



REGION 3

PHILADELPHIA, PA 19103

SUBJECT: Request for Ceiling Increase and CERCLA Exemption from \$2 Million and 12-month Statutory Limit for a Removal Action at the Fairmont Brine Superfund Site, Fairmont, Marion County, West Virginia
Site ID: B3CL

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TO: Paul Leonard, Director
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I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of a ceiling increase and exemption from the 12-month and \$2 million statutory limit for continued actions at a time-critical removal action at the Fairmont Brine Superfund Site ("Site") in Fairmont, Marion County, West Virginia ("WV").

The EPA has determined that the potentially responsible parties ("PRPs") do not possess the resources to perform prompt and proper response actions necessary to mitigate the release or threat of release of technologically-enhanced naturally occurring radioactive materials ("TENORM"), as well as other listed hazardous substances used in the manufacturing process, from this former brine processing facility.

Removal actions in this request pertain to significant sources of contamination which can be mitigated timely based on current knowledge of the contamination and the selected removal action contained in this document. TENORM contamination in two large impoundments on Site also pose threat of release of TENORM. Continued assessment is ongoing to evaluate feasible future action alternatives.

On September 23, 2023, a Special Bulletin authorizing funds of \$250,000 was prepared by the On-Scene Coordinator ("OSC"). The EPA commenced immediate actions necessary to secure the Site from unauthorized access. Additional funds of \$3,566,000 are being requested. If approved, the new Site ceiling will be \$3,816,000.

II. SITE DESCRIPTION AND BACKGROUND

A. Site Description

1. Site Background

The Site is located in a commercial area on the outskirts of Fairmont, Marion County, WV. The Site property comprises of approximately 38 acres and contains two areas separated by a natural hill. The “Upper Complex” includes a process building, an impoundment (hereinafter referred to as “upper impoundment”), an oil-water separator inside of a concrete basin, a receiving area which contains frac tanks to store water, and other tanks and apparatus. An April 2024 Google Earth© search shows the appearance of a large aboveground storage tank on the upper complex. This feature is no longer present. A more accurate view is depicted below.

In 2012, Fairmont Brine Processing LLC (“FBP”) purchased the Site property and manufactured sodium chloride and calcium chloride, two common salts used in many industries, at the FBP facility between 2014 and 2018. FBP’s operations included receiving brine from the exploration and production sector (“E&P”) within the oil and gas industry.

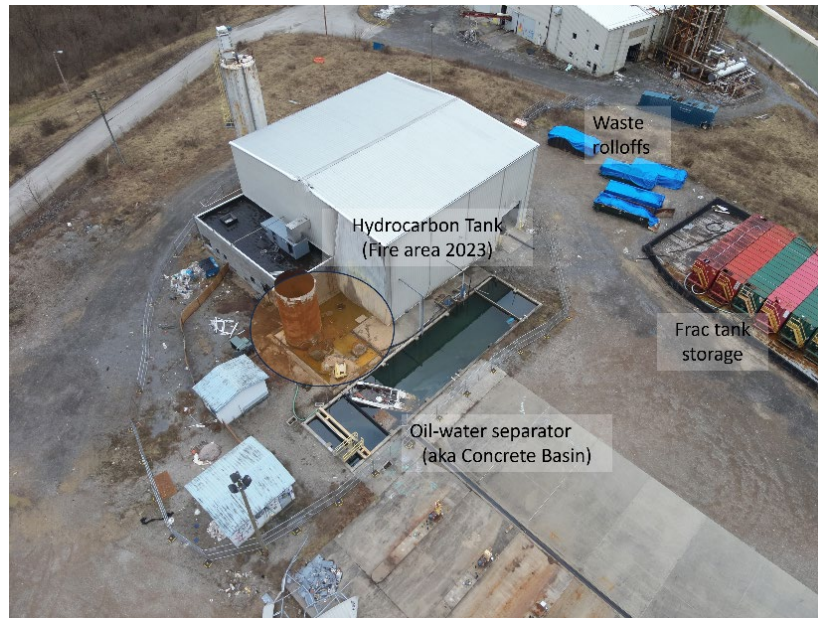
In the E&P sector, shale, petroleum, and gas deposits are often found in aquifers containing brine. In nature, materials which may contain primordial radionuclides (radionuclides are radioactive forms of elements) or radioactive elements such as uranium, radium, thorium, potassium and their radioactive decay products such as radium and radon, that are undisturbed as a result of human activities are known as “Naturally -Occurring Radioactive Materials” (“NORM”). Because the extraction concentrates these radionuclides and brings them to the surface, they are classified as “Technologically-Enhanced Naturally-Occurring Radioactive Material” (“TENORM”). TENORM means that the physical and chemical properties of the materials have been concentrated or further altered by having been processed, or beneficiated, or disturbed in a way that increases the potential for human and environmental exposures.

During this phase of oil E&P, raw materials are extracted from the earth. Uranium is a naturally occurring substance in the earth. Uranium is naturally found in primarily two isotopes – Uranium 235 (U235) and Uranium 238 (U238). Over 99% of uranium found in nature is U238.

Uranium has a long decay chain. In the process of decay, other radionuclides are formed. The term “half-life” is used to describe the time it takes for the radionuclide to lose half of its radioactivity. Two of the radionuclides in the uranium decay chain which have particularly long half-life(s) are Radium-226 (Ra226), which has a half-life of 1600 years and Thorium 232 (Th232) which has a half-life of billions of years. As a comparison, Radon 222, also found in this decay chain, has a half-life of 3.8 days.

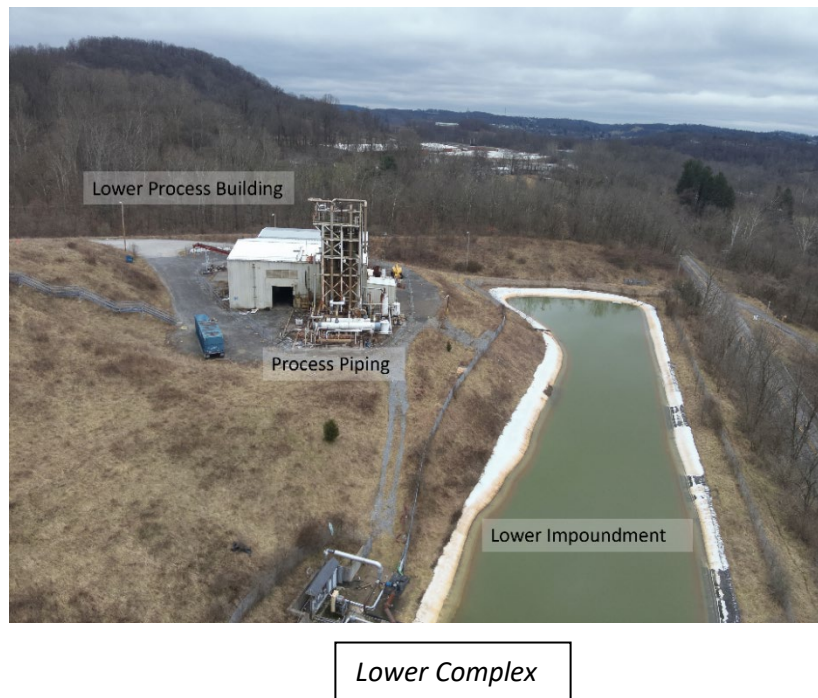
In this document, the unit of milliRem/hr or mR/hr is used to describe exposure. The unit picocuries/gram (“pCi/g”) is used to describe the actual amount or concentration of radiation present.

During its operation, the FBP facility did not require any permits specific to TENORM. The FBP facility did maintain an NPDES permit for two outfalls to the Monongahela River, located approximately one tenth of a mile directly downgradient from the Site.



Upper Complex

The lower complex includes a process area used for evaporation and crystallization and impoundment. Distilled water was discharged to this impoundment which has a storage capacity of 1.8 million gallons. The FBP facility also maintained two outfalls and a NPDES permit for a permitted discharge to the Monongahela River.



A seep is present on the west side of the property facing AFR Drive.

2. Removal Site Evaluation (RSE)

The FBP facility was sold for non-payment of taxes in 2020. Since that time, the West Virginia Department of Environmental Protection (“WVDEP”) issued enforcement actions to FBP. Information regarding these actions is included in Section II.B.1. of this document.

On or about May 29, 2023, a fire and explosion occurred in an aboveground storage tank in the upper complex of the Site. The fire and resulting explosion caused the roof to eject over the building. The remainder of the tank remains mostly intact. No injuries were reported. WVDEP and West Virginia Department of Health (“WVDH”), formerly West Virginia Department of Health and Human Resources (“WVDHHR”) responded to the Site.

Following the fire, WVDEP requested EPA assistance at the scene. One of the tasks EPA performed was screening the responders’ gear for radiation contamination. The EPA did not detect any contamination on equipment provided for screening.

During this response, the EPA, WVDEP, and WVDH performed a walkthrough of the Site to determine areas where radiation may be present. Using field monitoring equipment, the EPA confirmed the presence of Radium-226 (Ra-226) at elevated levels in the area where the fire occurred. WVDH posted “TENORM” warning signs throughout the Site.

In August 2023, WVDEP, WVDH, and the EPA agreed to take action to prevent unauthorized access to the Site, since the Site was abandoned and unsecured.

In September 2023, the West Virginia Office of Environmental Health Services (“OEHS”) became aware of work occurring at the former Fairmont Brine site to remove water from an impoundment on Site. WVDH requested that this action by FBP be paused until the levels of TENORM in the sediments could be properly evaluated.

A few weeks later, the EPA accompanied by WVDEP and WVDH, performed a limited removal site evaluation. During this time, additional readings were collected with field instruments. A reading of 3 milliRem/hr (“mR/hr”) was detected around the tank involved in the fire.

Since previous visits to the Site by WVDH, WVDEP, and EPA, vandalism on the Site had significantly increased. The building in the upper complex was heavily littered with trash, empty beer cases, and other evidence of trespass.



Evidence of trespass inside Upper Complex building

In addition to evidence of trespass, safety hazards were also noted during the removal Site evaluation. For example, a set of stairs for pedestrian access from the upper complex to the lower complex had been removed. No markings or safety measures were put into place to prevent a catastrophic fall in this area as well as fall hazards elsewhere on the facility. Because the conditions on Site at that time posed an imminent and substantial threat of release of hazardous substances, pollutants, or contaminants, the OSC activated emergency funding to secure the Site before the removal site evaluation could be completed.

The OSC, upon the recommendation of the EPA Regional Radiation Safety Officer, invited additional assistance from the EPA National Center for Radiological Field Operations (“NCRFO”). The NCRFO is a specialized team within the EPA’s Radiological Emergency Response Teams (“RERT”). The National Contingency Plan (“NCP”) (40 CFR §300.145(f)) identifies the RERTs to provide support for sites containing radiological hazards.

In March 2024, NCRFO performed a detailed radiological survey of the Site using advanced equipment. This survey identified areas with elevated levels of radiological contamination. The NCRFO survey confirmed the findings of the original survey following the fire. Additionally, the NCRFO survey identified several additional areas for investigation. The NCRFO survey confirmed that all radionuclides identified on the Site are components of TENORM. No radionuclides associated with manmade nuclear material were present on Site. Concurrent with the survey, the EPA's contractor collected samples for radionuclide analysis. Draft sample results have been received and are under review.

Nevertheless, source areas of contamination are known to be present. These source areas are primarily in the area where the tank fire occurred, the concrete basin containing the oil/water separator, rolloffs containing waste materials, and the frac tanks which stored source brine. These areas of elevated readings are located in the upper complex. In addition to the soil, debris, and waste, approximately 76,000 gallons of rainwater is deposited in the concrete basin. This basin flows to the upper impoundment.

The NCRFO survey also confirmed that water from the upper impoundment is migrating overland to the lower impoundment. The EPA found elevated readings in this area, albeit not as high as the source area. The survey also identified a few isolated areas of soil which exhibited higher levels of radiation.

3. Physical location and Site characteristics

The Site is situated at 168 AFR Drive in a mixed residential and commercial area of Fairmont.

Approximately 56,000 persons reside in the county, of which an estimated 18,000 live in the City of Fairmont. An Environmental Justice (EJ) Community Report prepared for the Site indicates the area within one mile from the Site has a >80% proximity to Superfund sites. The EPA Big Johns Salvage NPL Site is located approximately 0.9 miles south of the Site.

A review of "Critical Habitats for Threatened and Endangered Species" indicates no known endangered species near the Site. The closest sensitive population identified is salamander mussels approximately 25 miles west of the Site.

Three nearby historic locations are listed on the National Historic Registry. Woodland Cemetery is located approximately 1.3 miles west of the Site. The historic Thomas C. Miller Public School is located approximately 1.5 miles southwest of the Site, and the Jacob Prickett Jr. log house is located in Montana, Marion County, approximately 1.3 north of the Site.

The Site is on a commercial road which leads to several other industries. The Monongahela River is located approximately one-quarter mile to the west of the Site. During its operation, the FBP facility did not require any permits specific to TENORM. It did maintain an NPDES permit for two outfalls on the Monongahela River.

4. Quantities and Types of Substances Present

Quantities and types of substances present can be broken down into two separate hazardous substances categories: hazardous substances which are contained in waste rolloff boxes, frac tanks, and piping; and hazardous substances which have been released or have the potential to be released into the environment.

Rolloff Boxes

FBP stored waste from the manufacturing process in unlined metal rolloff boxes on the Site. Six rolloffs containing contaminated filter cake materials are situated on the Upper Complex. Field instrument readings on the outside of the containers indicated readings of greater than 2mR/hr. Five of the rolloffs are outdoors and exposed to the weather. The contents are not secure, covered loosely with tarps. In February 2024, the EPA took emergency response action to secure one of the rolloffs which had broken open. In March 2024, the EPA performed a survey confirming high readings of TENORM around the rolloff boxes outdoors as well in the area around the rolloff box staged inside of the building on the Upper Complex.



Rolloff boxes containing process waste

Frac Tanks

Additional waste brine and salt are contained in approximately ten frac tanks staged in the Upper Complex. Due to safety concerns, the frac tanks have not yet been opened. The EPA's survey confirmed elevated readings of TENORM in the basin around the frac tanks.



Frac tanks containing raw material

Process Waste

Process vessels and piping are still present at the Site. According to a former FBP employee, these vessels were not emptied prior to closure. The OSC and WVDEP observed several drums of caustic materials in the building in the Lower Complex. These substances may also be contained in the existing pipes and vessels.



Process equipment in lower complex

Contaminated Debris In Fire Area

The debris around the area where the tank caught fire in the Upper Complex contains elevated levels of TENORM. Work performed during the removal assessment confirmed the presence of radiation up to 3 mR/hr in this area. This debris consists of metal, concrete, and soil debris. In response to the uncontrolled release of TENORM, WVDEP and WVDH requested EPA assistance.

Using emergency funds, the EPA has cordoned off the area around the former tank. However, the contaminated debris is still present and continues to pose a threat of human exposure and/or a release into the environment.



The surface area around the base of this tank, which caught fire in 2023, contained elevated levels of TENORM, identified as the presence of Ra²²⁶

Concrete Basin Containing Oil/Water Separator

Next to the tank above sits a concrete basin which formerly contained an oil/water separator. Significant pieces of debris, including a boat, have been deposited in this area. This basin contains water, sediment, and debris and is located within the hot zone of elevated radiation readings. The basin contains three chambers of varying depths. The capacity of this basin is an estimated 10,000 cubic feet which can hold approximately 76,000 gallons. When this basin overflows, the surface water follows a concrete trench to the upper impoundment. TENORM or other hazardous substances in this basin continue to migrate toward the upper impoundment. Furthermore, observations and past history at the Site suggest that this area may contain mixed waste.



The concrete basin is situated next to the tank fire area. Notice the boat floating in the basin as well as the runoff trench in the lower left.

Overland Drainage between Impoundments

Heavy rains cause the upper impoundment to overflow. A natural migration path has been eroded from the upper impoundment to the lower impoundment. During the survey assessment, the EPA's NCRFO

team identified elevated levels of TENORM at the base of this path entering the lower impoundment. Sediments in this area will likely continue to release TENORM to the environment.



Drainage path from upper impoundment to lower impoundment

Floor Inside Upper Complex Building

Another area of the Site identified as having elevated radiation readings is building floor in the Upper Complex. As mentioned above, five of the rollofs containing waste materials are outdoors. A sixth rolloff is situated inside of the building on the Upper Complex.



Rolloff inside upper complex building. This building was affected by the fire and must be inspected for safety prior to entry.

Radionuclides identified as CERCLA hazardous substances in 40 CFR §302.4 are present at the Site as TENORM. Although these are naturally occurring, the brine process at the Site has increased the concentrations in certain areas of the Site. Radiation surveys at the Site confirm these radionuclides are present in elevated concentrations in the source areas as well as several other areas of the Site.

5. Release or threatened release into the environment of a hazardous substance, pollutant, or contaminant.

TENORM at the Site in the form of concentrated levels of radionuclides have been released into the environment. Surveys performed by the EPA have confirmed elevated levels of TENORM, including Radium 226. Radium 226 and other radionuclides listed in this document are hazardous substances as listed in 40 CFR § 302.4.

6. National Priorities List (“NPL”) Status

The Site is not currently listed on the NPL. The Site has been referred to the Site Assessment Manager (“SAM”) for possible consideration on the NPL. The OSC continues to coordinate removal actions with the SAM.

B. Other Actions to Date

1. Previous Actions

FBP formerly operated the Site from approximately 2012 to 2016. During that time, FBP managed their waste on Site. Following processing, the water was discharged to the lower impoundment where it was stored pending reuse within the E&P industry. FBP also maintained a National Pollution Discharge Elimination System (“NPDES”) permit. The TENORM at the Site was not subject to WV regulations at the time of FBP’s operations.

From approximately 2015 through 2023, WVDEP took several enforcement actions against FBP. In 2016, WVDEP issued an Order to FBP in response to the FBP facility’s NPDES permit, WV legislative rules, and WV State Code violations. In 2018, WVDEP issued another Order requiring additional work including hauling wastewater to a permitted disposal facility and halting unpermitted discharges from both impoundments. Inspections conducted by WVDEP from 2018 through 2022 documented continuing violations.

During discussions between WVDEP and FBP in September 2022, FBP informed WVDEP that FBP no longer owns the Site. In November 2022, FBP submitted a plan of corrective action to WVDEP which included provisions for proper removal and disposal of fluids from the impoundments. At the conclusion of 2022, FBP reported that approximately 2.1 million gallons of fluids had been removed.

In May 2023, WVDEP issued another order to FBP. This Order required FBP to continue monitoring at the Site and continue to remove fluids from the impoundment ponds for proper disposal.

2. Current Actions

On or about May 29, 2023 a fire occurred at the Site in an aboveground storage tank on the Upper Complex. The top of the tank became dislodged during the fire and ejected over the adjacent building. On May 30, 2023, the EPA responded to the incident. The EPA assisted WVDEP and WVDH with

surveying areas around the fire incident for radiation. The EPA confirmed the presence of elevated levels of radionuclides. A handheld survey meter confirmed the presence of Ra226, a radionuclide included in the uranium decay chain and present in TENORM, as well as a listed hazardous substance.

In August 2023, WVDEP, WVDH, and the EPA initiated consultations for actions at the Site to prevent unauthorized access. At this time the Site was abandoned and unsecured.

In September 2023, WVDH and WVDEP performed a Site visit. During this visit, WV officials observed activity taking place on Site outside the scope of the 2023 Order. Specifically, a contractor on Site was removing and pumping the impoundments. This action increased the likelihood that sediments contained radiation could be exposed directly to the environment. Also, the WV representatives observed radiation outside of the concrete containment areas where the tank had caught fire, indicating the debris containing radiation, was possibly migrating. Higher than normal radiation readings were detected in this area. Furthermore, significant increases in vandalism at the Site were noted. WVDEP and WVDH requested EPA assistance to secure the Site.

On September 14, 2024, the OSC, accompanied by WVDEP and WVDH, performed a partial removal assessment at the Site. At this time, readings of up to 3 mR/hr were observed around the area in the Upper Complex where the fire occurred. As a reference, the Nuclear Regulatory Commission recommends a dose limit of not more than 2 mR/hr in any one hour from external radiation sources in any unrestricted and controlled area.

As conditions at the Site continued to deteriorate and radiation readings were present which may pose a threat to public health, welfare, or the environment, the OSC activated emergency funds on September 22, 2023 to take actions to secure the Site.

In November 2023, temporary fencing and locked gates were installed around the Site by the EPA's contractor.

In March 2023, the OSC engaged the services of the EPA's NCRFO to continue the Site assessment. Refer to Section II.A.2. of this document for more details. Based on elevated readings in various source areas, samples were collected. The OSC expects to receive the validated data from this sampling event by September 2024.

C. State, Tribal, and Local Authorities

EPA assistance was requested at the Site when WVDEP and WVDH recognized that FBP could no longer perform removal operations promptly and properly. The OSC immediately convened a Unified Command structure with partners from Marion County Office of Emergency Services, WVDEP, and WVDH. These agencies coordinate regularly.

The EPA has also established a joint information team, including representatives from partner unified command agencies, to respond promptly to concerns from the community. Public meetings and/or availability sessions will be offered at key points in the removal action. Also, if these funds are

approved, the EPA will maintain an on-Site presence during normal business hours to respond to inquiries as needed.

No federally-recognized tribes are known to be impacted by this removal action. However, the OSC will forward this document to the EPA Region III tribal coordinator to address any tribal concerns which may arise.

III. THREATS TO PUBLIC HEALTH WELFARE OR THE ENVIRONMENT

A. Release or threatened release into the environment of a hazardous substance, pollutants or contaminants.

TENORM is comprised of naturally occurring radionuclides which become concentrated in the brine from drilling operations in the oil and gas exploration industry.

In an article published in the National Library of Medicine, the authors (one of whom is a Medical Doctor of occupational medicine), concluded that the existence of TENORM results in an increased risk for human exposure to radioactivity (*“Technologically Enhanced Naturally Occurring Radioactive Materials”*, Vearrier, Curts, Greenburg, 2009).

According to the EPA’s website on TENORM, the average concentration of radium in the oil and gas wastes at off-Site and on-site disposal locations is approximately 120 pCi/g.

The EPA Site-specific removal action levels for TENORM at this Site were developed based by inputting Site-specific information into the EPA’s Preliminary Remediation Goals Calculator setting a 10^{-4} cancer risk level. See more information on these values in Section VI of this document.

The EPA document “Distribution of the Radiation Risk Assessment at CERCLA Sites: Q&A (2014)” establishes a recommendation for Superfund sites of a protective dose base of not greater than 12 mR/year from conditions at the Site.

Site surveys performed by NCRFO indicate that exposure to concentrations in the source areas will likely exceed these values.

Since the Site is no longer operational, no controls are permanently in place to eliminate the risk from the sources of TENORM at the Site. The EPA contractors have installed temporary fence and gates, however, these actions do not remove the threats to public health and welfare.

Continued response actions are necessary to remove the sources of TENORM to prevent unauthorized exposures to persons, including possibly children, from inhaling, touching, or ingesting TENORM from sources at the Site.

B. Applicable factors of 40 CFR 300.415(b)(2)

Section 300.415b of the NCP lists factors to be considered in determining the appropriateness of a removal action. As described below, subparagraphs 40 C.F.R. §§ 300.415b(2)(i), (ii), (iii), (iv), (v), and (vi) apply directly to conditions at this Site.

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

The EPA's 2014 document "Radiation Risk Assessment at CERCLA Sites: Q&A" establishes a recommendation for Superfund Sites of a protective dose base of not greater than 12 mR/year from conditions at the Site. Exposure to certain source areas of the Site could expose a person to 2 to 3 mR/hour. Extended time at the Site by trespassers or unauthorized persons could likely cause an exposure greater than 12 mR/yr.

Site surveys performed by NCRFO indicate that the source area likely contain concentrations of TENORM which could potentially create these exposures. Evidence of rampant trespassing including vandalism, graffiti, discarded beverage containers, etc., indicates unknown persons are likely entering the Site. Although the area is marked with warning signs, the signs are not a sufficient deterrent. Trespassers, including possibly children, could come into direct contact, from inhaling, touching or ingesting, with debris or waste materials with high levels of TENORM. Unknown persons may also accidentally inhale or ingest TENORM or other hazardous substances.

Animals or the food chain are also at risk of being exposed. The EPA personnel and contractors have observed geese and other animals using the impoundments for drinking or swimming. During periods of dry weather, persons or animals may seek the contained water for recreation or food. Actions are necessary to prevent additional TENORM or other hazardous substances from being readily available to animals in the area.

40 CFR §300.415(b)(2)(ii): Actual or potential contamination of drinking water supplies or sensitive ecosystems

The Site is directly upgradient of the Monongahela River ("the Mon"). The Mon begins at the junction of Tygart Valley River and the West Fork River, less than five miles from the Site. The Mon is an approximate 130-mile river which runs from the south northeasterly into Pennsylvania where it joins the Allegheny River in Pittsburgh, creating a headwater to the Ohio River. The Mon is used for fishing and recreation as well as commercial uses.

Radionuclides in TENORM are not visible and give off no sense of taste or smell. If the sources of TENORM are not removed and disposed of properly, radionuclides can continue to migrate into the Mon.

Several drinking water intakes are present on the Mon. WVDH informed the EPA that no evidence of TENORM was detected at the closest intake. Community drinking water intakes are monitored

for radionuclides as required under the national primary drinking water regulations.

40 CFR §300.415(b)(2)(iii): Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.

Waste from the process area is stored on Site. At least six rollofs of solid material (suspected filter cake) in the Upper Complex contain elevated levels of TENORM. The rollofs are rapidly deteriorating. In February 2024, the EPA's contractor hired a radiation trained subcontractor to secure one of the rollofs which had come open, spilling contaminated material onto the ground. The rollofs are in such poor condition that they cannot be moved safely. Actions are necessary to transfer this material to shippable containers for proper transportation and disposal.



Note the poor condition of the rollofs. The end of a rolloff broke open in 2024. The right photo shows excessive deterioration of the rolloff base.

Brine water transported to the Site for processing was stored in large frac tanks on Site. Left unattended, the contents of these containers may also release and migrate offsite.



Frac tanks in the upper complex contains source brine liquids and solids.

During the initial assessment, several 55-gallon drums which may contain hazardous substances were found in the building in the Lower Complex. Two drums were marked "CORROSIVE" and had label information indicating the drums may contain sodium hydroxide and/or potassium hydroxide, both of which can cause caustic burns to the skin and eyes. Sodium hydroxide and potassium hydroxide are both hazardous substances listed in 40 CFR § 302.4.

Other tanks and piping are located throughout the Site. If hazardous substances which may pose a threat of release are stored in these containers, they must be removed and returned to the owner or disposed of properly.

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

Following the fire, high readings of TENORM were discovered in the area around the base of the tank. Readings taken with survey instruments indicated radiation readings almost 100x background levels of exposure. This area contains debris and soil. These radionuclides will continue to migrate if not controlled and removed.

The EPA's survey indicated elevated levels of TENORM in the overland path from the upper to the lower impoundment. Additionally, rain causes the concrete basin in the upper complex to overflow, possibly releasing TENORM and other wastes offsite. Isolated other surface areas indicated higher radiation levels higher than background. Samples were collected from these additional areas.

The Site is abandoned and is no longer maintained. Additional actions are necessary to remove and properly dispose of the TENORM and possible other hazardous substances, pollutants, or contaminants at the Site which may migrate and cause harm offsite.

40 CFR §300.415(b)(2)(v): Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or to be released.

Most of the source areas of TENORM are directly exposed to weather. Weather has already degraded the rolloff containers, caused flooding of the concrete basin, and resulted in overflow from the upper impoundment. Weather will continue to cause conditions at the Site to deteriorate, resulting in additional offsite migration.

40 CFR §300.415(b)(2)(vi) Threat of fire or explosion

One fire has already occurred at the Site. Although the Site is temporarily secured, trespassers will likely continue to trespass the Site property. If trespassers bring flammable substances onto the Site or burn piles of debris around the Site, more fires could occur. Additional actions are necessary to remove the TENORM and other hazardous substances, pollutants, or contaminants from the Site to prevent these substances from being involved in a fire or explosion. Additional fires at the Site increase the threat of offsite contamination of TENORM.

40 CFR §300.415(b)(2)(vii): The availability of other appropriate federal or state response mechanisms to respond to the release

From 2015 through 2022, WVDEP performed numerous inspections at the Site which resulted in enforcement action. In 2022, FBP informed WVDEP that it no longer owns the Site property. Following the fire in 2023, WVDEP determined that FBP no longer had the means to perform the necessary prompt and proper actions at the Site. FBP has agreed to provide WVDEP, WVDH, and the EPA with technical assistance as needed.

WVDEP has requested EPA assistance to mitigate the release or threat of release of TENORM and other hazardous substances, pollutants, or contaminants from the Site because of the Site conditions including deterioration resulting from the 2023 fire.

IV. ENDANGERMENT DETERMINATION

Uncontrolled sources of TENORM at the Site continue to be released or pose a threat of release. Based on radiation readings collected from the Site, consultation with the WVDH and the EPA's Regional Radiation Officer, and due to observations of deteriorating conditions, the EPA has determined that conditions at the Site pose an imminent and substantial threat to public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

Due to the potential for release of hazardous substances, pollutants, or contaminants as described above, an exemption from the 12-month and \$2-million limits for continued removal action is requested to fully implement the approved proposed actions. The EPA Superfund Division Director has been delegated the authority to select removal response actions costing up to \$6 million and lasting longer than 12 months when the emergency waiver (or exemption) in Section 104(c)(1)(A) of CERCLA is used by EPA Delegation 14-2 (Response), Paragraph 2.d(i). (Dated April 15, 2019). Conditions at the Site meet the requirements for an emergency exemption as described below:

- (i) *Continued response actions are immediately required to prevent, limit, or mitigate an emergency;*

The EPA has taken initial action to secure the Site. However, hazardous substances contained in TENORM and other hazardous substances on Site continue to pose a release or threat of release. This is evidenced by the presence of TENORM radionuclides in various areas of the Site identified by the EPA NCRFO team. Continued response actions are necessary to remove and properly dispose of the source materials at the Site.

- (ii) *There is an immediate threat to public health or welfare or the environment*

The EPA recommends a protective dose of not greater than 12 mR/yr from a Superfund site. Exposure readings performed in the source areas indicate a person could be exposed to this amount of radiation simply by spending six or more hours in certain areas of the Site. Additional response actions are necessary to remove TENORM from these areas and dispose of contaminated waste materials promptly and properly.

- (iii) *Such assistance will not otherwise be provided on a timely basis;*

WVDEP has issued several administrative orders to FBP. The Site was purchased at a tax sale; however, no operations or security is present at the Site. To date, the EPA has not identified a PRP with the financial means to perform a safe and proper removal action. WV State and local agencies have requested EPA assistance to mitigate the threats at the Site posed by the release or threatened release of hazardous substances. Furthermore, due to the presence of radionuclides at the Site, this work can only be performed by contractors with specialized training and who possess a license under WV law.

VI. PROPOSED REMOVAL ACTION AND ESTIMATED COSTS

A. PROPOSED ACTIONS

The objectives of the Removal Action are to remove and properly dispose of hazardous substances, pollutants, or contaminants, including radionuclides which comprise TENORM, to prevent exposure to these substances and mitigate the risks as previously described.

Included below are emergency actions performed to secure the Site as well as additional removal actions necessary to control and remove sources of contamination which can be properly mitigated. Additional evaluation of the sediments, liner, and water in the impoundments is ongoing to determine feasible alternatives to mitigate these threats.

1. Proposed Action Description

The following actions are listed in the OSC's POLREP #1 and Special Bulletin Activation of Emergency Funding:

1. Obtain legal access to perform the actions described in this memo;
2. Secure the entrances to the Site necessary to prevent unauthorized access. Install surveillance devices to ensure security measures are effective;
3. Install containment measures around tank to prevent further migration of hazardous substances to uncontrolled areas;
4. Install fire protection measures, including, but not limited to fire breaks, moving combustibles away from potential ignition sources, moving and securing flammable substances which may be

present in the processing area, and removing trash which may ignite;

5. Determine the structural integrity of the building(s) affected by the fire;
6. Control contaminated runoff from the Site;
7. Segregate contaminated ash, debris, metal, and other substances found to contain radionuclides above background levels;
8. Establish and set up a command post area including, but not limited to office trailers, lighting, utilities, etc. necessary to perform the work;
9. Create and implement a plan to properly remove and dispose of hazardous substances, including radionuclides in accordance with 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440.

The following additional proposed actions are necessary to mitigate the threats to public health, welfare, or the environment.

10. Obtain a WV license from WVDH for contractor(s) authorized to perform work under the requirements of WV 64 CSR 23 § 16;
11. Create and implement a radiation work plan which meets the requirements of WV 64 CSR 23 §16;
12. Create staging areas on Site for temporary storage of waste pending disposal;
13. Implement additional safety measures as needed to create safe working conditions, such as possible decontamination showers, barriers between work zones, and covers for work areas if practicable;
14. Provide additional security as needed to prevent unauthorized access to work areas on the Site during operations;
15. Remove and dispose of contents of waste rolloffs and frac tanks on Site. Properly transfer materials to suitable containers for proper transportation and disposal;
16. Prepare contaminated rolloff boxes for disposal, in sizes appropriate to meet disposal facility requirements;
17. Dispose of contaminated rolloff box debris;
18. Decontaminate or encapsulate non-porous debris such as metal piping, open floors in buildings, or other non-permeable material, which poses a threat of release of TENORM or other hazardous substances to the environment. Analyze wipe samples to confirm removable

contamination has been removed to the limits identified WV 64 CSR 23§16;

19. Decontaminate to ARARs requirements or dispose of contaminated frac tanks;
20. Remove, prepare, and properly dispose of debris from concrete basin on upper complex;
21. Remove and properly dispose of liquids contained in concrete basin;
22. Fill emptied basin with concrete or other non-permeable material;
23. Remove rolloff and surface contamination to the extent practicable from the upper complex building. Seal floors as necessary to prevent migration of TENORM;
24. Remove and dispose contaminated debris/soil from base of tank involved in fire. Following removal of contaminated surface area, safely determine remaining contents of tank and dispose if contents pose a threat of release of hazardous substances, pollutants or contaminants;
25. Remove and dispose of contaminated soil/rock along drainage area between upper and lower impoundments which contains concentrations of radionuclides which exceed site specific action levels;
26. Remove and properly dispose of hazardous substances which pose a threat of release contained in drums, floor surfaces open to the outdoors, piping, or other apparatus on Site;
27. Excavate and properly dispose of surface soils identified during the removal Site assessment which contain radionuclides in concentrations greater than the Site-specific removal action levels determined for the Site (see next section regarding action levels) and
28. Regrade or fill areas as needed to eliminate or mitigate safety hazards.

Determination of Action Levels for TENORM

For traditional chemical hazardous substances, the EPA uses Removal Management Levels (RMLs) as a factor to support the decision for the EPA to take a removal action under CERCLA. RMLs are risk-based, although not necessarily protective for long term exposures, concentrations derived from standardized equations combining exposure assumptions with toxicity data from the Superfund program's hierarchy.

For radiation, the EPA recommends using the EPA's "Preliminary Remediation Goals for Radionuclides at Superfund Sites" (PRG) calculator website. The recommended PRGs on this website are PRGs for contaminated soil, water, and air. PRGs are addressed in the NCP and EPA CERCLA guidance. The PRG calculator account for the variety of radiation isotopes at the Site.

A calculation was performed for the radionuclides which were sampled during the assessment and are contained in TENORM. These calculations are included in the administrative record.

The PRG calculator was used to create site-specific cleanup levels for the radionuclides in TENORM. The EPA calculated these numbers for a 10⁻⁴ cancer risk, which is consistent with EPA RMLs for chemical contamination.

The following isotopes of TENORM have been entered into the PRG calculator to create site-specific action levels for work at the Site. The following isotopes of TENORM pose a 10⁻⁴ cancer risk at the following concentrations using the data generated by the EPA's PRG calculator.

Radionuclide	Reference ID	Action Level	Measurement in pCi/g
Actinium-228	Ac228	4.00E+04	40000
Bismuth-210	Bi210	3.53E+04	35300
Lead-210	Pb210	2.61E+01	26
Polonium-210	Po210	1.30E+03	1300
Radium-226	Ra226	1.32E+00	1.32
Radium-228	Ra228	3.28E+00	3.28
Thorium-230	Th230	1.38E+00	1.38
Thorium-232	Th232	9.86E-01	0.985
Uranium-234	U234	2.13E+00	2.13
Uranium-235	U235	4.59E+00	4.59
Uranium-238	U238	1.25E+00	1.25

All of the above listed radionuclides are hazardous substances listed in 40 C.F.R. § 302.4.

Cleanup goals in soil will not exceed background radiation levels of TENORM. If the RML level is lower than background, then the background level will be the cleanup goal. Background levels will be documented from validated analytical sample results. The OSC will use the most conservative analytical results found in background samples collected on Site during the removal assessment.

2. Contribution to remedial performance

The proposed actions will, to the extent practicable, contribute to the efficient performance of any long-term remedial action at the Site.

The removal and possible disposal of the impoundments is not included in this scope of work. Once analytical results are received, the OSC will coordinate with the EPA Site Assessment Manager ("SAM"), EPA Radiation Safety Officer, WVDH, WVDEP, and possibly other risk assessors to determine if additional removal work is necessary to protect public health, welfare, or the environment. The OSC will continue to coordinate with the SAM during the removal action.

Due to the proximity of the Site to the EPA Big John's Salvage NPL Superfund Site, the OSC will coordinate removal actions with the Remedial Project Manager ("RPM") at the Big John's Salvage Site.

3. Applicable or Relevant and Appropriate Requirements

In accordance with 40 C.F.R. § 300.415(j), on-site removal actions conducted under CERCLA are required to attain Applicable or Relevant and Appropriate Requirements (“ARARs”) to the extent practicable considering the exigencies of the situation. In determining whether compliance with ARARs is practicable, the lead agency may consider appropriate factors, including (1) the urgency of the situation and (2) scope of the removal action to be conducted. On-Site removal actions must comply, to the extent practicable, with substantive but not administrative requirements of ARARs.

ARARs are generally divided into three categories: (1) chemical-specific, (2) location-specific, and (3) action specific. The OSC requested and received proposed ARARs from WVDEP and WVDH. The EPA is reviewing the proposed ARARs to determine their applicability. Applicable federal and state ARARs will be considered during this Removal Action. Based on evaluation of proposed work at the Site and review of the proposed ARARs received from WVDEP, the OSC has identified the following preliminary ARARs for the Site:

Regulations governing the identification and listing of hazardous waste under the Resource Conservation and Recovery Act, of 1976 (RCRA), as amended, 42 U.S.C. §§ 6901 et seq, at 40 C.F.R. § 261.24 (incorporated by reference in W. Va. Code R. § 33-20-3). Waste generated on-Site during any removal activities will be managed in accordance with these standards to the extent practicable considering the exigencies of the situation.

Standards applicable to generators of hazardous waste under RCRA at 40 C.F.R. §§ 262.14-17 (b) and (c) (incorporated by reference in W. Va. Code R. § 33-20-5). Any on-Site generation of a hazardous waste during the Response Action will comply with these standards to the extent practicable considering the exigencies of the situation.

West Virginia’s Radiation Safety Requirements for TENORM at W. Va. Code R. § 64-23-16. Any on-Site handling of TENORM will comply with the relevant and appropriate and substantive requirements of this section to the extent practicable considering the exigencies of the situation.

Transportation regulations relating to the identification, labeling, packaging, and shipping of hazardous materials as found in 49 CFR §§ 171-179. Transportation of hazardous waste will comply with the relevant and appropriate and substantive requirements of these sections to the extent practicable considering the exigencies of the situation.

National Historic Preservation Act and regulations at 36 C.F.R. §§ 800.4 and 800.10 and 40 C.F.R. § 6.301(b)(c). If a determination is made that there are historic properties on or near the Site, action will be taken to mitigate any adverse effects on those properties resulting from the removal activities to the extent practicable considering the exigencies of the situation.

4. Project Schedule

Continued response actions will resume immediately upon approval of this Action Memorandum. The EPA anticipates 12-24 months are necessary to complete the Removal Action. However, please note that uncertainties include the availability of trained and licensed radiation

contractors/subcontractors, availability and capacity of CERCLA-approved disposal facilities, and logistical challenges related to size and weight of contaminated debris.

B. Estimated Costs

Direct Extramural Costs	Current Site Ceiling	Ceiling Increase	Total Project Ceiling
Total ERRS Costs	\$200,000	\$2,200,000	\$2,400,000
Total START Costs	\$ 50,000	\$ 730,000	\$ 780,000
Subtotal Extramural Costs			\$3,180,000
Extramural Contingency 20%			\$ 636,000
Total Direct Extramural Costs	\$250,000	\$3,566,000	\$3,816,000

*EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this Removal Action. Liable parties may be held financially responsible for costs incurred by the EPA as set forth in Section 107 of CERCLA.

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

A delay in action or no action at this Site would allow the TENORM and other hazardous substances at the Site to release or continue to be released, increasing the actual or potential threats to the public health and/or environment as described above.

VIII. OUTSTANDING POLICY ISSUES

The EPA does not regulate TENORM. However, the radionuclides contained in TENORM are hazardous substances listed in 40 C.F.R. § 302.4.

In 1997, EPA issued “EPA Guidance on Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination” (OSWER No 9200.4-18). This 1997 guidance provided clarification on establishing protective cleanup levels for radioactive contamination at CERCLA sites.

As a follow-up to this document, the EPA previously issued “Radiation Risk Assessment at CERCLA Sites: Q&A (OSWER no. 9200.4-31P) in 1999. In 2014, the EPA updated the 1999 Q&A document. The 2014 guidance updated the protective dose-based ARAR to 12 mR/yr.

The EPA will be using Site-specific action levels of 10^{-4} cancer risk, as calculated by EPA’s PRG calculator, in lieu of the standard(s) set forth in 40 C.F.R. § 192.12. This 1997 EPA guidance states that the cleanup levels described in 40 C.F.R. § 192.12(a)(1) are never to be used at CERCLA sites and apply only to uranium mill tailings sites exempt from CERCLA.

Furthermore, in areas where the cleanup goals calculated for surface soils at the Site are below background levels, this Removal Action will not exceed existing background levels for the naturally occurring radionuclides.

IX. ENFORCEMENT

Enforcement actions have been initiated and are ongoing. See Attachment, "Confidential Enforcement Addendum" for more information.

The total EPA costs for this Removal Action based on full-cost accounting practices that will be eligible for cost recovery are estimated below as:

Direct Extramural Costs:	\$ 3,816,000
Direct Intramural Costs:	<u>\$ 343,440</u>
Subtotal	\$ 4,159,440
Indirect Costs (64.57%)	\$ 2,685,750
Estimated Costs for Removal Action	\$ 6,845,190

The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$ 6,845,190.¹

X. RECOMMENDATIONS

This decision document represents the selected Removal Action for the Fairmont Brine Superfund Site, located in Fairmont, Marion County, WV, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Removal Action selected herein. The following documents listed below are added to the existing administrative record for this action. Refer to existing administrative record for this Site for items 1-14.

By signing this Action Memorandum, you are hereby establishing the documents listed below as additions to the existing Administrative Record supporting the issuance of this Action Memorandum, pursuant to Section 113(k) of CERCLA and EPA Delegation No. 14-22.

15. EPA TENORM Website: <https://www.epa.gov/radiation/technologically-enhanced-naturally-occurring-radioactive-materials-tenorm>
16. Map depicting distance to Monongahela River
17. US Department of Energy: Nuclear Fuel Facts

¹ Direct costs include direct extramural 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, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of the 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 the total cost estimate nor deviation of actual costs from this estimate will affect the United States' rights to cost recovery.

18. FBP NPDES Permit Mod Application 4-28-16
19. FBP Corrective Action Plan Item 2 Order 8574 4.12.17
20. Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination (OSWER No. 9200 4-18, 1997)
21. "Distribution of the Radiation Risk Assessment at CERCLA Sites: Q&A (2014)"
22. "Technologically Enhanced Naturally Occurring Radioactive Materials", Vearrier, Curts, Greenburg, 2009)
23. WVDEP Consent Order 10093 5/24/23
24. Fairmont Brine EJ Screen Community Report
25. WV CSR 23§16
26. ARARs response letter (2/8/24)
27. Email to file re: conversation with former Site operator (5/17/23)
28. Fairmont Brine Preliminary Data Memo (NCRFO) (4/16/24)
29. PRG Calculator Site-Specific Cleanup Levels

Conditions at the Fairmont Brine Site meet the removal action requirements of the NCP. Therefore, I recommend that you approve the proposed Removal Action. The total Removal Action Project Ceiling, if approved, will be \$3,816,000.

Action by Approving Official:

I have reviewed the above-stated facts and based upon those facts and the information compiled in the documents described above, I hereby determine that the release or threatened release of hazardous substances at and/or from the Site present or may present an imminent and substantial endangerment to the public health or welfare or to the environment. I concur with the recommended Removal Action as outlined.

APPROVED: _____ **DATE:** _____

Paul Leonard, Director
Superfund and Emergency Management Division
EPA Region 3

Attachments:

- Attachment 1: Uranium 238 Decay Chain Illustration (USEPA)
- Attachment 2: WV ARARS Response Letter (Includes ARARS from WVDEP and WVDH)
- Attachment 3: POLREP #1 & SPECIAL BULLETIN A
- Attachment 4: Enforcement Confidential Memo

The Uranium-238 Decay Chain

82 83 84 85 86 87 88 89 90 91 92

Only main decays are shown
Gamma emitters are not indicated

Decay chain diagram showing the transformation of various isotopes. The chain starts with U-238 (4.5x10⁹ a) decaying to Th-234 (24.1 d) via alpha decay. Th-234 decays to Pa-234 (1.17 m) via beta decay. Pa-234 decays to U-234 (2.4x10⁵ a) via beta decay. U-234 decays to Th-230 (7.7x10⁴ a) via alpha decay. Th-230 decays to Ra-226 (1600 a) via alpha decay. Ra-226 decays to Rn-222 (3.82 d) via alpha decay. Rn-222 decays to Po-218 (3.05 m) via alpha decay. Po-218 decays to Pb-214 (26.8 m) via alpha decay. Pb-214 decays to Bi-214 (19.9 m) via beta decay. Bi-214 decays to Po-214 (1.64x10⁻⁴ s) via beta decay. Po-214 decays to Pb-210 (22.3 a) via alpha decay. Pb-210 decays to Bi-210 (5.0 d) via beta decay. Bi-210 decays to Po-210 (138.4 d) via beta decay. Po-210 decays to Pb-206 (Stable) via alpha decay.

Element Names
U - uranium
Th - thorium
Ra - radium
Pa - protactinium
Rn - radon
Po - polonium
Bi - bismuth
Pb - lead

Half-life units
a - years
d - days
h - hours
m - minutes
s - seconds

ATTACHMENT 2
WV ARARS RESPONSE LETTER

ATTACHMENT 3
POLREP #1 AND SPECIAL BULLETIN A

ATTACHMENT 4
ENFORCEMENT CONFIDENTIAL MEMO