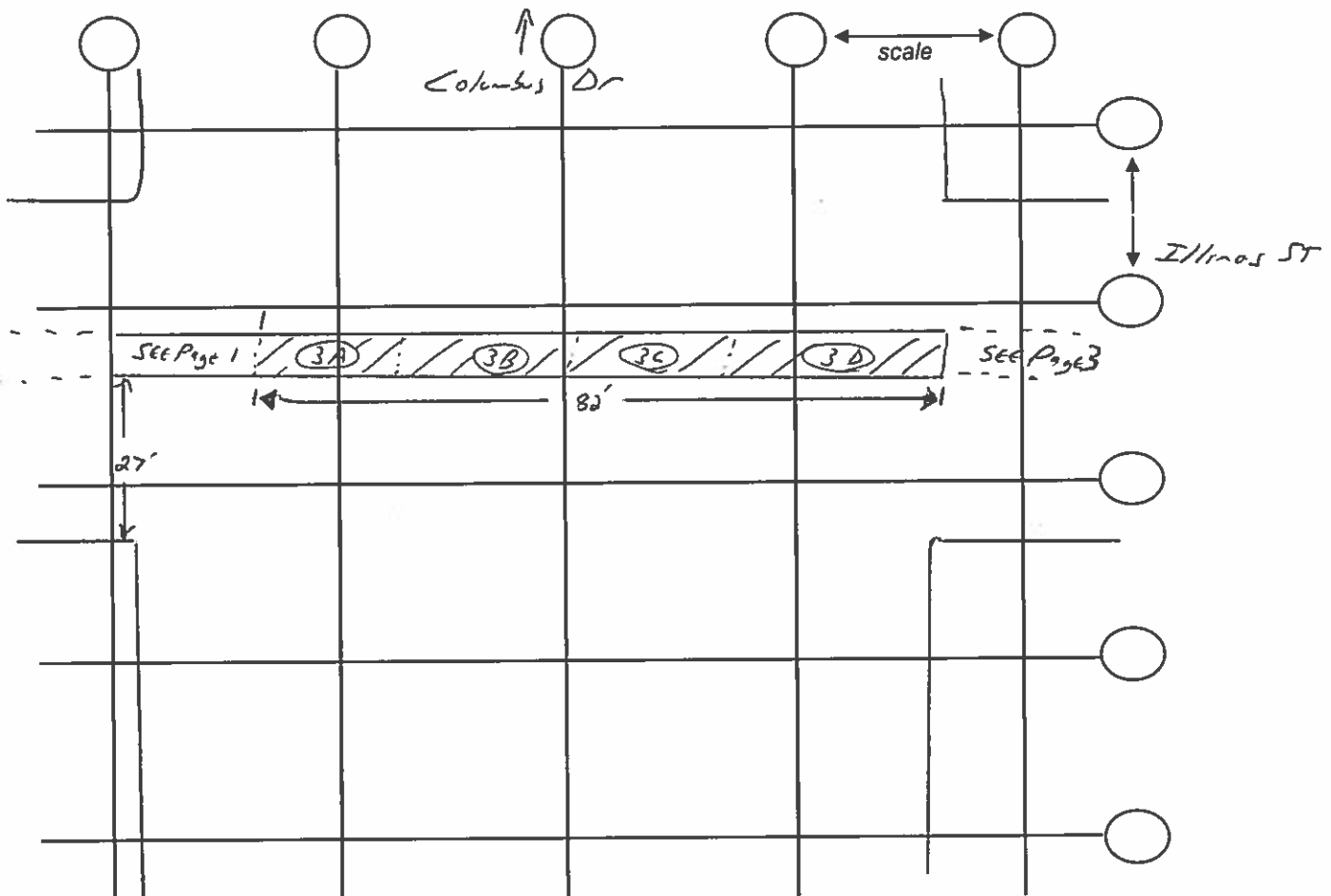
Inst Model: Lucas 2221 Serial No.: 134542

Probe Type: 1"x1" NaI / 2"x2" NaI Lift Elevation: Surface → -4'  
Shielded / Not Shielded

Background 1800 cpm Action Level: 6,338 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.

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(3A)	Depth	CPM	(3B)	Depth	CPM	(3C)	Depth	CPM	(3D)	Depth	CPM
	Surf	2100		Surf	1900		Surf	1800		Surf	2000
	-18"	2300		-18"	2100		-18"	2500		-18"	2100
	-36"	2300		-36"	2200		-36"	2300		-36"	2300
	-48"	2700		-48"	2400						

## Radiation Survey Form

Location/ Project ID: ELECTRIC CORDON - ILLINOIS ST. & COLUMBUS ST - CHICAGO IL - FIBER OPTIC ROW INSTALLATION

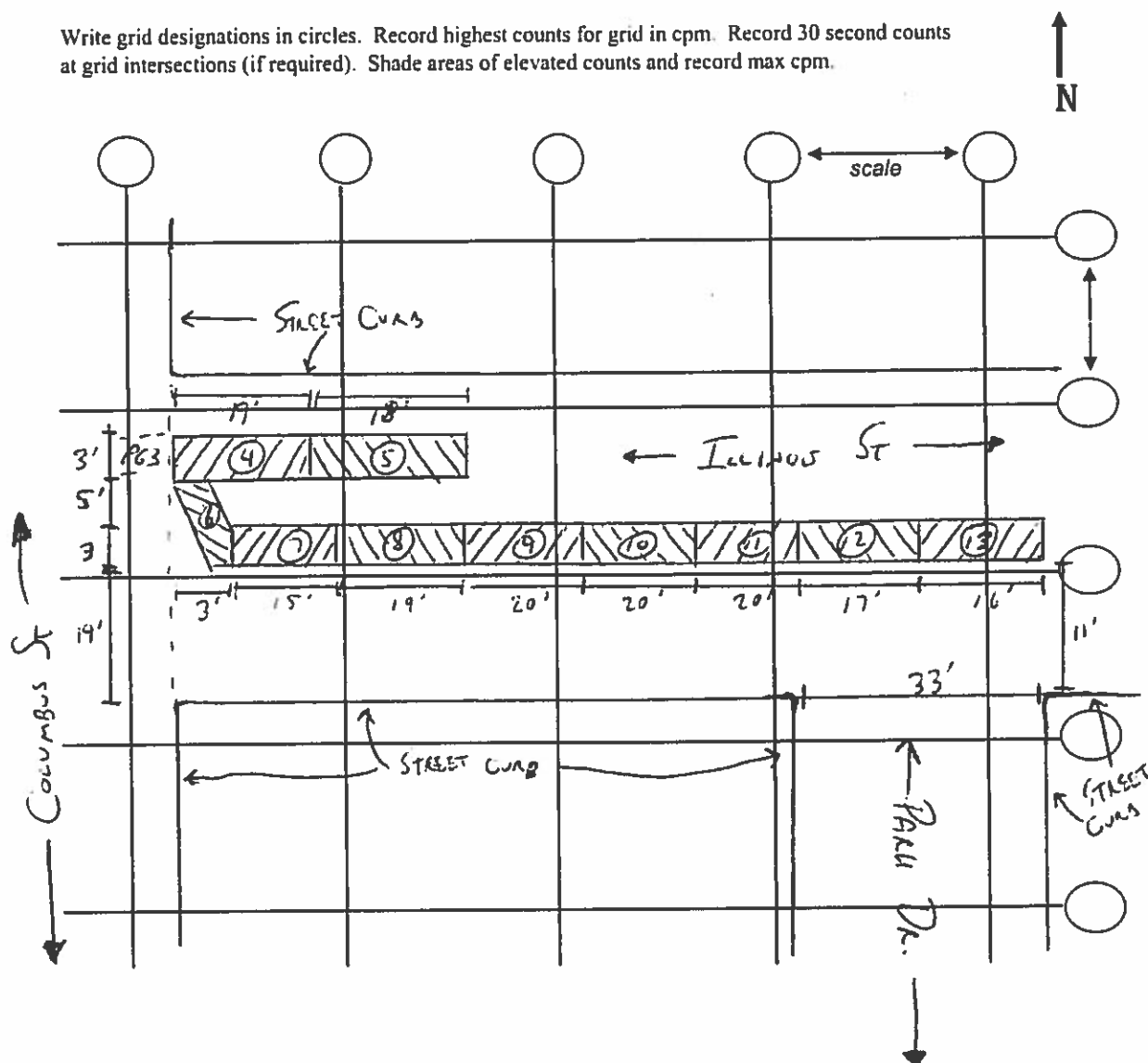
Date: 7/21/2017 + 8/8-10/2017 Technician: BRIAN SCHMIDT

Inst Model: LuPVM-2221 Serial No.: 126496

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

Background 1829 cpm      Action Level: 7029 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: ELECTRIC CONDUIT - ILLINOIS ST & COLUMBUS ST. - CHICAGO, IL - FIBER OPTIC

Date: 8/11/2017

Technician: BRIAN SCHMIDT Row

Inst Model: Ludlum - 2221

Serial No. : 126496

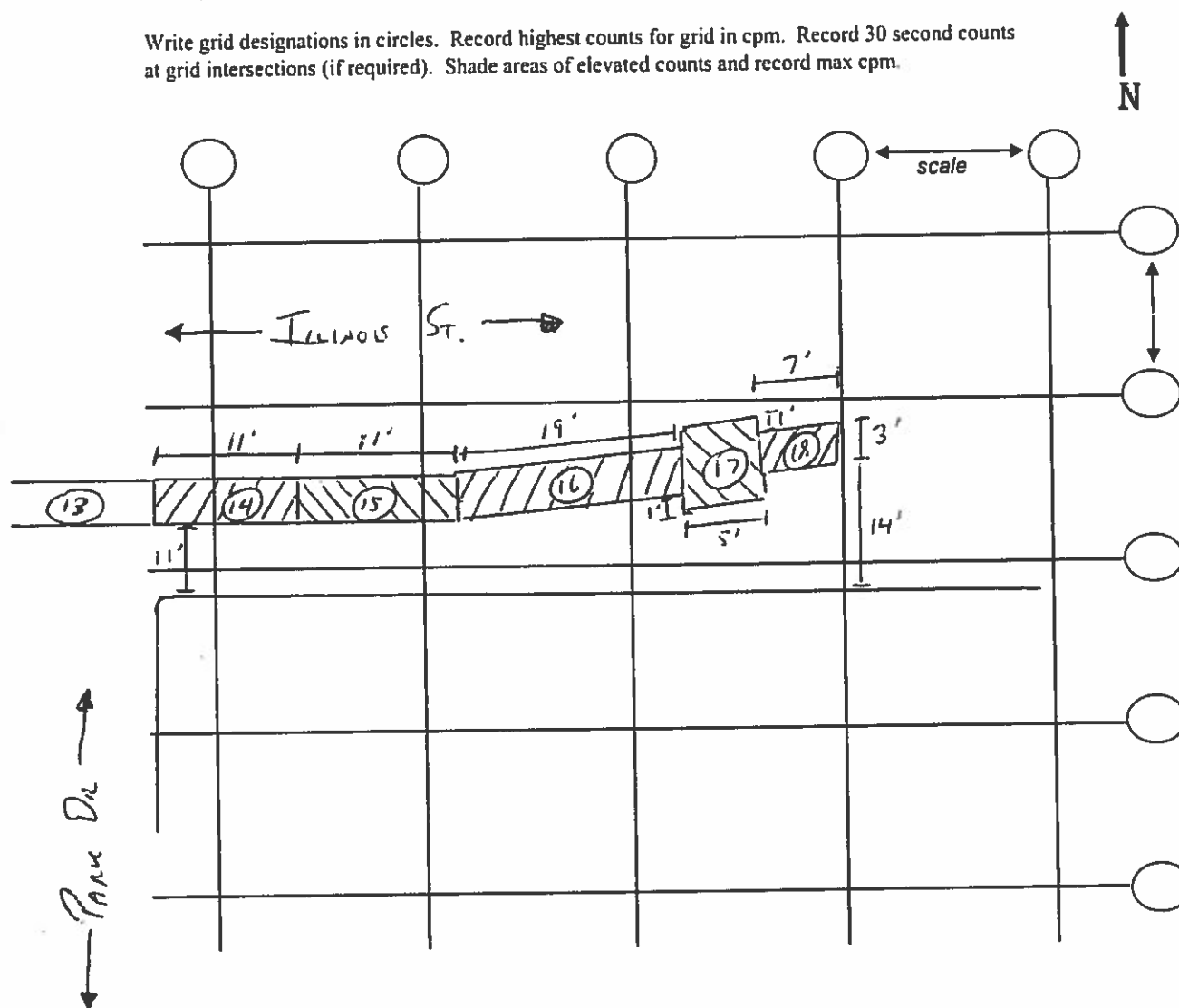
**Probe Type:** 1"x1" NaI / 2"x2" NaI  
Shielded / Not Shielded

Lift Elevation: 0-48"

Background 1829 cpm

Action Level: 7029 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: ELECTRIC CONDUIT - ILLINOIS ST. & COWLES ST. - CHICAGO, IL - FIBER OPTIC ROW INSTALLATION

Date: 7/21 - 8/14 2017

Technician: BRIAN SCHMIDT

Inst Model: LOQUUM-2221

Serial No.: 126496

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

Lift Elevation: 0-48"

Background 1829 cpm

Action Level: 7029 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.



EXCAVATION #	DEPTH	CPM	EXCAVATION #	DEPTH	CPM
(4)	0-12"	2600	(12)	0-12"	1600
	12-30"	2800		12-30"	2200
	24-42"	2400		30-48"	4100
(5)	0-12"	2400		36-54"	4400
	12-30"	2700	(13)	0-12"	1800
	24-42"	2500		12-30"	2400
(6)	0-12"	1600		30-48"	5200
	12-30"	2200		36-54"	5700
	30-48"	2600	(14)	0-12"	3600
	36-54"	2900		12-30"	4300
(7)	0-12"	1900		30-48"	5900
	12-30"	2100		36-54"	6300
	30-48"	2900	(15)	0-12"	2900
	36-54"	3100		12-30"	3700
(8)	0-12"	1700		30-48"	5600
	12-30"	2200		36-54"	5200
	30-48"	2300	(16)	0-12"	1900
	36-54"	3100		12-30"	1900
(9)	0-12"	1400		30-48"	3000
	12-30"	1500		36-54"	3500
	30-48"	2800	(17)	0-12"	2100
	36-54"	3100		12-30"	2200
(10)	0-12"	1400		30-48"	2800
	12-30"	1900		36-54"	3000
	30-48"	2400		48-66"	3300
	36-54"	2500	(18)	0-12"	1800
(11)	0-12"	1600		12-30"	2300
	12-30"	1800		30-48"	3600
	30-48"	3200		48-66"	4200
	36-54"	3400			