MEMORANDUM

SUBJECT: Request for a Removal Action at the Lowerline Site, New Orleans, Orleans Parish, Louisiana

FROM: Gregory E. Fife, On-Scene Coordinator
CERCLA and Oil Removal Section (SEDEC)

THRU: Chris Petersen, Acting Branch Chief
Emergency Management Branch (SEDE)

TO: Carl Edlund, P.E., Director
Superfund and Emergency Management Division (SED)

1. PURPOSE

This memorandum requests approval for a Removal Action pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. §§ 9601-9675, at the Lowerline Site (the Site) in New Orleans, Orleans Parish, Louisiana. The proposed action includes the removal and offsite disposal of radium-contaminated soil and road base on the Site.

This action meets the criteria for initiating a removal action under the National Contingency Plan (NCP), 40 C.F.R. §300.415. This action is expected to require less than twelve months and $2 million to complete.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS # LAN000622076
Category of Removal: Time Critical
Site ID #A6SK
Latitude 29.961490°
Longitude -90.109990°

A. Site Description

1. Removal Site Evaluation

The Lowerline Site is a street in a residential area in the City of New Orleans (City). As recently as 2017, the Department of Energy (DOE) performed radiological sweeps of the area and identified a hot spot on Lowerline Street. Further investigation by Louisiana Department of Environmental Quality (LDEQ) better defined the hot spot as containing radium-226 (Ra-226). Activity measured at the surface indicated a potential source of 1 to 10 milli-Curies (mCi). At the time, the source was believed to be a discrete sealed source. The City worked with the LDEQ and hired a contractor to excavate and remove the source.

The contractor excavated 36" x 36" laterally and 30" deep. The excavation did not reveal a sealed source but found contaminated soil below the original pavement level in the street. The contractor isolated, containerized, and shielded the contaminated soil in a drum. A subsequent radiation walking survey found five additional areas of subsurface contamination, which can be consolidated into three areas for reasonable excavation work. The consolidated areas are 5'x5', 10'x20' and 20'x40'. The survey extended the block and the intersecting street until the readings were not elevated. The contractor also surveyed the adjacent properties and did not find any contamination beyond the street.

2. Physical Location

The Site is located on the 3400 block of Lowerline Street, near the intersection of Coolidge Court and bounded by Olive Street and Edinburgh Street. The area is known as Gert Town. It is mostly residential with supporting businesses. The block where the Site is located has several vacant lots and possibly abandoned homes. Xavier University is just two blocks away.

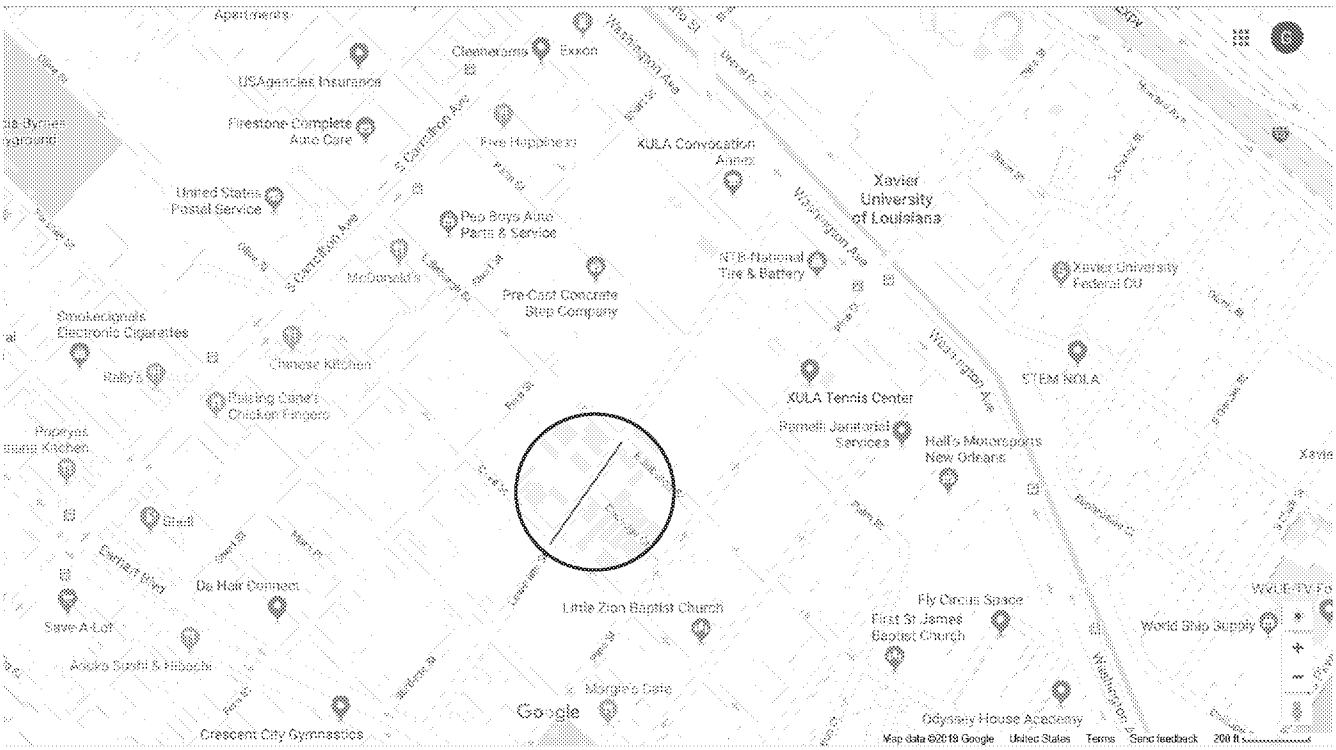

Figure 1. Google Map of location of the Lowerline Site.

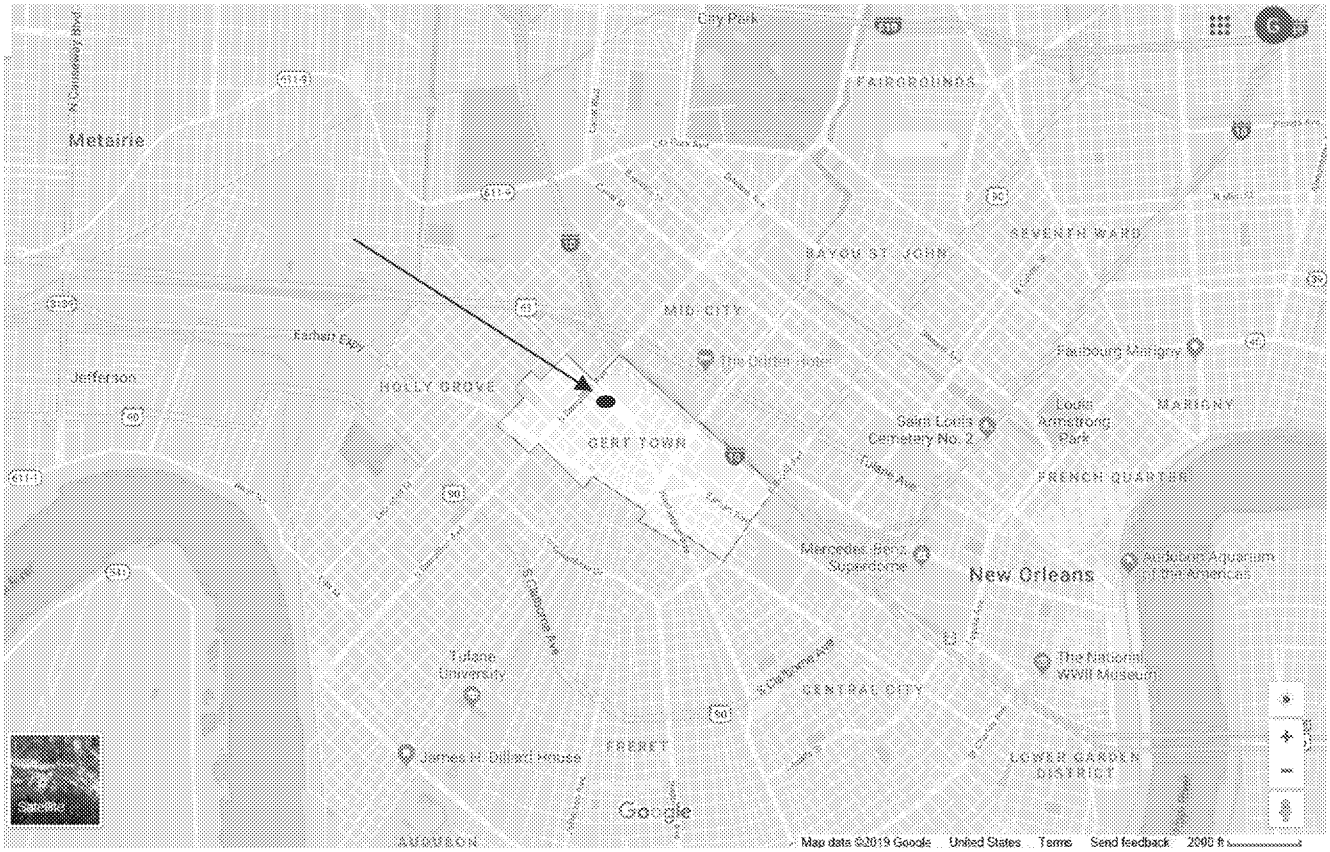

Figure 2. Google Area Map of the Lowerline Site.

3. Site Characteristics

The excavation conducted by the City's contractor found the contaminated soil below two levels of pavement and a seashell road base. Historical records suggest that Lowerline Street was constructed in the 1940s or early 1950s. The Ra-226 was not found in the top 14 inches. The concentration mixed in and below the seashell road was high in Ra-226. Samples showed more than 24,000 pico-Curies per gram (pCi/g); the EPA's established cleanup level is 5 pCi/g for this situation.

The survey showed elevated activity above the roadway surface several times above the background and above the action level. During a post excavation gamma survey, the City's contractor detected the activity at 1.5 mR/hr. The background for the area is 0.005 mR/hr (5 microR/hour (µR/hr)). The EPA considers an area to be an elevated radiation risk at two times the background or 0.010 mR/hr.

During the excavation, the contractor detected 10,000 mR/hr near the hole as the contamination was reached.

The contractor's survey included the side of the street and part of the adjacent residential yards. The survey did not find any elevated readings in those areas. The contractor surveyed the length of Lowerline Street between Olive and Edinburgh Streets, and it appears to be beyond the area of contamination.

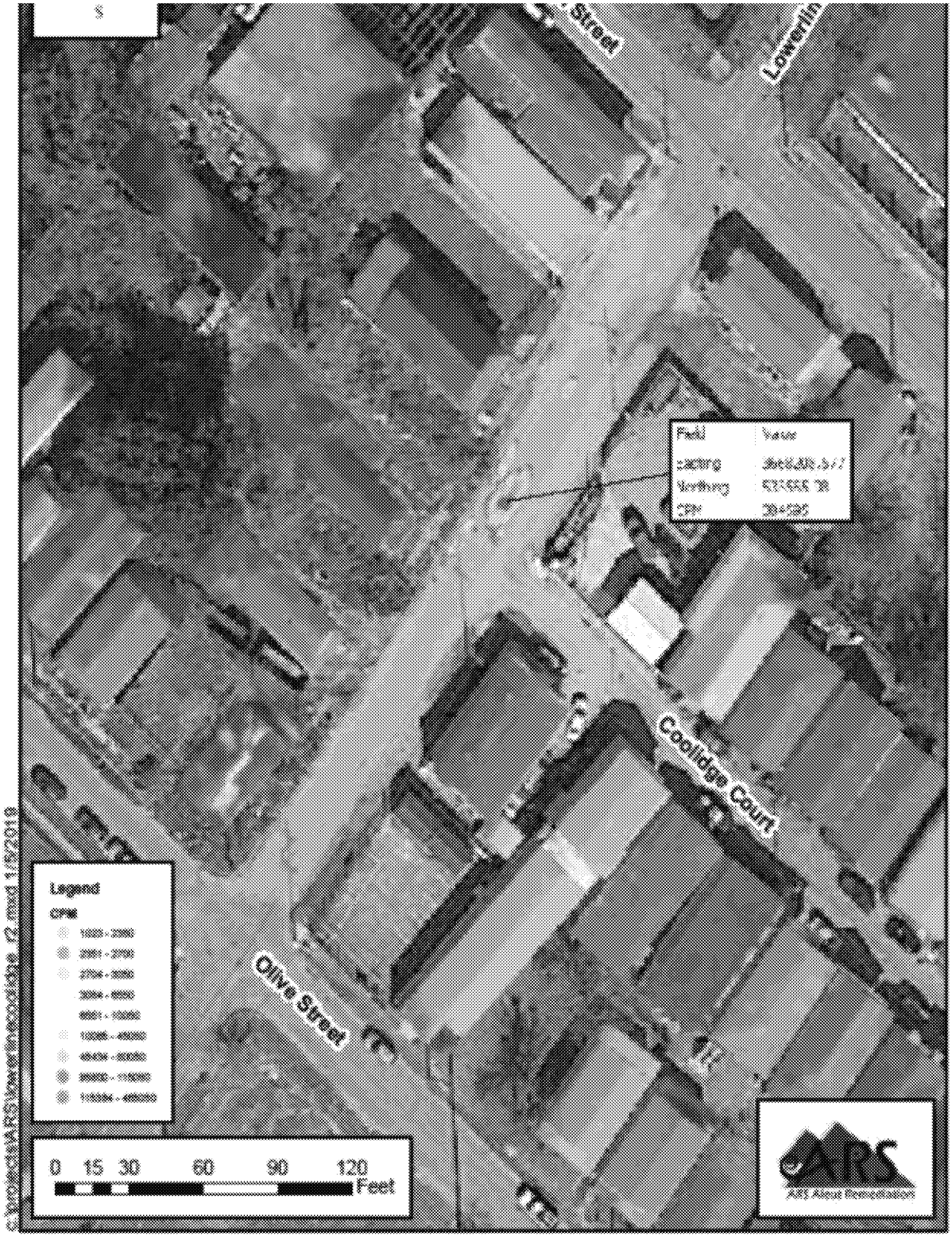

Figure 3, Mapped gamma survey results.

4. Releases or threatened release into the environment of a hazardous substance, pollutant or contaminant.

The primary hazardous substance of concern at the Site is the radionuclide radium-226. Ra-226 has been found below the surface in the roadbed. It is mixed or adhering to the soils and shell road base. The pattern of contamination seems to indicate that the dispersion for the Ra-226 was during the initial construction of the road. A grader's blade or tire may have been the mechanical device to spread the Ra-226. Historical records show that the road was initially built in the 1940s or early 1950s. There is no record of the source or the base material or shells used in the construction. There is speculation that the source of the RA-226 could be a damaged sealed source that was dropped or lost on the road as it was built. Other speculation is that it was from the source of the road base or the shells and brought to the road.

Radium-226 is a radionuclide and a hazardous substance according to section 101(14) of CERCLA, 42 U.S.C. § 9601(14) and 40 C.F.R. § 302.4. *See* Attachment 2, Material Safety Data Sheet for Radium.

5. NPL Status

The Site is not on the National Priorities List (NPL). The proposed action consists of the removal of sources of contamination and is consistent with any potential Remedial goals.

6. Maps, Pictures and other graphic representations

Attachment 1 Enforcement Addendum
Attachment 2 Material Safety Data Sheet for Radium

B. <u>Other Actions to Date</u>

1. Previous actions

Prior to the 2013 Superbowl played at the nearby Superdome, the Department of Energy (DOE) Radiation Assistance Program Team (RAP) conducted a sweep of the area. The sweep identified the hotspot on Lowerline Street. The RAP Triage Report was forwarded to the LDEQ for its consideration.

In 2017, another sweep was performed for another event at the Superdome. The RAP again identified the hotspot and characterized it as a 1 to 10 mCi source or Radium-226. The RAP notified the LDEQ and the City of New Orleans.

In 2018, the City worked with the LDEQ and hired a contractor to conduct a response to the hotspot. In early December 2018, the contractor excavated the spot that had been identified. Although, they were expecting a sealed source, they found contaminated soil and road base. The soil was containerized and shielded and prepared for transportation and disposal.

Figure 4, Contractors excavating original hotspot.

Following the excavation, the contractor conducted a gamma survey to confirm the cleanup. The survey found additional hotspots in the road, close to the original location.

Figure 5, Additional hotspot detected, post excavation.

2. Current actions

The excavated soil is awaiting approval by the disposal facilities. It is has been temporarily staged at a facility provided by the LDEQ. The City requested a work plan and quote from the contractor for the additional work at the Site. The amount of money is beyond the financial budget of the City. The City sought assistance from the DOE and the LDEQ. Both of those agencies referred the City to the EPA.

C. State and Local Authorities' Roles

1. State and local actions to date

In 2018, the City working with the LDEQ hired a contractor to conduct a response to the hotspot. In early December 2018, the contractor excavated the spot that had been identified. Although, they were expecting a sealed source, they found contaminated soil and road base. The soil was containerized and shielded and prepared for transportation and disposal.

Following the excavation, the contractor conducted a gamma survey to confirm the cleanup. The survey found additional hotspots in the road, close to the original location.

2. Potential for continued State/Local response

The City has indicated that the cost of the response is prohibitive. The City has sought assistance from the DOE and the LDEQ and most recently from the EPA.

The LDEQ has indicated that the situation does not prompt a State response.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

The current conditions at the Site meet the following factors which indicate that the Site is a threat to the public health, welfare and the environment and a removal action is appropriate under section 300.415(b)(2) of the NCP. Any or all of these factors may be present at the Site yet any one of these factors may determine the appropriateness of a removal action.

1. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants. 40 C.F.R. § 300.415(b)(2)(i)

The current exposure rate from the Ra-226 at the Site is several times higher than the EPA acceptable exposure limit of 125 mR/quarter. In fact, the annual dose allowable for the general public can be exceeded at levels at the street or adjacent areas in less than 1 hour per day. The exposure rate measured by the post excavation survey was 1.5 mR/hr. An average of 1-hour exposure per day would result in an approximate dose of 135 R. That does not include exposure to naturally occuring radiation, medical treatments, and other man-made exposures.

The EPA considers exposures exceeding twice background as unacceptable. The background for the New Orleans area is 0.005 mR/hr. Twice background is 0.010 mR/hr, for the acceptable activity. The 1.5 mR/hr detected by the gamma survey well exceeds that limit.

Storm and sanitary sewers as well as water and gas utilities run below the surface of the road. During the excavation, the contractor measured the activity in the hole at 10,000 mR/hr. In that condition, the soil and pavement are not shielding the radiation. Crews working on the utilities or road could receive a dose exceeding the annual allowable general public dose within minutes. The activity is high enough that a trained and medically monitored radiation worker is in danger of exceeding the annual allowable dose.

If the soils are not removed, there is the potential they could be disturbed in the future, resulting in further dispersal of the contamination. In this scenario, the shielding effect of the soil and pavement would be eliminated, and surface activity would be elevated, posing even more of a threat of exposure. The spoils of a future uncontrolled excavation could be exposed to the weather and cause the radioactive solids to migrate with rain or winds. This would allow people to come into direct contact with radioactive material as well as the exposure from the gamma radiation.

2. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate. 40 C.F.R. § 300.415(b)(2)(iv)

The deposition of the Ra-226 in the excavated hole is evidence that the Ra-226 has not been mobile under the road. Although most forms of a Ra-226 in use are soluble in water, it does not appear to have been migrating in the soil. Although New Orleans is known for water movement in the near surface (as demonstrated by the need for above ground burial tombs), there was no seepage into the hole during excavation. The Ra-226 did not migrate upward as would happen with as the water infiltrates the soil during rain events.

However, dissolved solids in water is not the only way that a radionuclide can migrate. Several of the Ra-226 degradation products are gaseous, one is radon. Radon gas is more mobile than the solids and could migrate to the surface and under the homes in the area. The gas then could migrate into the homes just as it does from naturally occuring radium and radon. This could result in unhealthy exposures to the residents of the homes.

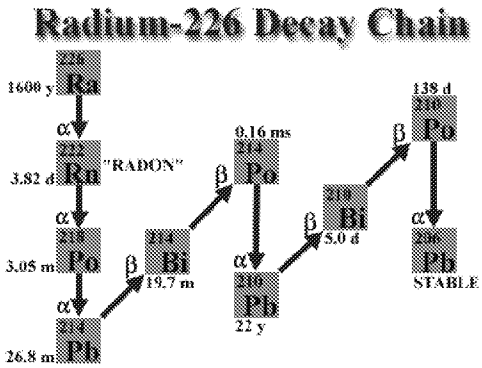

Figure 6. Radium-226 decay chain.

3. The Availability of other Appropriate Federal or State Response Mechanisms to Respond to the Release. 40 C.F.R. § 300.415(b)(2)(vii)

The City of New Orleans and the LDEQ have requested EPA assistance because existing State resources will not ensure a timely response action. The City has stated that it does not have the budgetary ability to conduct the cleanup. The LDEQ indicated that the Site does not meet the State's criteria to respond.

The DOE can do sweeps and surveys as part of its RAP activities. However, the DOE cannot respond to cleanup sources, whether a sealed source or contamination that is not a DOE source.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants or contaminants from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed actions

1. Proposed Action Description

The proposed removal action involves the excavation, removal, and offsite disposal of the contaminated soil and any sealed source of container that may be encountered. The anticipated volume of contaminated soil is approximately 115 cubic yards, in-situ. The process of excavation and loading the soil could expand the volume to 150 cubic yards. The crews will attempt to separate clean overburden and other uncontaminated soil to reduce the cost of disposal. Post-excavation verification gamma survey will be conducted.

Disposal will be done at a licensed facility in compliance with the EPA's Off-Site Rule.

Repair and repaving of the road will be conducted, and the assistance of the City will be sought for this portion of the response.

2. Contribution to remedial performance

The proposed action is the removal of the source of contamination and will contribute to any potential remedial action.

3. Description of alternative technologies

At this time, there are no other proven alternative technologies that could feasibly be applied at this Site. The appropriate action is to conduct the removal action on the Site as described in this memorandum. If an equally protective and less expensive technology is later identified, it may be considered.

4. Applicable or relevant and appropriate requirements (ARARs)

This removal action will be conducted to eliminate the actual or potential exposure to a hazardous substance, pollutant or contaminant to the environment, pursuant to CERCLA, 42 U.S.C. §§ 9601-9675,

and in a manner consistent with the NCP, 40 C.F.R. Part 300. Pursuant to 40 C.F.R. Part 300.415(j), fund-financed removal actions under CERCLA section 104 and removal actions pursuant to CERCLA section 106 shall, to the extent practicable considering the exigencies of the situation, attain the applicable or relevant and appropriate requirements (ARARs) of federal environmental law.

Waste generated during the removal action will undergo waste analysis under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901-6992k and 40 C.F.R. §§ 261.20 and 261.30. If RCRA wastes are generated during the removal action, then it will be appropriate to utilize the waste generator management standards found at 40 C.F.R. Part 262, Subparts B (Manifest), C (Pre-Transport), and D (Recordkeeping/Reporting).

5. Project Schedule

The duration of the removal is expected to be approximately three to six weeks from the initiation of the work.

B. Estimated Costs

Extramural Costs

Cleanup Contractor	$1,000,000
Technical Assistance Contractor	$75,000
Total Extramural	$1,075,000
Site Contingency	$215,000
TOTAL CEILING	$1,290,000

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Should the actions described in this Action Memorandum be delayed or not taken, the potential for migration of the Ra-226 will increase. The exposure to residents will continue and contribute to their annual dose of radiation. Excavation for utility work could inadvertently enhance the mobility of the contamination and increase the exposure to residents and workers.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this site.

VIII. ENFORCEMENT

For administrative purposes, information concerning confidential enforcement strategy for this Site is contained in the Enforcement Attachment #1. The total cost for this removal action is estimated to be $1,290,000. This cost estimate is based on full-cost accounting practices and includes costs that will be eligible for cost recovery.

(Direct Costs)	+	(Indirect Costs)	= **Estimated EPA Cost for a Removal Action**
(Direct extramural + Direct intramural)	+	*[(Region-specific Indirect Cost Rate) x (Direct Costs)]*	
$1,290,000 + $80,000	+	0.4709($1,290,000 + $80,000)	= $2,015,133

Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full-cost accounting methodology effective October 2, 2002. The estimates do not include pre-judgment interest, do not take into account other enforcement costs, including the DOJ costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only, and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor the deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Lowerline Site in New Orleans, Orleans Parish, Louisiana, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the criteria for a removal as defined by 40 C.F.R. § 300.415(b)(2) of the NCP for a removal, and I recommend your approval of the proposed removal action. The total project ceiling will be $1,290,000.

APPROVED: _____ DATE: _____

Carl E. Edlund, P.E., Director
Superfund and Emergency Management Division

S. Webster	Andrews	L. Johnson	Shilling	M. Peycke	C. Petersen/xxxxxxx
6SF-EC	6SF-TE	6SF-TE	6RC-SF	6RC-SF	6SF-EB/6SF-E