

**ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES
FOR
28 DAVIDSON AVENUE
ELRAMA, UNION TOWNSHIP,
WASHINGTON COUNTY, PENNSYLVANIA**

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1.0 INTRODUCTION

Union Township has entered into a loan agreement with the Redevelopment Authority of the County of Washington (RACW) to borrow funds to undertake the environmental cleanup of the former Elrama Chrome Shop site. The Site was acquired by Union Township with the intention to develop a new playground for the Elrama neighborhood.

The cleanup activities of the Site will be undertaken utilizing a loan fund established by the RACW with an approved United States Environmental Protection Agency (U.S. EPA) Brownfield Cleanup Revitalization Loan Fund (BCRLF) grant. Pursuant to the RACW BCRLF Agreement, Union Township is required to prepare an Analysis of Brownfield Cleanup Alternatives (ABCA). The purpose of the ABCA is to analyze brownfield cleanup alternatives that will remediate or control contaminated media identified at the Site to provide protection of human health and the environment. The ABCA includes information about the site and its previous use(s), previous cleanup/remediation, Site assessment findings, applicable regulations and cleanup standards, an evaluation of cleanup alternatives considered and the recommended cleanup alternative.

This ABCA was prepared by KU Resources, Inc. on behalf of Union Township and the RACW. Notice of this document has been published, and this document has been made available for public comment, in accordance with the former Elrama Chrome Ship Community Relations Plan.

1.1 Site Location, Description, and Context

The Site is located at 28 Davidson Avenue in Elrama, Washington County, Pennsylvania and encompasses approximately 0.5 acre (21,000 square feet) of vacant, former commercial land. The Property is recorded in the Washington County Tax Assessment as Parcel Number 640-007-04-03-0014-00. There are currently no structures Site. The Site is situated on the southwest side of Davidson Avenue in a primarily residential area. The parcel is covered with vegetation the exception of an area of crushed stone along Davidson Avenue. The Site generally slopes from northwest to southeast towards the Pennsylvania American Water facility and the Monongahela River.

1.2 Previous Site Uses

Prior to 1947, the Site was vacant, undeveloped land. From 1947 to 1981, the Site was owned by John Drechsler and operated as the Drechsler Cabinet Company. In 1981, the Site was sold to David and Aimee Kogut, under whose ownership it was leased to several businesses. Following closure of the cabinet shop in 1981, the Site was vacant for a number of years until the mid-1990s. In 1995, the Site was leased and operated as Seebacher's Plating Mill. This Site was used in this manner until 2000. Beginning in September 2000, the Site was owned and operated Boyle's Metal Polishing and Finishing. In May 2003, Boyle sold the business to Classic Auto Restoration Services, a specialty electroplating facility, primarily for car parts, which operated until November 2004, after which the facility was abandoned. In 2009, Mr. Marion Vincent Eggleston purchased the Property at a tax sale. Under Mr. Eggleston's ownership the Site was vacant land. In June 2013, the Property was sold to Improper Properties, LLC, again by the Washington County Tax Claim Bureau for the non-payment of taxes. Union Township subsequently acquired the Site from Improper Properties, LLC, and is the current owner.

1.3 Previous Site Investigations, Cleanup and Remediation

Two interim responses pursuant to the Hazardous Sites Cleanup Act (HSCA) were performed at the Property by the Pennsylvania Department of Environmental Protection (PADEP), removing the building, hazardous wastes, and contaminated soils. Additionally, an Environmental Covenant and Activity and Use Limitations (AULs) exist for the Property limiting potential future exposure to hazardous materials at the site.

The PADEP initiated a Prompt Interim Response in 2005 on the Site. The 2005 investigation conducted by the PADEP included the following:

- Advancement of 18 soil borings (SB-1 through SB-18). Collection of soil samples from shallow (1-3 feet), intermediate (5-7 feet), and deep (9-16 feet) intervals at each respective soil boring location. The total metals that exceeded Act 2 medium-specific concentrations (MSCs) for soil included arsenic, cobalt, and iron. Arsenic exceeded the MSC at 10 sample locations, cobalt exceeded the MSC at 47 sample locations, and iron exceeded the MSC at two sample locations.
- Installation of piezometers in five of the soil borings (SB-1, SB-4, SB-5, SB-12, and SB-13). Resulting groundwater flow direction was determined to be east. Groundwater MSCs were exceeded for nitrates at PZ-2 and PZ-4 and for nickel at PZ-2.
- Installation of four monitoring wells (MW-1 through MW-4). Samples were analyzed for total and dissolved metals, volatile organic compounds, cyanide, hexavalent chromium, and semi-volatile organic compounds. Groundwater MSCs were only exceeded for antimony in MW-3 and arsenic in MW-1 and MW-3.
- Shipment of 42.76 tons of non-hazardous bulk solid waste and 342 containers off the Property.
- A septic investigation in November 2005 to locate the on-site sewage system. The septic tank and its contents were removed. The cavity remaining was filled with gravel to meet existing grade.
- Collection of cistern water samples which exceeded Surface Water Quality Criteria and groundwater MSCs for sulfates, dissolved cadmium, chromium, and nickel, and for total barium and nickel. As a result, 4,000 gallons of water were pumped out of the cistern and it was backfilled with gravel as a safety measure.
- Collection of pit well water samples which exceeded the MSCs for hexavalent chromium, nitrates, aluminum, antimony, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, silver, and zinc. As a result, liquid in the pit well was removed and it was filled with cement to ground surface.

In 2010, the PADEP conducted a second Interim Response pursuant to the HSCA, which included the demolition of the building (including the floor slab and footers), excavation of contaminated soil, and site restoration. A total of 72 loads of demolition debris, 96 tri-axle loads of non-hazardous material, and 11 tri-axle loads of chromium contaminated soil were shipped for disposal. Fifteen confirmation samples were subsequently collected from locations where the suspected waste was removed in order to confirm attainment criteria were achieved. These samples were analyzed for metals, hexavalent chromium, boron, molybdenum, vanadium, and cyanide. Of the 15 confirmation soil samples obtained following excavation, the only constituent analyzed for that exceeded its residential soil-to-groundwater and direct

contact MSC was arsenic, at one location. Sample CONF-01 returned results greater than the attainment criteria and was re-sampled with sample A-007 after additional soil was removed. Sample A-007 met attainment criteria.

In May 2011, the PADEP issued an Administrative Order to the property requiring him to record within 20 days an Environmental Covenant and deed acknowledgement to the Washington County. There is no documentation that the property owner recorded the Environmental Covenant and it was recorded on the deed on August 5, 2011 by the PADEP. The 2011 Administrative Order states:

“Contaminated soil or other hazardous substances may still remain on the Site beneath the vegetative cover, including the area where the building was formerly located, and could present a threat of release if this vegetative cover is disturbed.”

Activity and Use Limitations (AULs) listed within the Environmental Covenant include the following:

- The use or consumption of groundwater located on or beneath the Property is prohibited;
- The Property may be used for commercial purposes. In no event shall any portion of the Property be used for residential purposes, nor shall the Property be used as the location for a nursing home, school, or other residential-style facilities;
- Excavation and removal of soils and/or waste materials from the Property is prohibited;
- The construction of a commercial building on the Property is permitted, provided that the following conditions are met: 1) the building must be built on a slab, 2) if excavation of soils and/or waste is required for construction, the affected soils and/or waste shall be sampled and properly handled according to sample results, 3) the PADEP is provided with notice of the construction at least 6 months before construction of a building commences, and 4) the PADEP is provided with sample results of any excavated soil and/or waste;
- Removal of the vegetative cover from the Property is prohibited unless a cap or cover is installed to prevent soil erosion; and
- Use of the Property that is inconsistent with or will negatively impact the investigative or remedial measures undertaken by the Department is prohibited.

1.4 Nature of Threat to Public Health

The present condition of the Site poses an ongoing threat from potential direct contact or ingestion of site soils. According to the 2007 End of Project Report, numerous chemicals remained on the Site including corrosives, oxidizers, poison including arsenic and cyanide, and metals such as nickel, chromium, lead, cadmium, and copper. Other listed hazardous wastes in many different containers were left open and/or in deteriorating condition. Furthermore, the drains at the Property were connected to an on-lot septic system, potentially resulting in an accumulation of hazardous substances in the septic tank. The 2007 End of Project Report also stated that the building was dilapidated and trespassers broke into it on more than one occasion. Hexavalent chromium is a recognized carcinogen. Because of its adverse effects on human health and the environment, use and exposure to hexavalent chromium represents potential occupational safety risks as well as risks to residents and sensitive populations in the area of the Site.

Sampling conducted by PADEP subsequent to the 2010 demolition and removal of soil indicated that arsenic could still be a concern.

1.5 Cleanup/Reuse Goals

The goal of the Former Elrama Chrome Plating Site cleanup project is to finalize the remediation of the site by confirming the effectiveness of active remediation measures previously conducted under the supervision of the PADEP, augmenting it if necessary and then attaining an Act 2 release from liability from the PADEP under a residential standard to permit the reuse of the site as a neighborhood playground. The existing Environmental Covenant will not allow the Site to be used as proposed, so the goal is to demonstrate to the PADEP the attainment of a Site-Specific Standard that will permit that use, and remove or amend the Covenant, as necessary. As previously described, the planned cleanup activities are intended to enable Union Township to reuse the Site for the construction of a neighborhood playground.

2.0 APPLICABLE LAWS/CLEANUP STANDARDS

Site remediation activities will be completed in compliance with all applicable Pennsylvania and Federal environmental regulations. Applicable Federal laws include CERCLA and RCRA. Applicable Pennsylvania Laws include PA Acts 2 and 68, and the HSCA. Pennsylvania's Act 2, Land Recycling Program, allows an owner or purchaser of a brownfield site to choose any one or combination of cleanup standards to guide the remediation. By meeting one or a combination of the background standard, the statewide health standard or the site-specific standard, the party conducting the remediation will receive liability relief for the property. Pennsylvania's Act 68, Uniform Environmental Covenants Act, provides a standardized process for creating, documenting and assuring the enforceability of activity and use limitations on contaminated sites. The PADEP utilized the provisions of the Hazardous Sites Cleanup Act, and the powers that law provides, to conduct the original cleanup and removal action on the site, and there is an existing Environmental Covenant that limits Union Township's reuse of the Site for the intended purpose.

3.0 EVALUATION OF CLEANUP ALTERNATIVES

In order to effectively address the recognized contamination at the site, three alternative remediation scenarios were considered. In accordance with U.S. EPA requirements, the effectiveness, Implementability and cost of each alternative were assessed and considered prior to selecting a recommended cleanup alternative.

3.1 Cleanup Alternatives Considered

The three alternatives considered included:

- 1) A "No Action" Alternative;
- 2) Conduct additional and extensive excavation and removal of contaminated soils and material;
and
- 3) Conduct Site documentation activities to finalize the remediation of the site by confirming the effectiveness of remediation previously conducted under the supervision of the PADEP,

augmenting it if necessary and then attaining an Act 2 release from liability from the PADEP under a standard appropriate to the Site's reuse goals.

Each of the three alternatives is discussed and summarized below with regard to feasibility, effectiveness, implementability, and cost.

3.1.1 *Alternative 1 - No Action*

The "No Action" alternative would leave the Site in its current condition and take no immediate steps that would facilitate its redevelopment. Under this alternative, the Site would be unsecured, no controls would be implemented, and no additional abatement or cleanup would occur. Essentially, the Site would remain as an unused, vacant lot. This alternative avoids expenses that would be incurred by taking remedial action.

3.1.1.1 Feasibility

The No Action alternative is deemed not to be feasible due to Union Township's desire to redevelop the site as a new playground and park for the Elrama neighborhood of the Township. If no further action is taken, the Environmental Covenant would prohibit that use of the Site as a park.

3.1.1.2 Effectiveness

The No-Action alternative would be ineffective in achieving project goals for the Site. If no action is taken, impacted soil would continue to be a concern for the community. If no action is taken and the Site remains unsecured, there is a possibility that the general public, including neighborhood children, could come into direct contact with impacted surface soils, thus creating a potential environmental, health, and welfare liability. No required actions or technology are necessary to implement this option. The time frame needed for the no action alternative to result in improved environmental conditions at the Site is not known, so the amount of time required to significantly reduce concentrations to acceptable levels through natural attenuation processes would not be effective. The "no action" approach would prohibit redevelopment of this Site and the Site will continue to pose an environmental and health risk to the residents of the surrounding neighborhood.

3.1.1.3 Implementability

Implementation of the No-Action alternative would be straightforward. The Site would be left in the current unused state. Possible transfer or lease of the property to other parties would require notification of the Environmental Covenant. The "no action" alternative does not have an associated cost, is easy to implement and does not require ongoing operation or maintenance costs. Direct costs associated with the No-Action Alternative and associated non-use of the buildings would consist mainly of providing site security and ensuring public safety. A significant indirect cost would be the continuing inability to reuse the Site for anything other than a commercial purpose which given the Site's location, lack of visibility, and adjacency to solely residential properties is doubtful. Also, values of neighboring properties would be impacted in a negative way, impacting not only owner equity, but also real estate tax revenue.

3.1.1.4 Cost

The No Action Alternative is the least costly alternative considered. Costs under this scenario are limited to ongoing site security and maintenance. In the long term, however, the expenses associated with taking no action could increase due to the continued deterioration site.

3.1.1.5 Summary

The immediate advantage to no action is related to avoidance of expenses that would be incurred by actually taking productive action. However, this alternative was removed from consideration since it will not allow the overall project to move forward.

3.1.2 *Alternative 2 - Conduct Additional and Extensive Excavation and Removal of Contaminated Soils and Material*

The intent of this cleanup alternative is to demonstrate attainment of the Statewide Health Standard through the excavation and off-site disposal of all impacted soil at an off-site landfill. Impacted soil would be excavated, temporarily stockpiled if necessary, loaded into trucks, and transported to a licensed landfill. Clean backfill from off-site sources would be brought into the site to raise the grade following removal of impacted soils. For attainment of the Statewide Health Standard sufficient remedial work needs to be completed that demonstrates that impacts remaining on the Site fall below State established medium specific concentrations.

3.1.2.1 Feasibility

The extent of documented contamination on the Site indicates that removal would require extensive excavation across the breadth of the site. This would also require the excavation of cover material previously placed under the PADEP Interim Response. The resources required to remove additional soil and then replace it far exceed the capacity of Union Township.

3.1.2.2 Effectiveness

Complete excavation and off-site disposal of all impacted soil, including the area under the former building which the PADEP indicated as a possible area of lingering contamination, would be effective at permanently removing contamination. This alternative would ensure that future redevelopment of the site would not encounter any residual contamination, thereby eliminating future exposure pathways.

3.1.2.3 Implementability

The implementation of this alternative is feasible, though costly. The high cost and physical disruptiveness of this approach is precisely the type of scenario that led to the more reasonable risk-based approach to site cleanup authorized under PA Act 2.

3.1.2.4 Cost

The cost to excavate the contaminated soil from the Site is estimated to be in excess of \$300,000. Union Township would then have the additional cost to develop the Site. The remediation process for this alternative would be disruptive to the neighborhood and is economically infeasible, as the cost to implement it would exceed its remediated value.

3.1.2.5 Summary

This alternative is not feasible due to its high cost and the lack of resources that can be directed toward its implementation.

3.1.3 **Alternative 3 – Site Specific Standard Alternative**

Under the Pennsylvania Act 2 program, the Site-Specific Standard involves using a risk-assessment procedure to determine suitable cleanup standards. This procedure takes into account future land use and the potential for human exposure, and develops standards that are tailored to site conditions. Sites remediated using the Site-Specific Standard typically involve the use of engineering or institutional controls to demonstrate attainment and will require an AUL in accordance with the Uniformed Environmental Covenant Act (UECA).

3.1.3.1 Feasibility

This alternative is technologically feasible and the process is well-defined to achieve it.

3.1.3.2 Effectiveness

Future use of the site will be recreational, and as such the cleanup standards will be commensurate with the intended reuse.

3.1.3.3 Implementability

The process to obtain a release of liability and achieving Act 2 closure under the Site-Specific Standard is well established. The steps required include:

- Submittal of Notice of Intent to Remediate to the PADEP
- Submittal of a Work Plan
- Perform Site Characterization Activities including confirmation of previous sampling
- Perform Risk Assessment
- Submittal of combined Site Characterization and Risk Assessment Report
- Perform any remedial activities required to demonstrate attainment (i.e., soil cap)
- Submit UECA
- Prepare Final Report demonstrating attainment of Standard

3.1.3.4 Cost

The cost to document existing conditions, conduct confirmatory sampling to and carry the site through the Act 2 process and obtain a release of liability under a site-specific residential standard is \$50,000.

3.1.3.5 Summary

The Site-Specific Standard alternative represents a reasonable and feasible approach that will allow Union Township to achieve its cleanup and reuse goals for the Site.

3.2 Selected Cleanup Alternative

The alternative selected is to confirm the effectiveness of remediation previously conducted under the supervision of the PADEP, and then obtain an Act 2 release from liability from the PADEP under the site-specific standard alternative. The benefit of the Site-Specific Standard alternative is that cleanup can be obtained through a minimally disruptive site characterization process and then applying institutional controls to demonstrate attainment. The institutional controls can consist of prohibiting the prohibiting the use of groundwater for drinking and agricultural purposes, and require that any soil excavated from the affected areas be properly characterized prior to leaving the Site or being stockpiled on the Site. The advantages of using the institutional control is that it can be implemented in a timely and economical manner, and it is a very effective method to control the environmental risks of human exposure to the contaminants that remain on the Site.