REMEDIAL ALTERNATIVES ANALYSIS REPORT

for the

FORMER CAMILLUS CUTLERY COMPANY SITE
52 & 54 Genesee Street
Village of Camillus
Onondaga County, New York

Brownfield Cleanup Program
Site No. C734142

Prepared for:
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TDK Project No. 2009040

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1.0 INTRODUCTION

TDK Engineering Associates, P.C. (TDK) has prepared this Alternatives Analysis (AA) Report in connection with the Former Camillus Cutlery Company Site - Brownfield Cleanup Program (BCP) Site I.D. C734142 (Site). The report describes and evaluates remedial alternatives to address contamination within Areas of Concern (AOCs) identified during a Remedial Investigation (RI) performed at the Site. The RI results are summarized in a report which is being submitted to the New York State Department of Environmental Conservation (DEC) concurrently with this AA and is incorporated into this analysis by reference[1].

1.1 Site Description

The 4.3-acre BCP Site is located at the former Camillus Cutlery Company property, 52 & 54 Genesee Street in the Village of Camillus (Village), Onondaga County, New York, approximately ½-mile south of the Camillus/Warners exit off New York State Route 5.

The Site is bordered by residential properties to the west and northwest, which are positioned at higher elevations, relative to the Site. The southwest and southeast corners of the Site border Solvay Bank and Camillus Kayak Shop (across Nine Mile Creek), respectively. Municipal and commercial properties are located to the south across Genesee Street (Village Hall and Camillus Animal Clinic) and the adjoining properties to the east and northeast (across Newport Road) are occupied by an Onondaga County Department of Water Environment Protection (WEP) sewage pump station and an inactive commercial building, which was most recently occupied by a tavern/restaurant.

Refer to the *Alternatives Analysis Plan* [*Figure AA-1*] and *Site Location Map* [*Figure LM-1*] in Appendix 1 for additional information.

1.2 Site History

The Camillus Cutlery primarily produced knives, with secondary products including but not limited to machetes, marlin spikes and surgical scalpels. Manufacturing operations began during the 1890's and continued until the mid-2000's. At the time the facility was closed (2007), two buildings occupied the Site. These included the 21,000 square foot (footprint area) western building (West Building) and the larger and older eastern building (East Building) that encompassed a footprint of approximately 57,000 square feet. The East Building was destroyed in a fire in February 2013.

Additional information concerning the Site's manufacturing and environmental history is provided in the RI report.

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[1] *Remedial Investigation Report for the Former Camillus Cutlery Company Site – Brownfield Cleanup Program Site No. C734142*, prepared by TDK, dated March 30, 2016.

1.3 Proposed Site Redevelopment

The overall objective of the project is for the Volunteer, Camillus Mills, LLC (Camillus Mills) to redevelop the former world renowned knife manufacturing facility into a new, mixed-use residential and commercial campus. The current business plan calls for the creation of a predominantly (80%) residential development of the West Building, with its remaining space being utilized for commercial purposes.

It is anticipated that the balance of the Site will be similarly developed at some point in the future. The site will be comprised of several tax parcels, the limits of which will be coordinated with the Village.

2.0 SUMMARY OF REMEDIAL INVESTIGATION

2.1 Scope of Work

The Remedial Investigation (RI) included the following general tasks, consistent with the DEC-approved work plan[2]:

- A site mapping program.
- Advancing a total of eighteen soil borings throughout the Site and installing groundwater monitoring wells within seven of the soil borings.
- Collecting representative soil and groundwater samples from the soil borings and monitoring wells, for laboratory analysis and comparison of results to the applicable Standards, Criteria and Guidance (SCG) values.
- Collecting three surface soil samples from the creek embankment and one from the southern lawn area.
- Pre-characterizing Site soils with respect to disposal facility acceptance criteria in anticipation of disposal during the remediation phase of the BCP.
- Evaluating potential soil vapor intrusion (SVI) within the West Building, soils along the western property line and below the former (East) building slab through the installation of three soil and four sub-slab vapor probes, in addition to the collection and analysis of an indoor (West Building) and outdoor air samples.
- Conducting an assessment of potential contaminant exposure pathways, based on the proposed redevelopment of the Site into a residential apartment and commercial complex.

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[2] *Remedial Investigation Work Plan for the Former Camillus Cutlery Company Site – Brownfield Cleanup Program Site No. C734142*, dated July 5, 2013.

- Performing a "Part 1" (resource characterization phase) Fish and Wildlife Resource Impact Analysis (FWRIA).
- Performing field permeability (i.e., "slug") tests in selected monitoring wells.
- Managing of Investigation-Derived Wastes (IDW).

Refer to the RI report for more specific information concerning the above tasks.

2.2 Areas of Concern

The following AOCs were identified as a result of the findings of the RI program:

- AOC-1: Subsurface soils at depths of approximately 5 to 8 feet adjacent to the historical wastewater collection chamber.
- AOC-2.1: Surface soils (i.e., to depths of 1 foot) along the creek embankment.
- AOC-2.2: Surface soils in the south lawn area.
- AOC-3.1: Soil Vapor Intrusion (SVI) Area – West Parcel (Existing Building)
- AOC-3.2: Soil Vapor Intrusion (SVI) Area – East Parcel (Former Building)

The AOCs are further described below and depicted on *Figure AA-1* [Appendix 1].

Soils

AOC-1 and AOC-2.1 (East Parcel)

- These areas are located in the vicinity of a former process water collection area (AOC-1) and air discharge exhaust from grinding operations (AOC-2.1). Constituents exceeding Unrestricted Use (UNR) and Restricted-Residential (RR) Soil Cleanup Objectives (SCOs)[3] included several semi-volatile organic compounds (SVOCs; benzo[a]anthracene, benzo[a]pyrene, benzo[b]flouranthene and chrysene) that are found in connection with petroleum-based materials and coal, both of which have been historically utilized on the Site.
- Several metals which were associated with former facility operations performed near these AOC's, such as heat treating/tempering, finishing and/or wastewater processing, were detected at levels exceeding RR and/or UNR SCOs (e.g., chromium, copper and lead).

[3] New York Codes, Rules and Regulations, Title 6 (6NYCRR), Chapter IV, Subpart 375-6: *Remedial Program Soil Cleanup Objectives*.

- Trace levels (0.348 parts per million) of polychlorinated biphenyls (PCBs) were also found within AOC-1. Elevated concentrations were found in the floor drains and fire brick oven areas within the former East Building floor slab, suggesting a possible source.

AOC-2.2 (West Parcel)

- A trace detection of an SVOC (benzo(b)flouranthene) which exceeded the UNR and RR SCO was reported in the south lawn area (surface soils), in addition to several metals (arsenic copper, lead and mercury), which also exceeded UNR SCOs.

Arsenic and/or mercury were also reported in the soil in the above AOCs, although at relatively low concentrations (i.e., marginally exceeding applicable SCOs). No specific sources for these materials were identified. They could potentially be associated with historic grading of fill on the Site (arsenic) or fluorescent light bulbs (mercury) which in recent years were managed under the facility's historical universal waste management program[4].

Soil Vapor

AOC-3.1 (West Parcel)

- The SVI evaluation indicated the presence of trichloroethylene (TCE) below the building slab and indoor air at concentrations which exceed New York State Department of Health (DOH) criteria.

AOC-3.2 (East Parcel)

- The SVI evaluation also identified an area below the southern area of the former building slab, where TCE was present. As no specific development plans are currently proposed in this area, AOC-3.2 will be addressed through the Site Management Plan (SMP).

Other Media

Groundwater

With respect to groundwater, the following is noted:

- Two rounds or groundwater sampling and analysis have been performed (September 2013 and January 2016). The results support the majority of contaminants to be metals, and the tendency of most metals to adhere to soils rather than dissolve and migrate in groundwater.

  The most recent analytical results (January 2016) indicate groundwater quality to meet

[4] 40 CFR Part 273: *Standards for Universal Waste Management*.

regulatory standards across the Site with respect to constituents of concern. No VOC, SVOC or PCB detections exceeded groundwater standards. The only metals which exceeded groundwater standards were not constituents of concern (i.e., antimony, iron, manganese and sodium).

- The Site and surrounding properties are served by public water.

Based on the above factors, no specific remediation of groundwater is proposed or warranted. Groundwater use restrictions will be governed by the SMP.

Surface Water

As Nine Mile Creek borders the eastern Site boundary, a Fish and Wildlife Resource Impact Analysis (FWRIA) was performed[5]. The FWRIA concluded that no further ecological evaluation of the creek would be warranted, unless remediation of the upland Areas of Concern (i.e., AOC-1 and AOC-2.1) produced results that are not compliant with applicable Standards.

Refer to the RI Report as/if needed for additional information concerning investigation of the Site and development of the AOCs.

3.0 PURPOSE

3.1 Evaluation Criteria

The purpose of this Alternatives Analysis (AA) is to evaluate remedial alternatives with respect to the following criteria:

(a) *Overall Protection of Public Health and the Environment*: An assessment of how each alternative would eliminate, reduce or control existing or potential human exposures or environmental impacts with respect to contaminants identified in the Remedial Investigation (RI).

(b) *Standards, Criteria and Guidance (SCG)*: Evaluates each alternative's potential to result in conformance to promulgated SCGs, as appropriate and practicable.

(c) *Long-Term Effectiveness*: An evaluation of each alternative from a long-term perspective, including the impacts of residual contamination after implementation of the remedy, institutional and/or engineering controls, as applicable.

(d) *Reduction of Toxicity, Mobility or Volume*: An evaluation of the alternative's ability to permanently or significantly reduce toxicity, mobility or volume of contaminants at the Site.

[5] *Fish and Wildlife Impact Analysis – Former Camillus Cutlery Site*, prepared by Lu Engineers, dated February 2016.

(e) *Short-Term Effectiveness*: Pertains to the protection of workers, community and environment during implementation of the remedy.

(f) *Implementability*: An evaluation of the technical feasibility of the remedy.

(g) *Cost Effectiveness*: Considers the capital, operation and maintenance and monitoring costs for the alternative, on a "present worth" basis, with respect to items (c), (d) and (e).

(h) *Land Use*: Evaluates each alternative with respect to the current, intended and reasonably anticipated use of the Site and surroundings.

(i) *Community Acceptance*: Considers public comments that may be received following the public review period for the remedy. The anticipated overall public perception is addressed as part of this AA.

3.2 Standards, Criteria and Guidance

The remedial alternatives were developed in consideration of the following standards, criteria and guidance (SCG) documents:

Soil:

- New York Codes, Rules and Regulations, Title 6 (6NYCRR), Chapter IV, Subpart 375-6: *Remedial Program Soil Cleanup Objectives*, and DEC *CP-51 / Soil Cleanup Guidance*, Issued October 21, 2010.

Groundwater:

- DEC Technical and Operational Guidance Series (TOGS) A*mbient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, June 1998.
- 6NYCRR Part 703: *Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations*.

Soil Vapor:

- NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006.
- NYSDOH *Trichloroethene (TCE) In Indoor and Outdoor Air – August 2015 Fact Sheet*.

Waste Characterization Analysis:

- DEC 6NYCRR Part 371, *Identification and Listing of Hazardous Wastes*.

Alternatives Analysis Guidelines:

- DEC DER-10 *Technical Guidance for Site Investigation and Remediation*, May 2010.
- DEC DER-31 Green Remediation, January 20, 2011.

4.0 REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) are medium-specific objectives for protection of public health and the environment and are based on Standards, Criteria and Guidance (SCG) developed by the New York State Department of Environmental Conservation (DEC).

Soils

AOC-1 (East Parcel)

RAOs for Protection of Public Health

In consideration of the current and reasonably foreseeable future of the Site, the RAOs are based on Soil Cleanup Objectives (SCOs) for Protection of Public Health – Restricted Residential (RR) Site use with respect to the following potential exposure pathways:

- Dermal contact or ingestion of subsurface soils during Site disturbance activities.
- Inhalation of windblown surface soils.

RAOs for Environmental Protection

RAOs for environmental protection include the following:

- Reducing the potential for downward migration of contaminants to groundwater, within unpaved areas.

AOC-2.1 (East Parcel)

RAOs for Protection of Public Health

In consideration of the current and reasonably foreseeable future of the Site, the RAOs are based on Soil SCOs for RR Site use with respect to the following potential exposure pathways:

- Dermal contact or ingestion of subsurface soils during Site disturbance activities.
- Inhalation of windblown surface soils.

ROA's for Environmental Protection

RAOs for environmental protection include the following:

- Reducing the potential for downward migration of contaminants to groundwater, within unpaved areas.

- Reducing the potential for migration of contaminants by surface runoff.

AOC-2.2 (West Parcel)

RAOs for Protection of Public Health

In consideration of the current and reasonably foreseeable future of the Site, the RAO's are based on SCOs for RR Site use with respect to the following potential exposure pathways:

- Dermal contact or ingestion of subsurface soils during Site disturbance activities.

- Inhalation of windblown surface soils.

ROA's for Environmental Protection

RAOs for environmental protection include the following:

- Reducing the potential for downward migration of contaminants to groundwater, within unpaved areas.

Soil Vapor

AOC-3.1 (West Parcel)

RAOs for Protection of Public Health

The RAOs with respect to the current and reasonably foreseeable future of the Site are as follows:

- Mitigating impacts to residential or commercial building occupants from potential soil vapor intrusion into the building.

AOC-3.2 (East Parcel)

No immediate development plans are proposed for this area.

Future site disturbances would be addressed through the Site Management Plan (SMP).

5.0 REMEDIAL ACTION ALTERNATIVES

The remedial alternatives that are being considered to address the AOCs as depicted on *Figure AA-1* [Appendix 1] are summarized in the following sections.

5.1 Soils: AOC-1, AOC-2.1 and AOC-2.2

5.1.1 Alternative No. 1 - No Action

Description:

The No Action alternative is included as a baseline to evaluate other alternatives. No remedial or monitoring activity would be performed and no environmental easements would be recorded. The Site would remain "as-is" and any change in use would be controlled only by local zoning regulations.

Assessment

This alternative is not protective of human health or the environment. The potential would remain for human exposure to contaminants exceeding DEC soil cleanup objectives (SCOs) and contaminant toxicity, mobility or volume would not be reduced.

There are no short term risks associated with implementation as no active remediation would be performed. However, this alternative will not be effective for the long term, as there remains a potential for exposure of Site occupants or workers to contamination during building renovations or utility (e.g., sanitary sewer, water line) repairs or modifications.

Based on the findings from the RI and current blighted state of the Site, it is anticipated this would not be an acceptable alternative to the community.

Cost

There is no cost associated with this alternative.

5.1.2 Alternative No. 2 - Track 2 Cleanup: Restricted Use - Restricted Residential (RR)

Description

Under this alternative, impacted soil would be removed from the AOCs, as needed for confirmation samples to indicate remaining constituent levels are below Soil Cleanup Objectives (SCOs) for Restricted-Residential (RR) use and as feasible given existing mature vegetation (i.e., trees along embankment). The removed soils would be replaced with clean soils or structural fill (e.g., crushed stone), with a minimum 2-foot thick clean soil "cap" in unpaved areas.

Contaminated soils (i.e., soils exceeding applicable SCOs) would be disposed of off-site at DEC-permitted facilities.

If groundwater is encountered during excavation operations, it would be pumped out of the excavation(s), as needed to facilitate implementation of the remedy and temporarily stored

(i.e., using "frac" tanks) pending treatment or removal by a DEC Part 364[6]-permitted hauler to an approved disposal facility.

Based on rapid recharge of groundwater noted during the in AOC-1 area, it is anticipated that this remedy would be implemented during dry weather months in order to minimize the amount of groundwater that is encountered.

Future (post-remediation) site disturbances, such as utility repairs or cut/fill operations during construction would be further managed through implementation of additional institutional controls (ICs) and engineering controls (ECs) under a DEC-approved environmental easement. The ICs/ECs would include the property use remaining RR or commercial, maintaining the soil cover system, implementation of the Site Management Plan (SMP) for intrusive activities and restrictions on groundwater use.

A detailed description of this remedy will be provided in the Remedial Action Work Plan (RAWP).

Assessment

This alternative is protective of human health and reduces the volume of contamination at the Site, as it includes removal of impacted soils and replacement with clean fill, including a minimum 2 feet thick "cap" within unpaved areas. It can also be considered protective of the environment, as the Fish and Wildlife Resource Impact Analysis (FWRIA) stated that no further evaluation of ecological resources would be necessary upon successful implementation of this remedy.

During implementation of the remedy, short term risks for workers, the community and environment would include dermal exposure and/or inhalation of dusts and the potential for contaminant migration by surface runoff. These risks would be managed through specific material handling, air monitoring and dust suppression measures during the field work, in addition to implementation of standard erosion and sediment control measures (i.e., silt fence and/or turbidity curtain).

The adjacent residential properties are positioned up-gradient from the Site and generally up-wind, based on prevailing wind direction. The commercial properties across Genesee Street are not located immediately adjacent to, or generally down-wind from the Site. These factors further reduce the short term risks associated with this remedy.

This remedy is effective from a long-term perspective since adversely impacted soils are removed and the potential for exposure is further addressed through use of clean, cap soils.

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[6] 6 NYCRR Part 364: *Waste Transporter Permits*.

This alternative meets the definition of "presumptive remedy" as per the DEC's DER-10[7] guidelines and Part 375[8] standards. It is readily implementable through use of standard construction equipment such as excavators, portable groundwater ("trash") pumps, etc. There is also sufficient access to impacted areas for heavy equipment and clearance from public sidewalks, roads, etc.

The alternative is also consistent with the proposed land use (residential apartments) and the recent zoning change to Planned Development District (PDD). Based on the zoning and configuration of the surrounding parcels, the residential (up-gradient) and commercial lot uses are considered unlikely to change. In consideration of these factors, it is anticipated that this alternative would be acceptable to the community.

Cost:

Our opinion of probable cost for implementation of this alternative is approximately $200,000 to $230,000. This includes contractor, laboratory, engineering, legal and surveying fees, in addition to services such as air monitoring and preparation of the data usability summary report (DUSR).

Refer to Section 7.0 and *Engineer's Opinion of Costs Worksheets: Soils – Alternative No. 2 (AOCs-1, 2.1* and *2.2)* in Appendix 2 for a breakdown of costs relative to each AOC. Note that for projected cost development purposes, certain assumptions were made concerning the horizontal and vertical extent of soils containing contaminants that exceed the SCOs.

5.1.3 Alternative No. 3 – Track 1 Cleanup: Unrestricted Use (UNR)

Description

This alternative consists of complete removal of soils where Unrestricted Use (UNR) SCOs are exceeded, with replacement using clean soils or structural fill (e.g., crushed stone). As such, the AOC limits would be modified. It can also be considered protective of the environment, as the Fish and Wildlife Resource Impact Analysis (FWRIA) stated that no further evaluation of ecological resources would be necessary upon successful implementation of this remedy.

Technically, all soils above bedrock which exceed UNR SCOs would be disposed of off-site at a DEC-permitted facility(s). Removal of groundwater would be needed to facilitate implementation of the remedy. As with Alternative No. 2, any groundwater that is encountered would be pumped out of the excavation and temporarily stored pending treatment or removal by a DEC Part 364-permitted hauler to an approved facility.

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[7] DEC *DER-10 Technical Guidance for Site Investigation and Remediation*, May 2010.

[8] 6 NYCRR Part 375: *Environmental Remediation Programs*

No long term institutional or engineering controls, such as implementation of an SMP would be required under this alternative.

Assessment

This alternative is protective of human health and the environment, and reduces the volume of contamination at the Site, as it includes removal of impacted soils to UNR levels and replacement with clean fill.

Short term risks for workers, the community and environment, during implementation would include dermal exposure, inhalation of dusts and runoff of disturbed soils off-Site. These risks would be managed through specified material handling, air monitoring and dust suppression procedures, in addition to standard erosion and sediment control measures.

The remedy is effective since adversely impacted soils are removed and replaced with clean soils. This alternative is also considered by the DEC to be a presumptive remedy, is readily implementable through use of standard construction equipment and is not precluded by site access issues.

The alternative is consistent with the highest proposed land use (residential apartments), the recent zoning change to PDD and zoning/configuration of the surrounding parcels. It is anticipated that this alternative would be acceptable to the community.

Cost

Our opinion of probable capital cost for implementation of this alternative is approximately $6,200,000 to $7,300,000. This includes contractor, laboratory and engineering fees, in addition to services such as air monitoring, preparation of the data usability summary report (DUSR), etc.

Refer to the *Engineer's Opinion of Costs Worksheet: Soils – Alternative No. 3* in Appendix 2 for additional information. Note that for projected cost development purposes, certain assumptions were made concerning the horizontal and vertical extent of soils containing contaminants that exceed the SCOs.

5.2 Soil Vapor: AOC-3.1

Based on proposed residential occupancy of the West Building, Camillus Mills is proposing to implement the installation of a soil vapor extraction (SVE) system during construction. However, for evaluation purposes the No Action and remediation to Unrestricted Use Alternatives are also considered, consistent with DER-10 criteria.

5.2.1 Alternative No. 1 – No Action

Description:

The No Action alternative is included as a baseline to evaluate other alternatives. No remedial or monitoring activity would be performed and no environmental easements would be recorded. Based on the current analytical data and certain interpretation of applicable guidance documents, the building may not be considered suitable for residential or non-residential occupancy.

Assessment

This alternative is not protective of human health or the environment. The potential would remain for human exposure to contaminants exceeding New York State Department of Health (DOH) air guidelines.

Short and long-term risks associated with this alternative include potential impacts to transient occupants should the building remain in its current state, and/or workers during renovations.

Based on the findings from the RI, it is anticipated this would not be an acceptable alternative to the community.

Cost

There is no cost associated with this alternative.

5.2.2 Alternative No. 2 – Soil Vapor Extraction (SVE) and Flooring System

Description

This alternative includes installation of a proprietary (i.e., "Cupolex") structural dome soil vapor extraction and concrete flooring system [Appendix 3]. Based on the estimated thickness of the existing slab, dimensions of the Cupolex modules and sub-base requirements, removal of several inches of underlying soils may also be required, in addition to the existing floor slab.

Due to the configuration of the modules, the Cupolex system provides an increased open area for recovery of vapors, relative to conventional perforated pipe and stone systems. Vapors will be recovered using vent pipes which will be routed to the building roof through an estimated 2 to 4 exterior vents.

The system would have the flexibility to be operated as either a passive or active system, consistent with the SMP and depending on the results of air monitoring following installation and completion of building construction to a stage that is suitable for testing. If indoor air sampling results indicate that an active system is necessary, an in-line fan/blower

used for vapor recovery would be positioned on the building roof.

The existing concrete floor slab would be demolished, crushed and re-used on-site as structural fill, consistent with the DEC's *DER-31/Green Remediation* Program Policy. In the event that unacceptable staining is present on the concrete (i.e., from contact with contamination), the removed debris would be disposed of off-site at a DEC-permitted facility.

The soils and/or sub-base material below the slab would be fine-grained and/or removed as needed to accommodate the Cupolex system. Field-screening of soils using a photo-ionization detection (PID) meter and confirmation sampling would be performed and identified source areas addressed as/if needed. Otherwise, soils removed during remediation and installation of the Cupolex system would either be reused for on-site grading, if sampling and analysis indicates acceptable constituent levels, or disposed of off-site.

As part of the Remedial Action Work Plan (RAWP) and prior to installation of the Cupolex system, soil vapor monitoring points will be installed along the southern and western property lines. Further details will be provided in the Remedial Action Work Plan (RAWP) and/or supplemental soil vapor evaluation (SVE) work plan.

Assessment

This remedial alternative will reduce or eliminate the potential for exposures to air contaminants exceeding DOH guidelines, and is therefore protective of human health. Based on the removal of impacted soils during construction, it is also protective of the environment.

The Cupolex system will encompass the entire floor, thereby removing uncertainty associated with source determination.

Short term risks for workers during construction would include dermal exposure and inhalation of dusts or vapors from potentially impacted shallow soils or demolished/crushed concrete. These concerns would be managed through specified material handling, air monitoring and dust suppression procedures, as will be set forth in the RAWP.

The alternative is consistent with the highest proposed land use (residential apartments), the recent zoning change to PDD and zoning/configuration of the surrounding parcels. It is anticipated that this alternative would be acceptable to the community.

Cost

Our opinion of probable capital cost for implementation of this alternative is approximately $530,000 to $625,000. This includes contractor, laboratory, engineering legal and surveying fees, in addition to services such as air monitoring and preparation of the data usability

summary report (DUSR). Refer to the *Engineer's Opinion of Costs Worksheet: Soil Vapor – Alternative No. 2 (AOC-3.1)* in Appendix 2 for additional information.

5.3 Soil Vapor: AOC-3.2

As no specific development plans are currently proposed, this AOC will be addressed in the SMP.

6.0 COMPARATIVE EVALUATIONS AND RECOMMENDED ACTIONS

The remedial alternatives that are being considered to address the areas of concern (AOC) are summarized in the following sections.

6.1 Soils: AOC-1, AOC-2.1 and AOC-2.2

The *No Action* Alternative would not be protective of human health or the environment and would likely not be an acceptable alternative to the community. As development of the Site is anticipated to occur, there would be an increased risk of exposure to workers during ground-intrusive construction operations.

The *Track 2 Cleanup: Restricted Use - Restricted Residential* Alternative would be a long-term remedy that is consistent with proposed Site use and is anticipated to be acceptable to the community. It removes contamination from Areas of Concern by excavation and effectively addresses potential exposure routes through the use of cover (cap) soils, incorporation of an environmental easement and implementation of the SMP. As such, this alternative offers a practical and functional approach to facilitating the proposed Site development while addressing AOCs.

The *Track 1 Cleanup: Unrestricted Use* Alternative would also be a long-term remedy that would remove contamination from AOCs and would likely be acceptable to the community. However, the substantial quantity of additional soil removal that would be required results in an excessive remediation cost, which would effectively preclude redevelopment of the Site.

The recommended action for the soils at the Site is the *Track 2 Cleanup: Restricted Use - Restricted Residential* Alternative.

6.2 Soil Vapor: AOC-3.1

The *No Action* Alternative would not be protective of human health or the environment and would likely result in the building remaining in it's current, unused and dilapidated condition.

The *Soil Vapor Extraction (SVE) and Flooring System* Alternative would be a long-term remedy that is consistent with proposed Site use and is anticipated to be acceptable to the

community. It addresses potential vapor exposure routes through an Engineering Control (EC) to be installed in conjunction with building renovations, incorporation of an environmental easement and implementation of the SMP. As such, this alternative offers a practical and functional approach to facilitating the proposed Site development, while addressing this AOC.

6.3 Soil Vapor: AOC-3.2

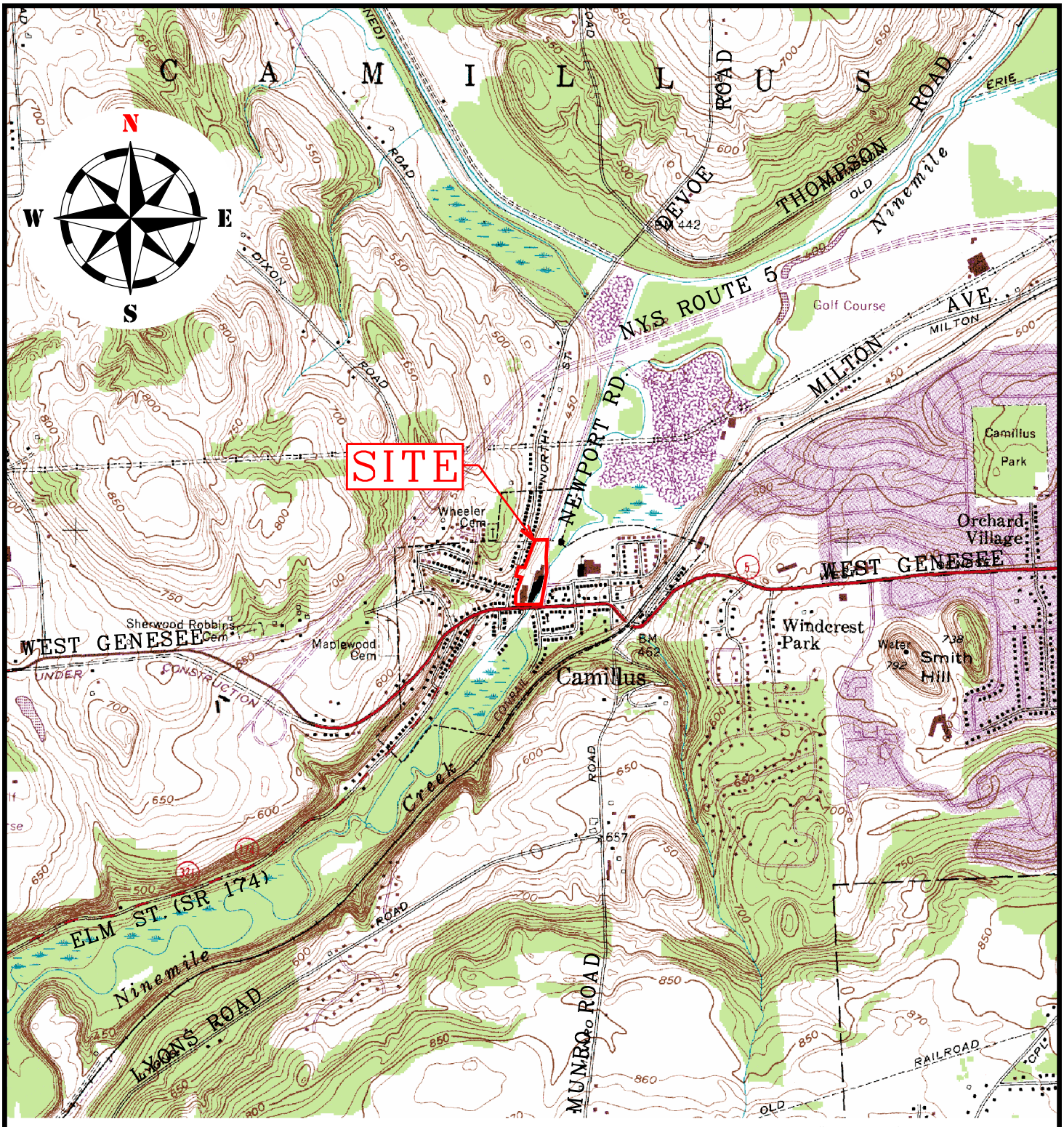
No development is proposed in this AOC at this time. Accordingly, no alternatives are currently under evaluation but will be addressed pending a determination of redevelopment plans.

7.0 SUMMARY OF RECOMMENDED ACTIONS

Based on the above information, the overall recommended remedial strategy is summarized below:

Category	Recommended Remedy	Estimated Cost
Soils		
AOC-1	Alternative No. 2: Track 2 Cleanup (RR)	$115,000 – $135,000
AOC-2.1	Alternative No. 2: Track 2 Cleanup (RR)	$58,000 - $66,000
ACO-2.2	Alternative No. 2: Track 2 Cleanup (RR)	$28,000 - $31,000
Soil Vapor		
AOC-3.1	Alternative No. 2: SVE/Flooring System	$530,000 - $625,000
AOC-3.2	N/A	
	Total	$730,000 - $860,000

Pending DEC approval, a remedial action work plan (RAWP) will be prepared and will provide specific information concerning implementation of the proposed remedies, consistent with DER-10.



REF: U.S.G.S. CAMILLUS, NY DATE: 1955 PHOTOREVISED 1978, 7.5 MIN., 1" = 2000'±

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DRAWING TITLE:

SITE LOCATION MAP

PROJECT: BROWNFIELD CLEANUP PROGRAM
FORMER CAMILLUS CUTLERY COMPANY SITE

CLIENT:

CAMILLUS MILLS, LLC

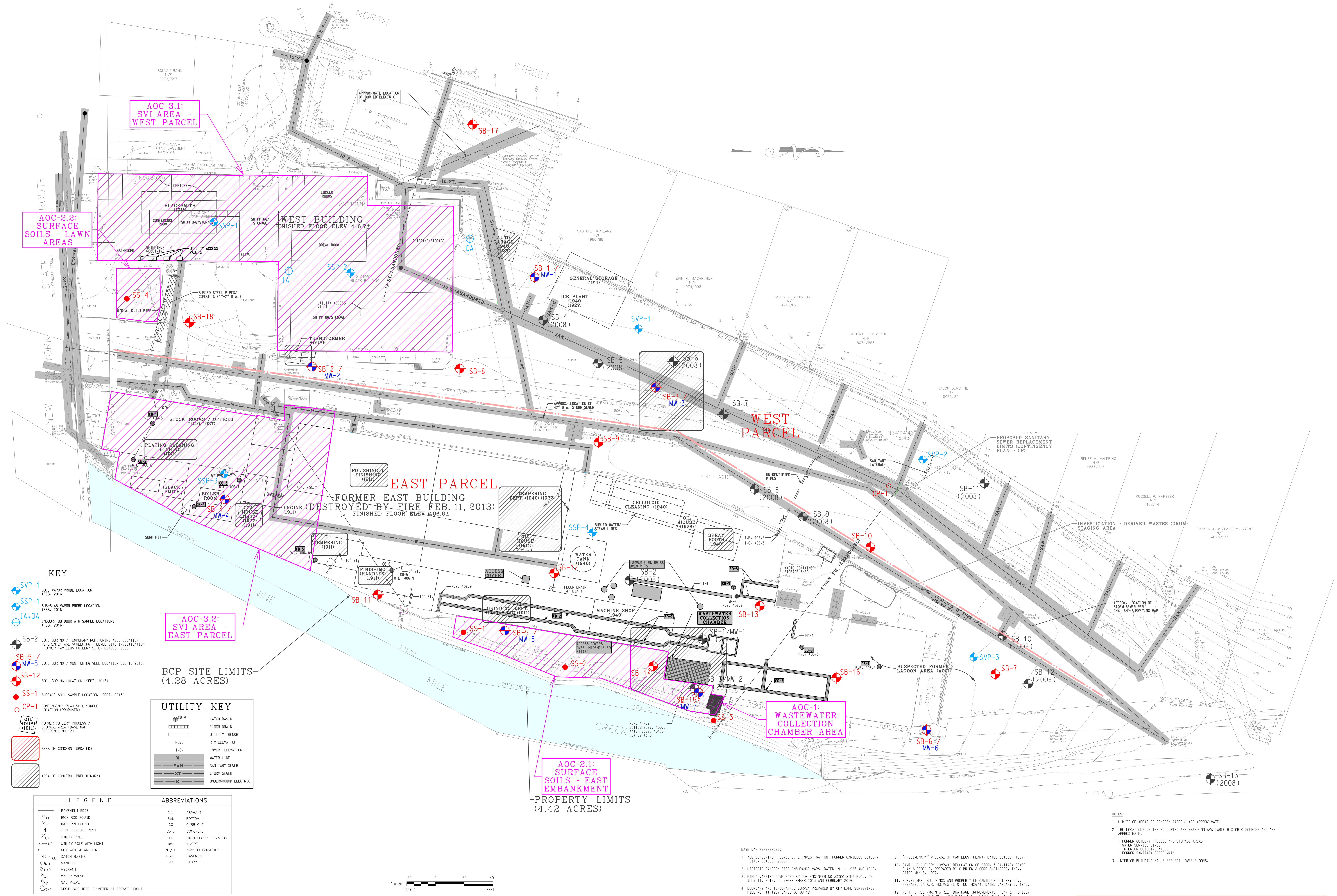
LOCATION:

VILLAGE OF CAMILLUS, ONONDAGA COUNTY, NEW YORK

PROJECT No.:	2009040
SCALE:	1"= 2000'
DATE:	03-01-16
ENG'D BY:	TDK
DRAWN BY:	DKC
CHECKED BY:	JED

SHEET NO.

LM–1



NORTH STREET
AOC-3.1: SVI AREA - WEST PARCEL
AOC-2.2: SURFACE SOILS - LAWN AREAS
WEST BUILDING
FINISHED FLOOR ELEV. 416.7±
WEST PARCEL
EAST PARCEL
FORMER EAST BUILDING (DESTROYED BY FIRE FEB. 11, 2013)
FINISHED FLOOR ELEV. 406.6±
AOC-3.2: SVI AREA - EAST PARCEL
BCP SITE LIMITS (4.28 ACRES)
PROPERTY LIMITS (4.42 ACRES)
AOC-2.1: SURFACE SOILS - EAST EMBANKMENT
AOC-1: WASTEWATER COLLECTION CHAMBER AREA
NINE MILE CREEK
STATE ROUTE 5 (WEST GENESEE STREET)
NEW YORK
KEY
SVP-1 SOIL VAPOR PROBE LOCATION (FEB. 2016)
SSP-1 SUB-SLAB VAPOR PROBE LOCATION (FEB. 2016)
IA, OA INDOOR, OUTDOOR AIR SAMPLE LOCATIONS (FEB. 2016)
SB-2 SOIL BORING / TEMPORARY MONITORING WELL LOCATION REFERENCE: ASE SCREENING - LEVEL SITE INVESTIGATION FORMER CAMILLUS CUTLERY SITE, OCTOBER 2008.
SB-5 / MW-5 SOIL BORING / MONITORING WELL LOCATION (SEPT. 2013)
SB-12 SOIL BORING LOCATION (SEPT. 2013)
SS-1 SURFACE SOIL SAMPLE LOCATION (SEPT. 2013)
CP-1 CONTINGENCY PLAN SOIL SAMPLE LOCATION (PROPOSED)
OIL HOUSE (1911) FORMER CUTLERY PROCESS / STORAGE AREA (BASE MAP REFERENCE NO. 2)
AREA OF CONCERN (UPDATED)
AREA OF CONCERN (PRELIMINARY)
UTILITY KEY
CATCH BASIN
FLOOR DRAIN
UTILITY TRENCH
R.E. RIM ELEVATION
I.E. INVERT ELEVATION
W WATER LINE
SAN SANITARY SEWER
ST STORM SEWER
E UNDERGROUND ELECTRIC
LEGEND
PAVEMENT EDGE
IRON ROD FOUND
IRON PIN FOUND
SIGN - SINGLE POST
UTILITY POLE
UTILITY POLE WITH LIGHT
GUY WIRE & ANCHOR
CATCH BASINS
MANHOLE
HYDRANT
WATER VALVE
GAS VALVE
DECIDUOUS TREE, DIAMETER AT BREAST HEIGHT
ABBREVIATIONS
Asp. ASPHALT
Bot. BOTTOM
CC CURB CUT
Conc. CONCRETE
FF FIRST FLOOR ELEVATION
Inv. INVERT
N / F NOW OR FORMERLY
Pvmt. PAVEMENT
STY. STORY
1" = 20' SCALE FEET

BASE MAP REFERENCES:

1. ASE SCREENING - LEVEL SITE INVESTIGATION, FORMER CAMILLUS CUTLERY SITE, OCTOBER 2008.
2. HISTORIC SANBORN FIRE INSURANCE MAPS, DATED 1911, 1927 AND 1940.
3. FIELD MAPPING COMPLETED BY TDK ENGINEERING ASSOCIATES P.C., ON JULY 11, 2012, JULY-SEPTEMBER 2013 AND FEBRUARY 2016.
4. BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY CNY LAND SURVEYING, FILE NO. 11.128, DATED 03-09-12.
5. FIRE INSURANCE MAP OF CAMILLUS CUTLERY CO., PREPARED BY EXTERIOR UNDERWRITERS INSPECTION BUREAU, DATED NOV. 19, 1940.
6. MAP OF PART OF F.L. 80 TOWN OF CAMILLUS, VILLAGE OF CAMILLUS, ONONDAGA CO., NY, CAMILLUS CUTLERY COMPANY, NEW YORK, PREPARED BY RICHARD ZOGG, DATED JANUARY 22, 1974.
7. FIRE INSURANCE MAP OF CAMILLUS CUTLERY CO., PREPARED BY BROWN CROSBY & CO., INC. INSURANCE, DATED JUNE 1928.
8. FIRE INSURANCE MAP OF CAMILLUS CUTLERY CO., PREPARED BY ISO NEW YORK, DATED OCTOBER 24, 1972.
9. "PRELIMINARY" VILLAGE OF CAMILLUS (PLAN), DATED OCTOBER 1967.
10. CAMILLUS CUTLERY COMPANY RELOCATION OF STORM & SANITARY SEWER PLAN & PROFILE, PREPARED BY O'BRIEN & GERE ENGINEERS, INC., DATED MAY 3, 1972.
11. SURVEY MAP BUILDINGS AND PROPERTY OF CAMILLUS CUTLERY CO., PREPARED BY A.R. HOLMES (LIC. NO. 4267), DATED JANUARY 5, 1945.
12. NORTH STREET/MAIN STREET DRAINAGE IMPROVEMENTS PLAN & PROFILE, PREPARED BY BARTON & LOGUIDICE, P.C., DATED APRIL 1993.
13. PROPOSED NEW BUILDING ROUTING - CAMILLUS CUTLERY COMPANY (PLAN - DATE NOT LEGIBLE).
14. VILLAGE OF CAMILLUS FIRST STREET SEWER REPLACEMENT : GENERAL SEWER PLAN, PREPARED BY BARTON & LOGUIDICE, DATED MARCH 11, 1987.
15. ALTERATIONS TO THE CAMILLUS CUTLERY COMPANY BUILDING NO. 5 FIRST FLOOR - FLOOR PLAN, PREPARED BY DAN LEARY, ARCHITECT AIA, DATED APRIL 10, 1969.
16. CLOSED-CIRCUIT TELEVISION (CCTV) INSPECTION OF SANITARY SEWER CONDUCTED IN MAY 2012 BY ONONDAGA COUNTY DEPARTMENT OF WATER ENVIRONMENT PROTECTION (WEP).

NOTES:

1. LIMITS OF AREAS OF CONCERN (AOC's) ARE APPROXIMATE.
2. THE LOCATIONS OF THE FOLLOWING ARE BASED ON AVAILABLE HISTORIC SOURCES AND ARE APPROXIMATE:
   - FORMER CUTLERY PROCESS AND STORAGE AREAS
   - WATER SERVICE LINES
   - INTERIOR BUILDING WALLS
   - FORMER SANITARY FORCE MAIN
3. INTERIOR BUILDING WALLS REFLECT LOWER FLOORS.

FIGURE AA–1 – ALTERNATIVES ANALYSIS PLAN

3–31–16

PROJECT No.:	2009040
SCALE:	1" = 20'
DATE:	04-05-13
ENG'D BY:	JCH
DRAWN BY:	CIE
CHECKED BY:	JED

DRAWING TITLE: ALTERNATIVES ANALYSIS PLAN

SHEET: AA–1

PROJECT: BROWNFIELD CLEANUP PROGRAM FORMER CAMILLUS CUTLERY COMPANY SITE

CLIENT: CAMILLUS MILLS, LLC

LOCATION: VILLAGE OF CAMILLUS, ONONDAGA COUNTY, NEW YORK

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19 Genesee Street • Camillus, New York 13031 • PH: (315) 672-8726 • FX: (315) 672-8732
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REVISIONS:
UPDATED 02/2016 PER REMEDIAL INVESTIGATION
UPDATED 09-16-13 PER FIELD MAPPING AND HISTORIC MAPS/PLANS
REVISED 07-05-13 PER DEC COMMENTS

NOTE: NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

ENGINEER'S OPINION OF COSTS WORKSHEET

TDK Engineering Associates, PC

PROJECT TITLE:	**BCP Site No. C734142 (Former Camillus Cutlery Coompany)**	ESTIMATED BY:	JCH
LOCATION:	**Village of Camillus, Onondaga County**	CHECKED BY:	JED
CLIENT:	**Camillus Mills, LLC**	TDK PROJECT NO:	2009040

Soils - Alternative No. 2 (AOC-1)
Remediation of Soils to Restricted-Residential SCOs

General Project Description: Excavation and off-site disposal of contaminated soils at depths of approximately 5 to 8 feet within AOC-1. Overburden soils meeting applicable SCOs to be re-graded on-site.

ITEM NO.	DESCRIPTION	QUANTITY	UNITS	COST PER UNIT	ESTIMATED AMOUNT
CAPITAL COSTS					
1	**Mobilization**	1	LS	$ 2,000.00	**2,000**
a.	Mobilization/Demobilization of Equipment				
b.	Premobilization - Sampling Backfill per DER-10				
2	**Excavation & Stockpiling**	470	CY	$ 17.00	**$ 7,990**
a.	Includes Overburden and Contaminated Soils				
b.	Temporary Staging of Soils On-Site				
c.	Erosion & Sediment Control				
3	**Groundwater Management**	50,000	gallons	$ 0.95	**$ 47,500**
a.	Includes Pump-Out, Containment & Disposal				
4	**Off-Site Disposal of Contaminated Soil**	285	tons	$ 54.00	**$ 15,390**
a.	Disposal of Contaminated Soils at Permitted Landfill				
b.	Includes Loading & Transport by Part 364 Hauler				
5	**Backfilling**	530	CY	$ 25.00	**$ 13,250**
a.	Importation and Placement of Off-Spec Crushed Stone				
b.	No. 2 Crushed Aggregate Below Water Table				
b.	Separation Geotextile				
6	**Regrading Overburden**	330	CY	$ 19.00	**$ 6,270**
a.	Regrading Overburden Soils Meeting SCOs				
7	**Restoration**	1	LS	$ 3,500.00	**$ 3,500**
a.	Topsoil (4 in), Seed & Mulch				
b.	Embankment Stabilization				
	SUBTOTAL - CONSTRUCTION COSTS				**$ 95,900**
	ENGINEERING FEES (Project Management, Field Observation, Reporting)				*$ 7,500*
	LABORATORY ANALYSIS (Confirmation & Waste Characterization Samples)				*$ 6,600*
	DATA USABILITY SUMMARY REPORT (DUSR) CONSULTANT				*$ 1,250*
	COMMUNITY AIR MONTORING PROGRAM / HASP				*$ 3,500*
	LEGAL / SURVEYING FEES (Easements)				*$ 1,000*
	CONSTRUCTION CONTINGENCY @ ~20 %				*$ 19,250*
TOTAL ESTIMATED CAPITAL COST					**$ 135,000**
Operation and Maintenance Costs					
1	**Periodic Review Reports (PRRs)**				**$ 500 per year**

Refer to Assumptions / Notes

ASSUMPTIONS/NOTES:

1. Costs are based on assumed excavation and disposal quantities and may vary.
2. Soil and groundwater are non-hazardous.
3. Excavation areas is within limits shown on Alternatives Analysis Plan [Figure AA-1].
4. Remediation of AOC-1, AOC-2.1 and AOC-2.2 to occur in one mobilization.
5. Backfill material originates from NYSDOT-approved quarry.
6. Periodic Review Reports for AOC-1, 2.1 and 2.2 to be performed concurrentlty.

ENGINEER'S OPINION OF COSTS WORKSHEET

TDK Engineering Associates, PC

PROJECT TITLE:	**BCP Site No. C734142 (Former Camillus Cutlery Coompany)**	ESTIMATED BY:	JCH
LOCATION:	**Village of Camillus, Onondaga County**	CHECKED BY:	JED
CLIENT:	**Camillus Mills, LLC**	TDK PROJECT NO:	2009040

Soils - Alternative No. 2 (AOC-2.1)
Remediation of Soils to Restricted-Residential SCOs

General Project Description: Excavation and off-site disposal of contaminated soils at depths of approximately 0 to 2 feet within AOC-2.1.

ITEM NO.	DESCRIPTION	QUANTITY	UNITS	COST PER UNIT	ESTIMATED AMOUNT
CAPITAL COSTS					
1	**Mobilization**	1	LS	$ 1,000.00	**1,000**
a.	Mobilization/Demobilization of Equipment				
b.	Premobilization - Sampling Backfill per DER-10				
2	**Excavation & Stockpiling**	260	CY	$ 17.00	**$ 4,420**
a.	Temporary Staging of Soils On-Site				
b.	Erosion & Sediment Control				
3	**Off-Site Disposal of Contaminated Soil**	417	tons	$ 54.00	**$ 22,518**
a.	Disposal of Contaminated Soils at Permitted Landfill				
b.	Includes Loading & Transport by Part 364 Hauler				
4	**Backfilling**	300	CY	$ 25.00	**$ 7,500**
a.	Importation and Placement of Off-Spec Crushed Stone				
b.	Separation Geotextile				
5	**Restoration**	1	LS	$ 6,300.00	**$ 6,300**
a.	Topsoil (4 in), Seed & Mulch				
b.	Embankment Stabilization				
	SUBTOTAL - CONSTRUCTION COSTS				**$ 41,738**
	ENGINEERING FEES (Project Management, Field Observation, Reporting)				*$ 5,700*
	LABORATORY ANALYSIS (Confirmation & Waste Characterization Samples)				*$ 6,800*
	DATA USABILITY SUMMARY REPORT (DUSR) CONSULTANT				*$ 1,250*
	COMMUNITY AIR MONTORING PROGRAM / HASP				*$ 1,750*
	LEGAL / SURVEYING FEES (Easements)				*$ 1,000*
	CONSTRUCTION CONTINGENCY @ ~20 %				*$ 7,762*
TOTAL ESTIMATED CAPITAL COST					**$ 66,000**
Operation and Maintenance Costs					
1	**Periodic Review Reports (PRRs)**				**$ 500 per year**

Refer to Assumptions / Notes

ASSUMPTIONS/NOTES:

1. Costs are based on assumed excavation and disposal quantities and may vary.
2. Soil and groundwater are non-hazardous.
3. Excavation areas is within limits shown on Alternatives Analysis Plan [Figure AA-1].
4. Remediation of AOC-1, AOC-2.1 and AOC-2.2 to occur in one mobilization.
5. Backfill material originates from NYSDOT-approved quarry.
6. Periodic Review Reports for AOC-1, 2.1 and 2.2 to be performed concurrentlty.

ENGINEER'S OPINION OF COSTS WORKSHEET

TDK Engineering Associates, PC

PROJECT TITLE:	**BCP Site No. C734142 (Former Camillus Cutlery Coompany)**	ESTIMATED BY:	JCH
LOCATION:	**Village of Camillus, Onondaga County**	CHECKED BY:	JED
CLIENT:	**Camillus Mills, LLC**	TDK PROJECT NO:	2009040

Soils - Alternative No. 2 (AOC-2.2)
Remediation of Soils to Restricted-Residential SCOs

General Project Description: Excavation and off-site disposal of contaminated soils at depths of approximately 0 to 2 feet within AOC-2.2.

ITEM NO.	DESCRIPTION	QUANTITY	UNITS	COST PER UNIT	ESTIMATED AMOUNT
CAPITAL COSTS					
1	**Mobilization**	1	LS	$ 1,000.00	**$ 1,000**
a.	Mobilization/Demobilization of Equipment				
b.	Premobilization - Sampling Backfill per DER-10				
2	**Excavation & Stockpiling**	80	CY	$ 17.00	**$ 1,360**
a.	Temporary Staging of Soils On-Site				
b.	Erosion & Sediment Control				
3	**Off-Site Disposal of Contaminated Soil**	130	tons	$ 54.00	**$ 7,020**
a.	Disposal of Contaminated Soils at Permitted Landfill				
b.	Includes Loading & Transport by Part 364 Hauler				
4	**Backfilling**	80	CY	$ 25.00	**$ 2,000**
a.	Importation and Placement of Off-Spec Crushed Stone				
b.	Separation Geotextile				
5	**Restoration**	1	LS	$ 2,000.00	**$ 2,000**
a.	Topsoil (4 in), Seed & Mulch				
	SUBTOTAL - CONSTRUCTION COSTS				**$ 13,380**
	ENGINEERING FEES (Project Management, Field Observation, Reporting)				*$ 5,700*
	LABORATORY ANALYSIS (Confirmation & Waste Characterization Samples)				*$ 4,900*
	DATA USABILITY SUMMARY REPORT (DUSR) CONSULTANT				*$ 1,250*
	COMMUNITY AIR MONTORING PROGRAM / HASP				*$ 1,750*
	LEGAL / SURVEYING FEES (Easements)				*$ 1,000*
	CONSTRUCTION CONTINGENCY @ ~20 %				*$ 3,020*
TOTAL ESTIMATED CAPITAL COST					**$ 31,000**
Operation and Maintenance Costs					
1	**Periodic Review Reports (PRRs)**				**$ 500 per year**

Refer to Assumptions / Notes

ASSUMPTIONS/NOTES:

1. Costs are based on assumed excavation and disposal quantities and may vary.
2. Soil and groundwater are non-hazardous.
3. Excavation areas is within limits shown on Alternatives Analysis Plan [Figure AA-1].
4. Remediation of AOC-1, AOC-2.1 and AOC-2.2 to occur in one mobilization.
5. Backfill material originates from NYSDOT-approved quarry.
6. Periodic Review Reports for AOC-1, 2.1 and 2.2 to be performed concurrentlty.

ENGINEER'S OPINION OF
CAPITAL COSTS WORKSHEET

TDK Engineering Associates, PC

PROJECT TITLE:	**BCP Site No. C734142 (Former Camillus Cutlery Company)**	ESTIMATED BY:	JCH
LOCATION:	**Village of Camillus, Onondaga County**	CHECKED BY:	JED
CLIENT:	**Camillus Mills, LLC**	TDK PROJECT NO:	2009040

Soil Vapor - Alternative No. 2 (AOC-3.1)
Installation of Cupolex Flooring System

General Project Description: Demolition and removal of 21,000 sf floor slab and replacement with Cupolex flooring system, along with related soil and on-site concrete management.

ITEM NO.	DESCRIPTION	QUANTITY	UNITS	COST PER UNIT	ESTIMATED AMOUNT
CAPITAL COSTS - Installation of Cupolex System					
1	**Asbestos Abatement - Floor Tile (First Floor)**	1	LS	$ 40,000.00	**$ 40,000**
a.	Includes Air Monitoring and Disposal				
2	**Demolish & Remove Concrete Floor**	21,000	SF	$ 4.00	**$ 84,000**
a.	Assumes 10-inch thick concrete slab				
b.	Includes Temporary Stockpiling On-Site				
3	**Remove Soil and Debris (6")**	390	CY	$ 19.00	**$ 7,410**
a.	Includes Rough Grading and Sub-Grade Preparation				
4	**Import and Place 3" Crushed Stone Sub-Base**	360	tons	$ 29.00	**$ 10,440**
a.	Includes Fine Grading				
5	**Install Cupolex Flooring System**	21,000	SF	$ 2.93	**$ 61,530**
a.	Installation of Cupolex Forms				
b.	Design, Inspection and Testing				
6	**Install 3" Thick Top Slab**	21,000	SF	$ 6.50	**$ 136,500**
a.	Includes Concrete Pumping to top Cupolex Forms				
8	**Soil Vent Piping, Fan and Electrical Controls**	1	LS	$ 7,500.00	**$ 7,500**
CAPITAL COSTS - Concrete and Soil Management					
1	**Crushing of Concrete**	645	CY	$ 110.00	**$ 70,950**
a.	Crushing to "4-Minus" Structural Fill				
2	**On-Site Grading of Processed Concrete**	645	CY	$ 14.00	**$ 9,030**
a.	Filling/Compacting Sag Vertical Curve in Parking Lot				
3	**Pavement Cap over Processed Concrete**	5,800	SF	$ 4.00	**$ 23,200**
a.	2.5 inches Binder and 1.5 inches Top Course				
b.	8 inches Crushed Stone Subbase and Geotextile				
4	**Off-Site Disposal of Contaminated Soil**	690	tons	$ 54.00	**$ 37,260**
a.	Includes Subgrade Preparation and Sanitary Line Spoils				
a.	Includes Loading and Transport by Part 364 hauler				
	SUBTOTAL - CONSTRUCTION COSTS				**$ 487,820**
	ENGINEERING FEES (Project Management, SVI Investigation, Field Observation, Reporting)				*$ 17,500*
	DRILLING CONTRACTOR (Expanded SVI Investigation)				*$ 1,700*
	LABORATORY ANALYSIS (Confirmation, Waste Characterization & Backfill Acceptance Samples)				*$ 7,000*
	DATA USABILITY SUMMARY REPORT (DUSR) CONSULTANT (SVI Investigation)				*$ 4,500*
	COMMUNITY AIR MONTORING PROGRAM (Concrete crushing/grading, stockpile/load contaminated soils)				*$ 6,800*
	LEGAL / SURVEYING FEES (Easements)				*$ 2,500*
	CONSTRUCTION CONTINGENCY @ ~20 %				***$ 98,180***
TOTAL ESTIMATED COST					**$ 626,000**
Operation and Maintenance Costs					
1	**Periodic Review Reports (PRRs)**				**$ 1,500 - $ 3,000 per year**

Refer to Assumptions/Notes

ASSUMPTIONS/NOTES:

1. Costs are based on assumed excavation and disposal quantities and may vary.
2. Soil is non-hazardous.
3. Soil removal area is within limits shown on Alternatives Analysis Plan [Figure AA-1].
4. Backfill material originates from NYSDOT-approved quarry.
5. Periodic monitoring to consist of semi-annual vacuum readings (active operation) or indoor air sampling (passive operation).
6. Electricity costs for fan/blower not included.

ENGINEER'S OPINION OF COSTS WORKSHEET

TDK Engineering Associates, PC

PROJECT TITLE:	**BCP Site No. C734142 (Former Camillus Cutlery Coompany)**	ESTIMATED BY:	JCH
LOCATION:	**Village of Camillus, Onondaga County**	CHECKED BY:	JED
CLIENT:	**Camillus Mills, LLC**	TDK PROJECT NO:	2009040

Soils - Alternative No. 3
Remediation of Soils to Unrestricted Use SCOs

General Project Description: Excavation and off-site disposal of contaminated soils to an average depth of 7 feet (1 foot below groundwater) over 70% of the site.

ITEM NO.	DESCRIPTION	QUANTITY	UNITS	COST PER UNIT	ESTIMATED AMOUNT
1	**Mobilization**	1	LS	$ 4,000.00	**4,000**
a.	Mobilization/Demobilization of Equipment				
b.	Premobilization - Sampling Backfill per DER-10				
2	**Demo & Remove Concrete Slab - Former East Bldg**	28,500	SF	$ 2.00	**$ 57,000**
a.	Assumes removal of 50% of slab				
b.	Assumes 10-inch thick concrete slab				
c.	Includes Temporary Stockpiling On-Site				
3	**Demo & Remove Concrete Slab - West Bldg**	21,000	SF	$ 4.00	**$ 84,000**
a.	Assumes 10-inch thick concrete slab				
b.	Includes Temporary Stockpiling On-Site				
4	**Off-Site Disposal of Concrete**	3,000	tons	$ 65.00	**$ 195,000**
a.	Disposal of Concrete at Permitted Landfill				
b.	Includes Loading & Transport by Part 364 Hauler				
5	**Excavation & Stockpiling Contaminated Soils**	34,000	CY	$ 17.00	**$ 578,000**
a.	Includes Overburden and Contaminated Soils				
b.	Temporary Staging of Soils On-Site				
c.	Erosion & Sediment Control				
6	**Groundwater Management**	980,000	gallons	$ 0.95	**$ 931,000**
a.	Includes Pump-Out, Containment & Disposal				
7	**Off-Site Disposal of Contaminated Soil**	54,000	tons	$ 54.00	**$ 2,916,000**
a.	Disposal of Contaminated Soils at Permitted Landfill				
b.	Includes Loading & Transport by Part 364 Hauler				
8	**Backfilling**	39,000	CY	$ 28.00	**$ 1,092,000**
a.	Importation and Placement of Off-Spec Crushed Stone				
b.	No. 2 Crushed Aggregate Below Water Table				
b.	Separation Geotextile, Top 1 foot Item 2 Subbase				
7	**Restoration**	1	LS	$ 12,000.00	**$ 12,000**
a.	Topsoil (4 in), Seed & Mulch				
b.	Embankment Stabilization				
	SUBTOTAL - CONSTRUCTION COSTS				**$ 5,869,000**
	ENGINEERING FEES (Project Management, Field Observation, Reporting)				*$ 160,000*
	LABORATORY ANALYSIS (Backfill Acceptance, Confirmation & Waste Characterization Samples)				*$ 65,000*
	DATA USABILITY SUMMARY REPORT (DUSR) CONSULTANT				*$ 25,000*
	COMMUNITY AIR MONTORING PROGRAM / HASP				*$ 75,000*
	LEGAL / SURVEYING FEES (Easements)				*$ -*
	CONSTRUCTION CONTINGENCY @ ~20 %				*$ 1,106,000*
TOTAL ESTIMATED COST					**$ 7,300,000**

Refer to Assumptions / Notes

ASSUMPTIONS/NOTES:

1. Costs are based on assumed excavation and disposal quantities and may vary.
2. Soil and groundwater are non-hazardous.
3. 50% of East Building Slab to be removed.
4. Removal of 7 feet of soils over 70% of site.
5. Backfill source is NYSDOT-approved quarry.

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The CUPOLEX® system also consists of an ancillary product called PONTEX® to create grade beams. Moreover, in order to prevent any voids BETON STOP® provides continuous closures. For a more detail description of the construction method employed and the use of PONTEX® and BETON STOP® with the CUPOLEX® flooring system to achieve these results, please visit www.pontarolo.com.

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As building requirements continue to be focused on long-term sustainability with the adoption of numerous programs such as the LEED rating system, or the redevelopment of Brownfields, CUPOLEX® provide economic solutions with its innovative technology that is designed to enhance structures that are environmentally friendly and healthier to live and work in.

Many development sites are underlain with reclaimed or natural deposits where the decomposition of minor amounts of organic matter has produced of harmful gases e.g. methane, radon or carbon dioxide. The distinctive dome shape of the modular elements provides an internal orthogonal mesh allowing for air-circulation ducts that can be fully ventilated.

The CUPOLEX® System has been certified by the Ministry of Environment and has been granted the NETE Certificate of Technology Assessment. The Ministry concludes that the CUPOLEX® System can be a viable technology allowing for the control of vapour emissions from contaminated soil and ground water. Suitable applications of the CUPOLEX® System include Level 2 Risk Management approach in Brownfields redevelopment.

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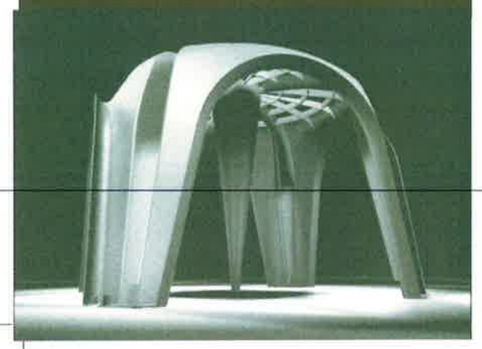
CUPOLEX®

THE STRUCTURAL DOME FLOORING SYSTEM

CUPOLEX® is a patented structural dome flooring system made from recycled non-toxic plastic modular elements. Each element easily inter-connects to create a self supporting structure which acts as a permanent form work, replacing gravel, hard fill and provides under slab voids for ventilating.

Main Benefits:

- Up to 20% reduction in concrete consumption
- Up to 20% reduction in reinforcing steel
- Up to 80% reduction in interior box forming for grade beams, footings, and foundations
- Ease of transportation of components 110 m² (1200sq.ft.)/pallet
- Reduced labour costs, 150 m2 (1600 sq.ft) laid in 2 man hours, fast assembly with minimal site work requirements
- One trade used to construct entire foundation and slab.
- Replaces gravel, engineered fill or hard fill and associated compaction costs. 3 truck loads of gravel to 1 Pallet of CUPOLEX*
- Reduced plant and machinery requirements
- Minimal construction traffic damage on site
- Substantially reduces dampness, mould & mildew by controlling moisture wicking through slabs, eradicating resultant problems with tiles or carpets lifting
- Reduces Slab curling and shrinkage cracks
- Provides space for running services such as cables, conduit, ductwork, chases, etc.;
- Eliminate the need for expensive mechanical piping systems on contaminated soils
- Can be fully ventilated to disperse Radon, Methane and other harmful gases.
- High standard of workmanship through the use of Approved Registered CUPOLEX® Installers.
- Considerable cost savings in poor load-bearing soils especially in expansive soils.



STANDARD FLOOR SLABS

Typically a 150mm (6") or a 300mm (12") thick CUPOLEX® floor slab is used for a standard floor such as residential or light commercial using CUPOLEX® and the corresponding accessory BETON STOP®. Where allowable bearing pressures are less than 100 kPa, additional reinforcements are used and a specific design is applied to reduce the imposed bearing pressures.

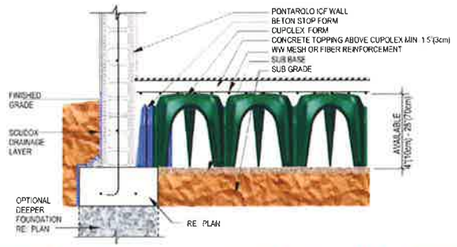
6x6 W4.0/4.0 (152x152 MW25.8/25.8) welded wire mesh with saw cuts or 152 x 152 MW34.9/34.9 (6x6 W5.4/5.4) mesh without saw cuts are used in the topping throughout the slab. Additional reinforcing is used where increased load capacity is required such as garage areas or heavy loaded floors.

A common criticism of wire mesh is that it settles in the fresh concrete and ends up lying on the granular base, rendering it completely useless. The wire mesh when placed on the CUPOLEX® elements is positioned exactly at the elevation required with no need to be lifted up into place.

Where top soil layers are thick, higher CUPOLEX® can be used to create a deeper slab. This replaces the hard fill that typically is required to bring the slab to level and eliminate the costs associated with importing, compacting and certifying engineered fill.

Each slab is specifically designed and includes; Stamped construction drawings with schedule indicating the number of CUPOLEX® and BETON STOP® required, the total concrete volume required and the reinforcements for the entire floor, an inspection and certificates from a Registered Professional Engineer on completion of each slab.

When the slab is ready for construction simply phone your Registered Approved Contractor and quote the reference number of your design to arrange delivery. The exact quantity of CUPOLEX® and BETON STOP® will be delivered to the project site. No cutting, wastage or disposal of the CUPOLEX® components is required reducing time and costs.



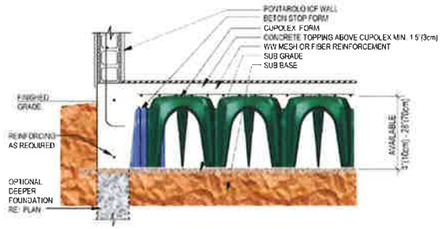
CONVENTIONAL FLOOR SLAB: HARDFILL REPLACEMENT, FLOATING SLABS OR CRAWLSPACES

Where conventional block base construction or concrete wall foundations are used, the CUPOLEX® domes can be placed between foundation walls to replace the compacted hard fill or clear gravel.

Advantages of the CUPOLEX® system include a reduction in:

- Labour / Subcontractors
- Hard fill or gravel and associated compaction and plant costs
- Concrete consumption
- Exterior footing size associated with retaining compacted engineered fill
- Minimal construction traffic damage
- Mould and mildew associated with conventional crawl spaces.

The CUPOLEX® units can be installed flush against the foundation wall without using BETON STOP®. On sloping sites various height CUPOLEX® units from 26cm (10") to 70cm(28") high can be used, stepping down the site to form a level upper surface. The CUPOLEX® slabs can also be stacked if finished floor elevations are required to be higher.



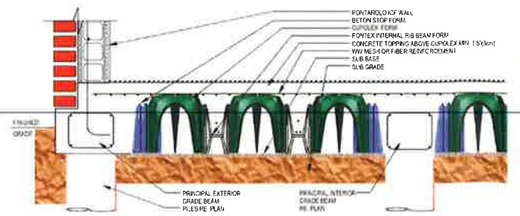
FULLY SUSPENDED STRUCTURAL FLOOR SLAB

Reasons for suspending a floor slab may include:

- Unsuitable ground conditions (very low bearing pressures) and expansive soils
- Bridging over public storm water and sewer lines
- Slope stability issues

The CUPOLEX® floor slab can be fully suspended on reinforced concrete piles. Additional reinforced internal ribs are then used in the slab by introducing PONTEX®, the structural CUPOLEX® accessory to provide a structure capable of spanning between pile locations.

Very little additional work or material is required to provide a suspended floor slab system and in many cases exterior footing reinforcement remains unchanged. As with all slabs, each suspended CUPOLEX® floor is specifically designed to suit site conditions, pile numbers are optimized to limit additional costs. Specific design calculations, engineered drawings and Design Certificates are provided for each design by an Approved Registered Professional Engineer.



INDUSTRIAL/COMMERCIAL FLOORS

CUPOLEX® Dome Forming System can be specifically designed for use on industrial floors. Loads of more than 10 kPa can be accommodated with topping thicknesses ranging from 50mm (2") to 120mm (5") over the CUPOLEX® elements.

In industrial applications, the reinforcing cages, pad foundations and other load bearing wall lines can be fixed into place first. The CUPOLEX® elements can then be used between load bearing lines to act as hard fill replacement and to bring the slab up to the required elevation. The footings, tie beams and the floor slab can be poured in one operation.

Advantages of the CUPOLEX® industrial floor slab system include:

- Footings, grade and tie beams, load bearing wall lines cast monolithically with the floor slab
- Elimination of interior box forming without wasting concrete
- Reduced concrete consumption
- Reduced reinforcement usage
- Eliminate or reduce engineered or hard fill and compaction requirements beneath the slab controlling slab thickness
- Ease of transportaion of components 1.2m (4') x 1.2m (4') x 1.9m (7') = 110 m2 (1200sq.ft.)
- Reduced labour costs, 150 m2 (1600 sq.ft) laid in 2 man hours, fast assembly with minimal site work requirements and construction traffic damage on site.