Analysis of Brownfields Cleanup Alternatives
Upshur County Youth Camp Tarpit Site
76 Youth Camp Road
Selbyville, West Virginia 26236
Prepared For: Upshur County Commission

1. Introduction and Background

a. Site Location

The approximate 0.5-acre Upshur County Youth Camp tarpit site (hereinafter referred to as the "tarpit Site" or "Site") is located within a larger property owned by the Upshur County Commission known as the Upshur County Youth camp. The entire Youth Camp property (hereinafter referred to as the "Youth Camp Property" or "Property") sits between the west-southwest banks of the Buckhannon River and Youth Camp Road on the southern border. The western portion of the Youth Camp Property contains the 0.5 acre Tarpit Site and the rest of the eastern portion is the Youth Camp Property. They are located approximately 0.25 miles north of the Selbyville Post Office in Selbyville, West Virginia (Latitude/Longitude coordinates: 38.760326, -80.236704, WGS 1984). The Site is addressed as 76 Youth Camp Road, Selbyville, West Virginia 26236. According to the Upshur County Assessor's Office, the Site is identified in District X (dist name) on Tax Map X as Parcel X.

b. Previous Uses

Historically, the Site was primarily undeveloped land until the Buckhannon Chemical Company developed a facility on the site in 1908 to manufacture charcoal, wood alcohol (methanol), and calcium acetate. The tarpit portion of the site was used to dispose of wastes from the production of these three hazardous substances. Operations and disposal of hazardous substances continued until around 1933 when the facility was closed, abandoned, and salvaged. The 9 year history from 1933 to 1942 is not clear. The property may have sat idle with little to no use.

In 1942, the Upshur County Farm Bureau bought the property and began using it for the Upshur County Youth Camp. Just a few years later, in 1945, the Farm Bureau deeded the property to the Upshur County Court, now known as the Upshur County Commission, who owns the property to this day. From 1942 to the present day, the property has been consistently used for hosting recreational activities under the Upshur County Youth camp program.

While the larger Youth Camp Property is still in use today, the Tarpit Site has been unused since 1988. In 1988, as a result of a West Virginia Division of Natural Resources (WVDNR) complaint, the 0.5 acre tarpit site was sealed by the US Environmental Protection Agency (USEPA) and included a reinforcing cover, a 6-8" soil cap over the cover, and an 8 foot chain link fence surrounding the perimeter in order to mitigate direct

human contact to the tarpit contaminants. Due to the age of the cap, ground cover and trees have penetrated the cap in several locations. However, the fencing around the perimeter of the tarpit is intact.

c. Past Site Assessment Findings

On January 14th, 1987, the WVDNR submitted a complaint to the USEPA regarding the potential hazards to human health found on the Tarpit Site and within just a few days on January 16th the investigations, discussions between USEPA and WVDNR, and regulatory actions were initiated.

On August 10th, 1987, the Tarpit Site was referred to USEPA Emergency Response for further evaluation, which included sampling to assess the removal action needed.

October 7th, 1987, the USEPA's Technical Assistance Team began sampling the Site. This investigation included four soil/sediment samples and one liquid sample. On December 7, 1987 the results of the October sampling were sent to to Charles Walters, ATSDR Coordinator at WVDNR from Jerry Saseen, On-Site Coordinator with USEPA Region III. The results found were as follows:

- 2 soil samples tested confirmed presence of phenols at 2800ppm and 4200ppm,
- 3 soil samples tested confirmed presence of 2,4-dimehtylphenol in concentrations of 360ppm, 5200ppm, and 7200ppm,
- and 1 liquid sample tested confirmed the presence of 2,4-dimehtylphenol at a concentration of 200ppm.

In April through June of 1988, as a result of the sampling conducted in 1987, the site underwent a USEPA Emergency Response removal action through the installation of a reinforcing cover, a 6-8" soil cap over that cover, and an 8 foot chain-link fence around the perimeter. This was to mitigate direct human contact to the tarpit contaminants.

On June 8, 1988, in addition to capping the contaminants, a CERCLA Site inspection was performed by the WVDNR. They sampled soil, sediment, and water from around the perimeter of the tarpit. No contaminants were found in the surface water samples and the WVDNR sampling did not detect phenol or 2,4-dimethylphenol. These results were contrary to the December 7th, 1987 USEPA results. However, this inspection did note the presence of polycyclic aromatic hydrocarbons (PAHs) in soil and sediment samples, but it's important to note that an offsite soil sample was obtained for background use, and indicated that there may be other possible anthropogenic sources entering the site from off-site.

On April 14, 2016 the Upshur County Commission received a letter from Neeraj Sharma, On-Scene Coordinator with USEPA Region III, stating that no further action is planned currently, but that any disturbance would need to be coordinated with the WV Department of Environmental Protection (WVDEP), be protective of human health, and be conducted in accordance with State Regulations. This letter was a response to an inquiry regarding

disturbing the site for sampling that would be needed for a Phase II ESA to meet the requirements of a FY17 EPA Brownfields Cleanup grant application.

On May 10, 2016, Donald W. Martin, II completed a Phase I ESA on the tarpit Site which summarized all of the assessments, sampling, and items discussed above. In addition to this, he noted in his conclusions that on the Site "known events during that period imply that contaminant-contributing activities ceased with the closure and abandonment of the facilities in the early 1930's."

November – December 2016 – Phase II Environmental Site Assessment (ESA) findings need to be included when available.

In October 2016, the Upshur County Commission contracted ENGINEERING COMPANY NAME to conduct limited surface soil sampling and testing at the Site. According to the report prepared by COMPANY NAME dated December XX, 2016, COMPANY NAME collected NUMBER AND TYPE samples from the Tarpit site as requested by the Upshur County Commission. The soil samples were submitted for laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and Resource Conservation and Recovery Act metals (RCRA metals). COMPANY NAME compared the soil sample results to the Risk-Based Concentrations (RBCs) developed by the West Virginia Department of Environmental Protection (WVDEP) – Office of Environmental Remediation (OER) for residential and industrial soils and natural background concentrations established in the WV Voluntary Remediation and Redevelopment Act (VRRA) guidance manual dated January 2002.

According to soil sampling results summary prepared by COMPANY NAME, CONTAMINANT NAMES were detected at or above the laboratory reporting limits. In five of the six soil samples, levels of CONTAMINANT ranged from XX.X – XX.X mg/kg that were "in excess" of the VRRA natural background concentration of XX mg/kg (residential) while other detectable levels of CONTAMINANT NAME were below the residential RBC levels. VOCs and SVOCs were not detected at or above the laboratory established reporting limits.

Included with the 2016 COMPANY NAME Phase II ESA were analytical results for a water sample that was collected on May 20, 2010 from "well #1", i.e., understood to be the former drinking water well (Well No. 1). Although the water sample was collected by COMPANY NAME on the same date as the soil samples; a discussion of its collection was not included in the 2016 COMPANY NAME Phase II ESA. According to the laboratory results for the water sample, the water well sample was analyzed for CONTAMINANT(S). A low level of CONTAMINANT (slightly above the laboratory established reporting limit) was detected in the water sample as well as the presence of total coliform. All other analytes were not detected at or above the laboratory established reporting limits. Noteworthy is that the water sample was not analyzed for CRITERIA/CONTAMINANT that would have included: _____by U.S. EPA Method 8260B, Total Petroleum

Hydrocarbons-Diesel Range Organics (TPH-DRO) and Gasoline Range Organics (TPH-GRO) by U.S. EPA Method 8015B.

d. Project Goal Summary

The Upshur County Commission and the Youth Camp's vision for the property is to expand recreational opportunities to its youth and broader community through cleanup of the Tarpit Site. The Commission plans for the site to be used as open space, like surrounding areas, as well as to be used as an archery range. Further potential improvements identified by the Commission through its work with local sports organizations and community partners include additional recreation fields, and adequate parking to support the growing popularity, needs, and membership of the sport groups in Upshur County. In order for this vision to become a reality the removal of all environmental contaminants in the tarpit area will have to be completed in a manner that is demonstrable to all stakeholders sufficient to improve the confidence of safety in the property, and the perception that the same issues would not resurface in the future.

The potential for the future of the planned archery range on the Site is high because existing use of the Youth Camp is already high in relation to the number of residents in Selbyville and Upshur County. Decades of consistent use and thousands of youth demonstrates that this facility will be used and completion of the archery range will enable the camp leaders to hold another type of recreation through archery courses.

The ability to redevelop this location into at archery range is advantageous for several reasons:

- in a county where childhood poverty for children under 5 is at around 65% while the United States stat is at 25%, this will provide youth with programs and experiences to motivate them to learn and take on proactive leadership roles as they mature
- in an small community, the additional of valuable resources and activities encourages youth to become active and engaged in their community
- reduces distance families' will need to travel to enjoy an archery range.
- many parents have children involved in other recreational activities at the 4H camp simultaneously, so having an additional activity located in the same general area minimizes travel time and makes the recreation experience more enjoyable.
- Full development of the 0.5 acre Site within the context of the whole Youth Camp Property into would bring more recreational focus to Upshur County which could influence decision-making about the timing of development of the nearby properties.

e. Summary of Environmental Site Assessments

On May 10, 2016, Donald W. Martin, II completed a Phase I ESA on the tarpit Site which summarized all of the assessments, sampling, and items discussed above.

Phase I ESA Conclusions and Recommendations:

- The Site was used for production charcoal, wood alcohol (methanol), and calcium acetate from 1908 until approximately 1933. Biproducts of the manufacturing process were buried in the tarpit area.
- On the Site "known events during that period imply that contaminant-contributing activities ceased with the closure and abandonment of the facilities in the early 1930's." This is consistent with Buckhannon Chemical Company's closure and dissolution of the company between 1933 and 1935.

- In October to December of 1987, the USEPA's Technical Assistance Team concluded that samples on the tarpit Site tested positive for phenols and 2,4-dimehtylphenol.

- In April through June of 1988, as a result of the sampling conducted in 1987, the site underwent a USEPA Emergency Response removal action through the installation of a reinforcing cover, a 6-8" soil cap over that cover, and an 8 foot chain-link fence around the perimeter to mitigate direct human contact to the tarpit contaminants.

- On June 8, 1988, in addition to capping the contaminants, a CERCLA Site inspection was performed by the WVDNR. They sampled soil, sediment, and water from around the perimeter of the tarpit. No contaminants were found in the surface water samples and the WVDNR sampling did not detect phenol or 2,4-dimethylphenol. These results were contrary to the December 7th, 1987 USEPA results. However, this inspection did note the presence of polycyclic aromatic hydrocarbons (PAHs) in soil and sediment samples, but it's important to note that an offsite soil sample was obtained for background use, and indicated that there may be other possible anthropogenic sources entering the site from off-site.

- Mr. Donald Martin II recommended that additional environmental sampling of water, soils, sediments, and residual source materials be performed to develop information regarding current conditions to allow the County and 4H camp to evaluate remedial alternatives to better utilize the property.

Phase I ESA Environmentally Noteworthy Findings:

- As of March 4, 2016, while the fencing around the perimeter of the Site is intact, volunteer vegetation has penetrated the cap in several locations.
- Septic tank leach field may be leaching into storm sewer system upgradient of a manhole. System may pass under tarpit Site and its cap.

On December XX, 2016, COMPANY NAME completed a Phase II ESA for the Site.

Phase II ESA Findings:

- To be delivered soon

2. Applicable Regulations and Cleanup Standards

a. Cleanup Oversight Responsibility State Standards and Regulations

It is the Upshur County Commission's intent to perform the Site cleanup under the WVDEP Voluntary Remediation Program (VRP) under the WV Legislature's Voluntary Remediation and Redevelopment Act (VRRA). The VRP requires that the site investigation and cleanup be performed under the oversight of a West Virginia Licensed Remediation Specialist. Reports documenting site investigation and cleanup activities must also be approved by the WVDEP. The DeMinimis cleanup standards under the VRP are listed in Table 60-3B of the West Virginia Voluntary Remediation and Redevelopment Rule (60CSR3-). Soil cleanup standards are provided for protection of groundwater (leaching) as well as direct contact exposure under residential and non-residential site use scenarios. The VRRP also allows for the development of site-specific risk-based standards based on anticipated future use.

b. Cleanup Standards

Briefly summarize the standard for cleanup e.g., state standards for residential or industrial reuse.

c. Laws and Regulations

Briefly summarize any federal, state, and local laws and regulations that apply to the cleanup

Evaluation of Cleanup Alternatives

Three alternatives are considered for addressing the Tarpit site that contains potential remnants and biproducts from the historic production of charcoal, wood alcohol (methanol), and calcium acetate.

Alternative 1 – No Action

This option requires no further action. This alternative would involve no action, leaving the site in its current condition. This is not a viable alternative given the current potential for public health hazards related to contaminants. This alternative would also negate all benefits associated with the installation of the archery range and additional recreation for Upshur County and Youth Camp attendees.

Total Cost = $0.00

Alternative 2 – Reinstalling and Improving Existing Cap

The 0.5 acre Tarpit Site currently has a cap on it that is failing due to existing vegetation, trees, weathering, and age that have exposed portions of the previously capped tarpit. These 0.5 acres (2,420 yd^2 area and 833 yd^3 volume of soil) will be capped as described below. Capping of the exposed portions of the Site with a geotextile layer and clean fill material for the cap will act as a barrier to restrict existing contaminated soil from migrating upwards from the existing soil layer. The geotextile fabric should have an acceptable permittivity and be placed over the existing soil and covered with clean fill. The fill material (top soil and fill) shall be placed at a minimum of 12 inch lifts and lightly compacted with existing geotechnical standards with each layer to prevent future settling. The depth needs to be sufficient to allow for wear from recreational use of playing fields and activities commonly associated with recreational and park facilities. The fill material shall be obtained from a soil borrow area acceptable and/or approved by the WVDEP. The contractor shall be responsible for ensuring that the fill material shall be free of deleterious material, contaminants of concern, and free of foreign objects. Once the fill is in place and the capping complete, restrictions on excavation will be updated or coordinated with the WVDEP to ensure that future human health is protected.

Therefore a rough cost estimate would be:

- Deconstruct fencing = $2,500
- Mobilization/Grading/Labor = $7,500
- 2,420 yd^2 of Geotextile fabric @$0.85/sq. yard = $2,057.
- Cap again with 833 yd^3 of Clean Fill (from within 7 miles) @$13/ton = $10,829
- Hydro seeding for capping (0.5 acres) = $2,500
- Reinstall fencing = $2,500
- Update or create land use covenants = $2000

Total = $29,886
Total (with 10% contingency) = $33,206.66

Alternative 3 – Excavation with Offsite Disposal

This option will remove all contamination to 10 feet in depth as long as no contamination is present in sampling at bottom of excavated pit. Removing the fencing existing cap, soil, topsoil, vegetation, fill material and contaminants until sampling protocols reveal no contamination at bottom of excavation and replacing it with clean fill material. The removed contaminated soil can be relocated offsite and placed into stockpiles for future use as fill material on this site. This material should only be used as deep fill and placed as the first lifts and then covered with one foot or more of clean fill material. The fill material (top soil and fill) shall be placed at a minimum of 12 inch lifts and lightly compacted with existing geotechnical standards with each layer to prevent future settling. The depth shall be sufficient to allow for wear from recreational use of playing fields and activities commonly associated with recreational and park facilities. The fill material shall be obtained from a soil borrow area acceptable and/or approved by the WVDEP. The

contractor shall be responsible for ensuring that the fill material shall be free of deleterious material, contaminants of concern, and free of foreign objects. Once the fill is in place and the capping complete, restrictions on excavation will be placed and coordinated with the WVDEP to ensure that future human health is protected.

A rough cost estimate would be:

- Deconstruct fencing = $2,500
- Remove existing soil (assume 10 feet over 0.5 acre) @$10/cu. yard = $81,000
- Replace with Clean Fill (8067 cu. yards from 7 mi. radius)@$13/cu.yard= $104,866
- Mobilization/Grading/Labor = $7,500
- Hydroseeding (0.5 acre) = $2,000

Total = $197,866
Total (with contingency) = $200,000

Recommended Cleanup Alternative

Based on the Phase II findings, anticipated EPA Cleanup grant, and planned reuse, the recommended cleanup alternative is Alternative 3 – Excavation with Offsite Disposal which includes removing the fence, mobilization of excavation and grading equipment, removing the existing soil until no contaminants are left, replacing the excavated soil with clean approved fill, and hydroseeding to encrouage grass growth for the recreational archery range. If done appropriately and in accordance with above-mentioned laws and standards, this will remove the contaminants from the site and fully mitigate human through inhalation, ingestion, or dermal contact.

Consideration of Climate Change

Given the project's anticipated duration, location, and permanent nature of the project, the effects of climate change will not be a factor in the feasibility of completion of the project.