

## Analysis of Brownfields Cleanup Alternatives

Former Uniroyal Tire Complex – Parcel #147-10

City of Chicopee, Massachusetts

### Introduction and Background

**Site Location:** Former Uniroyal Tire Complex – Parcel #147-10

154 Grove Street

Chicopee, MA 01020

Owner: City of Chicopee

**Previous Uses of the Site:** *The Former Uniroyal Tire Complex* consists of approximately 28 acres of land, originally developed during the late 1800s (see Figure 1). In 1870 the property was used as a lumber yard by the Chicopee Manufacturing Company. From 1896 to 1898 the property was owned by the Spaulding and Pepper Company, who manufactured bicycle tires. The Fisk Rubber Company, which later changed its name to United States Rubber Company and then to Uniroyal, Inc., manufactured bicycle, automobile and truck tires, and adhesives from 1898 to 1980. Uniroyal Inc. closed this facility in 1980 and sold the property to the Facemate Corporation in 1981. Facemate leased portions of the Uniroyal buildings to various companies for manufacturing, printing, machine shops, office, storage and health care facilities. Currently, nine vacant buildings encompassing nearly 750,000 square feet, remain standing at the former complex.

Former manufacturing operations included approximately 22 underground storage tanks (USTs) and five aboveground storage tanks for the storage of various petroleum products and solvents. Twenty-five (25) pad and/or wall mounted transformers were used to distribute electrical power for site operations. Of these, 23 contained PCB-based dielectric fluids. Also, the Boston and Maine Railroad tracks bisect the former complex.

Parcel #147-10 (the “Site”) represents 26.203 acres of the Uniroyal property (see Figure 2). The Site is characterized as a strip of land running north from Grape Street along the Chicopee River and then bisecting the lower and middle tiers of the former Uniroyal Tire Complex before terminating at Oak Street. The strip of land was formerly the Boston & Maine Railroad right-of-way for a rail line spur off the main line running along the Connecticut River, west of the Uniroyal Site, proper. Railcars historically delivered carbon black to the complex for use in tire manufacturing. In 2010, the City contracted with Iron Horse Preservation Society (a non-profit) for the removal of rails and ties along a majority of the corridor. Rails and ties were not removed from the portion of the Site within the boundaries of the Uniroyal Tire Complex. As with most rail lines throughout the Northeast, residual contamination in rail beds include: heavy metals (notably arsenic and lead), polynuclear aromatic hydrocarbons (PAHs); and pesticides/herbicides. The presence of this contamination has been confirmed with limited sampling of rail bed soils.

**Past Assessment Findings:** Michelin North America, Inc. (MNA) acquired the assets of Uniroyal, Inc. circa 1990 and is considered the primary responsible party (PRP) dealing with residual contamination at the Uniroyal property. To date, MNA has identified and removed all known USTs on the property and all transformers have been removed by MNA and the City of Chicopee (the “City”). MNA has managed transformer fluids and PCB-impacted soils (>50 ppm) at appropriately licensed off-site waste management facilities. In addition, MNA has consolidated PCB-impacted soils (<50ppm) on the Site and has initiated

construction of a cap under applicable TSCA regulations over a portion of the rail bed located on Parcel #147-10.

Various consultants have completed environmental studies on the Uniroyal property, dating back to the early 1980s. A Phase I Limited Site Investigation and a Phase II Comprehensive Site Assessment (CSA) were completed by Environmental Compliance Services (ECS) in March 1991 and February 1998, respectively. A Supplemental Phase II CSA was completed by Gannett Fleming in June 2005. Gannett Fleming also completed a Phase III Remedial Alternatives Analysis in June 2005 as well as various Phase IV Remedy Implementation Plans from March 2006 through April 2010. Additional work since that date has been completed by GZA GeoEnvironmental, Inc. and includes a Supplemental Phase II CSA, dated January 2011.

Phase I assessment work was completed in conformance with the American Society of Testing Materials (ASTM) Standard Practice E 1527-05 for Phase I ESAs, which meets Environmental Protection Agency (EPA) Standards and Practices for All Appropriate Inquiries (AAI); Final Rule (40CFR Part 312).

On May 10, 2010, an *Existing Conditions Report* was completed by Tighe & Bond on some of the remaining Uniroyal buildings. A number of Hazardous Building Material Assessments have been completed for various Uniroyal structures as follows:

- **Report for Asbestos-Containing Building Materials, Lead-Based Paint, Polychlorinated Biphenyls and Mercury Containing Components in Uniroyal Building 26**, Smith & Wessel Associates, Inc., November 19, 2012;
- **Hazardous Materials Summary Report (Buildings 7, 8, 14, 15, 27, 29, 28N, 28N Ext, 33, 40, 42, 43, and 45 (Pump House))**, CDW Consultants, Inc., October 31, 2012; and
- **Report for Asbestos-Containing Building Materials, Lead-Based Paint, Polychlorinated Biphenyls and Mercury Containing Components in Uniroyal Buildings 28S, 28N, 28N Extension & 33**, Smith & Wessel Associates, Inc., June 20, 2011.

Environmental sampling of rail bed soils has been conducted by MNA and BETA Group, Inc. (BETA), on behalf of the City. Surface soil sampling conducted along the subject rail bed has concluded that residual contamination consists of heavy metals (particularly arsenic and lead), PAHs and pesticides/herbicides. In addition, sampling of rail bed soils by MNA identified residual concentrations of PCBs along the line passing between former Uniroyal Buildings #28 South and #42.

The City is working in cooperation with MNA to address other environmental conditions at the Site; however, MNA has taken the position that historical application of pesticides/herbicides falls under the exemption provisions of the Federal Insecticide and Rodenticide Act (FIFRA). In addition, historic rail contamination, including leaching preservatives from rail ties, exhaust from trains and ash from the combustion of coal, are exempt under the MCP. Since the City is looking to change the use of the rail line to a different exposure potential, appropriate response actions must be undertaken, consistent with the provisions and associated policies under the MCP.

**Project Goals:** The former Uniroyal Tire Complex property is part of a larger redevelopment project known as RiverMills at Chicopee Falls. Situated at the geographical center of the City, these post-industrial lands were once part of Factory Village, a complex of workforce housing, businesses and services that brought

industrialization to Chicopee beginning in 1822. Today, RiverMills represents the City's largest Brownfields redevelopment project.

The RiverMills Vision Plan was completed in December 2010. Extensive community outreach resulted in a plan reflecting community desires and endorsed by the City as the official redevelopment guide. The plan proposes the creation of an active/passive recreational network that reconnects the neighborhood to the Chicopee River. This network is the armature around which a mixed-use community is molded. This mixed-used scheme includes 33,500 square feet of new commercial space, 131,000 square feet of new office space, 131 new housing units, the City's new Senior Center (known as RiverMills Center) and a potential Family Recreation Center. Estimates indicate that this scheme will leverage an estimated \$100 million in private investment when full buildout is achieved and will support the creation of 275 new full and part time, local jobs.

City officials and residents alike have repeatedly underscored the importance of RiverMills' redevelopment as the avenue through which the Chicopee's heritage can be preserved. It is hoped that through redevelopment RiverMills can once again be a part of the community it helped to establish. With this in mind, the City has established the following vision and objectives to guide redevelopment:

***“The City of Chicopee envisions the creation of a mixed-use, energy conscious, walkable community integrated within the historic framework of Chicopee Falls. With expanded business and job opportunities and new living options for residents, redevelopment will reconnect the neighborhood to its rich environmental context while re-forging links between Chicopee Falls and Chicopee Center...”***

### **Redevelopment Objectives**

- **Mixed Use Redevelopment:** The City is interested in redevelopment schemes that provide a diverse mix of uses on the Site. This mix should preferably include complementary uses that will directly and indirectly enhance the area as a place to live, work, shop, dine, visit and as a place to connect with recreational/environmental amenities. Schemes should provide for high quality improvements with uses that will actively contribute to the economy of the City, provide public access where appropriate and add to the neighborhood's vitality and tax base.
- **Site Legacy:** The City has a vested interest in preserving the site's history as part of the redevelopment process. It is hoped that redevelopment schemes will address how the Site's industrial past can be incorporated into its reuse, remembering the Site's history.
- **Environmental Connections:** Development schemes should strive to surround proposed buildings with a series of green spaces linked with pedestrian walkways, greenways or trails that also take advantage of the Chicopee River Walk that is currently under development. The entire RiverMills development should strive to be a pedestrian friendly environment, while enhancing the Chicopee River. Redevelopment schemes should propose avenues through which the river can be accessed and utilized from RiverMills by the public.
- **Neighborhood Connections:** The RiverMills property has been inaccessible to the Chicopee Falls neighborhood for nearly thirty (30) years. Redevelopment schemes should propose avenues

through which the site will be reintegrated into the surrounding neighborhood and enable new connections to Chicopee Center and Memorial Drive's commercial corridor.

- ***Green Development:*** The City of Chicopee supports sustainable development practices and is pursuing LEED certification for RiverMills Center, which is the first RiverMills redevelopment project. The use of 'green' development techniques, with respect to energy efficiency, materials, building systems, construction methods, long-term building operations and site planning will be key factors considered during the developer selection and bid process.
- ***Effective Public-Private Partnership:*** With City, state and federal agency investments of nearly \$30 million dollars to date, redevelopment schemes should not place disproportionate requirements on City resources.

### **Changing Climate Concern**

Changing climate conditions modeled for Northeast should have limited impact on the proposed Site cleanup strategies. Due to its interior urban, industrial location and the proposed reuse of the Site, the following changing climate conditions are not applicable: rising sea level, changing environmental/ecological zones, increased salt water intrusion, changing dates of ground thaw/freezing, changing groundwater tables, and increased risk of wildfires. The Site is not subject to flooding due to the presence of an Army Corp of Engineers (ACOE) flood protection wall. The wall, in conjunction with the Barre Falls and Conant Brook dams, provides flood protection for the Chicopee Falls area. .

According to the *Regional Climate Trends for the US National Climate Assessment Part 1. Climate of the Northeast US*, NOAA Technical Report. NESDIS 142-1 (2014), historical data indicates that temperatures are trending upward with more pronounced warming during the winter and spring seasons, and annual precipitation shows a clear shift towards greater variability and higher totals. Increased precipitation and extreme weather events are identified as climate changes that should also have limited impact to the effectiveness of remedial alternatives identified for the Site. Under current Site conditions, increased precipitation and extreme weather could result in additional stormwater runoff and potential erosion of the Site. The likely remedial alternative is capping with a permeable cap, which will allow for infiltration of stormwater. Additionally, part of the design planning is to retain stormwater on the Site and direct excess stormwater to the ACOE stormwater interceptor, which is connected to a pumping station located to the east. Stormwater is then discharged to the Chicopee River. Therefore, increased stormwater discharge due to increased precipitation and greater storm intensity is not expected to have any appreciable impact to the Site or the preferred cleanup alternative.

### **Applicable Regulations and Cleanup**

***Cleanup Oversight Responsibility:*** The Commonwealth requires property owners to hire a Licensed Site Professional (LSP) if cleanup activities are deemed necessary. As defined by the Commonwealth, the LSP "ensures that actions taken to address contaminated property comply with Massachusetts regulations and protect public health, safety, welfare and the environment." In Massachusetts, LSPs are licensed by the state Board of Registration of Hazardous Waste Site Cleanup Professionals.

Following designation as a Brownfield Priority Project by MassDevelopment, the City released a Request for Proposals for Licensed Site Professional Services for the Uniroyal Site. The City followed all federal (40 CFR 31.36) and state public procurement guidelines during the process and has retained BETA Group, Inc. of Chicopee, MA to provide LSP services related to oversight, assessment and cleanup of residual contamination and management of hazardous materials at the Site. Alan Hanscom, MA LSP License #2152 – serves as the lead BETA representative to the City. The primary environmental regulations governing cleanup of the Site include the Massachusetts Contingency Plan (MCP), the Wetlands Protection Act (WPA), the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA).

BETA reports directly to the City's Office of Community Development (OCD) and prior services provided by BETA related to subsurface contamination have been funded through the MassDevelopment Brownfields Priority Project Fund. Services related to building inspections, demolition and other related services are separately funded. BETA is under contract to the City's OCD to provide ongoing LSP and services related to the oversight of soil management activities covered under this U.S. EPA Brownfields Grant. Any additional contractors needed to perform the proposed cleanup project will be retained following all federal (40 CFR 31.36) and state public procurement guidelines.

**Cleanup Standards for Major Contaminants and Planned Reuse:** The Site is likely to include some combination of residential, commercial and recreational uses. The primary regulations dealing with residual rail bed contamination and associated environmental releases and debris are the MCP, RCRA, TSCA and the MassDEP Solid Waste Regulations. To that end, the cleanup standards can vary under the applicable regulations, supported by risk characterization performed largely under the provisions of the MCP. .

- Environmental releases of regulated contaminants, including heavy metals, polynuclear aromatic hydrocarbons (PAHs), pesticides and herbicides, are largely regulated under the MCP. Depending upon the concentrations, potential for exposure and Site inhabitants, varying standards apply. When such exposure is eliminated (or significantly limited) by capping and implementation of activity and use limitations (AULs), higher concentrations of residual contamination can remain on the Site without impact to human health or the environment.
- Polychlorinated Biphenyls (PCBs) are primarily regulated under TSCA, with U.S. EPA maintaining jurisdiction over all PCB releases greater than 50 ppm. The management of most PCB-containing equipment and fluids is also regulated under TSCA, but may also be subject to various regulations under RCRA and the MCP. Releases to the environment from sources containing less than 50 ppm are regulated under the MCP. In accordance with TSCA Guidance issued by U.S. EPA, along with provisions under the MCP, alternative compliance options provide for various cleanup standards. Under certain circumstances, a risk based cleanup may justify leaving PCB concentrations less than 100 ppm in place, with appropriate capping and implementation of an AUL. The current Risk Based Cleanup Plan for the Site provides for off-site management of all PCB-impacted soils with concentrations greater than 50 ppm.
- Contaminated residuals and byproducts present in rail beds are primarily regulated under the Federal Insecticide and Rodenticide Act (FIFRA), RCRA and the MCP. The exemption provisions under FIFRA will not apply, since the existing use of the property will change with redevelopment. The City will determine whether any such heavy metal wastes and/or residual pesticides/herbicides demonstrate 'hazardous' characteristics, as defined under RCRA. If the wastes are determined to

be hazardous, these materials will be managed off-site at an appropriately licensed hazardous waste landfill. In certain cases, on-site treatment may be used to allow for off-site management at a Special Waste Landfill. In other cases, since the materials are mostly inert and largely non-leaching, they may be managed on site under the provisions of the MCP.

**Laws & Regulations Applicable to the Cleanup:** There are three primary federal regulations that govern the pre-demolition abatement and disposal of regulated building materials:

- Resource Conservation and Recovery Act (RCRA);
- Toxic Substances Control Act of 1976 (TSCA); and
- Asbestos Hazard Emergency Response Act (AHERA) of 1986.

In addition to the regulations promulgated under the referenced laws, the MassDEP and U.S. EPA have provided numerous guidance documents and policies that govern the manner in which the presence of regulated building materials in buried demolition debris is handled and managed. Such regulations are very prescriptive and close adherence to the requirements is required, except in unusual circumstances when site-specific requirements are waived by state and/or federal regulators.

In this case, MassDEP has jurisdiction over most activities involving the abatement and off-site management of buried demolition debris. Several federal and state solid and hazardous waste regulations, including air and resource protection regulations, govern the licensing and permitting of pertinent recycling and disposal facilities.

Specific state regulations that govern environmental site investigations, characterization and disposal activities include:

- Solid Waste Regulations, administered through MassDEP (310 CMR 7.000 and 19.0000);
- Air Quality Regulations, Department of Labor Standards, Division of Occupational Safety (453 CMR 6.00);
- Massachusetts Contingency Plan (MCP) at 310 CMR 40.0000; and
- Massachusetts Hazardous Waste Regulations at 310 CMR 30.0000.

There are also numerous state and federal policy and guidance documents that regulate the handling, transportation and off-site management of contaminated soil, groundwater and buried demolition debris.

### **Cleanup Alternatives Considered**

Three different cleanup alternatives were considered to address contamination at the Site, including Alternative A – No Action, Alternative B – Cap in Place with On- and Off-site Management of Debris, Wastes and Contaminated Soil, and Alternative C – Excavation and Off-Site Management of all Debris, Wastes and Contaminated Soil.

## **Evaluation of Cleanup Alternatives**

### ***Cleanup Alternative A – No Action***

Effectiveness: The ‘no action’ alternative is not effective in controlling or preventing the exposure of receptors to contamination at the Site. If no action is taken at the Site, the required cleanup costs during redevelopment would severely restrict the parcel’s appeal and marketability, and in turn, serve to obstruct realization of the project goals.

Feasibility: The “no action” alternative does not require implementation of any response actions.

Cost: There are no costs associated with Cleanup Alternative A - No Action.

### ***Cleanup Alternative B – Cap in Place, with On- and Off-Site Management of Debris, Wastes and Contaminated Soil***

Overview: Where the residual contaminant levels meet acceptable risk management objectives under the MCP, capping with two feet of an engineered barrier (i.e. parking areas) and/or three feet of soil in landscaped areas is often a cost effective strategy that is protective of both human health and the environment. It is likely that this alternative would also include off-site management of recyclable and reusable material (rails, contaminated soil), all hazardous and special wastes (including rail ties), and any other deleterious materials that are not suitable for capping on site. On-site consolidation of certain debris and/or contaminated soil in designated areas (i.e. parking, under buildings, etc.) would also be implemented where appropriate and would be done in consistency with applicable regulations.

The topography of the Site slopes downward steeply from the east to the west, towards the Chicopee River. As indicated on Figure 2, a flood control dike is located between the Site and the Chicopee River. The top of the flood control dike is approximately twenty-one (21) feet higher than the Chicopee River, and the lowest elevation point of Site is approximately fifteen (15) feet lower than the top of the flood control dike. The City proposes to fill this lower portion of the Site in order to create a level surface that is suitable for redevelopment. Rail bed soils will likely be placed in this portion of the Site, with imported soil and processed asphalt, brick and concrete material, above seasonal high groundwater elevation. These proposed filling activities will restrict exposure to the rail bed soils.

For the portion of the rail bed soils between the Uniroyal Site and Grape Street, the implementation of Best Management Practices (policy issued by MassDEP) will be required. That policy provides for capping of rail bed soils on ‘rails to trails’ projects, such as that currently being undertaken by the City. In some cases, especially where subsurface utilities will be installed under the former rail line and/or within the former rail corridor, relocation and capping of the impacted soils within the lower tier of the Uniroyal Site is proposed.

This alternative has the potential to be compromised by the climate change concern identified above (increased storm frequency and intensity), if proper engineering and stormwater controls are not incorporated into redevelopment plans. Increased stormwater runoff may promote erosion of proposed landscaped portions of the cover. On-going maintenance will be required within landscape areas to reduce erosion potential. Erosion control best management practices (BMP) will be implemented to prevent erosion of the Site in the event of storms during construction. The cap will also be permeable to allow for

infiltration of precipitation and stormwater. As discussed in the section above, stormwater management controls will be implemented to retain stormwater on-site and excess stormwater will be directed to the ACOE interceptor, with eventual discharge to the Chicopee River.

In addition to capping, AULs are proposed for the Site. The AULs will provide for the sustainability for this alternative through maintenance and substantially restricting access to contaminated soils by future owners, users or utility workers.

Effectiveness: Capping of the Site combined with on-Site management of debris, wastes and impacted soils is an effective approach for preventing human and other receptors from coming into direct contact with contaminated soils and any consolidated debris or wastes.

Capping of the Site combined with on- and off-site management of debris, wastes and contaminated soil is an effective approach as the combined approach will eliminate some of the on-site contamination while preventing humans and other receptors from coming into contact with any consolidated debris or wastes.

Feasibility: Capping of the Site is relatively easy to implement, as filling operations are planned to make the Site more suitable for future development. Given the depth of fill material required (approximately fifteen feet), on-going monitoring and maintenance should be minimal. This Alternative requires the filing of an AUL on the deed for the Site. If future site activities require the disturbance of soils after the filing of the AUL, is necessary, then an LSP must be involved for the protection of workers and to make sure that the contaminated soil is properly managed and disposed in accordance with the applicable MCP and other applicable regulatory requirements.

Cost: The estimated cost for capping rail bed soils on Parcel #147-10 would range from approximately **\$350,000 to \$450,000**, depending upon the nature and extent of subsurface contamination and debris encountered during redevelopment. The actual cleanup will be dependent upon the re-use plan for the Site, including considerations for subsurface utilities, storm water management, the degree of fill materials to be placed on the Site and several other factors to be defined once the final re-use plan is developed.

### ***Cleanup Alternative C – Excavation & Off-Site Management of All Rails, Ties and Rail Bed Soils***

Overview: This alternative would provide for the delineation, characterization and off-site management of all rails, ties and contaminated rail bed soil, consistent with applicable regulations. Typical activities would include segregation and off-site recycling of recyclable materials (rails) at appropriately licensed off-site recycling facilities, characterization and off-site reuse of contaminated soil (i.e. asphalt batching); characterization and disposal at appropriately licensed disposal facilities (hazardous wastes, TSCA wastes, special wastes, etc.), and implementation of other applicable off-site management options, depending upon the nature of the materials encountered.

This alternative requires significant offsite disposal of contaminated soils resulting in greater fuel consumption and greenhouse gas emissions during transport.

In the short term, this alternative has the potential to be compromised by the climate change concern identified above (increased runoff from increasing storm frequency and intensity). However, proper

engineering and stormwater controls will be incorporated into future Site redevelopment plans. Erosion control BMPs will also be in place to prevent erosion of the Site during construction.

Since all contamination is proposed to be removed, this alternative has long term sustainability in a changing climate since the identified climate change concern will not affect this alternative, as it can be completed within a relatively short timeframe.

**Effectiveness:** The excavation and on and off-site management of debris, wastes and contaminated soil is an effective approach as the material will be removed from the Site and the exposure pathways for receptors will be eliminated.

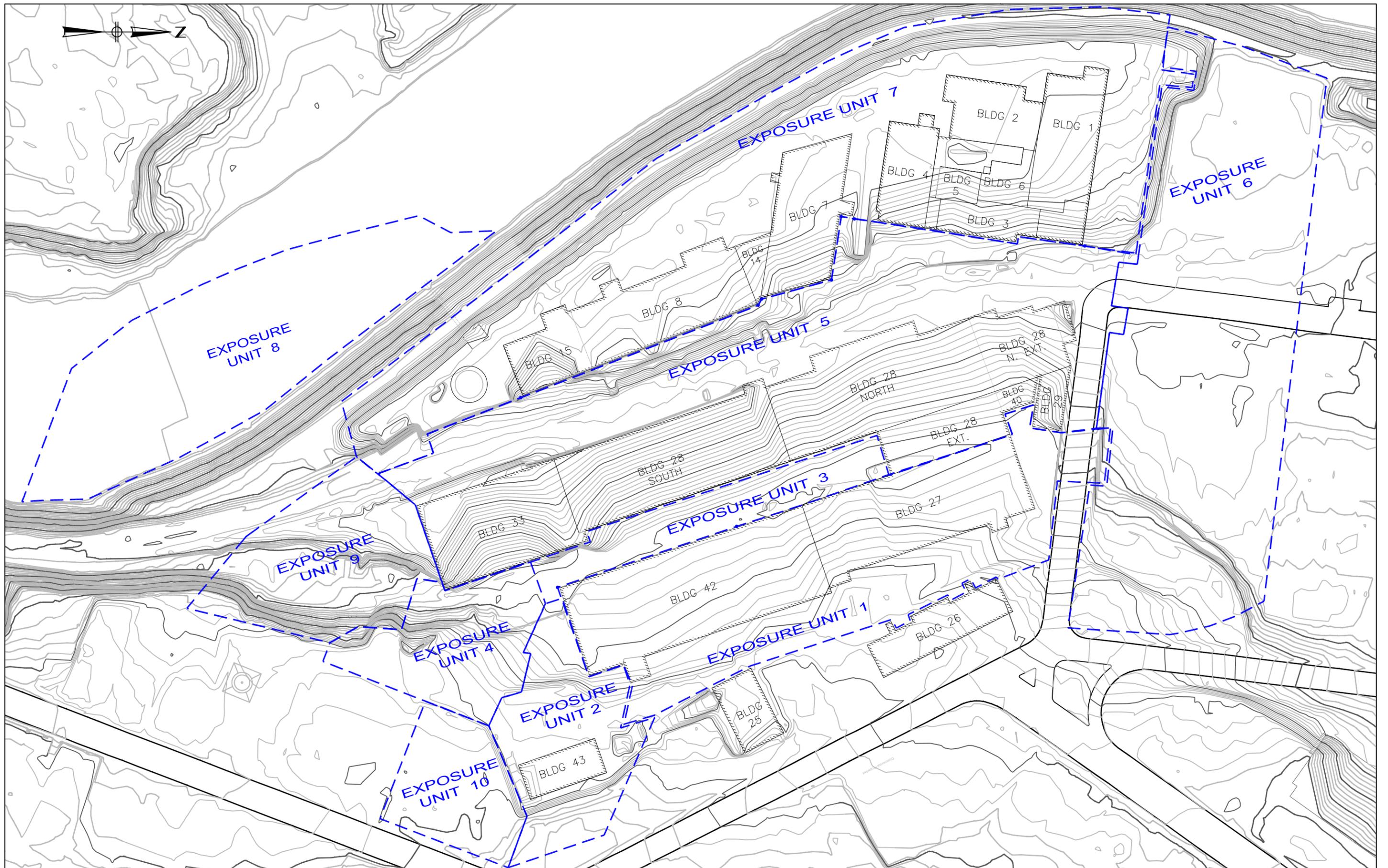
**Feasibility:** The excavation and on and off-site management of all debris, wastes and contaminated soils is moderately difficult to implement. Dust suppression and monitoring activities may be required during loading activities, and steps will need to be taken to prevent trucks from tracking soils on nearby roadways. Post-excavation sampling and analysis would need to be conducted to confirm the removal of contaminated soil, and fill material may need to be imported to the Site. Ongoing monitoring and/or maintenance would not be required following excavation and off-Site disposal. In addition, the filing of an AUL would not be required.

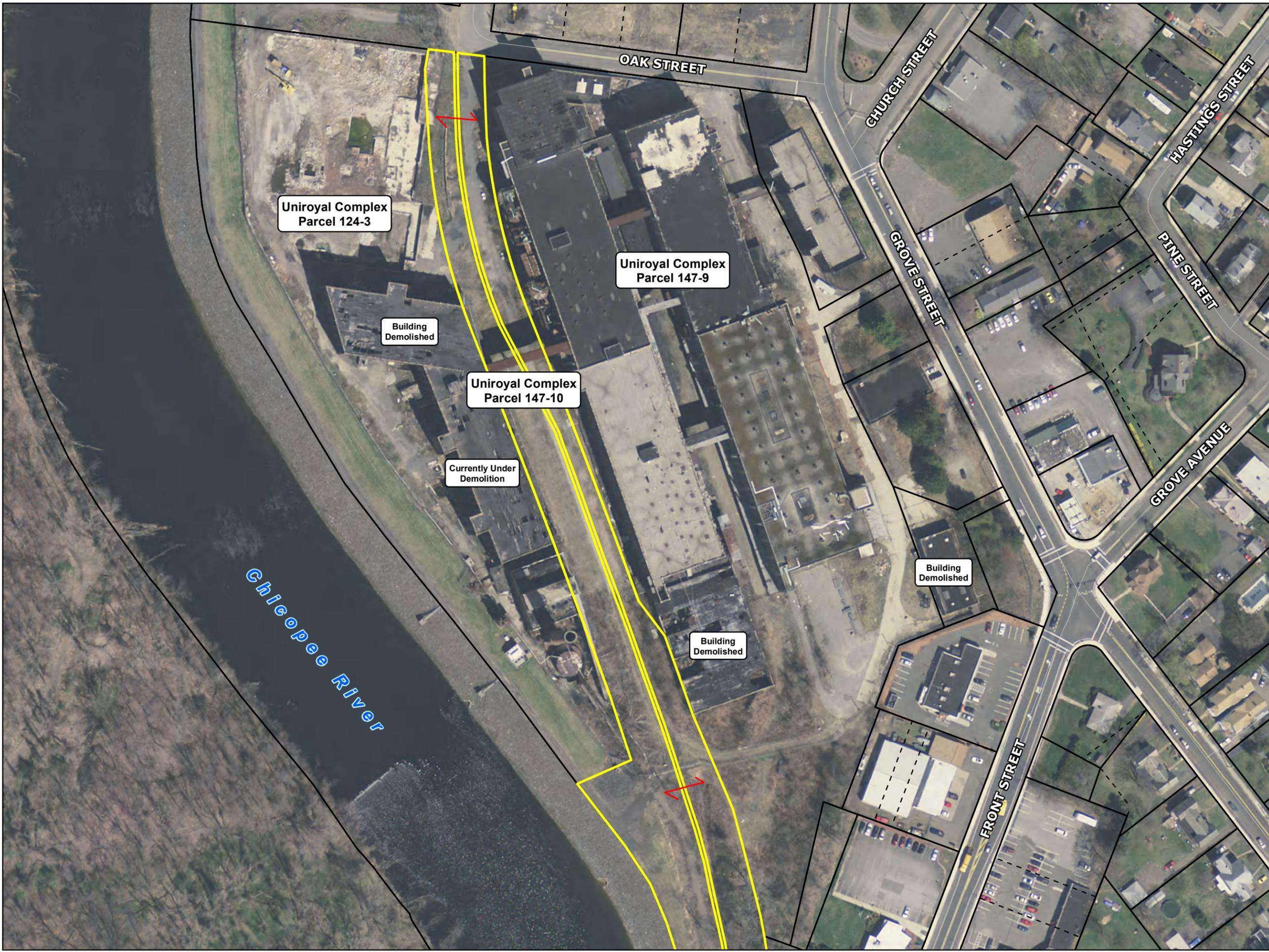
**Cost:** To excavate, characterize and manage all rails, ties and contaminated rail bed soils from the Site, including rail bed soils along the rail-to-trails project, costs are estimated to be on the order of **\$1.9 million**. This estimate is based upon recent remediation work performed on an adjacent parcel, assuming similar subsurface conditions and residual rail bed soil contamination is encountered.

### **Recommended Cleanup Alternative**

Alternative B, Cap in Place, with On- and Off-Site Management of Debris, Wastes and Contaminated Soil is the recommended cleanup alternative. This alternative will allow for cost-effective management of residual rail bed contamination, using risk characterization and capping strategies, consistent with Best Management Practices developed by MassDEP and other applicable regulations. Although more susceptible to a changing climate (increased storm frequency and intensity), these effects can be minimized with appropriate cap design and storm water management. In addition, this alternative allows for coordination of response actions with the proposed redevelopment plan.

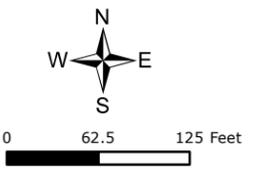
O:\3800s\3889 - Chicopee\AutoCAD\Uniroyal Redevelopment Plan.dwg Mar 09.2011 6:22pm



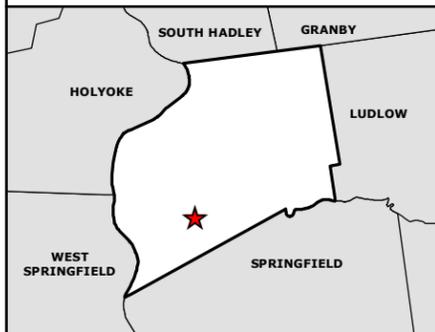


**Site Context Map**

- Legend**
- Parcel 147-10
  - Parcel Boundary



- Notes**
1. Aerial Photography courtesy of MassGIS, Spring 2013.
  2. Parcel data courtesy of City of Chicopee, 2015.



**FIGURE 1**  
**Clean Up Site**  
**Parcel 147-10**  
**Uniroyal Complex**  
**Oak Street**  
**Chicopee, Massachusetts**

