The Westinghouse Building
Former Paramount Stamp & Welding

Analysis of Brownfield Clean-up Alternatives (ABCA)

The purpose of this ABCA is to outline the planned remediation actions and the alternative remedial strategies that were considered for the former Westinghouse/Paramount Metals facility located at 1200 West 58th Street, Cleveland, Ohio.

Property Background

The VAP property is located at 1200 West 58th Street, Cleveland, Cuyahoga County, Ohio. The property consists of a single parcel (Number 002-11-002) and totals approximately 3.6 acres in area. The property is developed with a (currently vacant) industrial facility consisting of an eight-story, 104,000 sq. ft. tower building and a 200,000 sq. ft. factory building. The Property buildings were constructed in the late 1890s. The property was most recently occupied by Paramount Stamping & Welding; which closed in approximately 2019. The property has remained vacant since that time.

The subject property was historically occupied by the Walker Manufacturing Co., a foundry, in 1896. The Walker MFG Co. primarily produced machinery associated with street/railway cars.
The Westinghouse Electric & Manufacturing Co.-Cleveland Works occupied the subject property from approximately 1989 through approximately 1974. Westinghouse initially produced brass and metals castings and parts, and later transitioned into industrial lighting products at the facility. The existing Tower Building was constructed at the site in 1915. The on-site manufacturing facilities consisted primarily of metal working (machine shops) and foundries and lighting products production. Railroad spurs were present at the site from at least 1903 through 1950.
The subject property was occupied by Paramount Stamping & Welding from approximately 1981 through 2019. Paramount Stamping & Welding manufactured various metal automobile seat frames and similar type parts using "wireform, stamped, welded and assembled metal products".

Prior Assessments – Phase I Property Assessment

Intertek-PSI completed a Phase I Property Assessment (compliant the Ohio EPA Voluntary Action Program) of the site in December 2020 (later updated in 2022). The Phase I PA listed the following environmental concerns (or "Identified Areas) with respect to the property and its industrial history:

- ***IA–1: Possible Asbestos Containing Materials in the subject property building***
  No known previous asbestos survey has been completed at the property. Therefore, based on the age of the building(s) asbestos containing materials (ACM) are potentially located in the building. However, it does not appear likely that potential asbestos containing materials have been disposed of or have degraded to a degree that would have impacted the site beyond the potential in-place building materials. Prior to any renovation or demolition actions at the site buildings, an Asbestos Survey should be completed. Subsequent to the initial Phase I PA, an asbestos and hazardous materials survey was conducted by PSI in February 2021.

- ***IA–2: Former "Gasoline House" and TCE AST-*** *A "gasoline house" was identified along the northern edge of the property in 1903. The PC assumes that a gasoline house was used for the storage of*

petroleum products associated with the former Westinghouse operations; therefore, there is the potential for petroleum products stored in this building to impact the subject property soil and groundwater. Additionally, in at least the 1980's, records present at the Cleveland Fire Prevention Office indicted that an AST containing TCE was present in this same area of the property; and was noted to be in poor condition. The TCE tank is considered part of the same Identified area. This former gasoline and TCE storage area had the potential for impacts to the soil and groundwater, and soil vapor.

- ***IA–3: Former "Oil House" -*** *An "oil house" was identified near the center of the property, as depicted on the 1896 and 1903 historic maps. The PC assumes that the oil house was used for the storage of petroleum products; therefore, there is the potential for petroleum products stored in this building to have impacted the subject property soil and groundwater.*

- ***IA-4: Former Industrial Use of the Property -*** *The subject property was occupied by the Walker Manufacturing Co., a foundry, in approximately 1883. The buildings associated with Walker Manufacturing Co. were occupied by a machine shop, two foundry buildings, and a pattern/blacksmith shop. The Walker MFG Co. primarily produced machinery associated with street/railway cars. The Westinghouse Electric & Manufacturing Co.-Cleveland Works occupied the subject property from approximately 1898 through approximately 1974. Westinghouse initially produced brass and metals castings and parts, and later transitioned into industrial lighting products at the facility. The northeast corner of the property was also occupied by The Hill Clutch Co. between approximately 1903 and 1950. Based on the historical use of the site for industrial purposes, including galvanizing, plating, metal working, and foundry operations. There is the potential for petroleum products, solvents, heavy metals and polychlorinated biphenyls (PCBs) to have impacted the subject property soil and groundwater. The chemicals of concern would therefore be covered by VOCs, PAHs, Metals, and PCBs.*

- ***Off-site Potential Source (1) -*** *The adjacent property to the south was part of the Walker Manufacturing Co., a foundry, in 1882 and later. The building to the south was primarily occupied by a machine shop. This property was also part of the Westinghouse Electric & Manufacturing Co.-Cleveland Works from at least 1898 through approximately 1974. Based on the historical use of the adjacent property to the south for industrial purposes, including metal working and foundry operations. There is the potential for petroleum products, solvents, heavy metals and polychlorinated biphenyls (PCBs) to impact the subject property soil and groundwater. This property has since been redeveloped into residential housing.*

- ***Off-site Potential Source (2) -*** *The adjacent property to the west was occupied by the Thompson Manufacturing Co.-iron roofing & siding works, in 1896. The Hill Clutch Co. Works No. 2 Facility was present to the west between at least 1903 and approximately 1912. This facility then became the Hill Acme Co., including a machine shop and foundry, between at least 1951 and 1986. Based on the historical use of the adjacent property to the south for industrial purposes, including metal working and foundry operations. There is the potential for petroleum products, solvents, heavy metals and polychlorinated biphenyls (PCBs) to impact the subject property soil and groundwater.*

Prior Assessments - Phase II Property Assessment

Based on the findings of the Phase I PA, a Phase II Property Assessment was conducted in February 2021 to further investigate and assess the concerns and identified areas. The Phase II ESA consisted of sampling of the soil, groundwater, and soil gas at various locations on the property. The Phase II PA resulted in the following generalize findings:

Soil Sampling Results

Analytical results of the soil sampling showed one boring (EB-5) with elevated VOCs (TCE). Elevated PAHs, above the VAP Generic Direct Contact Standard (GDCS) for residential land use or construction/excavation activities were detected in three of the borings/samples. Two borings/samples (EB-8 and EB-14) showed elevated Lead concentrations, exceeded the VAP direct contact standards for residential occupants, commerical occupants and construction/excavation workers.

Soil Gas Sampling Results

Results of the sub-slab soil gas samples indicated that select VOCs (primarily TCE) in 3 of the 5 samples were above the sub-slab vapor screening levels as determined using the EPA's Vapor Intrusion Screening Level (VISL) calculator for a residential building scenario. Most notable was Trichloroethylene (TCE) ranged from 40 ug/m^3, up to 20,500 ug/m^3 (at SG-2).

Indoor Air Sampling Results

Three indoor air (ambient) samples were collected. Sample results indicated that TCE was detected in two of the samples (both from the main former plant production areas) at concentrations exceeding the VAP indoor air standard for a residential building (of 2.1 ug/m^3). The maximum concentration detected was 5.08 ug/m^3.

Groundwater Sampling Results

Analytical results from groundwater samples indicated that select VOC and Metals analytes exceeded the VAP Generic Unrestricted Potable Use Standards (GUPUS) in 4 of the 6 samples.

Phase II Property Assessment Conclusions

The VAP Phase II PA concluded that the following generalized "remedies" would be required for the various media exposure pathways:

Remedy to address Soil Direct Contact

Based on the various chemicals of concern in soil that exceed the VAP standards for direct contact in 8 of the 28 soil samples collected (for residential occupants, commercial workers, and/or construction/excavation workers); a remedy that prevents and manages soil direct contact for future occupants and construction/excavation workers will have to be implemented at the property. Based on the planned re-use of (some of) the on-site buildings, and on the presence of the current building slabs covering the majority of the site, one potential remedy will be the use of the building slabs as a formal engineering control to prevent the incidental direct contact of the underlying soils (and dust generated from the soil). Utilizing the building slabs (and other hard-surfaces such as parking lots) as engineering controls for this purpose will require the recording of an Environmental Covenant (EC) with Ohio EPA, an Operations and Maintenance Plan (O&M plan) for the continued periodic monitoring of the control, and an Operations & Maintenance Plan Agreement with Ohio EPA. Additionally, because select areas (4 of 28 samples) of the property exceed the construction/excavation worker direct contact standard, a Risk Management Plan for construction workers would also be required for the property.

While much of the soil that exceeds the relevant soil direct contact standards is relatively shallow in depth, the presence of the current building slab(s) over these areas, and their planned re-use complicate the possibility of excavation and removal of most of these soils. One significant area of particularly impacted soil that should be evaluated for possible excavation and removal (if feasible) is the area around boring EB-5, due to highly elevated TCE concentrations.

In areas that are planned as open soil (grass or landscaping areas), additional remedial actions will be needed to prevent direct contact. These can include the excavation of soils that exceed the direct contact standard (down to the point of compliance depth), or the emplacement of "clean" fill soil (at a modified residential point of compliance depth of 2') to prevent direct contact and exposure to the underlying soil. Because the construction/excavation worker point of compliance depth is 10' feet, areas excavated or capped will still need to be covered by an EC, O&M Plan, O&M Plan agreement, and a Risk Management Plan.

Remedy for Soil to Indoor Air Risk

The sub-slab soil gas sampling results indicate that VOCs in soil gas exceed the VISL screening levels for migration into indoor air of the current site buildings. Sampling of the indoor air of the existing building(s) as part of the current assessment confirmed that TCE was present in indoor air in 2 of 3 samples at concentrations exceeding the VAP residential standard. Therefore, the CP concludes that implementation of a sub-slab depressurization system (or similar sub-slab venting system), or vapor barrier system will be required as part of the remedy for the property.

An alternative remedy would be the excavation and removal of the source soils; however, given the presence and planned re-use of the on-site buildings, and the apparent wide-spread source area, it is CP's opinion that excavation of (all of) the source soils would be impractical.

A sub-slab depressurization System remedy could be installed in the building(s) to prevent the VOCs detected in sub-slab soil gas from entering the indoor air of the building above a relevant VAP residential indoor air standard. The implementation of this remedy would require an Environmental Covenant, an O&M plan, and an O&M Plan Agreement with Ohio EPA. These documents would specify the periodic monitoring of the systems performance and the required reporting to Ohio EPA.

Groundwater Ingestion Remedy

Based on the COCs detected in site groundwater above VAP UPUS standards, an Environmental Covenant restricting the use of groundwater for potable purposes will need to be recorded for the property.

Prior Assessments – Asbestos/Hazardous Materials Survey

Asbestos Pre-Renovation Survey:

PSI conducted an Asbestos Pre-Renovation Survey of the office spaces of the first, second, and third floors within the Main Warehouse of the property, the second floor of the Main Warehouse, the Atrium and other sections of the first floor of the Main Warehouse, the Tower, and roofing areas.

A total of 214 samples were collected from 87 suspect asbestos-containing homogeneous sampling materials (HSMs) during the survey. The samples were analyzed by polarized light microscopy (PLM). The U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA) and State of Ohio define an ACM as any material containing greater than one percent (>1%) asbestos.

The following ACM (≥1% asbestos) were identified during this survey:

Main Warehouse:

- HA 02 – Non-ACM 9”x9” Floor Tile (Dark Brown with White Streaks) over ACM Tan Floor Tiles
- HA 10 – 9”x9” Floor Tile (Red with White Streaks) and Mastic (Black)
- HA 11 – Non-ACM 9”x9” Floor Tile (Brown with White Streaks) and Mastic (Black/Yellow; Inseparable)
- HA 12 – 9”x9” Floor Tile (Black with White Streaks) and Mastic (Black)
- HA 16 – Window Caulk (Round Windows; Brown/Red)
- HA 21 – Non-AC Vinyl Sheet Flooring over ACM Tan Floor Tiles
- HA 23 – Non-ACM 9”x9” Floor Tile (Beige with White Streaks) over ACM Beige Floor Tiles
- HA 26 – Plaster Walls
- HA 27 – Duct Tar (Black)
- HA 31 – Transite Wall Siding

Tower:

- HA 02 – Window Glazing (White)
- HA 04 – Pipe Insulation (Air-o-cell)
- HA 05 – Pipe Insulation (MAG)
- HA 07 – 9”x9” Floor Tile (Dark Brown with White Streaks) and Mastic (Black)
- HA 08 – 9”x9” Floor Tile (White) and Mastic (Black)
- HA 09 – 9”x9” Floor Tile (Gray with White Streaks) and Mastic (Black)
- HA 10 – 9”x9” Floor Tile (Red with White Streaks) and Mastic (Black)
- HA 11 –9”x9” Floor Tile (Beige with White Streaks) and Mastic (Black)
- HA 12 – 12”x12” Floor Tile (Red/Rust with White Streaks) and Mastic (Black)
- HA 13 – 2’x1.5’ Floor Tile (Black with White Streaks) and Mastic (Black)
- HA 45 – Insulation Board
- HA 47 – Freight Elevator Door Bumpers

Roofing:

- TR-1 – Roofing Flashing (Tower)
- TR-2 – Roofing Cement/ Partial Field (Tower)
- TR-4 – Roofing Flashing (Main Warehouse, North)
- TR-6 – Roofing Flashing Main Warehouse, South)

Lead-Based Paint Survey:

PSI conducted lead-based paint testing within the offices, restrooms, main floor, 2nd floor, and main workspace of the Main Warehouse; and eight and a half floors of partially finished office space and basement areas within the Tower.

XRF testing indicated that lead in excess of the regulatory level of 1.0 mg/cm^2 was present in the following painted or coated components:

Main Warehouse:

- 1st/Basement: Black Concrete Wall near Stairwell
- All Metal Columns, Cages, and Beams and Door Casings
- 2nd Floor: Restroom Brown Metal Stalls
- South Wall (Side B) of Main Warehouse: Aqua Brick Walls
- Central Stairwell: Brown Metal Stair Stringers
- North Stairwell: Black Metal Stair Stringers and Risers
- Kitchen: Yellow Plaster Walls
- Bathroom: Pink/Gold Ceramic Wall Tiles
- Warehouse Stairs to Men's Locker room: Yellow Metal Stair Risers
- Warehouse Stairs to Men's Locker room: Orange Metal Stair Tread
- Training Rooms & Women's Restroom: Pink/Gold Ceramic Subway Tile
- Safety Offices: Brown Wooden Window Casing
- Metal Fire Doors

Tower:

- All Fire Doors in the tower
- East and West Stairwell walls, Stairs, and Piping
- All Window Frames and Casings
- Freight Elevator Casings Throughout
- 8th Floor: Restroom Green Wall Plaster
- 6th Floor: Green Ceramic Bathroom Tile
- 6th Floor: All Orange Electrical Boxes
- 5th Floor: All White Wooden Door Frames
- 5th Floor: Salmon Colored Plaster Wall Systems
- 4th Floor: Green Concrete Columns
- 1st/Basement: Brown Metal Doors

Hazardous Material Inventory:

PSI conduct a Hazardous Material Inventory of the Former Westinghouse Facility including the Main Warehouse and the Tower.

PSI visually identified the following suspect-PCB, mercury, CFC, lead/heavy metal and oil containing devices:

Main Warehouse:

- Transformers
- Fluorescent light ballasts
- Hydraulic door closers
- Motor lubricants
- Fluorescent light bulbs
- Metal halide/Mercury vapor/High-pressure sodium bulbs
- Mercury Thermostats
- Smoke detectors, sprinklers, alarms
- Fire extinguishers
- AC Units
- Exit signs and Emergency lighting batteries
- Propane Tank
- Used Oil Container
- Oil Drum
- Air Compressor

Tower:

- Transformers
- Fluorescent light ballasts
- Hydraulic door closers
- Motor lubricants
- Fluorescent light bulbs
- Metal halide/Mercury vapor/High-pressure sodium bulbs
- Mercury Thermostats
- Smoke detectors, sprinklers, alarms
- Fire extinguishers
- Cooling Coils
- AC Units
- Exit signs and Emergency lighting batteries
- Propane Tanks
- Oil Drum
- Air Compressors

Evaluation of Remedial Alternatives – Soil, Soil Gas, Groundwater

As noted in the prior Phase II Property Assessment, there are several specified remedial alternatives available to address the contamination present at the site. These alternatives and their rough/approximate costs are evaluated in the following summaries. The selected remedial actions will require oversight and documentation by a VAP Certified Professional and a No Further Action (NFA) document.

A brief description of the alternatives considered, and the approximate associated costs are provided in the following summaries.

Take No Action - Although low cost and easy to implement, this alternative would not provide any positive effect toward reaching the remedial goal of meeting Ohio VAP re-use standards and obtaining NFA status and a Covenant Not to Sue (CNS) from the State of Ohio. Planned residential redevelopment would fail due to the site's existing contamination. The site would continue to be blighted and represent contribute a health risk to the community. Additionally, the asbestos and other hazardous substances above-ground at the property would remain a risk to the community.

Excavate and Dispose Select Soil Areas - This alternative consists of the excavation and off-site disposal of the most contaminated areas of soil on the property. This consists of the elevated TCE in soil in the vicinity of boring/sample EB-5; and the Lead in soil in the vicinity of EB-8 and EB-14. These respective concentrations were the only soil chemicals of concern that exceeded the construction worker direct contact standards (in addition to the residential land standards). By eliminating the soil in these areas, the need for a construction worker Risk Management Plan may/could be eliminated. Additionally, the TCE concentrations in the soil around EB-5 represent the most significant vapor intrusion risk on the site. The estimated volume of soil to be removed is approximately 500 to 800 tons. This equates to an estimated cost of approximately $48,000 to $77,000; assuming a unit cost of around $96/ton (for excavation, handling, and disposal). This remedial component is considered essential and necessary for the reuse of the subject property.

Vapor Mitigation System (Existing Tower Building) – Pending results of limited planned additional soil gas testing, the existing tower building will likely require a retrofit sub-slab venting or depressurization system. Based on the size of the building, this is projected to be on the order of $160,000 - $190,000.

Vapor Mitigation System (planned new building) - Based on VOCs detected in soil, groundwater, and soil gas, the proposed new building is expected to incorporate a vapor mitigation system into the design. This will likely take the form of a passive barrier layer, coupled with a venting system below the barrier that can function either passively, or be converted to active (blower/vacuum) as needed. Based on the size of the proposed new site building (~48,000 SF), the estimated cost for a barrier/vapor mitigation system is approximately $240,000; assuming a cost of approximately $5/SF of building.

Barrier Layer Soil in "green" Areas - Based on the various chemicals of concern in soil that exceed the VAP standards for direct contact in 8 of the 28 soil samples collected (for residential occupants, commercial workers, and/or construction/excavation workers); a remedy that prevents and manages soil direct contact for future occupants and construction/excavation workers will have to be implemented at the property. Based on the planned re-use of the tower building, and on the presence of the final building slabs and parking pavement that will cover the majority of the site, it is anticipated that the final remedy will (in part) use these hardscapes as formal engineering controls to prevent the incidental direct contact of the underlying soils (and dust generated from the soil).

In areas that are planned as open soil (grass or landscaping areas), additional remedial actions will be needed to prevent direct contact. This is planned to include the emplacement of "clean" fill soil (at a modified residential point of compliance depth of 2') to prevent direct contact and exposure to the underlying soil. Based on the relatively limited area of proposed "open green space", this is expected to require approximately 1500 cubic yards of material/soil. The projected cost of clean fill soil is approximately $30,000; assuming a unit cost of $20/cubic yard.

Additional Assessment Activates – Limited Additional assessment activities are planned for the property to provide additional data in the following areas:

- Additional soil gas/vapor data below the existing Tower building; to aid in the design of a sub-slab venting system.
- Additional assessment in the areas were soil exceeds the construction worker direct contact standards to aid is determining the lateral and vertical extent.
- Limited shallow soil sampling to better determine if specific areas of the site can be excluded from the need for soil direct contact engineering controls.

The additional assessment activities will build upon and be added to the prior Phase II Property Assessment. The project cost is approximately $15,000.

Ohio VAP Documentation and NFA – The project is intended to achieve an NFA (no further action) status and receive a reciprocal CNS (Covenant not to Sue) from Ohio EPA under the Ohio EPA's VAP. The projected costs are approximately $25,000 for the NFA Letter and $18,500 for the Ohio EPA's CNS fee.

Remediation of Asbestos, Lead-Based Paint and Hazardous Materials–The asbestos containing materials, lead-based paint and hazardous materials must be encapsulated or removed from the property buildings prior to demolition of the Main Warehouse and prior to renovation of the Tower building. The following remedial alternatives were evaluated with respect to asbestos, lead-based paint and hazardous materials remediation:

1. Encapsulate the asbestos- Based on the poor condition of the Regulated Asbestos Containing Materials, encapsulation of the ACM within the building is not an option.

2. Removal of asbestos- The cost to remove the asbestos from the property is estimated at $1,400,000. The ability to implement the removal is high due to grants and loans available to offset the total cost of remediation. The effectiveness for public health and safety is high as the asbestos would be removed and therefore the risk to public health and safety would be eliminated from this contaminant.

3. Encapsulate or Removal of Lead-Based Paint-Since deteriorated paints were identified during this assessment, the Client should consider determining the source of the deterioration and making appropriate repairs. Repainting should only be considered after the source of the deterioration is repaired. Review of the current maintenance procedures should also be performed. The estimated encapsulation or removal of Lead-Based Paint is $80,000.

4. Removal of Hazardous Materials-- The cost to remove the hazardous materials from the property is estimated at $55,000.

The selected alternative is #2, Removal of Asbestos. This alternative eliminates the risk to public health and safety and does not require maintenance. The cost can be reduced by available public loans and grants to make the clean-up and asbestos removal cost achievable.

Sustainability and Climate Change considerations - Remediation and reuse of this property is considered to be beneficial to the community and to represent development that is sustainable and beneficial with respect to climate change. The non-reuse of this property (particularly for residential purposes) is likely to result in additional greenspace or farmland being developed further from Cleveland's core; which in turn would result in a net loss of either green space of farmland. The aggregate reuse and occupation of former/non-used industrial properties such as this one will ultimately have a net decrease in the total developed area of the community.