

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
ILLINOIS EMERGENCY MANAGEMENT AGENCY
BUREAU OF RADIATION SAFETY
1035 OUTER PARK DRIVE
SPRINGFIELD, IL 62704
(217) 785-9947

RADIOACTIVE MATERIAL LICENSE

Pursuant to the Illinois Radiation Protection Act and the rules and regulations in 32 Illinois Administrative Code promulgated thereunder, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess and transfer radioactive material(s) listed herein; and to use such radioactive material(s) for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations and orders of the Agency now or hereafter in effect and to any conditions specified in the license.

City of Chicago
Department of Assets and Information and Services (AIS)
30 North LaSalle St., Suite 300
Chicago, IL 60602

LICENSEE
IL- 02467-01

LICENSE NUMBER
January 31, 2021

EXPIRATION DATE

AMENDMENT NUMBER
4

Attention: Abby Mazza P.E.
Environmental Engineer III

In accordance with application dated 5-13-2015 and letters with attachments dated 5-28-2015 and 6-18-2015, License Number IL-02467-01 is established.

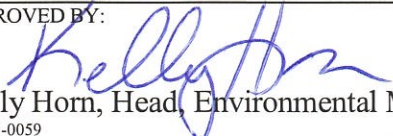
ITEM	RADIONUCLIDE	MAXIMUM ACTIVITY*		MAXIMUM POSSESSION	
		CHEMICAL and/or PHYSICAL FORM	PER SOURCE	PER SOURCE	LIMIT
A.	Radium, Uranium, Thorium, and their daughters	As contamination from previous operations			Only the quantity present at the site
B.	Radium, Uranium, Thorium and their daughters	As Environmental (air, soil, water) and wipe samples	Any	Any	Any

Agency Note: Manufacturers/Distributors must verify authenticity of license and maximum possession limits with the Illinois Emergency Management Agency, Bureau of Radiation Safety prior to shipment of radioactive material to this licensee.

AUTHORIZED USE:

- A. Except as specifically provided otherwise by the license, the licensee shall possess and use radioactive material described in all schedules of this license in accordance with statements, representations and procedures contained in, referenced in, or enclosed with the documents listed below for Site Decommissioning Plan and associated implementing documents.**
- B. For collection, possession, storage and transfer of samples incidental to site environmental monitoring and characterization act**

* μCi-microcurie; mCi-millicurie; Ci-Curie; MBq-Megabecquerel; GBq-Gigabecquerel; TBq-Terabecquerel; g-gram; μg-microgram; kg-kilogram

APPROVED BY:  DATE: May 19, 2020 PAGE of PAGES: 1 9

Kelly Horn, Head, Environmental Management Section
IL 473-0059

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

<u>LICENSEE</u>	<u>LICENSE NUMBER</u>	<u>AMENDMENT NUMBER</u>	<u>EXPIRATION DATE</u>
City of Chicago	IL- 02467-01		January 31, 2021

CONDITIONS

1. Radioactive material listed in License Schedule Items A. and B. shall be stored only on the licensee's property at 434 East 26th Street, Chicago, Illinois, known as the Former Carnotite Reduction Company site and further described in accordance with statements, representations and procedures listed in other conditions of this license.
2. Radioactive material shall be used by, or under the supervision of the Radiation Safety Officer Glen Huber, CHP or individuals who have been trained in accordance with application dated May 13, 2015. The licensee shall maintain training records of all designated users.
3. License Responsibilities
 - A. The Radiation Safety Officer for this license is Glenn Huber, as designated by the Agent for the City of Chicago.
 - B. The Agent for the City of Chicago is Kimberly Worthington, P.E., Deputy Commissioner.
 - C. The Contact for the City of Chicago is Abby Mazza, P.E., Environmental Engineer III.
4. The Radiation Safety Officer may delegate certain duties to specified individuals provided that:
 - A. The licensee maintain, for a period of 5 years, records of all individuals designated by the Radiation Safety Officer to perform duties or meet regulatory requirements that would otherwise be required as a duty of the Radiation Safety Officer. These records shall include:
 1. The name of the individual;
 2. A list of all duties the Radiation Safety Officer's designee is authorized to perform;
 3. The date upon which the designation became effective;
 4. The signature of the Radiation Safety Officer's designee; and
 5. The signature of the Radiation Safety Officer.

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APPROVED BY:

DATE

PAGE of PAGES

Kelly Horn, Head, Environmental Management Section
IL 473-0059

May 19, 2020

2 9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

<u>LICENSEE</u>	<u>LICENSE NUMBER</u>	<u>AMENDMENT NUMBER</u>	<u>EXPIRATION DATE</u>
City of Chicago	IL- 02467-01		January 31, 2021

- B. The Radiation Safety Officer shall review records generated by designees and the performance of designees quarterly. In addition, the licensee shall maintain for Agency inspection for a period of 5 years, records of the quarterly reviews of records generated by designees and quarterly reviews of designee's performance. These records shall include:
1. The date of the review;
 2. The records being reviewed and the name of the designee being reviewed;
 3. A list of all duties performed by the designee;
 4. The results of the Radiation Safety Officer's review and any corrective measures taken, if applicable, based on the review; and
 5. The signature of the Radiation Safety Officer.
5. Radioactive material authorized for use in License Schedule Item A shall be used in accordance with the following conditions:
- A. The licensee shall not commence decommissioning activities until authorized in writing by the Agency.**
 - B. The installation of utilities to support environmental monitoring
 - C. The installation of groundwater monitoring wells
 - D. The maintenance of existing installed utilities
 - E. Any other activities as approved by the Agency with prior approval via memo or email.
6. The licensee has developed a plan and procedure for utility emergencies in impacted areas and shall continue to keep the Agency informed of significant activities in the vicinity of the site.
7. The licensee shall control entry to the licensed area, with the exception of the pedestrian/public right-of-way areas along 26th and 27th Street as shown on Figure 2 of the HASP, Rev 0, until the areas are released for unrestricted use. Items and surface contamination shall be decontaminated in

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APPROVED BY:	DATE	PAGE	of PAGES
Kelly Horn, Head, Environmental Management Section IL 473-0059	May 19, 2020	3	9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

LICENSEE	LICENSE NUMBER	AMENDMENT NUMBER	EXPIRATION DATE
City of Chicago	IL- 02467-01		January 31, 2021

accordance with 32 Ill. Adm. Code 340. Appendix A. Failure to meet the stipulations of this Condition may result in termination of this authorization.

8. An environmental monitoring program, shall be implemented as soon as practicable after the issuance of this license. **Portions of this program were previously temporarily suspended. Those portions shall resume 30 days prior to initiation of invasive remedial decommissioning activities, including site mobilization. The environmental monitoring program shall consist of the following:**
- A. Particulate sampling shall be performed as follows: 4 locations as specified in the May 13, 2015 application and further described in the May 28, 2015 Environmental Monitoring Plan. The method of collection shall be continuous. The frequency of filter change shall be weekly. Analysis shall be as outlined in the Environmental Monitoring Plan. These shall be reported in units of microcurie per milliliter ($\mu\text{Ci/ml}$). A background location for this program was requested via letter on October 31, 2017.
 - B. Radon sampling shall be performed as follows: 10 locations as specified in the May 13, 2015 application and as described in the May 28, 2015 Environmental Monitoring Plan. The method of collection shall be continuous. The frequency of collection shall be quarterly. Sample analysis shall be quarterly by location.
 - C. Direct gamma radiation monitoring shall be performed as follows: 10 locations as specified in the May 13, 2015 application and as described in the May 28, 2015 Environmental Monitoring Plan. The method of collection shall be continuous. The frequency of collection shall be quarterly. Sample analysis shall be quarterly by location. During the quarterly collection, dose rate information shall be collected at each of these locations as requested. A background location for this program was requested via letter on October 31, 2017.
 - D. Water monitoring shall be performed as follows: Groundwater monitoring shall be conducted initially at 3 existing well locations. Additional locations may be added based on results. The frequency of collection shall be quarterly and the analysis shall be quarterly by location and as outlined in the Environmental Monitoring Plan. A background location for this program was requested via letter on October 31, 2017.
 - E. The Licensee shall conduct an evaluation of existing storm sewers and drainage systems and select two locations for storm sewer water sampling; said sampling will be conducted at the same time and frequency as groundwater sampling. Initially, sediments should also be collected from these same locations for a total of 4 quarters. **For the purposes of**

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APPROVED BY:

DATE

PAGE of PAGES

Kelly Horn, Head, Environmental Management Section
IL 473-0059

May 19, 2020

4

9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

LICENSEE	LICENSE NUMBER	AMENDMENT NUMBER	EXPIRATION DATE
City of Chicago	IL- 02467-01		January 31, 2021

decommissioning, storm sewer and sediment sampling will only performed when requested by the Agency. A background location for this program was requested via letter on October 31, 2017.

- F. The Environmental Monitoring Program will generate quarterly data reports based on analytical results. These results should be shared with the Agency. An annual report of these compiled results and an analysis of trends should be submitted to the Agency within 120 days of the end of the 4th quarter.

The annual environmental monitoring report specified above, shall contain a section that includes the Annual Public Dose Evaluation as required by 32 Ill. Adm. Code 340.320.

9. The installation, initiation and implementation of the Environmental Monitoring Program shall comply with the Quality Assurance program.
10. The licensee shall use appropriately calibrated survey instruments for performing exposure rate surveys in accordance with 32 Ill. Adm. Code 332(b)(2). The gamma radiation shall be measured at a distance of 100 cm from the surface. For purposes of the survey, the background gamma radiation level is defined as $10 \mu\text{R/hr} \pm 4 \mu\text{R/hr}$.
11. For the purpose of radionuclide determinations in air samples from the Former Carnotite Reduction Site, any laboratory employed for this purpose shall use instrumentation and methodologies with lower limits of detection at or below 10% of the regulatory limits for the radiological parameters for which environmental air particulate samples are analyzed. Results indicating that a parameter is not detected shall be reported as "less than" the value of the corresponding lower limit of detection
12. The licensee shall ensure that background counts and operational efficiency checks are performed on radiation detection instrumentation used on the site. The background count and counting efficiency shall be performed daily or, if not used daily, prior to each use. The licensee shall calibrate the systems initially, at intervals not to exceed 12 months, and after each repair of the instrument. Counting efficiencies shall be determined using appropriate standards which are traceable to the National Institute of Standards and Technology (NIST). Records shall be maintained to document the system calibration, background determinations, and counting efficiency determinations.

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APPROVED BY:

DATE

PAGE of PAGES

Kelly Horn, Head, Environmental Management Section
IL 473-0059

May 19, 2020

5 9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

<u>LICENSEE</u>	<u>LICENSE NUMBER</u>	<u>AMENDMENT NUMBER</u>	<u>EXPIRATION DATE</u>
City of Chicago	IL- 02467-01		January 31, 2021

13. Each radiation survey instrument calibration certificate shall include an appropriate scale correction factor each time the exposure rate indicated by the radiation survey instrument differs from the true exposure rate by more than plus or minus ten percent.
14. The licensee shall remove from service any radiation survey instrument which exhibits reference check source readings deviating by more than plus or minus 20 percent from the reference check source reading taken immediately after calibration.
15. Operating and emergency procedures submitted with the licensee's application dated May 13, 2015 shall be followed.
16. This license does not exempt the licensee from compliance with state and or federal laws and rules governing the treatment of water.
17. All radioactive material must be disposed in accordance with 32 Ill. Adm. Code 340 and other applicable state and federal regulations
18. **Reserved**
19. Soil Remediation Criteria
 - a. For the purpose of the activities authorized by this amendment, the concentration of residual radium (radium 226) in dry soil, after removal of soil or other materials that are being relocated, shall not exceed 5 picocuries per gram (5 pCi/g) above background. Concentrations of radium in such residual soils shall be averaged over areas of 100 square meters and averaged over layers of 15 centimeters thickness. The soil concentration of 5 pCi/g is deemed necessary to ensure that the licensee will meet the requirements of 32 Ill. Adm. Code, sections 340.110(b) and 330.325 to maintain doses to the public and releases to the general environment as low as is reasonably achievable (ALARA). A case by case demonstration that particular circumstances do not require cleanup to the above-stated goal will be considered.
 - b. For the purpose of the activities authorized by this amendment, the concentration of total residual uranium in dry soil, after removal of soil or other materials that are being relocated, shall not exceed 20 picocuries per gram (20 pCi/g) above background to a depth of 5 meters and 50 picocuries per gram (50 pCi/g) for all other depths. Concentrations of uranium in such residual soils shall be averaged over areas of 100 square meters and averaged over layers of 15 centimeters thickness. The soil concentration of 20 pCi/g to a depth of 5 meters and 50 pCi/g for all other depths is deemed necessary to ensure that the licensee will meet the requirements of 32 Ill. Adm. Code, sections 340.110(b) and 330.325 to maintain doses to the public and

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APPROVED BY:

DATE

PAGE of PAGES

Kelly Horn, Head, Environmental Management Section
IL 473-0059

May 19, 2020

6 9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

<u>LICENSEE</u>	<u>LICENSE NUMBER</u>	<u>AMENDMENT NUMBER</u>	<u>EXPIRATION DATE</u>
City of Chicago	IL- 02467-01		January 31, 2021

releases to the general environment as low as is reasonably achievable (ALARA). A case by case demonstration that particular circumstances do not require cleanup to the above-stated goal will be considered.

- c. For the purpose of the activities authorized by this amendment, the concentration of residual thorium (Th-230) in dry soil, after removal of soil or other materials that are being relocated, shall not exceed 5 picocuries per gram (5 pCi/g) above background. Concentrations of thorium in such residual soils shall be averaged over areas of 100 square meters and averaged over layers of 15 centimeters thickness. The soil concentration of 5 pCi/g is deemed necessary to ensure that the licensee will meet the requirements of 32 Ill. Adm. Code, sections 340.110(b) and 330.325 to maintain doses to the public and releases to the general environment as low as is reasonably achievable (ALARA). A case by case demonstration that particular circumstances do not require cleanup to the above-stated goal will be considered.
- d. Background concentrations for the aforementioned radionuclides shall be determined either via utilization of established local background concentrations from other projects, or via an approved background sampling activity.

- 20. The RSO shall order all outdoor contaminated waste handling operations (e.g., excavation or loading of trucks) to cease in the event of adverse weather (e.g., sustained winds exceeding 20 miles/hour averaged over a 10 minute period or rainfall exceeding 0.25 inch/hour). In addition, any time visible dust is observed at the Site, the RSO shall take actions within 20 minutes to stop the generation of visible dust.**
- 21. The licensee shall provide two (2) copies of the dust control plan and QA/QC plan required for each contractor in the contract specifications to IEMA prior to commencement of decommissioning activities.**
- 22. The licensee shall ensure, for the purposes of dust control, that each truck hauling contaminated soil has either: a soil moisture content that is sufficient to prevent visible dust generation; the soil on the top of the load is wet before transporting it; or the contents are covered. In addition, all outdoor, stockpiled, contaminated material at the Site shall be covered with geomembranes, or other approved alternate cover material.**
- 23. All above grade, outdoor, stockpiles and associated exposed faces of contaminated materials shall be fully covered with geomembranes or approved alternate cover material, when activities using the materials are completed for the day.**

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APPROVED BY:	DATE	PAGE	PAGES
Kelly Horn, Head, Environmental Management Section IL 473-0059	May 19, 2020	7	9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

<u>LICENSEE</u>	<u>LICENSE NUMBER</u>	<u>AMENDMENT NUMBER</u>	<u>EXPIRATION DATE</u>
City of Chicago	IL- 02467-01		January 31, 2021

24. **The licensee shall perform occupational air monitoring while engaged in the following activities: when digging in contaminated soil, managing contaminated material stockpiles, and loading waste for shipment.**
25. **Interfaces between clean backfill and contaminated material (which is to be excavated at a later date, if any) shall be identified and synthetic or natural barriers shall be placed at these interfaces to prevent contamination of clean backfill material.**
26. **Radiological analysis of water discharged off site from any water treatment system shall be performed as described in the Decommissioning Plan and associated implementing procedures**
27. **All accessible areas of *clean areas* shall be surveyed for contamination on at least a weekly frequency. If contamination in excess of the limits specified in 32 Ill. Adm. Code 340 Appendix A is detected, the licensee shall decontaminate the area to the specified limits.**
28. Except as specifically provided otherwise by the license, the licensee shall possess and use radioactive material described in all schedules of this license in accordance with statements, representations and procedures contained in, referenced in, or enclosed with the documents listed below. The regulations contained in 32 Ill. Adm. Code: Chapter II, Subchapters b and d shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations. The most recent statements, representations and procedures listed below shall govern if they conflict with previously submitted documents.
 - A. Application, with attachments, dated May 13, 2015.
 - B. Letter with attachments dated May 28, 2015, Environmental Monitoring Plan Submittal
 - C. Letter with attachment dated June 18, 2015, HASP/RPP and QAPP Submittal
 - D. Letter dated March 3, 2017 regarding temporary suspension of Environmental Monitoring Program
 - E. Letter dated October 31, 2017 with the Agency review of the Public Dose Evaluation and request for background locations for all environmental sampling system and the collection of dose rate data at TLD locations.
 - F. **Letter transmitting Draft Remediation Plans, Specifications, and Drawings, August 9, 2019.**

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APPROVED BY:

DATE

PAGE of PAGES

Kelly Horn, Head, Environmental Management Section
IL 473-0059

May 19, 2020

8 9

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

OFFICIAL USE ONLY – SECURITY RELATED INFORMATION

STATE OF ILLINOIS
IEMA BUREAU OF RADIATION SAFETY
RADIOACTIVE MATERIAL LICENSE

<u>LICENSEE</u>	<u>LICENSE NUMBER</u>	<u>AMENDMENT NUMBER</u>	<u>EXPIRATION DATE</u>
City of Chicago	IL- 02467-01		January 31, 2021

- G. Letter transmitting the City of Chicago’s (City) Decommissioning Plan, Revision 4, Former Carnotite Reduction Company Site, 434 East 26th Street, Chicago, Illinois, 60616 submitted by the City on April 30, 2020, and Agency approval letter sent on May 13, 2020.**

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APPROVED BY: _____ DATE _____ PAGE of PAGES

Kelly Horn, Head, Environmental Management Section
IL 473-0059

May 19, 2020

9 9

