Burlington Brownfields

Area Wide Plan

City of Burlington

September 2016

ACKNOWLEDGMENTS

This brownfields area-wide plan was managed by the City of Burlington and has been funded by grants from the United States Environmental Protection Agency Brownfields Area Wide Planning Program and the Vermont Agency of Natural Resources. This effort is intended to conduct an area wide revitalization and implementation study focusing on key brownfield sites in the Pine Street Barge Canal area of Burlington.

Burlington Area Wide Plan Project Team:

Greenman-Pedersen, Inc.
Stone Environmental

This plan has been developed from several plans and studies, including:

- *planBTV South End, Goody Clancy, Civic Moxie and Dubois & King, Draft, June 2015*
- *planBTV South End Existing Conditions Report, VHB Inc., February, 2015*
- *Burlington South End Market Study, HR& A Advisors, Inc., November, 2014*
- *Railyard Enterprise Project, Chittenden County Regional Planning Commission, City of Burlington, Ongoing*
- *Observations and Recommendations for the South End Arts District, Walkable and Livable Communities Institute, November 2014*

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LIST OF ACRONYMS

AAI	All Appropriate Inquiry
ACCD	Vermont Agency of Commerce and Community Development
ACM	Asbestos Containing Materials
AST	Aboveground Storage Tank
ASTM	American Society of Testing and Materials (ASTM)
AWP	Area Wide Plan
BERA	Brownfield Economic Revitalization Alliance
BHS	Burlington High School
BRELLA	Brownfield Reuse Economic Liability Limitation Act
CAFI	Corrective Action Feasibility Investigation
CAP	Corrective Action Plan
CCTA	Chittenden County Transportation Authority
CCRPC	Chittenden County Regional Planning Commission
CDE	Community Development Entity
CEDO	Burlington Community and Economic Development Office
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DPW	Burlington Department of Public Works
DPZ	Burlington Department of Planning and Zoning
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
HIA	Health Impact Assessment
MGP	Manufactured Gas Plant
NAPL	Non-Aqueous Phase Liquid
NEPA	National Environmental Policy Act
NHS	National Highway System
NMTC	New Markets Tax Credit
NPL	National Priorities List
NRCS	Natural Resources Conservation Services
OSHA	Occupational Health and Safety Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Conditions
REP	Railyard Enterprise Project
RFP	Request for Proposals
RLF	Revolving Loan Fund
ROD	Record of Decision
RSL	Regional Screening Level
SBLR & BRA	Small Business Liability Relief and Brownfields Revitalization Act
SEABA	South End Arts and Business Association
SMAC	Sites Management Activities Completed
SMS	Site Management Section
SVOC	Semivolatile Organic Compound
TIF	Tax Increment Financing
TPH	Total Petroleum Hydrocarbon
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UVM	University of Vermont
VOC	Volatile Organic Compound
VTrans	Vermont Agency of Transportation
VT DEC	Vermont Department of Environmental Conservation
WWTP	Waste Water Treatment Plant

INTRODUCTION

What is an Area Wide Plan?

A brownfields area wide plan is specifically targeted to address areas affected by one or more brownfield sites. This brownfields area-wide plan (AWP) includes the area around the Pine Street Barge Canal including the Railyard Enterprise Project (REP) study area and points south along the Pine Street corridor within Burlington's South End district. The plan presents the vision for the future of the area and an implementation strategy to achieve that vision. The United States Environmental Protection Agency (EPA) provides grants to communities to "… research, plan and develop implementation strategies for an area affected by one or more brownfields. Developing an area-wide plan will inform the assessment, cleanup and reuse of brownfield properties and promote area-wide revitalization…" Area wide plans are intended to be implementation-oriented and focused on sites that can be catalysts for revitalization of a neighborhood or district.

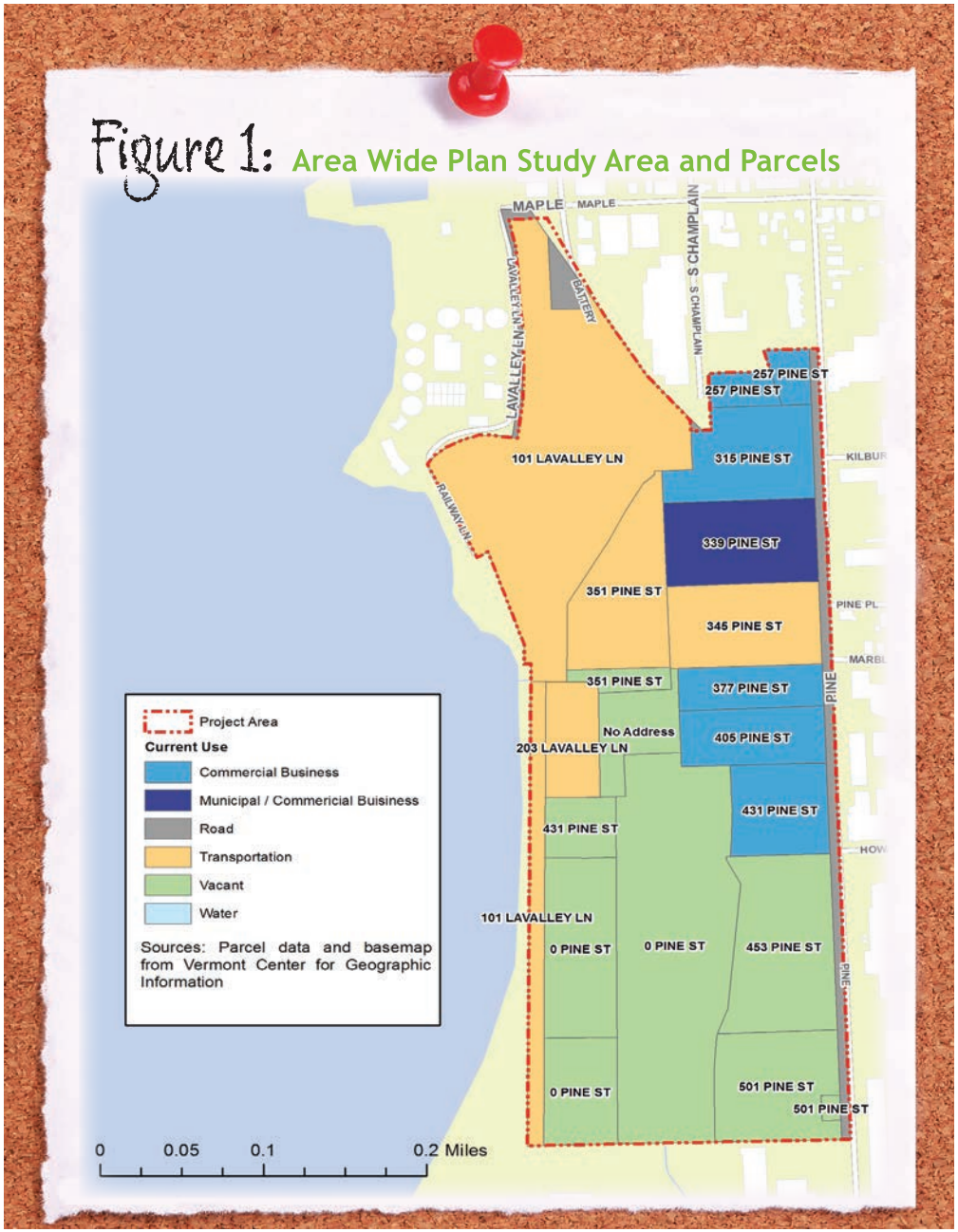
This area wide plan is focused on the barge canal and railyard area at the heart of Burlington's industrial past—alongside Lake Champlain, served by rail and just outside the central business district. The plan area has long served Burlington's needs for industry and transportation. Beginning in the mid-nineteenth century the railroad and barge canal supported the lumber industry, and other large manufacturing enterprises grew up around this area. A hundred years ago, along Pine Street, the Burlington Light & Power manufactured gas plant (1908-1966) produced gas for cooking and heating, generating the contaminants that are still being managed today at the barge canal site. Today the area continues as a functional industrial and manufacturing district that serves the City and the region; however environmental contamination stemming from the legacy of industrial operations has limited the economic and community value of some properties in the area.

The City's overall goals for this plan is to help guide the clean-up and revitalization of the brownfield sites along the Pine Street corridor as a means to improve the quality of life for Burlington residents, stimulate economic growth and development, and support the improvement of transportation options.

The information included in this plan is targeted to the designated area wide plan study area while also considering the broader context of the South End. The plan contains information and guidance that is intended to inform the assessment, clean-up and subsequent reuse of the designated sites.

Table 1: Area Wide Plan Properties and Acreages

ADDRESS	OWNER	CURRENT USE	TOTAL ACRES
101 Lavalley Ln.	State of Vermont	Transportation	13.83
257 Pine St.	Bent Partnership, LLP	Commercial	0.56
257 Pine St.	Bent Partnership, LLP	Commercial	0.62
315 Pine St.	Parkview at Ticonderoga, LLC	Commercial	3.2
339 Pine St.	City DPW	Municipal/Comm.	3.23
345 Pine St.	Havey, Dennis P.	Transportation	1.72
377 Pine St.	Citizens Properties Inc.	Commercial	1.62
101 Lavalley Ln.	State of Vermont	Transportation	4.25
203 Lavalley Ln.	Vermont Railway Inc.	Transportation	1.21
405 Pine St.	S&S Vending Co.	Commercial	2.19
0 Pine St.	City of Burlington	Vacant	11.07
431 Pine St.	Maltex Partnership	Commercial	3.42
431 Pine St.	Davis Development Corp.	Vacant	1.15
453 Pine St.	Davis Derrick H. ET AL Trustee	Vacant	4.8
0 Pine St.	BCV Associates, Inc.	Vacant	3.49
501 Pine St.	Maltex Partnership	Vacant	3.57
0 Pine St.	BCV Associtates, Inc.	Vacant	2.12
501 Pine St.	Vermont Gas Systems, Inc.	Vacant	0.12
351 Pine St.	Vermont Railway Inc.	Transportation	3.72
Water			2.22
Streets			2.5
TOTAL ACRES			**70.61**



Study Area Description

The AWP study area encompasses approximately 70 acres and includes 19 parcels situated between the Pine Street corridor and a rail line. Businesses operating within study area include retail (e.g., Curtis Lumber, the ReSOURCE facility), food and beverage retailers (e.g., Myer's Bagels, North American Beverage, Farrell Vending) , service (e.g., Chittenden Solid Waste District drop off, Bikram's Yoga), and the Burlington Rail Yard. The Island Line Rail Trail (Burlington Bike Path) provides a north-south connector for bicyclists, pedestrians, and other non-motorized users along the shore of Lake Champlain.

The study area includes at its center the Pine Street Barge Canal which formerly provided local lumber companies and other industries the benefit of water transport for their goods. In its current configuration, the canal is approximately 4.5 acres.

The Pine Street AWP study area is marked by a significant amount of undeveloped or underdeveloped land; approximately 30 acres of the study area are vacant or underutilized. The largest undeveloped properties include 453, 501, and 0 Pine Street. Three fifty-one (351) and 345 Pine Street, although currently in use for storage of bulk materials and trailers, respectively, are underutilized. Development in the southern end of the study area has been stymied by the presence of coal gasification wastes

The Pine Street corridor, facing south. A former rail line servicing industries along Pine Street is shown in the foreground.

The Burlington Rail Yard forms the northern edge of the area wide plan project area.

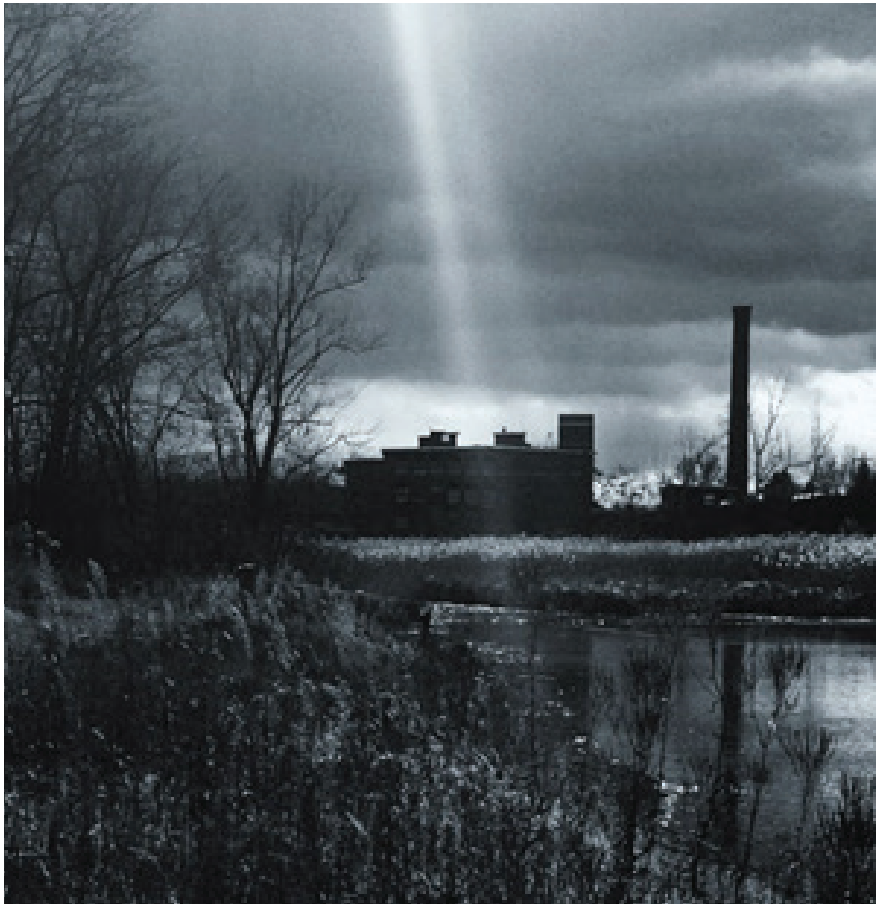
related to the former Burlington Light and Power Company manufactured coal gas plant formerly located at 501 Pine Street. Coal gasification wastes related to the Burlington Light and Power plant have been managed as the Pine Street Barge Canal Superfund Site since 1983.

Coordination with Other Planning Efforts

This plan is a part of, complements, and will help to implement, several other planning initiatives that have been undertaken in Burlington's South End, as follows:

planBTV South End. Chief among these efforts is the *planBTV South End*. The study area of this area wide plan is a subset of the planBTV South End planning area and the development plan for the AWP plan was developed through the planning process for the larger Burlington South End. A comprehensive public outreach process to provide a long-term vision that will guide future growth, development and conservation of the South End district was undertaken through the planBTV South End process. The South End planning process commenced with an extensive investigation and documentation of conditions in the 800-acre South End including an assessment of land use; transportation; stormwater, brownfields and real estate market conditions. Supplemental work in the area of brownfield investigation and planning was performed by Stone Environmental for this AWP document.

Railyard Enterprise Project (REP). The ongoing REP is a scoping study investigating multimodal circulation options to enhance connectivity between the Pine Street Corridor and Battery Street in Burlington's waterfront / downtown district.



Pine Street Canal with former General Electric / Queen City Cotton Mill in background. The Canal and adjacent undeveloped property present a tempting potential greenspace feature for the Pine Street area.

The REP plan area overlaps with the northern most portion of the AWP area.

The following is the adopted Purpose and Need Statement for the Railyard Enterprise Project :

> The purpose of the Railyard Enterprise Project is to develop a network of multimodal transportation infrastructure improvements in the Pine and Battery Streets area which incorporate the principles of Complete Streets, and to: **1)** support economic development in the area; **2)** improve livability of the surrounding neighborhoods; **3)** enhance multimodal travel connectivity between the Pine Street corridor and Battery Street in the Burlington Waterfront South area; and **4)** improve intermodal connections to the Burlington Railyard, a National Highway System (NHS)-designated intermodal facility.

1

Develop supporting infrastructure to be consistent with the long term vision of planBTV (Downtown and Waterfront part of the municipal plan) associated with the Railyard Enterprise Project area, that supports economic development in the area and enhances Railyard operations. *There is a need for a new street network between Pine Street and Battery Street and related infrastructure to support economic development in the area. PlanBTV has identified the Railyard Enterprise Project area as prime for infill, mixed-use development to increase economic activity and to provide accessibility to underutilized land adjacent to the Railyard.*

2

Improve livability and connectivity in the Railyard Enterprise Project area. *There is a need to improve the livability of residential areas and emerging mixed-use districts in the Railyard Enterprise Project area. Livability can be enhanced by dispersing traffic and reducing vehicle queues at neighborhood intersections, including the intersections of Pine Street with King and Maple Streets. Additional transportation connections between Pine Street and Battery Street, that do not involve Maple of King Street, will help improve livability and travel conditions for all users in the Railyard enterprise Project area.*

3

Enhance multi-modal travel connections and choices in the Railyard Enterprise Project area. *There is a need for additional multi-modal connections in the Railyard Enterprise Project area to support transit system performance, enhance bicycle and pedestrian connectivity and accessibility and facilitate travel from existing neighborhoods to Battery Street, the Waterfront, and Lake Champlain. There is also a need to create safe, efficient and dedicated pedestrian and bicycle connections from Pine Street neighborhoods between Maple Street and Lakeside Avenue to the Waterfront, the Burlington Bike Path and Lake Champlain and improve access for the King Street neighborhood.*

4

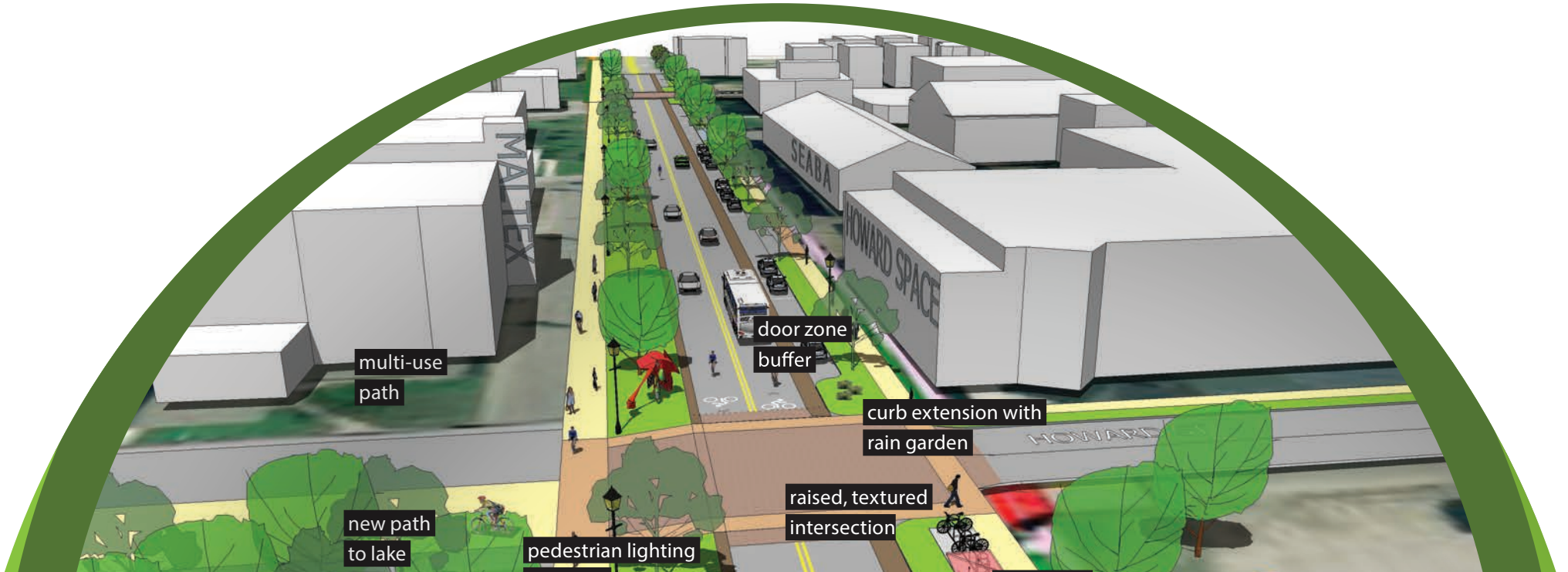
Improve connectivity and access between nearby streets, including Pine Street and Battery Street and the Burlington Railyard, a NHS-designated intermodal facility, while reducing the impacts of freight operations on adjacent neighborhoods. *There is a need to improve connection to the Railyard in a way that enhances its operations while also reducing the impact of freight operations on adjacent neighborhoods. PlanBTV recognizes the importance of the Burlington Railyard to the City's economy and environment.*

As of this writing, three alternatives for the REP area have been advanced for environmental review under the federal National Environmental Policy Act (NEPA) process. The three alternatives appear in Appendix A.

Brownfield Economic Revitalization Alliance (BERA). The BERA is a joint effort between the State of Vermont Agency of Commerce and Community Development and the Agency of Natural Resources, and is intended to help critical redevelopment projects with brownfields come to completion faster, more economically, and more easily. Selected BERA project sites receive funding priority and increased coordination between the federal, state, regional and municipal government representatives and private sector developers to simplify and fast-track brownfield revitalization projects. The Railyard Enterprise Project (REP) and 453 Pine Street were selected in 2013 as pilot projects for the BERA process in Vermont. Both BERA Pilot Projects continue to move forward. The REP is ongoing. Redevelopment plans for the 453 Pine Street property have been developed and the project is going through permitting and technical review processes.

Future Updates to this Area Wide Plan

To ensure that this AWP is a useful and evolving document that will continue to coordinate with other planning initiatives and future redevelopment opportunities, it may be amended from time to time. Changes to the document will be reflected in an Appendix.



EXISTING CONDITIONS

Geological Context

This section of the plan provides an overview of the geological construct of the plan area. This is important because the geologic setting of the area effects the cleanup methods for brownfield properties and structural considerations for new development.

The depositional history of the Pine Street area has resulted in three primary features that are relevant to development of the AWP study area: lake bottom and marine silts and clays; wetland organic rich peats; and high-energy alluvial fan deposits associated with the Burlington Ravine.

Following the retreat of the Laurentide Ice Sheet from the Burlington area circa 15,000 years ago, a large freshwater pro glacial lake (Glacial Lake Vermont) covered a large portion of the Champlain Valley until approximately 13,000 years when the ice sheet retreated far enough north to allow for seawater to enter via the Saint Lawrence seaway creating the Champlain Sea. During this increased lake and maritime extent, lake-bottom and marine silts and clays were deposited across the region. In portions of the study area adjacent the current shoreline of Lake Champlain, silts and clays have been observed to measure upwards of 100 feet thick.

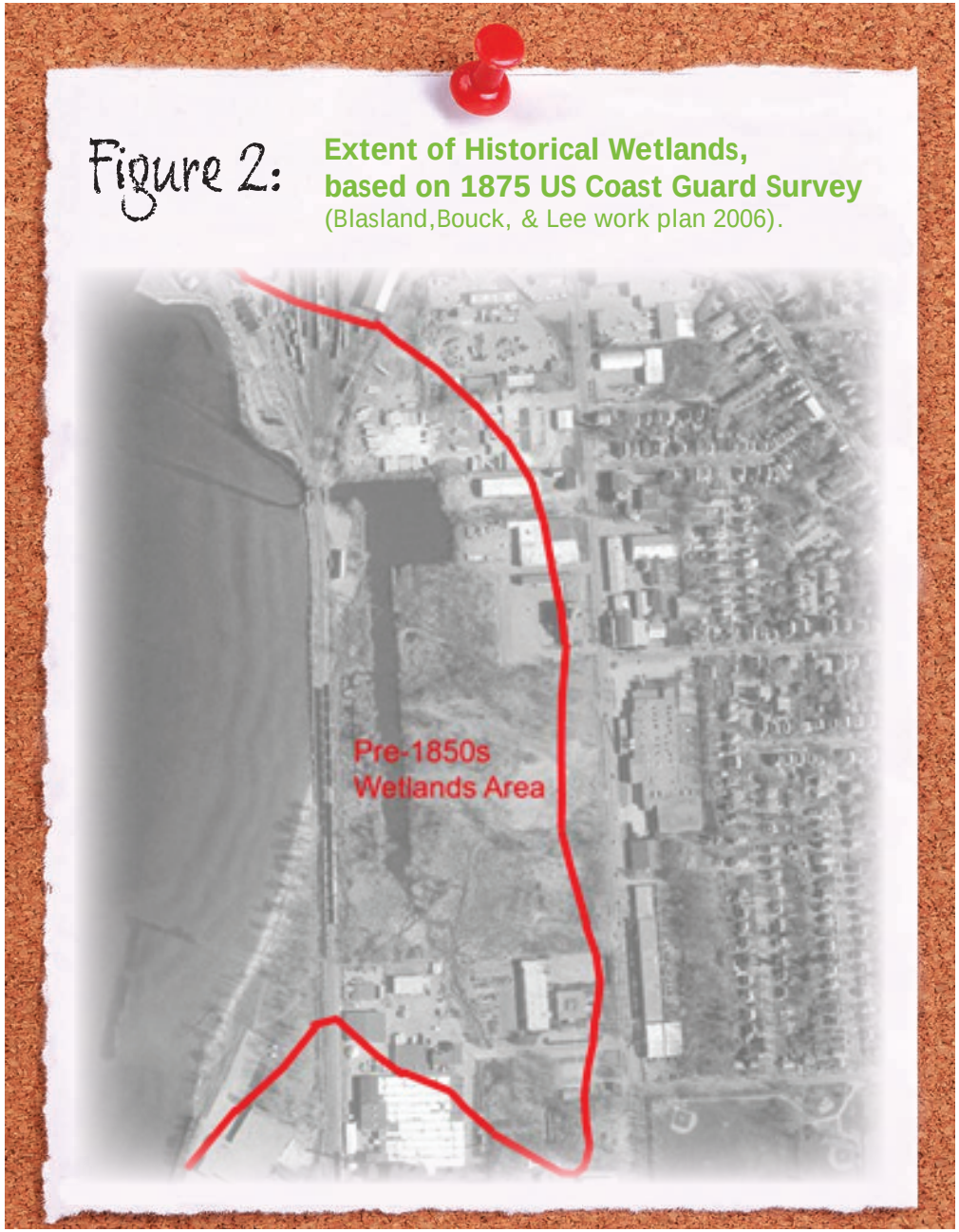
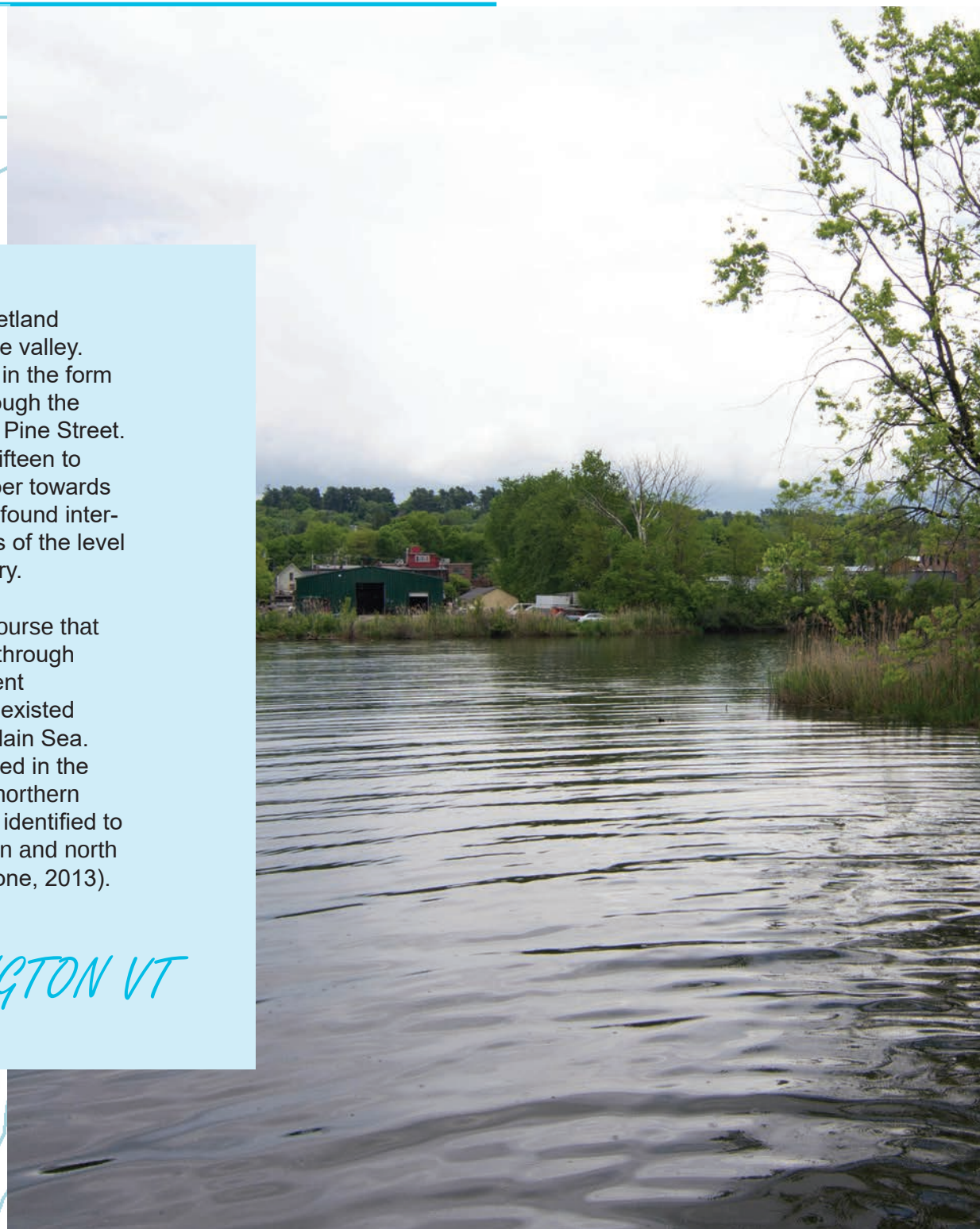


Figure 2: **Extent of Historical Wetlands, based on 1875 US Coast Guard Survey** (Blasland,Bouck, & Lee work plan 2006).

As marine water subsided and lake levels dropped, wetland complexes began to develop along the periphery of the valley. Within the study area, evidence of a wetland complex in the form of peat soils can be found from the rail yard south through the canal to nearly Lakeside Avenue and east to nearly to Pine Street. Peat soils have been demonstrated to be as thick as fifteen to twenty feet in the center of the former wetland and taper towards its edges (e.g., Stone, 2013). Wetland soils are often found inter-bedded with and overlain by silt, indicating fluctuations of the level of Lake Champlain even through its more recent history.

The former ***Burlington Ravine*** is an historical watercourse that extended southwest from the Intervale neighborhood through downtown Burlington to the rail yard. The pre-settlement watercourse that eroded the Burlington Ravine surely existed for the millennia following the recession of the Champlain Sea. As a high energy system, the Burlington Ravine resulted in the deposition of sand and gravel in an alluvial fan in the northern portion of the study area. Alluvial deposits have been identified to occur in the area of the Pine Street Canal turning basin and north through the 351 Pine Street property and rail yard (Stone, 2013).

PINE STREET CANAL - BURLINGTON VT



EXISTING CONDITIONS

Historical Context

This section of the plan summarizes the historic use of the property within the plan area, focusing on industrial and manufacturing activities which created brownfield conditions.

The first industrial uses of the project area began with the construction of the Rutland and Burlington Railroad in 1849. The rail line, after filling for its rail bed, severed the former wetland from Lake Champlain. Initial industries that operated in the area of Pine Street were largely lumber related; unfinished Canadian lumber entered Vermont through a series of canals that connected Lake Champlain with the St. Lawrence River. Further milling and planing of lumber occurred in mills along Pine Street. The rail line provided transport to larger markets in the northeast. As winter conditions restricted lumber movement by water, large stockpiles of lumber were needed to keep the mills running on a year-round basis (BBL, 2006). The wetland south of the rail yard began to be infilled to serve as storage space for the mills. Materials used for the fill included waste wood chips from the lumber processing mills and spoils from the growing City of Burlington – including wastes generated from nearby industries.

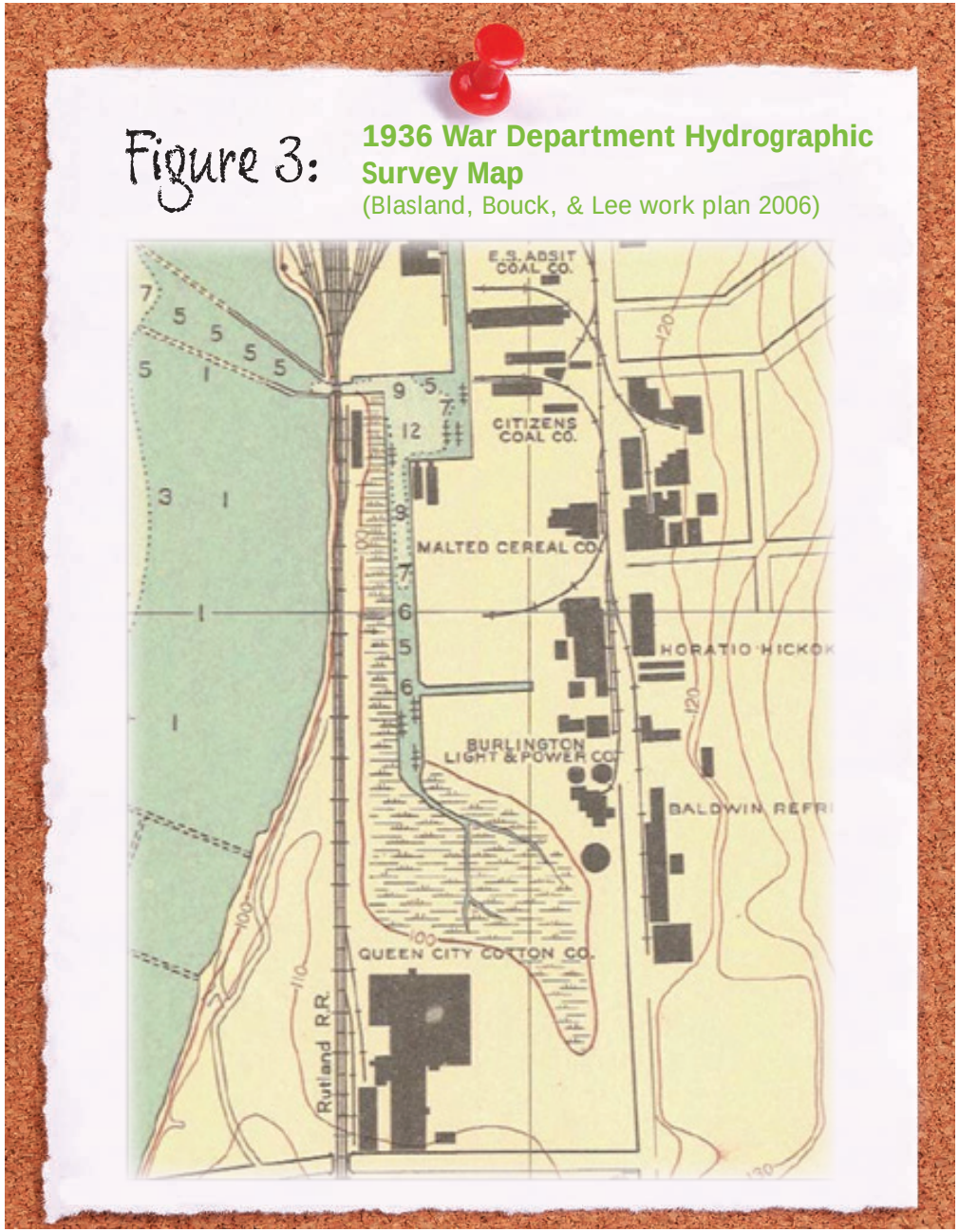


Figure 3: **1936 War Department Hydrographic Survey Map**
(Blasland, Bouck, & Lee work plan 2006)

Beginning in 1869, in an effort to provide easier access between the mills on Pine Street, the lumber stock piles, and Lake Champlain, Lawrence Barnes, a mill owner, began construction on the Pine Street Canal. Growing gradually over time, the canal was gradually extended southward and included a north and south slip.

Industries that flourished during the later 1800s included the Kilburne and Gates factory (furniture manufacturing), the Burlington Manufacturing Company (bobbins), and the Horatio Hickok Company (planing mill).

Following the economic downturn of the 1890s, lumber began to diminish while other business began, including a malted cereal manufacturer (later known as Maltex), the Whiting Brush Company, and a maple syrup plant. Beginning sometime after 1900, the Burlington Light and Power manufactured gas plant (MGP) was constructed at 501 Pine Street to provide “city gas” to Burlington residences and businesses. The Burlington Light and Power Company operated as its own entity until 1928 when it was purchased by the Green Mountain Power Corporation.

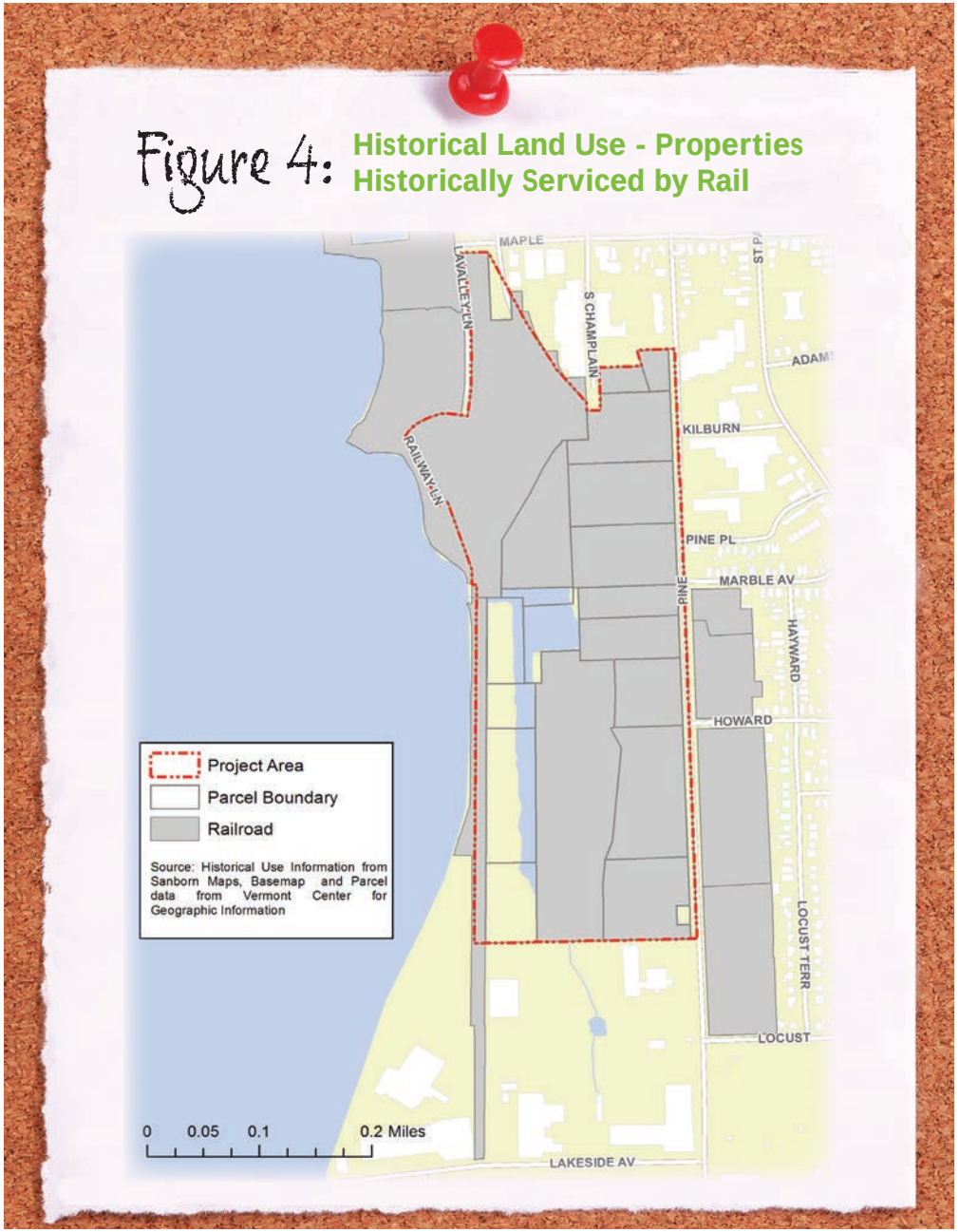


Figure 5: Historical Land Use - Manufacturing

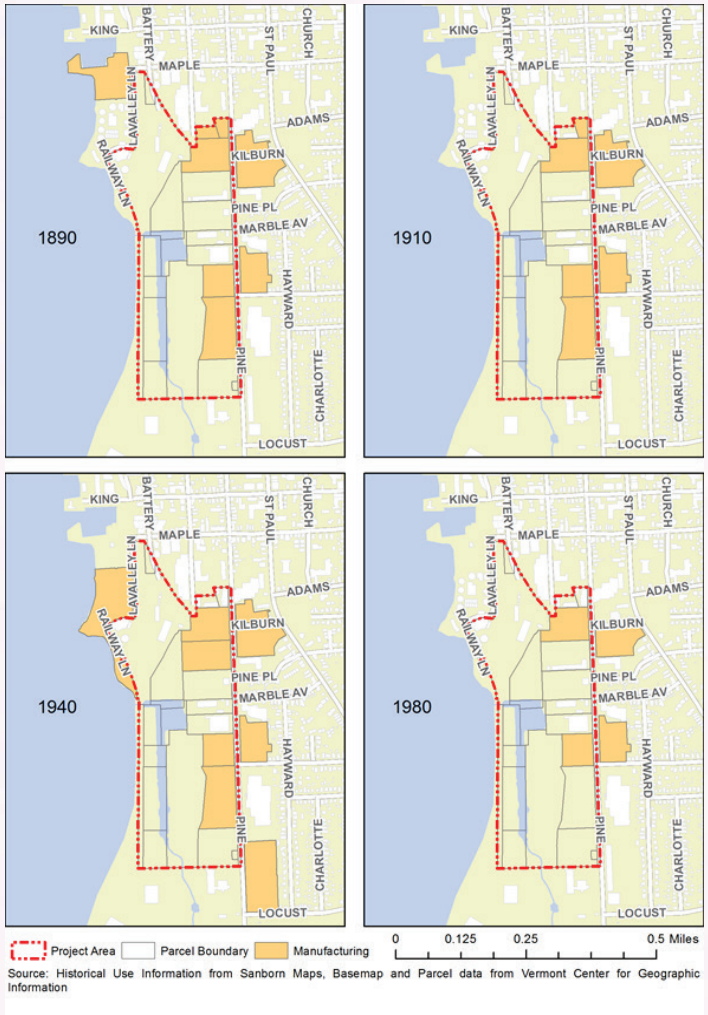
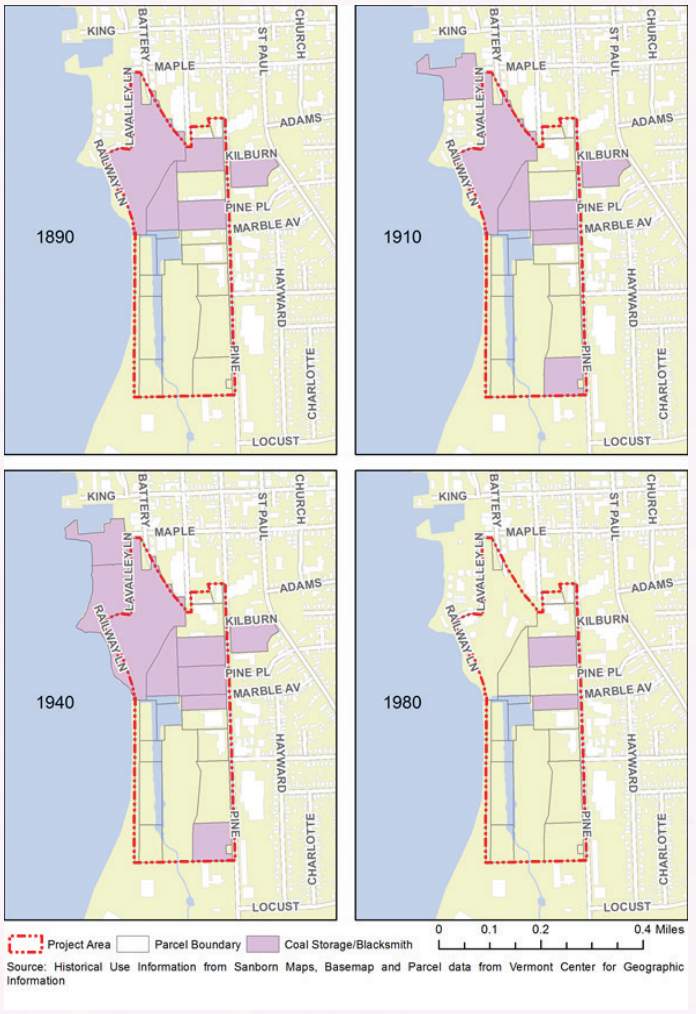


Figure 6: Historical Land Use - Coal Storage



As coal use began to rise in prominence as a heating source, storage of bulk coal became more common in the study area. By the 1930s, bulk coal storage occurred on 351 Pine Street, 345 Pine Street, 377 Pine Street, and 1 LaValley Lane.

Other industries that have left their mark include the Baldwin Refrigerator Company, located on the property that is today occupied by the Jackson Terrace Apartments at 500 Pine Street, and later the Queen City Tulatex Company (rubber car seat upholstery). Various other industries in this area of Pine Street included commercial laundry / dry cleaning and stone manufacturing (257 Pine Street), printing and kitchen utensil manufacturing (7 Kilburn Street), and maple syrup production (400 Pine Street). AppendixB includes a tabulation of historic land use of each parcel.

Pine Street circa 1953. The snare drum-looking structure is the former manufactured gas plant pressure vessel. The E.B. and A.C Whiting Brush Fiber Company and Maltex Cereal Company are shown north of the manufactured gas plant.

EXISTING CONDITIONS

Brownfields Analysis

This section of the plan provides an inventory of brownfield conditions within the plan area. This section also identifies data gaps for each property.

According to the US Environmental Protection Agency, a brownfield is a "Real Property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant."

Due to the specifics related to the Pine Street Canal Superfund program, for the purpose of this AWP, a Brownfield (capital B) site is also a property that is eligible to receive funding for assessment or cleanup. Due to its status as part of the Superfund, 501 Pine Street is not a Brownfield as it cannot receive Federal Brownfield Assessment or Cleanup funds although it meets the definition of a brownfield for having contamination that will hinder its redevelopment.

Also crucial within the definition of a brownfield is the notion of "potential presence" of contamination. Oftentimes it is the perception of contamination on a property that stands in the way of it returning to active reuse. Therefore it is important to do further analysis in the area to confirm what environmental conditions existing in the area and to what extent.

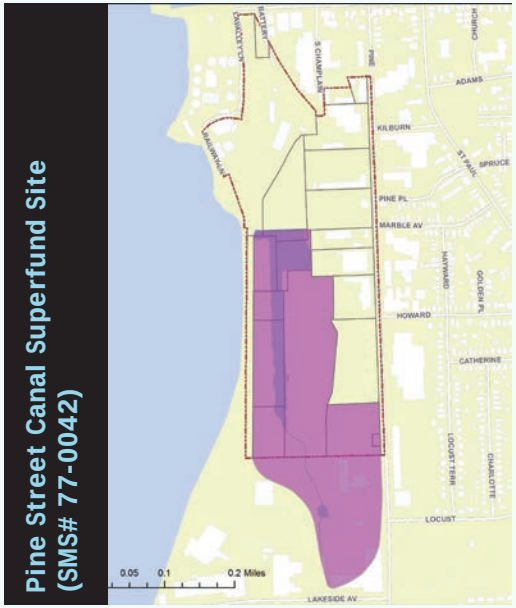
Brownfields Inventory

The Project Team utilized the Vermont Department of Environmental Contamination (VT DEC) Natural Resources Atlas and Waste Management Information Database to establish which managed environmental sites reside within or immediately up-gradient (east) of the AWP study area.

Historical documentation of land use, specifically Sanborn Fire Insurance Maps and the University of Vermont (UVM) Land Use Change Program photo archives was used to establish past industrial and commercial land uses within the study area. Using professional knowledge and US EPA Industry Sector notebooks, potential contaminants of concern were assigned to parcels with associated land uses.

Managed Environmental Sites

According to a review of the VT DEC Environmental Resource Atlas, there are a total of twenty-four managed environmental sites within or up-gradient of the AWP study area—meaning they are listed as a hazardous waste site, brownfield site, underground storage tank operator, or a generator of hazardous wastes. Several properties occur on more than one of the managed lists. Appendix C presents a tabulation of all managed environmental sites within and immediately up-gradient of the study area. The following sections describe the status of VT DEC managed hazardous wastes sites within the study area.



The Pine Street Canal Superfund Site was listed within the National Priorities List (NPL) in 1983 due to the presence of coal gasification wastes that were released by the Burlington Light and Power Company manufactured gas plant (MGP) formerly located at 501 Pine Street. Beginning in approximately 1900, the MGP released a substantial volume of coal tar into the wetlands between it and Lake Champlain and the southern portion of the Pine Street Canal. MGP wastes migrated through the preferential pathways of the main canal and former south slip. Recent investigations of the extent of coal tar non aqueous phase liquid (NAPL) indicate that coal tar NAPL remain within the former south slip on 453 and 0 Pine Street, adjacent peat soils, the former gas holder bases that remain buried on 501 Pine.

On September 29, 1998, the Director of the Office of Site Remediation and Restoration of US EPA New England approved a Record of Decision (ROD) for the Pine Street Canal Superfund Site. The ROD presented the selected remedial action for the Superfund Site and outlines the major components of the selected remedy, including:

- *Capping contaminated sediments in the canal and selected wetland areas;*
- *Institutional controls for groundwater below the designated Pine Street Canal Superfund Site and select adjacent properties, including the 351 Site;*
- *Institutional controls for land-use development;*
- *Designated Superfund Site boundary definition;*
- *Long-term performance monitoring; and*
- *Five-year reviews.*

Institutional controls set forth within the ROD for the properties that fall within and/or are adjacent to the designated Superfund Site include:

- *The properties will not be used for residential use or for children's day care centers;*
- *Groundwater under the properties shall not be used for potable drinking water purposes. No production well (e.g., for industrial use) will be installed where free-phase contamination has been shown to be present;*
- *The properties will not be used so as to interfere with investigations of environmental conditions, or cause recontamination of the Superfund Site or contamination of off-site properties following completion of the remedy;*

No construction activities that will change hydro-geologic conditions and that would cause migration of contaminated groundwater to Lake Champlain will be allowed on the properties;

Excavations to depths greater than five feet (including those below the water table) on the properties will be prohibited unless one or more of the following exceptions apply:

(a) the excavation is performed to install, repair, maintain, service, or remove underground utility components, conduits, installation or channels, which may presently be deeper than five feet and which may be below the water table;

(b) drilling, driving, or boring to install piling for otherwise allowable construction is permitted; or,

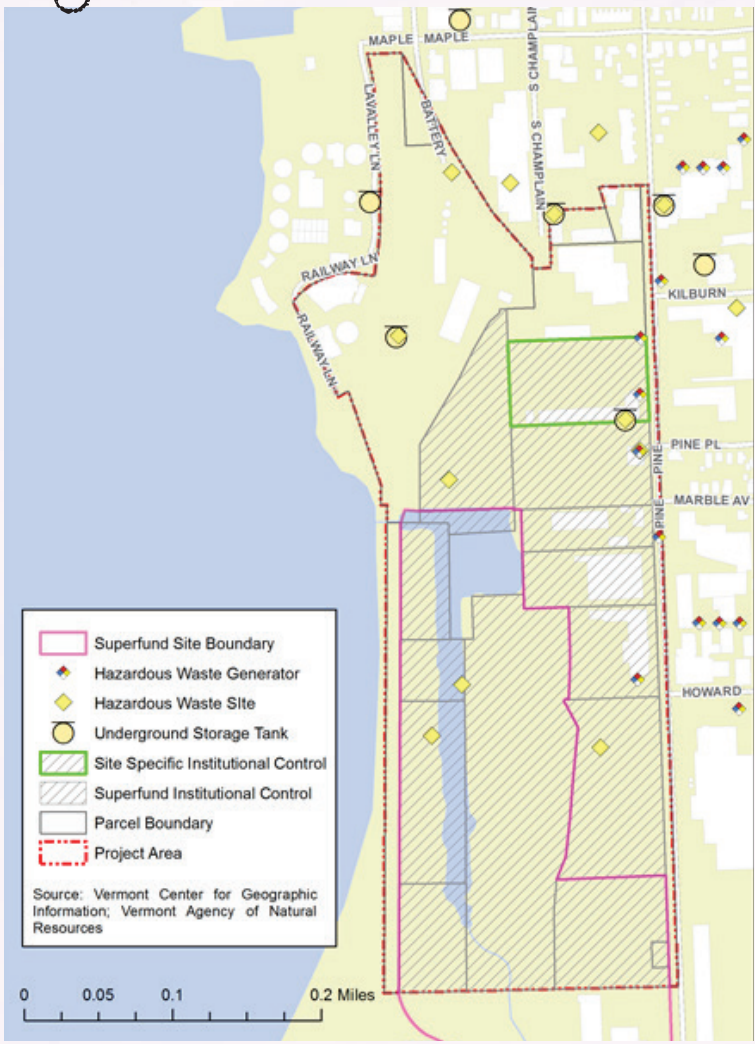
(c) the excavation is performed in a location on the property in which current contaminant concentrations at depths greater than five-feet are below 140 mg/kg total PAHs.

In the case of exceptions (a) and (b), workers conducting the excavations and working in the area must use appropriate personal protective equipment as required by the Occupational Health and Safety Administration (OSHA) or its successor agencies, unless a site-specific risk assessment is performed and its results have been approved by EPA prior to excavation.

Properties within the AWP study area that are subject to these institutional controls are:

- *351 Pine Street*
- *453 Pine Street*
- *345 Pine Street*
- *501 Pine Street*
- *377 Pine Street*
- *339 Pine Street*
- *0 Pine Street*
- *405 Pine Street*
- *431 Pine Street*
- *431 Pine Street, Rear Lot*
- *453 Pine Street, Rear Lot*
- *501 Pine Street (Gatehouse)*
- *0 Maple Street*

Figure 7: **Managed Environmental Sites within the AWP Study Area.**



Early remedial activities to address surface coal tar contamination included the installation of engineered caps on both the General Dynamics property, located south of the Project Area, and within the Maltex Pond area, located to the west of 431 Pine Street. Initial remedial efforts within the canal were limited to the installation of a sand cap within the canal, which was completed in 2003 and placement of institutional controls on the properties within and adjacent the delineated Superfund Site. South of the sand cap, the canal bottom and sides were armored with gabion baskets filled with stone. The sand cap was expanded in the summer of 2004 after NAPL was observed on top of the cap and within the canal. The cap augmentation, however, failed to cease NAPL migration into the canal. In 2011, following further assessment and an Explanation of Significant Differences a portion of the sand cap was removed and a cap containing a reactive organo-clay core was installed. The revised cap was sufficient in preventing further embulations of NAPL rising into the canal. Over time, the reactive core mat will fill up with coal tar and oil and will need to be replaced. To lengthen time between change-outs, NAPL recovery wells were installed along the east and west banks of the canal. It is expected that the current cap will have a lifespan of approximately 25 years.

Ongoing monitoring of the canal and groundwater conditions is underway by the Performing Defendants.

Data Gaps: *Despite active management of the Pine Street Canal Superfund Site for the past 33 years as a NPL site, the distribution of MGP-related contaminants in surface soil across the 501 and 0 Pine Street parcels is not well understood. Limited removal and capping was done to address contamination within the former Maltex Pond in 1987.*

The Maltex Pond site refers to an area of the 0 Pine Street parcel that is due west of the former Maltex Cereal Company building located at 435 Pine Street. [Note: The 0 Pine Street property, owned by the City of Burlington, was created during the planning stages of the Southern Connector roadway to serve as its alignment. The project was abandoned, in part, due to the discovery of the MGP wastes that resulted in the listing of the Pine Street Canal Superfund Site. The Maltex Pond area was once a portion of the 435 Pine Street parcel]. In 1987, following the discovery of MGP wastes in surface soils and sediments within and surrounding the former pond, US EPA performed a removal action that included excavation and removal of an unknown volume of coal tar impacted soils and installation of a cap. Ongoing management of the Maltex Pond site has been combined with that of the Pine Street Canal Superund site.

Data Gaps: *The criteria for determining the extent of excavation of coal tar contaminated soils is unknown. It is suspected that coal tar wastes may remain in the area of the former Maltex Pond.*

In March 2005, a Phase I Environmental Site Assessment (Phase I ESA) for the 453 Pine Street parcel was conducted on behalf of Pine Street Redevelopment, LLC. The Phase I ESA Report, prepared by ECS, documented the following recognized environmental conditions (RECs):

- *Historical use of the property and potential chemicals used on the property;*
- *Historical and current presence of railroad tracks on the site;*
- *Unknown nature of fill materials used at the site;*
- *Adjacent Pine Street Canal Superfund Site and the Maltex Pond State-listed property;*
- *Presence of coal tar in the shallow soils of the northwestern portion of the site;*
- *Reported use of coal gasification waste to fill the South Slip, which extends approximately 40 feet onto the site along the western boundary; and*
- *Presence of NAPL in peat underlying the southern site boundary, and its inferred presence in the southwest corner of the site.*

Follow up Phase II ESA activities performed later in 2005 revealed that coal tar wastes, attributed to the adjacent Pine Street Canal Superfund site, were present on the 453 Pine Street property at three locations: along the southern property boundary, within the easternmost extent of the former south slip and the southwest corner. Elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) were also widespread in surface soils.

Beginning in the spring of 2013 the 453 Pine Street property was managed as a Brownfield Economic Revitalization Alliance (BERA) pilot site (please see Appendix for leveraged funds). As part of this program, extensive geotechnical and environmental assessment was performed to evaluate the site's limitations for redevelopment given site conditions relative to the Superfund Site's institutional controls. Coal Tar NAPL was identified within the portion of the 453 Pine Street property that was formerly the south slip as well as a limited area along the southern property boundary that was adjacent the former MGP gas holders.

Geotechnical assessment of the site revealed that, due to the presence of loose clay soils and fill across the site and peat soils across much of the site, and fear that compaction of site soils may have an adverse effect on the Superfund Site remedy, redevelopment of the site would need to have the following considerations:

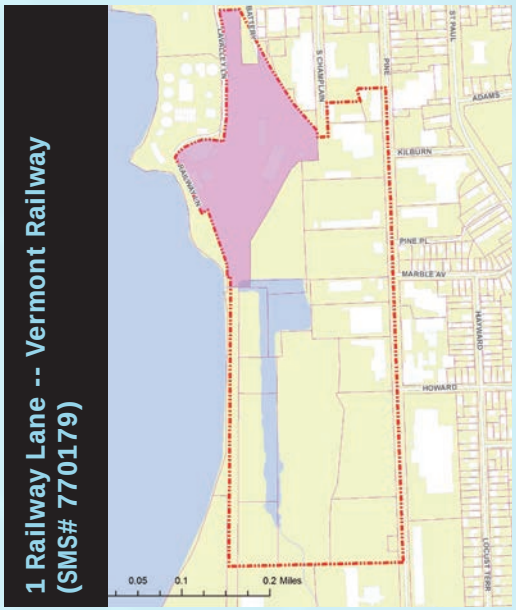
- *Any building design should include the use of pilings to the bedrock surface (~100 feet below ground surface) or other soils that exhibit the bearing capacity needed to support the pilings within the foundation design.*
- *To allow for installation of suitable materials for sub base of parking areas, etc., an equal volume/weight of soil would need to be removed from the site to prevent uncontrolled settling and possible migration of coal tar NAPL.*

- *Site stormwater management practices should be designed to mimic existing conditions.*
- *Monitoring of hydraulic conditions at the 453 Pine Street property pre-development, intra-development, and post-development conditions is necessary to ensure that any site redevelopment is in compliance with the Superfund Site institutional controls.*

Data Gaps: *The vapor intrusion pathway is a concern for any future development of the 453 Pine Street property. While the vapor intrusion pathway has not been assessed to date, it would be prudent to assume that vapor intrusion mitigation will be necessary for any site building.*

Historical documentation of the 266 Champlain Street site indicated that there were formerly two USTs in use at the site; a fuel oil UST located in the northwestern corner of the property and a 1,000 gallon gasoline UST located in the southwestern corner for the site. It was believed that the gasoline UST was removed during site activities in 1990. However, in 2012, the UST was discovered during construction activities. Contamination related to the UST was found to extend below the adjacent site building, preventing its removal. Impacts to groundwater and soil have been documented at the site with exceedences of the Vermont Groundwater Enforcement Standard of several gasoline derivatives.

Data Gaps: *Based on the remaining gasoline contamination in groundwater and soil, there is a potential risk of vapor intrusion at this site and those down gradient. Redevelopment of the 266 Champlain Street property should include an assessment of the vapor intrusion pathway and, if applicable, remedial action to prevent exposure to occupants.*



The Vermont Railway property located at 1 Railway Lane, was listed as a VT DEC Hazardous Waste Site due to a release of fuel oil discovered during the closure of a 2,000 gallon underground storage tank. Follow up assessment of the degree nature and extent of contamination at the site related to the USTs indicated limited contamination in soil and groundwater. The site received a Sites Management Activities Complete designation in 2008.

Data Gaps: *The Vermont Railway rail yard has operated as a rail yard for over 165 years under various owners. During its operation, releases of various contaminants of concern from maintenance activities (e.g., creosote railroad ties, spraying herbicides) and undocumented spills have likely resulted in releases of hazardous or petroleum materials to the environment. Future use of this property for anything other than a rail yard, however unlikely, will need to assess impacts to various site media.*

Prior to Vermont Rail Systems purchasing a portion of the property in 2012, the property that was the former extent of the Ultramar site was sub-divided to 351 and 345 Pine Street. Under the ownership of several corporations, the collective 345/351 property operated as a bulk petroleum storage facility. In 1986, when the property was owned by Ultramar, a 4,200-gallon fuel oil spill occurred from one of the above ground storage tanks (ASTs) on the 351 Pine Street property resulting in the site to be listed as SMS# 87-0097. Actions taken following the spill included the excavation, transport, and disposal of 400 yards of petroleum contaminated soils and recovery of 110,000 gallons of petroleum contaminated surface and groundwater. Monitoring of the site continued until 1998 when petroleum contamination in site groundwater wells fell below relevant regulatory criteria.

In 2012 and 2013, in anticipation of the subdivision and Vermont Rail Systems purchasing the property, a Phase I ESA was completed on the 351 Pine Street property. Recognized Environmental Conditions identified during the Phase I ESA included:

- *The 351 Pine property is situated immediately adjacent to the Pine Street Canal Superfund Site.*

- *Past 351 Pine property use and that of the adjacent 345 Pine Street property has included 50 years of bulk petroleum storage, including the use of six petroleum aboveground storage tanks (ASTs).*
- *Past use of 351 Pine and surrounding properties has included bulk coal storage.*
- *The 351 property and vicinity were subjected to extensive infilling with materials of unknown origin.*
- *The 351 property is situated immediately adjacent to the Burlington Rail Yard.*
- *Prior environmental investigation of 351 Pine demonstrated lead-, polycyclic aromatic hydrocarbons- (PAH), and polychlorinated biphenyls- (PCB) contamination in soil and/or groundwater at concentrations in excess of relevant regulatory criteria.*
- *Stockpiled soils of unknown origin are present at the 351 Pine property.*
- *The 351 Pine property is situated in a location that is potentially hydraulically-down gradient of several VT DEC-managed hazardous waste sites.*

The subsequent Phase II ESA identified coal tar and petroleum NAPLs, PAHs, lead and arsenic contamination in subsurface media. These contaminants will require further evaluation prior to redevelopment of the 351 Site for its proposed re-use.

Coal Tar NAPL:

- Coal tar NAPL has been confirmed within fill soils in the former North Slip area of the 351 Site. The extent of coal tar NAPL appears to be limited to isolated pockets. The mobility of these NAPLs under existing and future site conditions has not been determined.

Petroleum NAPL:

- Petroleum NAPL, likely in both free and residual phases, has been detected in soils along the southern property boundary and within the North Slip area. These materials are likely related to past releases of petroleum fuel from former ASTs located on the property. Based on the results of co-located groundwater samples, these NAPLs are depleted of their volatile fraction.

VOC Contamination:

- Past land use for bulk storage of petroleum within aboveground storage tanks (ASTs) has had documented historic impacts on groundwater, soils, and surface water.
- Naphthalene concentrations in soil and groundwater remains at concentrations in excess of the regulatory criteria.
- Other petroleum VOCs, although present at detectable concentrations, have been determined to not exceed relevant regulatory criteria in soil and groundwater.

SVOC Contamination:

- Contamination of soils and groundwater by PAHs (both non-carcinogenic and carcinogenic) is widespread and is likely related to:
  - *Past land use for coal and petroleum storage;*
  - *Atmospheric deposition from nearby fossil fuel combustion, including past coal-fired train engines within the Burlington Rail Yard, the presence of historic fill soils, which contain coal ash; and*
  - *The migration of contaminants from off-site source(s) (i.e., the Burlington Gas Company).*

Based on surface soil concentration results and current conditions, there is potential for direct contact exposure to current and future site workers from PAH-contaminated soils.

Metals Contamination:

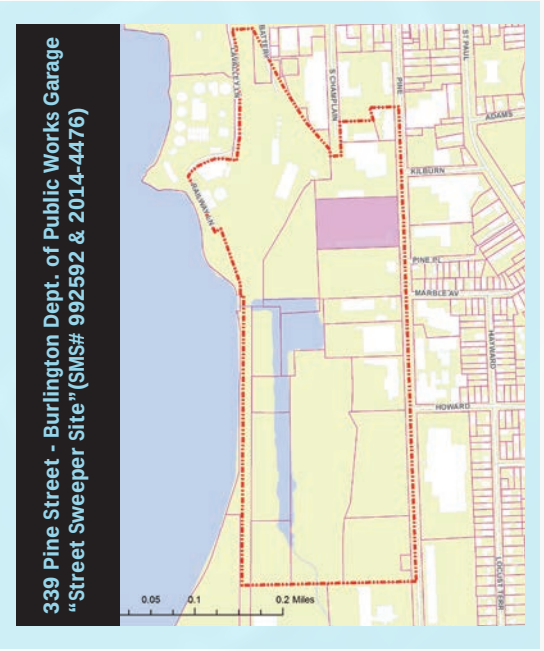
- Arsenic contamination was detected at concentrations in excess of the industrial RSL in nearly every soil sample collected during this investigation. Arsenic was also detected in groundwater in seven of fifteen groundwater samples. The presence of arsenic is likely a combined result of its natural occurrence in site soils as well as the presence of coal ash contained in soil. Other potential sources of arsenic include potential past use of arsenic-based pesticides and as a fortifying agent within creosote within railroad ties.

- Lead contamination was detected at concentrations in excess of its relevant regulatory criteria in surface and subsurface soils and groundwater. Lead contamination may be the result of past releases of leaded gasoline, lead-based paint, the presence of coal ash in soil, or from past use of the site as a scrap yard.

Following completion of the Phase II ESA, and in anticipation of the need for relocating a portion of the rail yard to the 351 Pine Street property, VRS began an ongoing monitoring program and has begun evaluating potential remedial activities for the Site.

Data Gaps: ***1)*** *The understanding of the nature and extent and potential mobility of coal tar and petroleum NAPLs within the north slip is not well understood, particularly if surface conditions change (e.g., construction of Alternatives 2 and 5B of the Railroad Enterprise Project or constructing a future rail spur or building over the north slip). Geotechnical assessment of the north slip and portion of the property adjacent the canal is needed to evaluate whether the intended development may impact the Superfund Site remedy.*

2) *The presence of contamination related to past use of the 345 Pine Street property has not been assessed. The property, which is currently used for trailer storage and surface parking, formerly contained two large petroleum ASTs with distribution piping, a rail spur, and coal storage. The 345 Pine Street parcel also includes approximately half of the width of the former north slip, which, based on the 2013 Phase II ESA of 351 Pine Street, likely contains coal tar and petroleum NAPL.*



The Burlington Department of Public Works (DPW) Garage property, located at 339 Pine Street, is currently the location of ReSOURCE building materials recycling, Burlington City Arts, and a transfer station for the Chittenden Solid Waste District. Environmental management of the property resulted from a release of waste oil from an AST and of diesel fuel from one of four former site USTs. Subsequent to the discovery of the release, site investigation activities were limited to petroleum contaminants of concern, which were found to have impacted soil and groundwater. Ongoing monitoring and excavation of contaminated soils related to a leaking AST was performed. The site was assigned a SMAC designation in 2011 after a notice to land records was placed on the property to alert future owners to the presence of subsurface petroleum contamination. The 339 Pine Street property also has an institutional control related to the Pine Street Canal Superfund site.

In 2014, in anticipation of the environmental assessment required as part of the Railroad Enterprise Project, a data gap analysis was performed of the site to evaluate what additional environmental investigation and/or remediation would be required to allow for future

redevelopment. During this analysis, past land use was determined to include automobile service, coal storage, a rail spur, and an asphalt batch plant. Several areas of concern, including a floor drain, former fuel oil USTs, the former asphalt batch plant area, and others, remain unassessed. In addition, several up-gradient sources of contamination were identified including commercial dry cleaners and manufacturers. Furthermore, even those areas of concern that had investigation had potentially impacted media that were never evaluated.

Data Gaps: ***1)*** *The presence or absence of VOCs has not been assessed in sub-slab soil gas or indoor air.*

2) *It is unknown whether or not an off-site pond / wetland depression area that has been impacted by potential site contaminants of concern via a catch basin outfall.*

3) *Given the age of the Site buildings, hazardous building materials, including asbestos containing materials, lead and PCB containing caulk and paint may be present.*

4) *Under current conditions, there are certain areas of the Site that present a known or potential risk of exposure to human receptors from VOCs and TPH, via impacted soils and groundwater. Should intrusive activities occur at the Site in the future, there may be a risk of exposure to additional contaminants of concern such as chlorinated solvents.*

5) *The quality of groundwater migrating onto the 339 Pine Street property is currently unknown. Based on a review of historical resources, potential up-gradient sources of groundwater contamination include commercial dry cleaners, manufactures, and metal fabrication facilities.*

6) *It is unknown whether or not observed soil and groundwater contamination has impacted indoor air quality within the Site building.*

7) *The exposure pathway to human and ecological receptors from contaminated surface water in the pond/ wetland depression is complete. Future site redevelopment of the site should consider remediation/mitigation of contaminated sediments before continued contribution by stormwater or find an alternative means of stormwater treatment.*

Prospective Brownfield Sites

While nearly all of the managed environmental sites within the study area can be considered brownfield sites, several additional properties should be considered prospective brownfield sites based on their past land use. Each of these properties has an institutional control associated with the Pine Street Canal Superfund Site.

The former Maltex Cereal Company building located at 431 Pine Street has been redeveloped for professional offices. According to the VT DEC Waste Management Information Database, the parcel currently has two listed RCRA hazardous waste generators: Amersand Inc. and H. Horseman & Company. No violations or releases are reported with either of these generators.

Past land use included its prior use as a cereal manufacturer from circa 1900 through ~1980. Portions of the site were also used by the Mathews & Hickok Planing Mill, Box Factory and Lumber Yard. The site was also formerly serviced by a rail spur.

Past extent of the property included the “Maltex Pond” that was the subject of an EPA removal action in 1987 to address coal tar contamination. It is unknown whether the removal action was effective in remediating the coal tar wastes. A cap was installed following the removal. This area of concern is now within the property boundary of 0 Pine Street.

Based on past land use (manufacturing and rail spur), PAHs and metals contamination may be present on the developed (eastern) portion of the Site beneath the constructed parking lot or landscaped areas. The western portion of the site that was not subject to the 1987 removal likely has surface soil contamination (PAHs, metals).

Data Gaps: *The extent of PAH- and metals-contaminated soils related to the presence of MGP wastes discovered in 1987 – leading to the remedial actions within and surrounding Maltex Pond – is unknown. It is unknown whether past use of the land for manufacturing and rail transport has resulted in a release of hazardous or petroleum materials to the environment.*

377 Pine Street (former Citizens Oil Co)

The 377 Pine Street property was the former location of the Citizen's Coal Company and a former rail spur. Bulk coal storage occurred on the property within hoppers in the building that is currently occupied by Myers Bagels. The site was also formerly serviced by a rail spur. Based on these historic land uses, there is potential for elevated concentrations of coal derived PAHs and metals in surface or shallow soils.

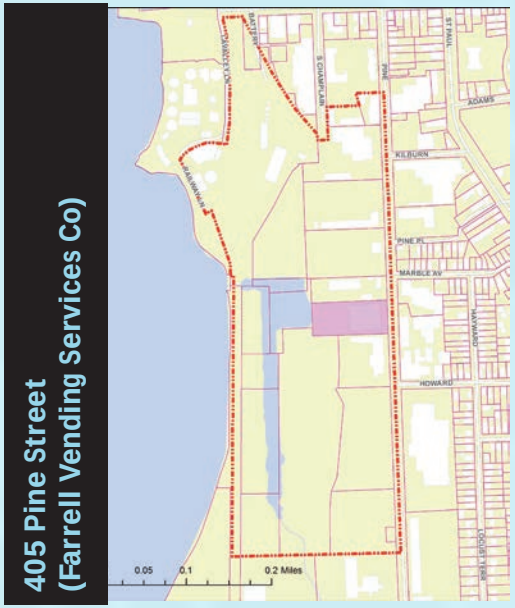
In addition, the site also had gasoline USTs located immediately south of the building that currently houses the Bakery at the Farmhouse Kitchen. There is no record whether this UST was removed or if removed, whether an environmental assessment was performed. Lastly, the site is listed as a Conditionally Exempt hazardous waste generator.

Data Gaps: ***1)*** *The presence of soil or groundwater contamination related to past use of the site for coal storage, rail transport, and gasoline storage is unknown.*

2) *The vapor intrusion pathway has not been assessed.*

3) *Based on the age of the site building, the presence of asbestos containing materials, lead based paint, and PCB-containing caulk and window glazes cannot be ruled out.*

405 Pine Street (Farrell Vending Services Co)



The 405 Pine Street property is currently the location of Farrell Vending Services. It is a portion of the former lumber storage yard that extended all along Pine Street prior to 1900, however, according to Sanborn Fire Insurance Maps, it also contained a small office in the western portion of the parcel that had "hand grenades" – likely fire suppression glass grenades filled with carbon tetrachloride. The site was also serviced by a rail spur.

Following 1900 the site was dormant until sometime between 1950 and 1960 when it was developed with a bottling works.

Data Gaps: ***1)*** *It is unknown whether the occurrence of carbon tetrachloride fire suppression grenades within the former lumber yard office resulted in a release of this material to the environment.*

2) *It is unknown whether past use of the site for rail transport may have resulted in a release to the environment.*

EXISTING CONDITIONS

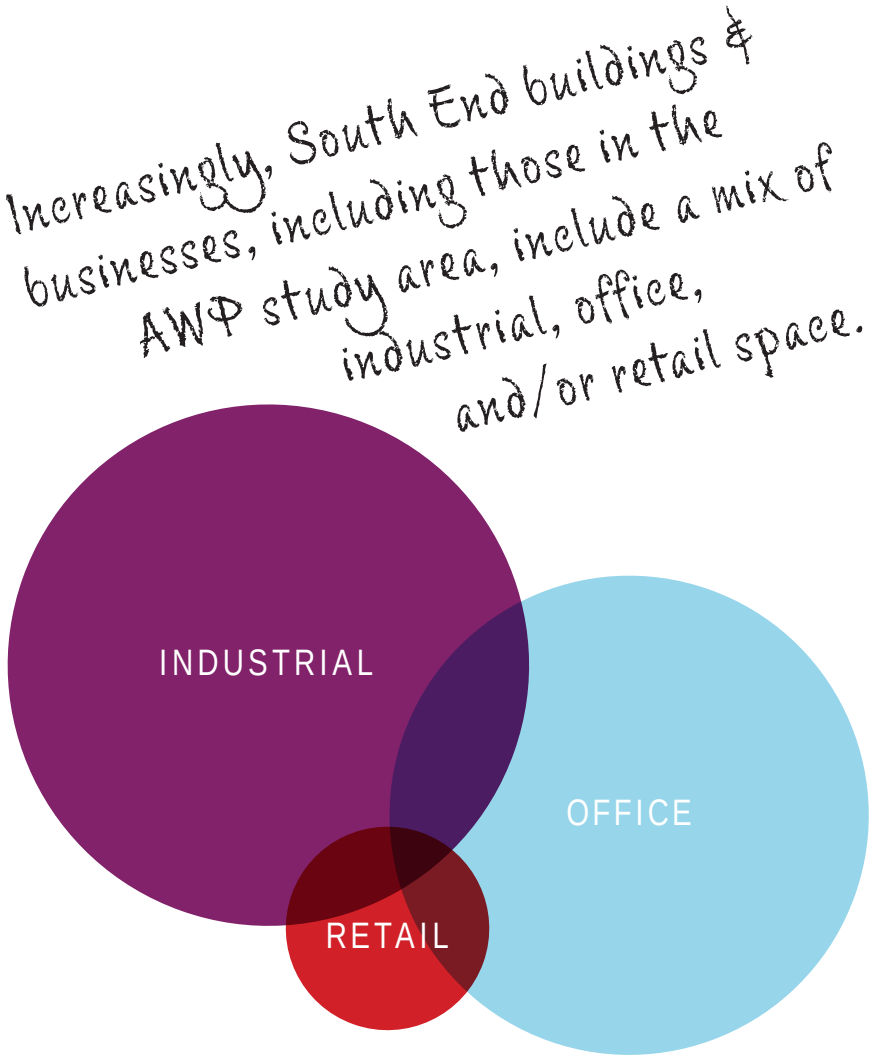
Market Study

This section is an excerpt from a market study and public policy analysis that was developed for the larger planBTV South End study area by HR&A Advisors, Inc. in 2014. The study analyzed market conditions for industrial, office, and residential property in the South End (which includes the AWP study area). This analysis is based on 2014 data.

The studys key findings are as follows:

The South End has been, and continues to be, an important economic center for the City of Burlington. It is home to 20% (6,383) of the jobs in Burlington and approximately 92% of the industrial space. It hosts businesses ranging from breweries to technology platforms to yoga and artist studios. Many new businesses that would traditionally be located downtown are attracted by the neighborhood's urban feel with suburban conveniences. Since 2002, local employment has been stable: even as some larger businesses have relocated (such as General Dynamics), jobs have been replaced quickly enough that overall employment has remained relatively constant.

There is strong demand for both commercial and residential product in the South End, a fact that will require Burlingtonians to continue to consider the future role of the South End's economic make up, scale and housing opportunities. Market indicators are equally strong for residential and commercial development in the South End. Growth in New Economy sectors such as the arts, food production, and tech are driving demand for a limited quantity of commercial space in the South End, most of it located in the Enterprise District, in which residential development is



Trends:

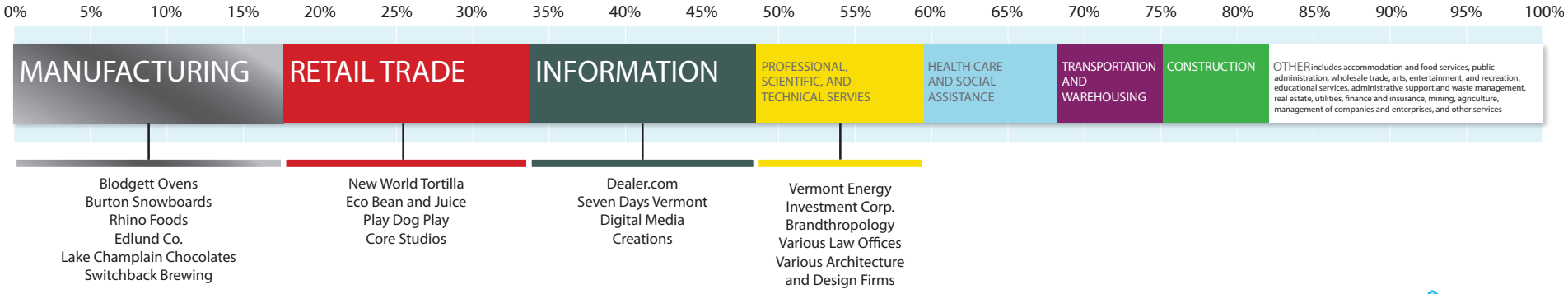
- Many old industrial buildings now house businesses that combine industrial AND consumer-facing operations (e.g., breweries with tap rooms, prototype facilities that offer public tours, some artist studios/galleries)
- Other old industrial buildings are attracting new businesses that require office, research and "maker" type space.

GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES
SOURCE FOR DATA: BURLINGTON SOUTH END MARKET STUDY, BY HR&A

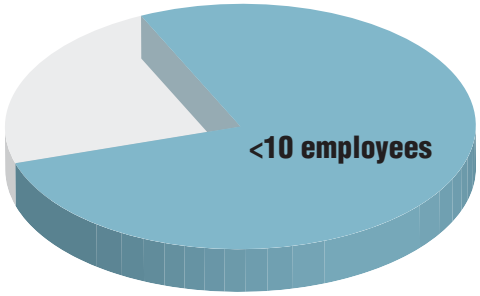
The South End, which includes the AWP area, is an important employment center for Burlington.

Home to 472 **businesses** employing 6,300 **people**

JOBS BY INDUSTRY SECTOR, 2014

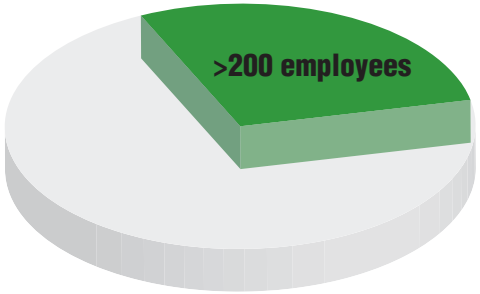


Over 3/4 of businesses employ fewer than 10 people



365
out of **472 businesses**

...but the 5 largest employers provide more than 25% of all jobs



1,810
out of **6,300 jobs**

Almost half of jobs are in manufacturing, retail trade, & information

Countywide, "New Economy" sectors grew 8%

"New Economy" refers to industries like technology, arts & design, small-scale artisanal manufacturing, and food production.

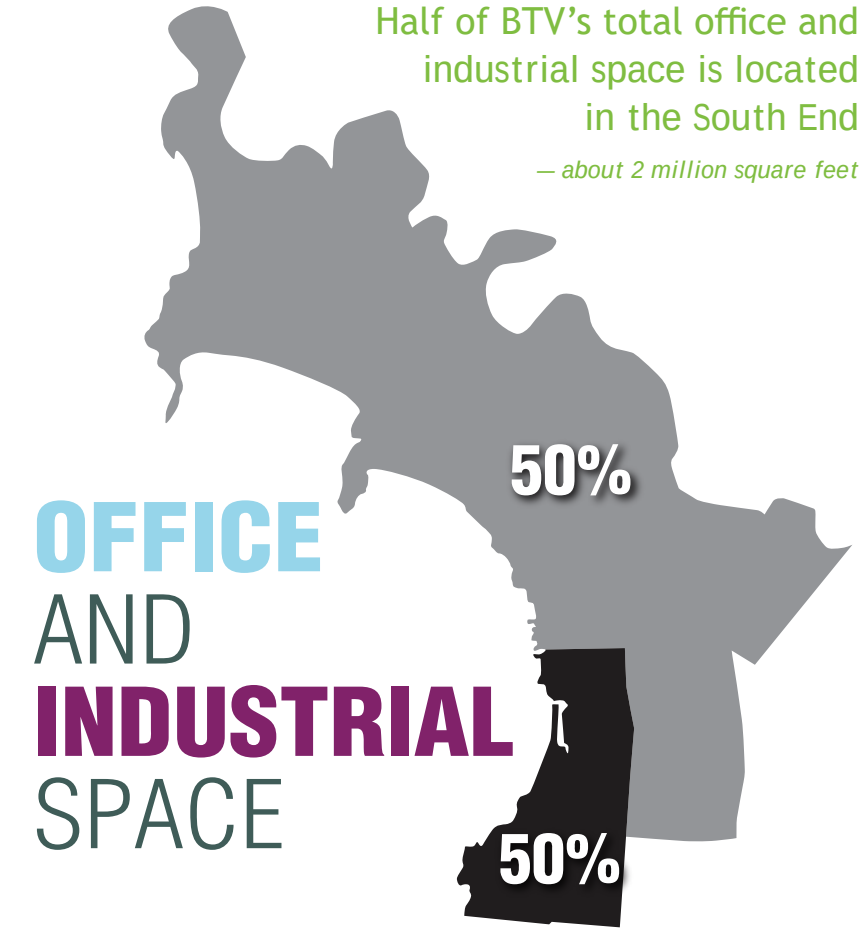
GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES
SOURCE FOR DATA: BURLINGTON SOUTH END MARKET STUDY, BY HR&A

prohibited. Likewise, demand from homeowners and investors in rental property in the South End has driven up housing prices, which are now higher than they are citywide. Allowing residential development in the Enterprise Zone was considered during the planning process for planBTV South End, but was ultimately discarded as an option out of a concern that new residential development would displace existing commercial and industrial users. It should be noted that residential development is prohibited in the AWP study area by the Pine Street Barge Canal deed restriction; while the question of new residential development was a key issue for the larger South End planning effort, it is not that relevant to the AWP area.

There are limited opportunities for existing businesses to expand in the South End. Historic employment stability is a function of out-migration of large firms and in-migration of large numbers of small firms. If traditional industrial users continue to relocate to more competitive locations in the county and/or to locations that offer expansion potential, their South End sites will likely be cleared, remediated, and redeveloped to highest and best permitted uses. Overall, if land use regulations do not permit market-viable uses, the South End may be left with vacant and underutilized land and property. In particular, a wider range of uses that serve the growing needs of creative businesses—from manufacturing, to retail and even office—should be permitted when they'll support and enhance the character of the South End.

Even if no changes are made to the zoning of the Enterprise District, the character of commercial uses in the South End may change as a result of a naturally evolving market. While manufacturing was still the largest single industry sector in 2014, making up approximately 18% of all jobs in the South End, the retail trade industry has grown to nearly 16% of all jobs and Information and Professional/Technical services industries together have grown to about 26% of all jobs.

The larger South End is an attractive location for companies seeking industrial and office space.

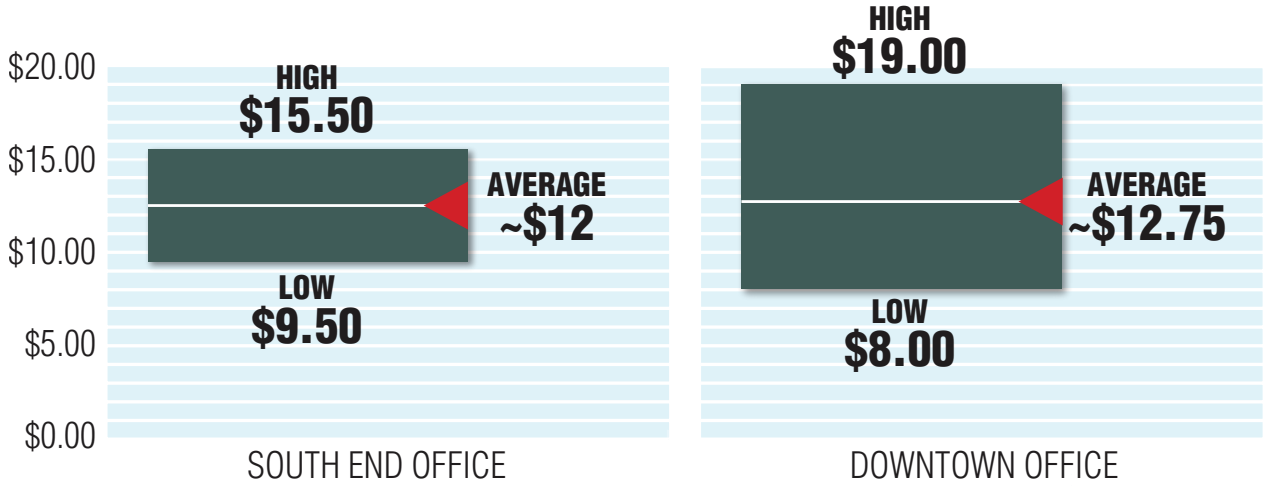


GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES
SOURCE FOR DATA: BURLINGTON SOUTH END MARKET STUDY, BY HR&A

Over time, the South End (which includes the AWP study area) has become a more attractive place for businesses seeking office space and remains an attractive place for businesses seeking traditional industrial space. As a result of rising rents caused by market demand, the South End is becoming increasingly unaffordable for traditional commercial-industrial business and small start-ups.

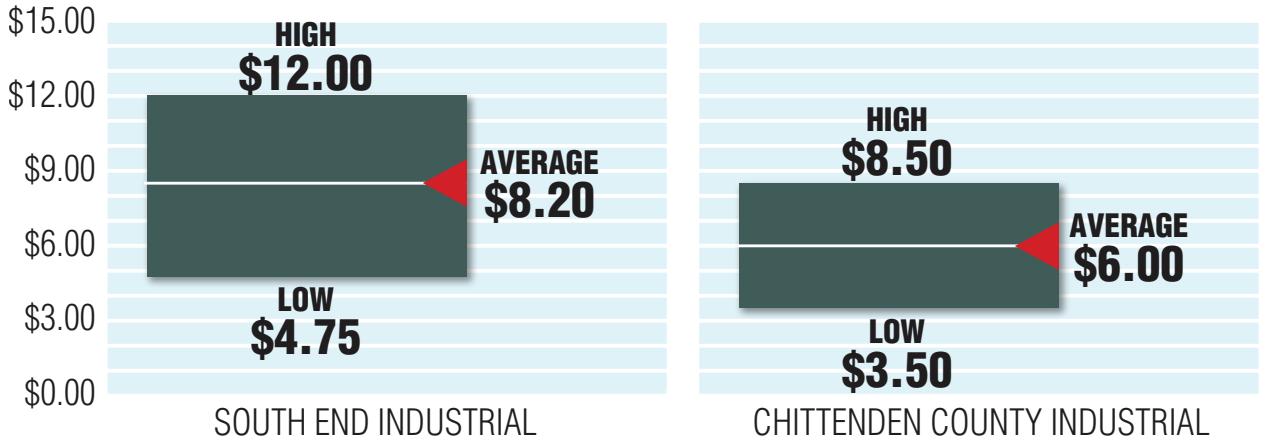
Average office rents in the South End are generally comparable to downtown.

SOURCE: BURLINGTON SOUTH END MARKET STUDY, BY HR&A



Average industrial rents in the South End are higher than elsewhere in Chittenden County. This reflects the appeal of the South End to businesses that combine industrial with consumer-facing operations—and are therefore willing to pay higher rents for industrial space.

GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES
SOURCE: BURLINGTON SOUTH END MARKET STUDY, BY HR&A



The Enterprise District has many distinctive characteristics, and is transitioning at different rates, suggesting that future plans should be tailored to support the preservation and expansion of these areas. The AWP study area makes up the bulk of the "Near Downtown" area of the Enterprise Zone, as defined in the planBTV South End market study. This area is known for its growing identity as an arts destination, and influenced by its proximity to downtown and is home to tech, office, arts, retail and consumer-facing industrial uses. This area contains the South End's oldest manufacturing buildings, most of which have been adaptively reused. By way of background, properties in this area are largely brick-and-mortar industrial buildings built in the late 1800s and early 1900s (such as the Maltex building).

As manufacturing declined regionally through the 1970s and 1980s, buildings in the South End became vacant. In response, property owners began to reposition them to attract new types of tenants. The South End first began to be associated with startups and artists as early as 40 years ago, with the Unsworth family's 1970's conversion of the E.B. & A.C. Whiting Brush Fibre Factory (400 Pine Street across the street from the AWP study area) into incubator space for artists and other businesses. The building now houses ArtsRiot, SEABA, Arentzen and Ohlander Glass Works, and other similar organizations. The most recent major building conversion in the 'Near Downtown' area was of the post-war former Specialty Filament building (1 Howard Street across the street from the AWP area), which was purchased and converted for use by Dealer.com and Lake Champlain Chocolates in 2006 (Dealer.com now owns and inhabits the entire building).

South Enders want to keep this neighborhood a vibrant and funky place of creativity, creation, and art.

Data Gaps: *The Enterprise Zone and the AWP study area represent the only area in the city that allows industrial or manufacturing uses. A market study on industrial and 'new economy' manufacturing demand should be undertaken for these areas.*

EXISTING CONDITIONS

Transportation System

This section of the plan summarizes the existing transportation system serving the plan area. In this section all modes of transportation are considered. The circulation system is critical for the reuse of properties in the plan area.

The primary focus of the transportation system for the AWP study area is Pine Street which carries a majority of the vehicular, transit, pedestrian and bicycle traffic in this study area. Pine Street within the AWP study area is slated for improvement as part of the Champlain Parkway project (see below). Other transportation facilities in the plan area include the Island Line Bike Path, a popular 14-mile lakeside rail trail, which parallels the railroad tracks along the western boundary of the study area. The Island Line runs from Oakledge Park on Flynn Street through downtown Burlington and Colchester and is connected to the Champlain Islands via a seasonal bike ferry. The study area is also traversed by the Vermont Railway tracks which currently serve freight operations, although in the future Amtrak's Ethan Allen Express passenger rail service is slated to be extended from Rutland to Burlington along this route. This would bring passenger rail service into downtown Burlington, providing passenger rail transportation between Burlington and New York City via Rutland and Albany.

This section is an excerpt from the planBTV South End Phase 1 Existing Conditions Report (VHB, February 2015) and planBTV South End Plan (Goody Clancy, Draft June 2015).

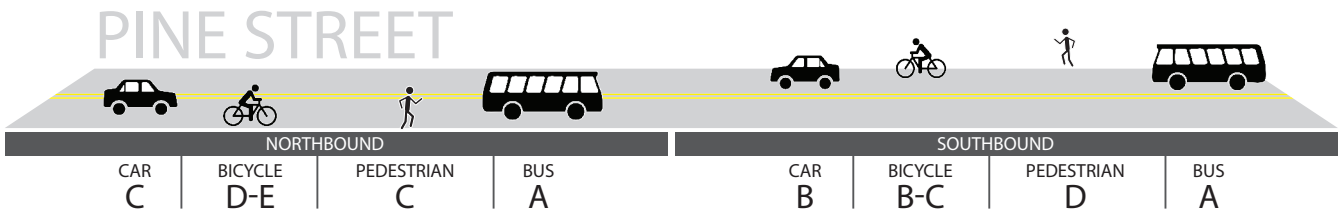
Pine Street

Pine Street forms the eastern boundary of the AWP study area. Pine Street is a two-lane roadway (one travel lane in each direction) that provides a north-south connection between Downtown and Queen City Park Road through the South End of Burlington. Sidewalks are provided along both sides of Pine Street with the exception of one segment

…the number of crashes along Pine Street involving injuries to pedestrians or bicyclists has also increased.

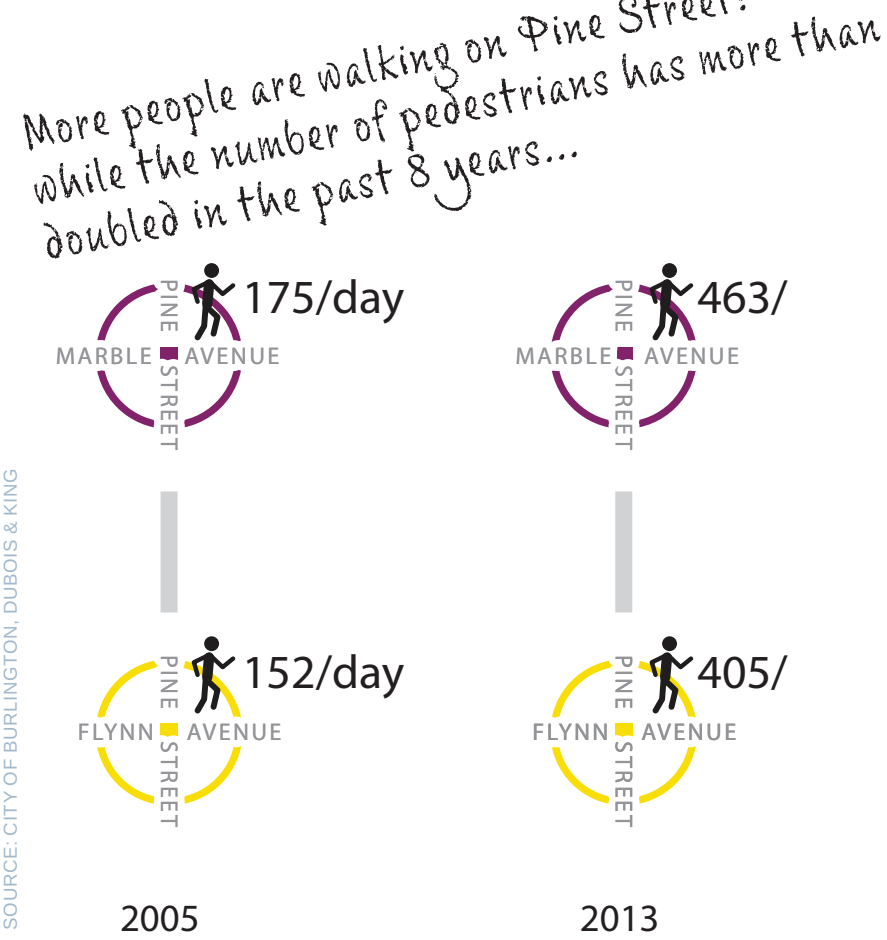
For an urban arterial, Pine Street performs relatively well in moving traffic across modes.

The planBTV assessment graded travel along Pine Street during the morning and evening rush hours from level of service "A" to "F". The target vehicular level of service for vibrant urban areas like the South End is a "C" or "D," which indicates an efficient use of the system with speeds appropriate for a bicycle- and pedestrian-friendly environment.



SOURCE: PLANBTV SOUTH END PHASE 1 EXISTING
GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES

Existing conditions on Pine Street looking southbound at 453 Pine and Dealer.com: The southbound sidewalk ends; a bike lane in the southbound direction, 'share the road' configuration northbound; no bus shelter at the bus stop.



from Marble Avenue to just south of the Dealer.com building along the west side of Pine Street. There is a southbound bike lane and a northbound 'share the road' accommodation for bicyclists on Pine Street within the AWP study area.

Several bus stops are located along the corridor with regularly scheduled service provided by Chittenden County Transportation Authority (CCTA). Specifically, CCTA's Route No. 3 (Lakeside Commuter), Route No. 5 (Pine Street), Route No. 46 (The 116 Commuter), Route No. 76 (Middlebury Link Express), and Route No. 86 (Montpelier Link Express) all provide service along Pine Street. CCTA Routes and schedules can be found at: *http://cctaride.org/bus-routes-schedules/*.

Pine Street Crash Data

There are numerous curb cuts and growing numbers of pedestrians and bicyclists along Pine Street. Vehicle conflicts with bicyclists and pedestrians have been prominent and increasing along Pine Street in recent years. Analysis of crashes completed for the south end corridor show the number of crashes involving bicyclists and pedestrians more than tripled from the period 2006-2010 to 2011-2014. The majority of these crashes are along the segment of Pine between Maple and Locust Street which reflects the evolving use of this area with retail and commercial uses and growing numbers of people walking and bicycling in the area.

Champlain Parkway

As the City of Burlington has grown from its late 18th century beginnings, the transportation infrastructure has not kept pace with development. One of the most distinct deficiencies has been the evolution of a city-wide street pattern with few north/south travel routes that are continuous. This deficiency is particularly pronounced in the southern end of the City, on streets that carry traffic between the US Route 7 (Shelburne Street) interchange on I-189 and the downtown area. Shelburne Street is heavily congested as a result of the high traffic volumes, heavily developed commercial properties, and a general lack of access management.

Motorists wishing to avoid the traffic impediments on Shelburne Street often times divert from this primary thoroughfare onto the local street network in an attempt to bypass the congestion. As a result, the principal alternate routes into the downtown area from the south are St. Paul Street, which extends from the north end of Shelburne Street; and Pine Street, which parallels St. Paul Street and Shelburne Street.

Pine Street has no direct connection to the two Principal Arterials, I-189 and US Route 7, and is only accessible by traffic migrating to and from Shelburne Street over local, residential streets which include Home Avenue, Lyman Avenue, Ferguson Avenue, Flynn Avenue, Birchcliff Parkway, Locust Street, Howard Street, and Kilburn Street. These local streets are not intended to, nor do they have the capacity to carry the volume of traffic which is diverted from arterial or collector systems. In addition, the existing street pattern encourages use of neighborhood streets by trucks due to the lack of alternative routings. This mix of traffic has created conflict and access concerns in several local neighborhoods.

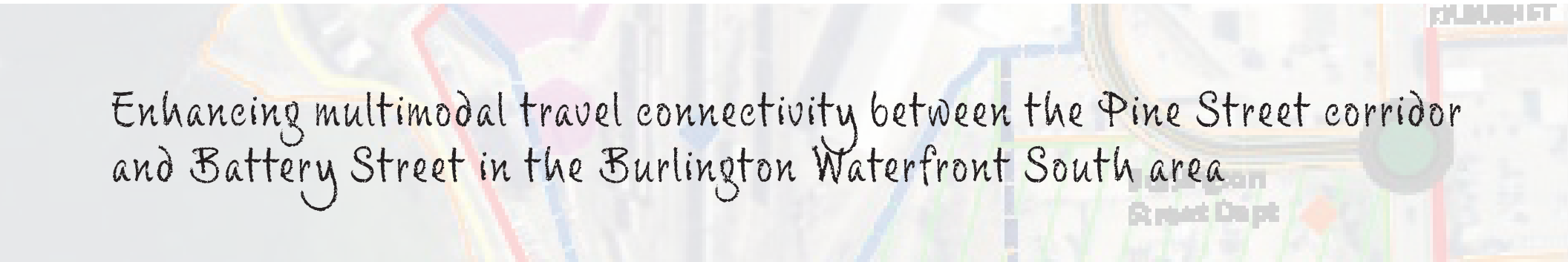
In July of 1979 the Final Environmental Impact Statement (FEIS) was approved by the Federal Highway Administration (FHWA) which documents the issues involved in the selection of the Selected Alternative. During project development, the EPA began studying the Pine Street Barge Canal area and it was proposed for inclusion on the EPA's first National Priorities List (NPL) of hazardous waste sites in 1981. The construction of the first segment of the section was nearly completed in the late 1980's when a remediation plan began for the Pine Street Barge Canal Superfund Site which delayed the construction of the second segment, and as a result, the initial segment has never been opened to traffic. During the late 1980's the Vermont Agency of Transportation (VTrans) began studying alternative routes which would bypass the Pine Street Barge Canal and by the 1990's the Burlington City Council began referring to the project as the Champlain Parkway rather than the Southern Connector to separate the project from the Superfund Site and to acknowledge efforts by the City in advocating a design more like that of a local street or boulevard versus a four-lane divided highway.

The purpose of the Champlain Parkway project is to improve circulation, alleviate capacity overburdens, improve safety on local streets and provide traffic relief in the southwestern quadrant of the City of Burlington by providing a connection between the interchange of I-189 with US Route 7 and the downtown / waterfront area. The project design includes features that will enhance safety along the corridor, including raised intersections, bump-outs, new bike lanes, transit shelters, more pedestrian-friendly intersections and a shared-use path along the east side of Pine Street between Lakeside Avenue and Kilburn Street.

Railyard Enterprise Project

The Railyard Enterprise Project is an on-going scoping study for a network of multimodal transportation infrastructure improvements that will improve connectivity between the Pine Street corridor and Battery Street. These improvements would traverse the AWP study area. Streets developed as a part of the REP will incorporate principles of complete streets.

Three alternatives for transportation improvements have been identified for further study in the environmental review and permitting phase through the federal National Environmental Policy Act (NEPA) process. Through this process it is expected that a preferred alternative will be identified and advanced for design and construction *(see Appendix A for the three alternatives).*



EXISTING CONDITIONS

Stormwater System

A stormwater assessment of the South End Study Area was performed by VHB as part of the planBTV South End Phase I Existing Conditions Report to identify capacity and limitations of existing infrastructure. This section describes the findings of the stormwater assessment that are relevant to the AWP study area, including observations at outfalls, recommended for future monitoring, locations for dye or flow testing to clarify indeterminate pipe connections, and locations requiring maintenance or rehabilitation.

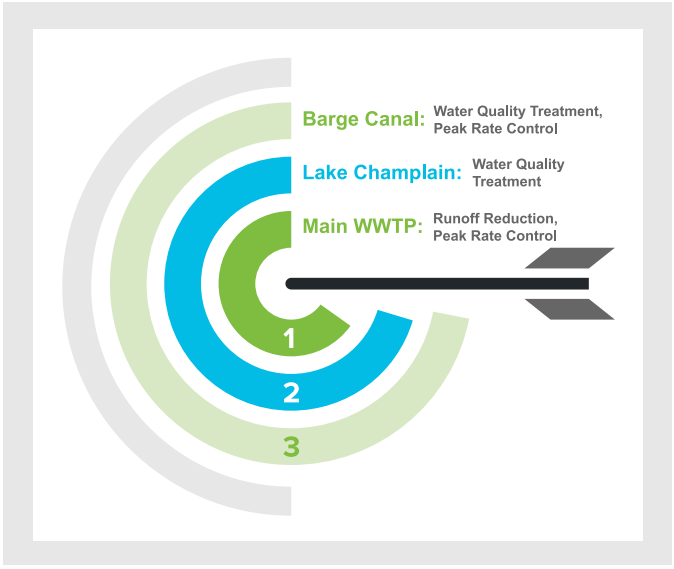
Stormwater Assessment

Stormwater not infiltrated on pervious surfaces within the study area flows to a closed drainage system which discharges either to the Main waste water treatment plant (WWTP) or to an open waterbody, namely the Barge Canal and Lake Champlain. Stormwater in the northern portion of the AWP study area, including the railyard and properties along Pine Street from Curtis Lumber north, flow into the city's combined system and flow into the WWTP. Stormwater from the remainder of the study area flows into the Barge Canal or Lake Champlain.

As is typical of older cities, much of the Main WWTP collection system is combined, meaning that wastewater and stormwater are collected in the same pipe and travel as a combined waste stream to the Main WWTP. During large storm events, the capacity of the treatment plant can be exceeded resulting in a portion of the excess combined sewer (wastewater and stormwater) flow not receiving the full complement of treatment provided by the plant under normal conditions before being discharged to Lake Champlain. This excess flow receives physical separation of solids and disinfection for bacteria, but does not receive nutrient removal. Therefore, the goal of stormwater management for both new development and redevelopment in portions of Study Area served by the Main WWTP combined sewer should be to reduce the quantity (both volume and peak discharge rates) of stormwater reaching the Main WWTP collection system in order to reduce the frequency of bypass events.

Stormwater Management Goals

Stormwater issues affecting the planBTV South End area are related to runoff quantity, runoff quality, or both. The city has identified the primary goals for each receiving water as follows:



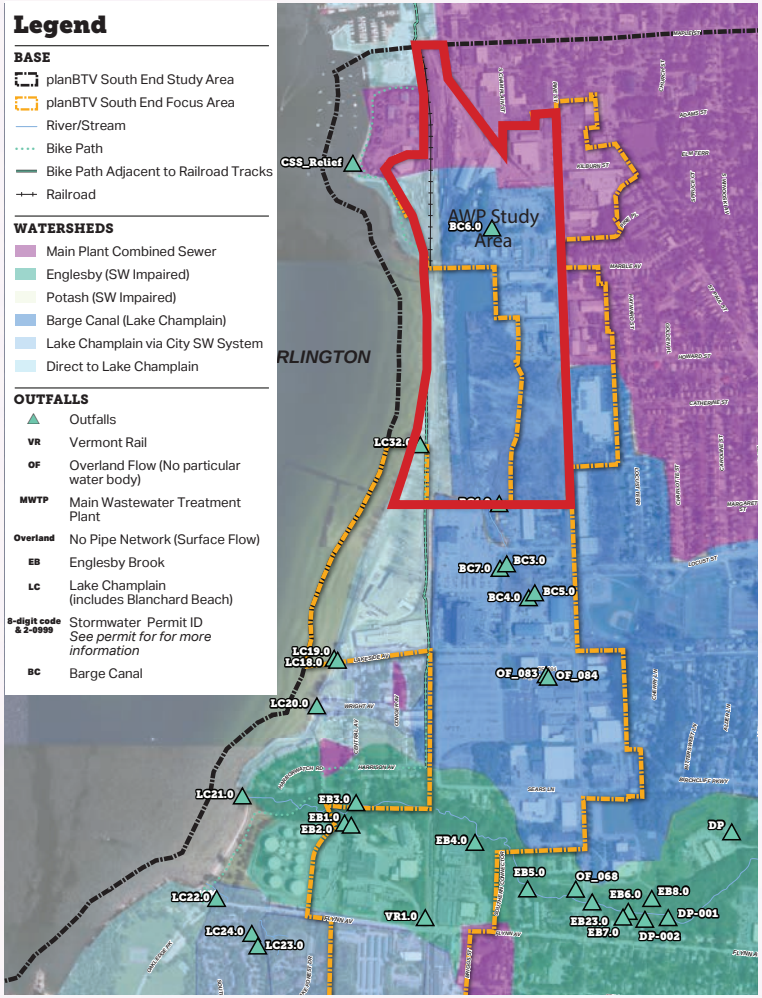
Typical stormwater management measures to address these goals are summarized on the following page.

Stormwater issues affecting the larger South End area are related to runoff quantity, runoff quality, or both.

PRIMARY STORMWATER ISSUE	TYPICAL STORMWATER MANAGEMENT MEASURES TO ADDRESS GOAL
Water Quality Treatment	Flow through practices like sand filters; bioretention or tree system filters with unrestricted underdrain; permeable pavements with unrestricted underdrain; downspout disconnection to vegetated area
Runoff Reduction	Infiltration type practices including subsurface infiltration, bioretention, tree system filters or permeable pavements without underdrain, increasing urban tree canopy coverage over impervious surface, residential downspout disconnection, removal of impervious surface, stormwater capture for reuse; green roofs
Peak Rate Control	Any of the runoff reduction methods, as well as, subsurface storage in tanks or pipes with slow release; bioretention or permeable pavement systems with restricted underdrain; green roofs or blue roofs.

SOURCE: PLANBTV SOUTH END PHASE 1 EXISTING CONDITIONS REPORT, BY VHB
GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES

Figure 8: Watersheds by Receiving Water



Data Gaps

- **Soil Hydraulic Properties**: In order to determine opportunities for runoff reduction and water quality treatment, the city should undertake soil testing at locations considered as having potential for stormwater management via infiltration. As city ROW may represent the most advantageous location for infiltration practices, the evaluation of these opportunities should proceed in close coordination with transportation planning efforts, especially roadway, parking, and sidewalk improvements. Some transportation uses may not be compatible with subsurface infiltration measures. Stormwater practices should be located in areas with soils suitable for infiltration, requiring site-specific soil exploration prior to site selection. Natural Resources Conservation Services (NRCS) and city staff should be consulted to select likely locations to test for favorable soils.

- **Missing Invert Data**: Though this assessment resolved the majority of missing connectivity data within the Focus Area of planBTV South End, the majority of stormwater infrastructure is missing invert data, and some pipe size data is also missing. In order to construct a stormwater system model of the entire system, all invert data will need to be collected. However, collection of invert data can be scaled back depending on the goals of the modeling effort. For instance, if the city only wishes to evaluate inlet capacity, no invert data is needed. If pipe capacity at the outfalls is the primary concern, inverts of manholes are of more importance than inverts of catch basins.

- **Rail Drainage**: Rail drainage patterns were only observed in some locations. Conditions observed indicate no subsurface drain infrastructure. Runoff flows to a ditch along rail. VHB recommends escort and inspection along the entire rail corridor.

- **Roof Drains**: Roof drains were not observed on several large buildings within the Focus Area. VHB made assumptions about connectivity and in most cases, whether roof runoff is routed internally to a closed drainage system or is disconnected to overland flow, the eventual discharge location of roof runoff will remain unchanged from what is indicated. VHB describes in the following section (Location-Specific Recommendations) where roof connectivity may result in a different discharge location.

- **Conditions Assessment:** The City is beginning a City-wide pipe condition assessment in 2016 to assess its highest risk pipes and develop a short-term list for pipe rehabilitation. Given the focus on the Pine Street area for the Champlain Parkway, it is likely that pipes in this area will be on that initial screening list.

DEVELOPMENT PLAN

Public Outreach

The AWP study area is a subset of the larger planBTV South End planning area. The goals and development plan for this AWP have grown out of the planBTV South End planning effort. The City of Burlington and the consultant team for planBTV South End (led by Goody Clancy) conducted an extensive public outreach process for the plan. Through this process many hundreds of South Enders and South End enthusiasts city-wide participated in this conversation, sharing their aspirations, ideas and concerns. They participated in planBTV South End events; they shared their perspective via the webtools developed for this plan; they tagged photos with #OurSouthEnd, sharing their view of what makes the South End special; they designed art-based strategies for reaching out to their neighbors in creative and engaging ways, and captured their visions for the South End.

Through these public engagement processes principles for the South End study area were developed, as follows:

PlanBTV South End public workshop.

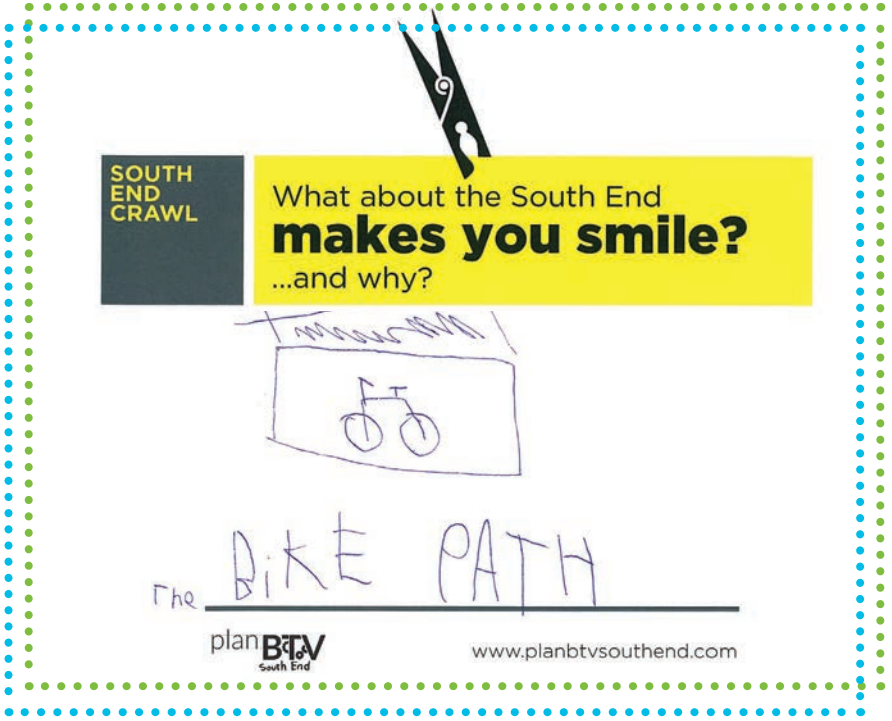
Principles for PlanBTV South End

- *Preserve what's unique and authentic about the South End. Enable funky, fun and creative places to flourish and grow within the South End.*
- *Reinforce and grow the South End as a center for innovative businesses and institutions, and as an important part of the Burlington economy.*
- *Improve access to Lake Champlain, parks and the bike path.*
- *Improve conditions related to traffic, bike safety and the walking environment – especially along Pine Street.*
- *Preserve and expand affordable studio AND maker space within the South End.*
- *Enable underutilized places (e.g., the Barge Canal site) to be re-purposed in ways that add to the uniqueness and vitality of the South End.*

Railyard Enterprise Project

Another planning effort, the Railyard Enterprise Project, is a scoping study for circulation improvements for an area that includes the northern portion of the AWP study area. This is an on-going planning effort that has also included a public outreach process guided by a Steering Committee. The REP planning began in January 2013 and has continued through a two-year process that led to the definition and selection of three alternatives to advance for review under NEPA. During the two-year time frame of the REP, a Steering Committee met eight times and four public workshops and meetings were held.

A robust public outreach process for planBTV South End collected public comments through a variety of venues and events.



DEVELOPMENT PLAN

Development Framework

This section of the Area Wide Plan sets forth a framework for new development and public improvements in the plan area. This framework was developed through the planning for the larger South End area and is an excerpt from the draft planBTV South End prepared by Goody Clancy. The primary strategy for this area is to reinforce the existing arts hub that has become established here while also encouraging maker and industrial activities. This includes enhancements to preserve existing arts destinations, encourage a greater density of art and maker uses, and to enhance the Barge Canal site as a park that showcases the industrial heritage and ecology of the Superfund site.

The following goals which address the AWP study area are derived from the Railyard Enterprise Project and planBTV South End:

Railyard

Support the continued viability of the railyard for freight operations and passenger service.

Establish critical multimodal transportation connections between the Pine Street Corridor and the waterfront and downtown through the ongoing Railyard Enterprise Project.

Pine Street Corridor

Reinforce the area as an arts hub and arts destination.

Activate land around the Barge Canal by encouraging remediation and appropriate reuse.

Expand space available for industrial activity with new infill development; incorporate active ground level uses; design/ locate buildings to define streets and open spaces.

Improve the walking environment, bus stops, and bike travel. Continue to reinforce Pine Street as a vehicular "slow zone" and as a "green street."*

Prioritize retention/expansion of existing buildings to support small artist/maker enterprises.

Barge Canal

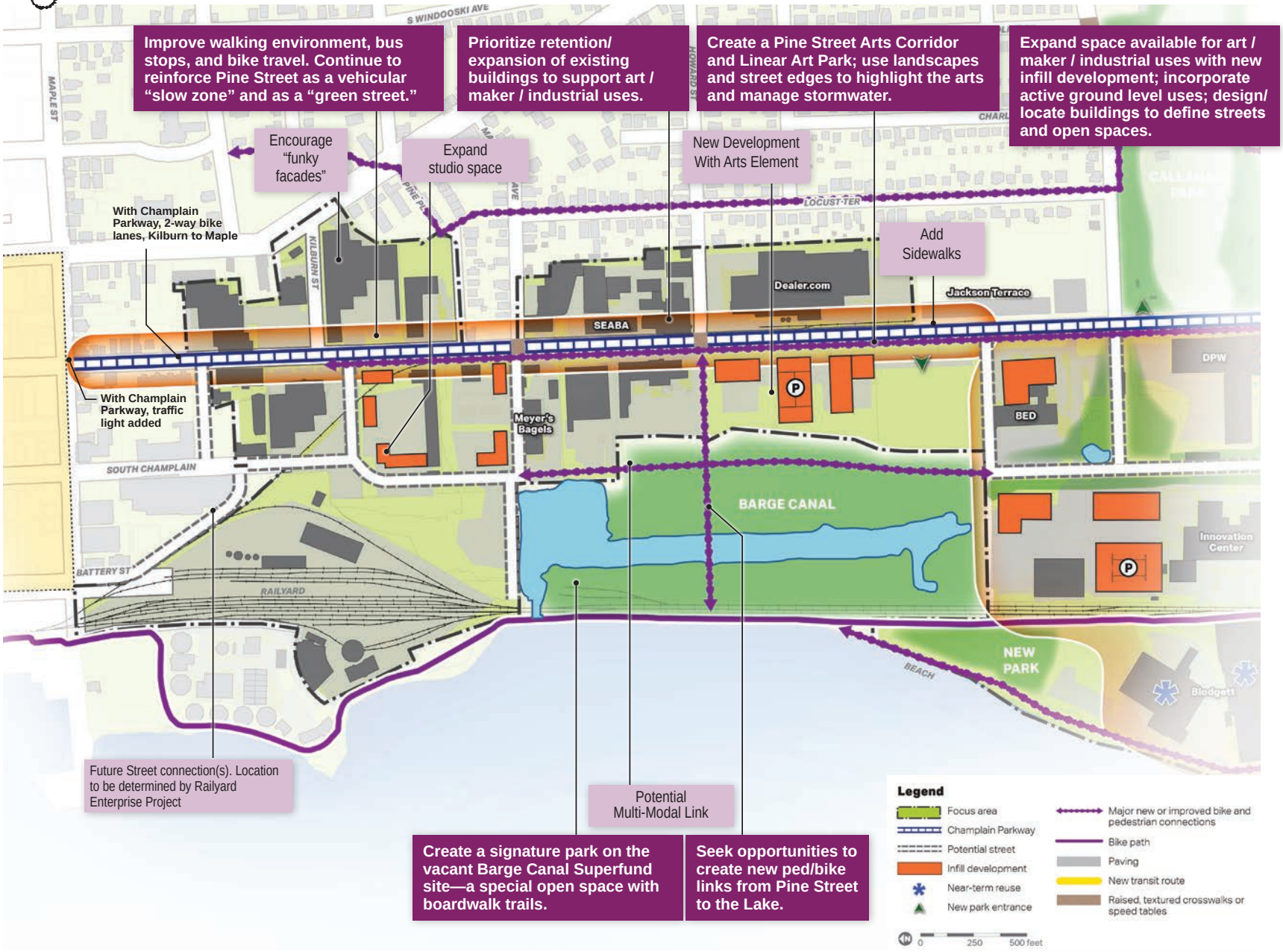
Create a Pine Street Arts Corridor and Linear Art Park; use landscape and street edges to highlight the arts and manage stormwater.

Create a signature park on the vacant Barge Canal Superfund site—a special open space with a network of trails.

Seek opportunities to create new pedestrian and bike links from Pine Street to the Lake.

* A green street incorporates robust stormwater management capabilities. Design characteristics of a green street includes features such as landscaped swales, bio-retention areas, porous paving, and street trees which capture, filter, slow and infiltrate stormwater.

Figure 9: Conceptual Development Framework



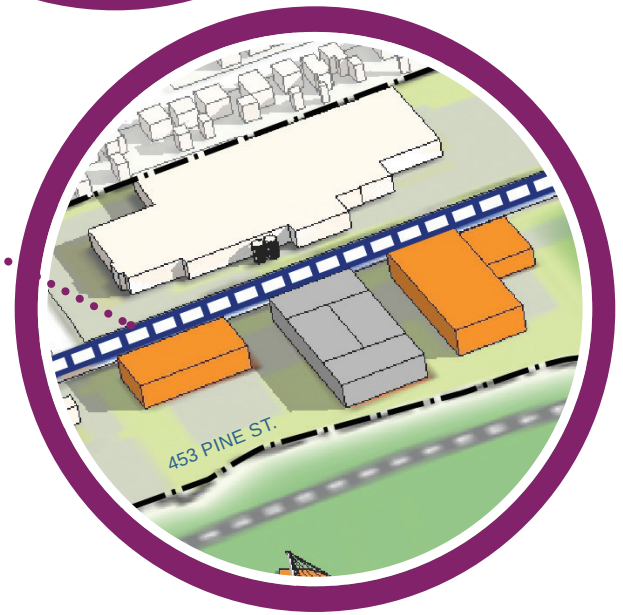
GRAPHIC: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES

Pine Street Corridor Infill Sites

Expand studio space under non-profit or public ownership to preserve affordability. Continue to advance public and non-profit initiatives that would add studio space within the South End, ensuring that affordable studio space remains a permanent presence. Provide technical assistance to artists and makers looking to establish studio cooperatives.

Prioritize retention/expansion of existing buildings to support industrial uses. Encourage continued use of buildings for industrial, maker and artists uses as existing buildings are likely to be more affordable source of space than new construction. Encourage creative use of facades (through murals, sculptural elements, etc.) to highlight the creative spirit of the South End and/or the enterprises occurring within.

Expand space available for industrial and maker enterprises with new infill development. Incorporate new uses and shared parking; use structured parking where feasible. For infill development at the barge canal site (i.e., 453 Pine Street), seek to locate buildings along Pine Street; include trail links to proposed barge canal park; comply with deed restrictions and environmental constraints.



GRAPHICS: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES

Barge Canal

Create a signature park on the vacant barge canal superfund site – a special open space with trails. This superfund site can become a publicly accessible open space destination, incorporating interpretive signage, art, and trails linking the Lakeside area, Pine Street and Lake Champlain. Leverage opportunities to recognize and highlight the industrial heritage of the site. Consider the use of boardwalks through sensitive ecological areas. Sensitivity to the site's environmental issues will be essential.

Seek opportunities to create new pedestrian/bike links from Pine Street to the Lake, with connections to the Island Line Trail. If/where necessary given the sensitive ecology and environmental constraints of the Barge Canal site, consider establishing portions of trails as elevated boardwalks.

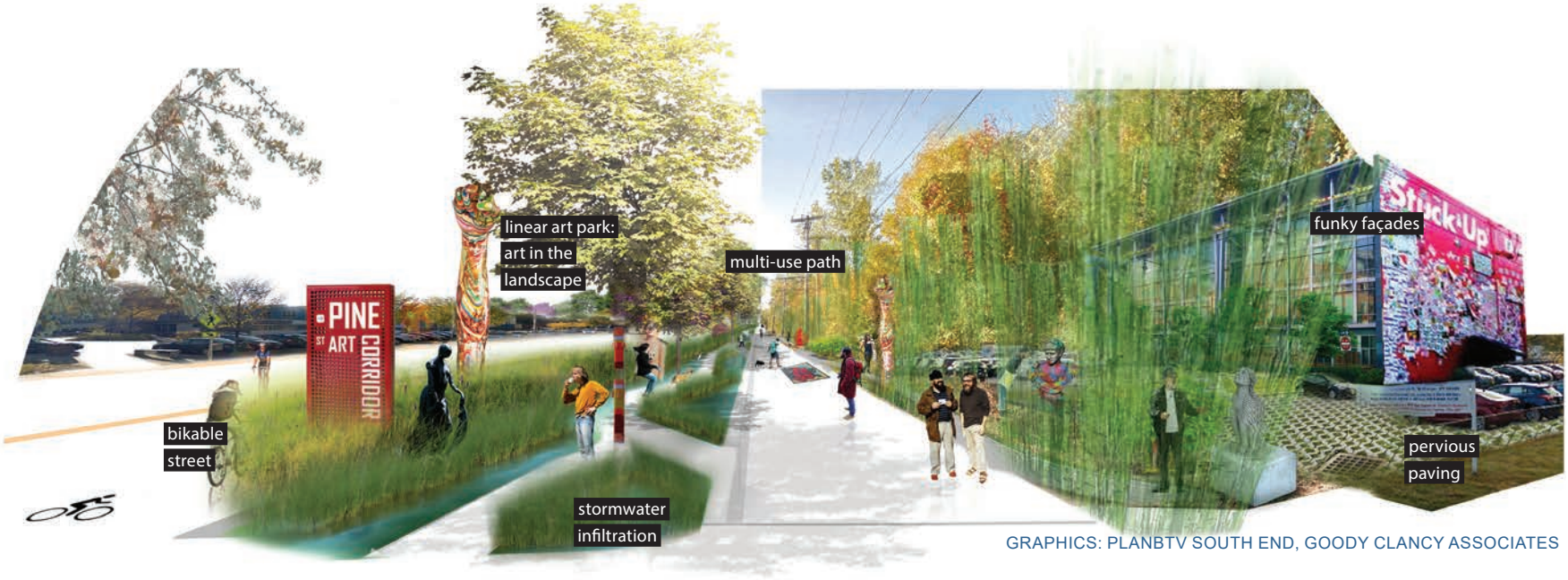
Explore potential for a new north-south multi-modal link through the Barge Canal site. This link would help improve connectivity within this part of the South End, making it easier to get around, and should be thought about in conjunction with development of a Barge Canal Park. The link could also serve as a multi-modal extension of potential future north-south streets created through the Railyard Enterprise project, and/or within the Lakeside Avenue area.

GRAPHICS: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES

Pine Street

Showcase the arts with a Pine Street Arts Corridor and Linear Art Park. Reinforce this section of Pine Street as an Arts corridor, with a strong and visible arts presence. Create a Linear Art Park along Pine Street incorporating interactive sculptures, creative use of landscaping, murals created by local artists and youth, and other outdoor art pieces along the street edge and in front of Pine Street buildings. Include signage and/or banners that announce arrival within the Arts Corridor.

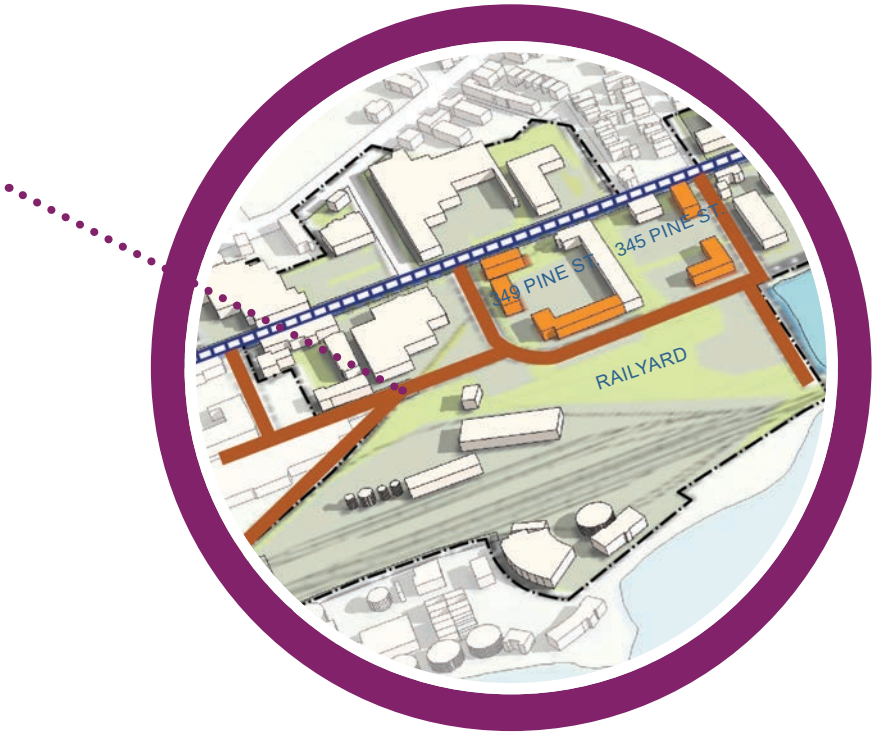
Improve walking environment, bus stops, and bike travel; continue to reinforce Pine and other South End streets as vehicular "slow zones" and as "green streets" with robust stormwater management capabilities. With the Champlain Parkway, Pine Street will see better bus stops, improved walking and biking routes, and new stormwater management infrastructure. Walkable, crossable, bikeable, soakable (stormwater management equipped) streets with good connections to transit should be the goal neighborhood-wide.



GRAPHICS: PLANBTV SOUTH END, GOODY CLANCY ASSOCIATES

Railyard

Continue to explore opportunities for new street connections in the Railyard Enterprise area. The Railyard Enterprise Project (REP) is exploring ways to consolidate the important functions of the railyard to allow multimodal transportation connectivity between Pine Street and the south waterfront and downtown. New streets may open opportunities for infill development in this area.



PLAN IMPLEMENTATION

Implementation Plan

This section of the plan presents an outline of the steps necessary to implement the plan. Likely partners and possible funding sources that would advance the cleanup and revitalization of the AWP study area are also identified for each implementing action. Implementation of the plan will be a public-private partnership between the City, private landowners and other public agencies that provide resources to assist in cleanup and redevelopment tasks.

It is important to note that the City has already started the implementation process and made tangible progress on several implementing initiatives including:

The Railyard Enterprise Project. The City is working with the Chittenden County Regional Planning Commission (CCRPC) on the scoping process for transportation infrastructure improvements in the Railyard area. Scoping is the initial planning phase in the project development process for federally funded transportation projects. The REP followed an enhanced scoping process under the Every Day Counts / Planning and Environmental Linkages (EDC/PEL) federal initiative. Three alternatives have been advanced for further analysis and review in the NEPA process. Once this process is complete, a preferred alternative will be identified and will be advanced for funding, engineering and construction.

The Champlain Parkway. The Champlain Parkway will provide safety improvements including bike lanes and a shared use path, improved intersections, pedestrian crossings and transit stops along Pine Street. Additional streetscape improvements to create the linear art park envisioned in planBTV can build on these complete street improvements.

Cleanup and Infill development on the West Side of Pine Street. The City requested and received State support through the BERA process to address the cleanup and redevelopment of 453 Pine Street. Through the BERA process additional site investigation was undertaken. A private developer has prepared a plan for the site and begun the permitting process for the site.

Implementation Program

Each of the above projects represents a significant step toward implementing the vision of the plan. Many of the following implementing actions will build on these initial steps.

1

Pine Street Arts Corridor Streetscape and Multimodal Improvements

Action 1.1: Construct asphalt sidewalks on the west side of Pine Street where there are gaps to improve pedestrian connectivity until the Champlain Parkway is constructed.

To improve pedestrian accommodation along the west side of Pine Street which has seen a significant increase in pedestrian volumes, temporary asphalt sidewalks should be constructed to accommodate walkers until the Champlain Parkway is developed.

Time Frame: 1 – 2 years
Responsibility: Department of Public Works (DPW)

Steps:

- *Review ROW, develop conceptual plans and cost estimate.*
- *Assess viability for securing the former rail spur alignment.*
- *Assess soil quality along the alignment, evaluate need for disposal options.*
- *Secure funding.*
- *Develop final plans, bid and construct sidewalks.*

Action 1.2: Implement the Champlain Parkway.

Under the current schedule, the Champlain Parkway is anticipated to start construction in 2018. The project will result in improvements to Pine Street for bicyclists, pedestrians, and transit riders and will form the basis for further streetscape enhancements associated with the Pine Street Linear Art Park (below).

Time Frame: 2-6 years
Responsibility: FHWA, VTrans, DPW
Partners: CEDO, CCTA, Local Motion

- **Steps:** *Continue ongoing coordination between agencies and property owners on the development of plans and construction of the Champlain Parkway.*

Action 1.3: Develop an Arts Corridor and Linear Art Park Implementation Plan for the arts district segment of Pine Street. The plan should build on improvements that will be constructed as part of the Champlain Parkway and integrate 'green street' landscape elements, artful transit stops, locations for art installations and other linear park features.

Conceptual plans for the Pine Street Linear Art Park should be developed using the Champlain Parkway plans as the base. It may be possible to integrate elements of the linear art park into the Champlain Parkway project if they are funded separately and do not require an Act 250 permit. Given the 'green street' element of the project, the Linear Art Park may make sense to follow the water quality plan (Action 7.1 below). The implementation plan should include conceptual design plans, cost estimates, potential sources of funding, ideas for funding the art elements and their maintenance, and include coordination with property owners, outreach to the South End community and the public.

Time Frame: 1-5 years
Responsibility: DPW, Burlington City Arts (BCA)
Partners: South End Arts & Business Association, VT DEC

Steps:

- *Convene a working group of City, non-profits in the South End and stakeholders to guide the project.*
- *Identify sources of funding for the implementation plan.*
- *Develop implementation plan, including conceptual plans, cost estimates and a public art funding and maintenance plan.*
- *Secure funding for final design and construction.*
- *Develop final plans.*
- *Bid and construct streetscape improvements.*
- *Commission art installations on an ongoing basis as funding is secured.*

Action 1.4: Develop a wayfinding signage plan which includes designs for the signage system, locations for signs, and cost estimates.

Time Frame: 3-5 years
Responsibility: Department of Planning & Zoning (DPZ), DPW, BCA
Partners: SEABA, CEDO, DPW

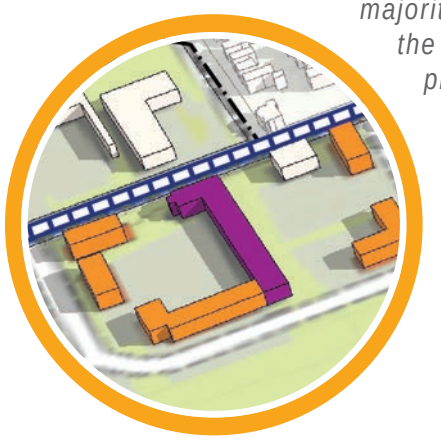
Steps:

- *Identify sources of funding for design and construction.*
- *Secure funding for wayfinding system signage design, location plan and cost estimates.*
- *Secure funding for final design and construction.*
- *Develop final plans.*
- *Bid and construct wayfinding signage.*

2

Retention / Expansion of Existing Buildings

Action 2.1: Continue to assess demand and feasibility of creating affordable studio space for artists and makers along with new industrial uses. Within the AWP study area this action would be potentially applicable to 377 (Myers Bagels, etc.), 405 (Farrell Vending) and 431 Pine (Maltex). NOTE: The majority of the AWP study area falls under the Barge Canal deed restriction which prohibits residential uses. For the purposes of this AWP it is assumed that there will be no new residential development in the AWP study area.



Time Frame: 1-10
Responsibility: DPZ, BCA
Partners: SEABA, CEDO

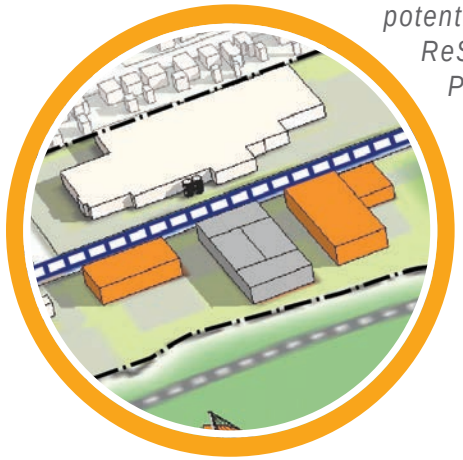
Steps:

- *Convene a working group charged with assessing demand and developing a strategy for retaining affordable studio space in the South End.*
- *Conduct a market study on industrial or new economy manufacturing demand in the AWP and Enterprise Zone.*
- *Make regulatory changes (e.g., development incentives, zoning changes) and provide assistance and support as needed for organizations seeking to create affordable studio space*

3

New Infill Development

Action 3.1: Expand studio space under non-profit or public ownership to preserve affordability along with new industrial uses. Within the AWP study area this action would be potentially applicable to 339 Pine (City ReSOURCE Site), 345 (Havey), 453 Pine (Davis). NOTE: The majority of the AWP study area falls under the Barge Canal deed restriction which prohibits residential uses. For the purposes of this AWP it is assumed that there will be no new residential in the AWP study area.



Time Frame: Ongoing
Responsibility: DPZ, BCA
Partners: CEDO, SEABA

Steps:

- *Convene a working group charged with assessing demand and developing a strategy for retaining affordable studio space in the South End.*
- *Conduct a market study on industrial or new economy manufacturing demand in the AWP and Enterprise Zone*
- *Make regulatory changes (e.g., development incentives, zoning changes) and provide assistance and support as needed for organizations seeking to create affordable studio space.*

Action 3.2: For infill development surrounding the Pine Street Canal Superfund Site, locate buildings along Pine Street; include links to Barge Canal Park (discussed below); comply with deed restrictions and environmental constraints. Within the AWP study area this action would be potentially applicable to 339 Pine (City ReSOURCE Site), 345 (Havey), 453 Pine (Davis) and 351 Pine (Vermont Railway). NOTE: The majority of the AWP study area falls under the Barge Canal deed restriction which prohibits residential uses. For the purposes of this AWP it is assumed that there will be no new residential development in the AWP study area.

Time Frame: 1-10 Years
Responsibility: DPZ, CEDO
Partners: Landowner/developers, VT DEC Waste Management, VT DEC Watershed Quality, Agency of Commerce and Community Development (ACCD), US EPA

Environmental Due Diligence

Any infill development within the Study Area that includes private debt or a transaction of real estate will need to undergo environmental due diligence. To avoid potential future environmental liability related to past land use, the developer should undergo “all appropriate inquiry” as to the environmental status of the property. The Phase I Environmental Site Assessment (Phase I ESA), when performed in accordance with the current American Society of Testing and Materials (ASTM) standard practice (e.g., ASTM 13-1527), satisfies the AAI obligations under the Small Business Liability Relief and Brownfields Revitalization Act (SBLR&BRA) amendment to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA; 42 U.S.C. 103) and is designed to satisfy certain components required for the Innocent Landowner Defense under CERCLA. The objective of the Phase I ESA is to identify, by performing a review of relevant environmental databases, interviews with the landowner and managers, a review of historical land use documentation, and site inspection, any indications of a past or ongoing release or threat of release of hazardous or petroleum materials to the environment.

As part of the Phase I ESA, it may be prudent to perform a visual inspection of the site buildings for suspected asbestos containing materials (ACM)

Depending on the findings of the Phase I ESA, further environmental assessment may be needed to evaluate whether any recognized environmental conditions (RECs) constitute an actual release of contaminants to the environment. If the Phase I ESA has identified RECs, the following steps should be undertaken to satisfy ongoing obligations for liability protection:

- *Enroll the project in the VT DEC Brownfields Reuse Economic Liability Limitation Act (BRELLA) Program.*
- *Apply for funding for a Phase II ESA to the VT DEC Brownfield Response Program through a VT DEC Brownfield Program Technical Assistant Grant or a Regional Planning Commission hazardous assessment grant.*
- *Perform the Phase II ESA to identify whether recognized environmental conditions from the Phase I ESA constitute a release of petroleum or hazardous materials to the environment.*

To better to adhere to development timelines, the developer should consider collecting additional data to begin remedial cost estimation process during the Phase II ESA. For example, as spoiling of excess soils generated during the development of a site within a historical growth center will likely require management of the soils as solid wastes, characterization sampling can be performed as part of the Phase II ESA. Similarly, if volatile organic compounds are identified in site media during the Phase II ESA, pilot testing can be performed that would be sufficient for designing a vapor intrusion mitigation system for the new or existing buildings.

If a release of contamination is identified during the Phase II ESA, remediation may be necessary to achieve the redevelopment objectives for the property. If remediation is warranted, we recommend the following steps:

- *Contact potential sources of funding for remedial work as soon as it is known that remediation may be necessary to inform them of the project.*
- *Retain a consultant to prepare Corrective Action Feasibility Investigation (CAFI) and Corrective Action Plan (CAP) remedial planning documents, as necessary. Costs for preparing these remedial planning documents are eligible under either EPA Brownfield Assessment funds or a Remediation Grant*.

To better leverage any cleanup grants or low-interest loans, remedial planning should occur comtemporaneously with site design; oftentimes, remedial installations can serve as final site improvements and are eligible expenses under these grant/loan programs. Furthermore, the consultant should engage with architects to ensure CAFI/CAP is compatible with proposed redevelopment and vice – versa.

Figure 10. **Architectural concept for new development on 453 Pine Street (existing Maltex Building on the right)** - *Smith Buckley Architects*

Sites with existing institutional controls related to the Pine Street Canal Superfund Site will need to comply with those institutional controls, which include restrictions to day care and residential uses. Residential uses within the Enterprise Zone are specifically precluded at this time; however, if the desired use of a property includes day care, the legal measures that would be required to remove this land use restriction would need to be assessed. According to VT DEC, the holders of the Pine Street Canal Superfund Site, there is no inherent technical attribute related to any of the infill properties that would prevent day care as a use following appropriate remediation. In other words, the restriction is a legal issue, not a technical one.
To better attract infill development in the study area, the City should evaluate additional incentive programs for developers, including:

- *Voluntary Cleanup Tax Credits*
- *Sales and Use Tax Exemption – Building Materials*
- *Tax refund for job creation - http://www.dep.state.fl.us/waste/quick_topics/publications/wc/brownfields/Incentives/BrownfieldBonus.pdf*
- *Loan Note Guarantees*

In addition, the City can help facilitate the use of New Market Tax Credits within the Study Area. Together with Tax Increment Financing (TIF), New Markets present one of the most commonly used mechanisms for funding brownfield redevelopment projects in the country (see following section 'Funding the Plan').

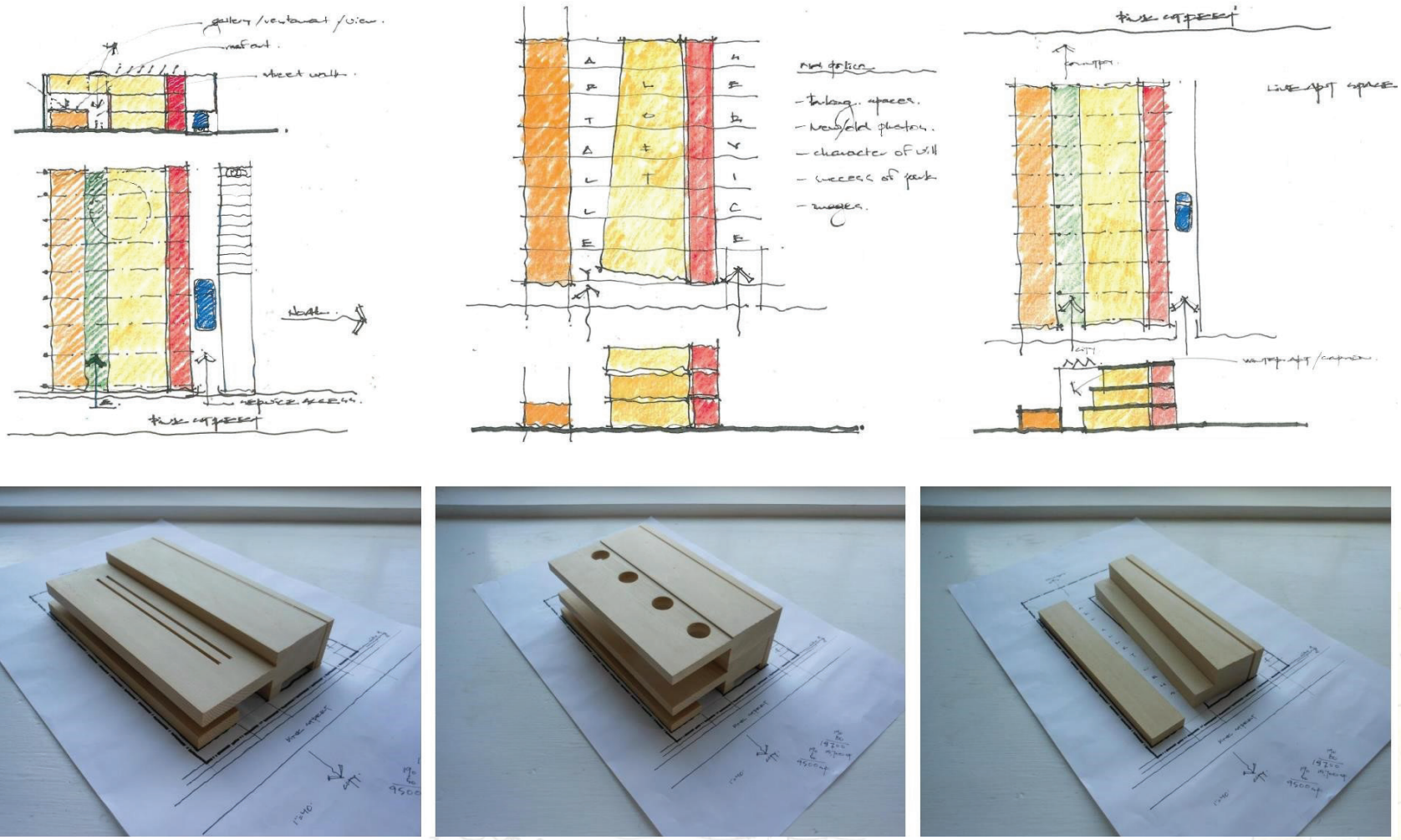
The steps described above are a necessary component for any of the properties targeted for infill development. The following sections describe additional steps that are required for specific properties.

453 Pine Street

The 453 Pine Street property was specifically excluded from the delineated Pine Street Canal Superfund Site with an eye towards its future development potential. Currently, private developers are undergoing design review for the construction of a 100,000 square foot office building and associated surface parking. The developer is actively engaged in developing the structural design, soil management and corrective action plans, stormwater management plan, and ongoing monitoring of hydraulic conditions required. The developer is working to identify financial mechanisms to assist bridging the gap between the costs to develop the 453 Pine Street property versus that of a "greenfield" site which does not have the cost of environmental remediation.

Figure 11.

Design Studies for Multi-Purpose Creative Complex at 339 Pine Street



Responsibility: DPZ, CEDO
Partners: Private Developer, VT DEC Waste Management, VT DEC Watershed Quality, Agency of Commerce and Community Development (ACCD), US EPA

Steps:

- *Continue pre-construction ongoing monitoring program*
- *Complete environmental due diligence for prospective purchaser.*
- *Gain City of Burlington Development Review Board approval*
- *Complete Corrective Action and Soil Management Plans and apply for cleanup funds through either an US EPA Cleanup Grant or Revolving Loan Fund.*
- *Finalize engineering plans*
- *Obtain environmental insurance*
- *Begin Construction, implement remedial activities, as necessary and defined within the Corrective Action Plan*
- *Perform intra- and post-construction monitoring program*

345 and 339 Pine Street

To date, geotechnical assessment for establishing a site classification for either the 345 or 339 Pine Street properties has not been performed (the site classification is a determined value for international building codes based on the properties of the site geology. The goal is to establish what improvements / foundation types would need to be performed for construction to occur). In addition, due to their location immediately adjacent to the former north slip of the Barge Canal, there is a potential that development on these properties, if performed in an irresponsible manner, could adversely impact the Superfund remedy or cause a migration of contaminants to Lake Champlain. A comprehensive geotechnical feasibility study should be performed to establish design parameters for these sites. Costs associated with the geotechnical assessment are eligible for brownfield assessment funds from US EPA, VT DEC, ACCD, or the CCRPC.

Steps:

- *Perform Phase I ESA*
  - *Enter the sites into BRELLA*
  - *Apply for Technical Assistance Grant (VT DEC) or Hazardous Assessment Grant (CCRPC) for Phase II/III ESA*
- *Perform Phase II/III ESA.*
  - *Evaluate best and highest use of these properties.*
  - *If remedial action is deemed necessary, begin outreach with potential funding agencies to alert them of the project.*
  - *Couple Phase II/III ESA assessment with geotechnical assessment to better leverage site investigation costs*
- *Evaluate remedial objectives relative to preferred redevelopment plan, prepare CAP.*
  - *Pair remedial planning with site redevelopment planning to capitalize on required site fit-ups and remedial actions*
  - *Evaluate how the REP preferred alternative will be accommodated on the redeveloped site*
- *Apply for RLF or site specific clean-up plans for remediation.*
- *Evaluate how to address stormwater concerns at the property given contaminant conditions.*
- *Complete remedial activities*

351 Pine Street

Redevelopment of the 351 Pine Street property is closely linked to the Railyard Enterprise Project. Initial conceptual redevelopment plans for the property included relocating components of the Vermont Railway rail yard to the 351 Pine Street parcel to accommodate construction of the Railyard Enterprise Project roadway(s). Although environmental due diligence has been performed (Stone, 2012 and 2013), the site is enrolled in BRELLA, and has an ongoing groundwater monitoring program, remedial planning at the site has been delayed until the REP analysis of alternatives is further along.

Once an alignment for Railyard Enterprise Project has been decided on, Vermont Railway can evaluate remedial objectives relative to preferred redevelopment plan and prepare a corrective action plan.

Steps:

- *Finalize the preferred alternative for the Railyard Enterprise Project and finalize site redevelopment plans.*
- *Establish remedial objectives for any necessary remedial actions.*
  - *Perform any necessary remedial investigation activities.*
  - *Perform geotechnical assessment of the site to support the redevelopment plan.*
- *Apply for RLF or site specific clean-up plans for remediation.*
  - *Pair remedial planning with site redevelopment planning to capitalize on required site up fits and remedial actions*
- *Finalize Engineering Plans*
- *Complete remedial activities*
- *Complete site improvements.*

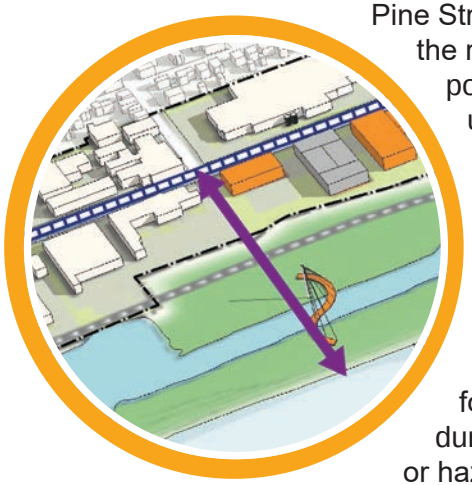
4

Transportation Improvements in the Railyard Enterprise Project Area

Action 4.1: Continue planning, design and analysis for new multimodal transportation connections in the Railyard Enterprise area.

Timeframe:	2-10 years
Responsibility:	FHWA, VTrans, CCRPC, CEDO, DPZ, DPW
Partners:	VT DEC Waste Management, VT DEC Watershed Quality, Agency of Commerce and Community Development (ACCD), US EPA, Landowners/developers

The Railyard Enterprise Project will provide a network of new multimodal transportation improvements between Pine Street, the Burlington Waterfront and the Burlington Railyard. Of the three alternatives currently under evaluation as part of the NEPA review, two alternatives (Alternative 2 and 5B) would traverse two of the properties identified for infill development summarized above (i.e., 339 and 345 Pine Street). Although the use of the roadway presents limited potential ongoing exposure to users—as the roadway itself would serve as a remedial barrier to any underlying contaminated soil—the proposed alignments present their own environmental challenges. Chief among these are the added costs for managing soils generated during construction as solid or hazardous wastes, which would be a concern regardless of



the alignment. In addition, for Alternatives 2 and 5B, which include portions of roadway in the area of the former north slip, it is unknown whether construction of the roadway (or other surface loading in this area) would cause migration of contaminants within the slip. A focused geotechnical assessment of the consolidation of soils in the north slip should be performed as part of the design phase for either of these alternatives.

Steps:

- *Continue ongoing coordination and support of the environmental review and scoping process for multi-modal circulation improvements of the REP.*
- *Once the scoping process is complete, identify funding sources for circulation improvements.*
- *Perform environmental investigation and geotechnical assessment of the proposed alignment.*
  - *Revise costs based on soil disposal requirements and other remedial activities, as required.*
- *Develop final engineering plans including soil management plan or Corrective Action Plan.*
- *Bid and construct improvements.*

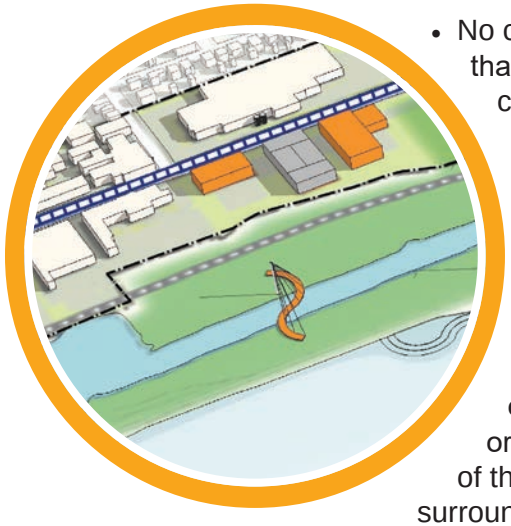
5

Bike and Pedestrian Linkages From Pine Street to the Barge Canal

Action 5.1: Explore opportunities for new pedestrian and bicycle links from Pine Street to Barge Canal, Island Line and the Lake and north-south from BED and the Innovation Center to the Railyard Enterprise Project circulation system.

Time Frame: 1-10+ years
Responsibility: DPW, DPZ
Partners: City of Burlington Parks, Recreation & Waterfront Dept. (DPRW), VT DEC Waste Management Division, US EPA.

Installation of surface paths on the properties surrounding the Barge Canal will be subject to the same restrictions that are outlined in the Superfund institutional controls. Institutional controls that are germane to this element of the implementation plan include:



- No construction activities that would change hydraulic conditions that would result in migration of contamination to Lake Champlain;
- No excavations greater than 5 feet in depth in areas of elevated PAH contamination;
- No activities that would interfere with investigations of environmental conditions, or cause recontamination of the Superfund or surrounding properties.

Furthermore, any surface paths would need to be constructed in a manner as to prevent a risk of exposure to users. Design elements to consider include the use of a net zero approach to installed materials (take out an equal volume to what you intend to put back in); a combination of permeable pavement and board walks to mimic site hydrology; use of floating foundations/sills for boardwalks that traverse areas of elevated PAHs; and restrict user access to only the paths.

Steps:

- *Develop a scoping feasibility study to identify potential alignment alternatives, conceptual design and cost estimates for pedestrian and bicycle connections to the Barge Canal Park, Island Line and the Lake.*
- *Perform environmental assessment of the preferred trail alignment(s).*
- *Prepare soil management plan and corrective action plan.*
- *Once the scoping process is complete, identify funding sources for improvements.*
- *Assess eligibility requirements for funding options for site costs within the superfund site.*
- *Develop final engineering plans.*
- *Bid and construct improvements.*

6

Barge Canal Park

Action 6.1: Create a signature park on the vacant Barge Canal Superfund site.

Time Frame:	10-25 years
Responsibility:	DPRW, CEDO
Partners:	Mayor's Office, Vermont Congressional Delegation, Performing Defendant for the Superfund Site, US EPA Superfund, VT DEC Waste Management, Watershed Management, Vermont Division for Historic Preservation

The development of the 0 Pine Street property and adjacent canal for recreational use requires further feasibility-level assessment to address the issues presented by the Superfund and wetlands. Limited development of the Superfund site for pedestrian and bicycle access through boardwalks with interpretive signage, and an overlook would require assessment of potential surface soil exposure and an evaluation of impacts to the canal remedy. Existing hydraulic conditions (e.g., the water balance) need to be maintained without significant alterations. These challenges, although not insignificant, are surmountable in a relatively short time frame (1 to 2 years). The City should actively engage with the Superfund Stakeholders, including the Performing Defendants, VTDEC, and US EPA, to identify goals, concerns, and possible solutions.

Steps:

- *Engage with the Pine Street Canal Stakeholders to discuss the goal of having limited recreational access to the 0 and 501 Pine Street properties.*
- *Perform environmental assessment to evaluate potential risk of exposure to users and construction workers.*
- *Develop engineering and corrective action plans.*
- *Bid and construct improvements.*

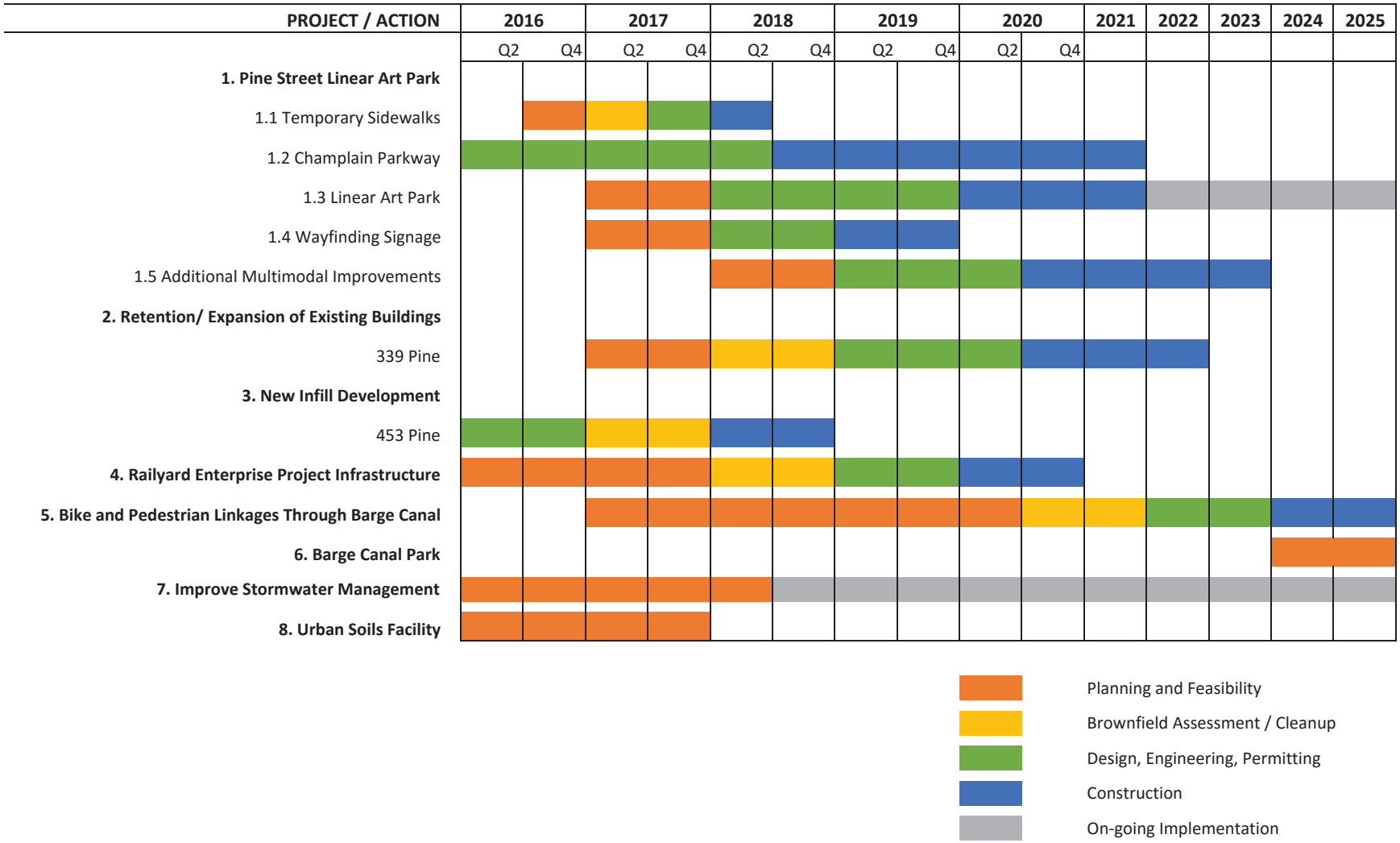
Development of the area for a more broadly accessible park would likely require a broader remedial strategy than what is currently within the Superfund Record of Decision (ROD). Removal or destruction of contaminant mass would be a significant alteration of the ROD and would require a comprehensive re-evaluation of existing data, supplemental remedial investigation, and focused feasibility study to support a full amendment to the ROD (as opposed to an Explanation of Significant Differences). Recent advancements in in-situ remedial technologies are promising for options that could result in a drastic reduction in the mass of coal tar NAPL.

As summarized earlier, the current remedy consists of an organo-clay cap that has a design life span of approximately 25 years before there would be a need to replace the cap. Alternative remedial solutions that would allow for a higher use of the property should be evaluated far in advance of the end of this life span.

Steps:

- *As part of the five-year review, provide concept of recreational development at the 0 and 501 Pine properties.*
- *Meet with EPA to discuss the process required to change the remedy.*
- *Develop incentives for the PRP Group (the Performing Defendants) for implementing a revised remedy.*
- *PRPs hire consultant to assist with process.*
- *Consultant prepares a conceptual design and cost estimate.*
- *PRPs come to an agreement on proceeding with the revised remedy and how it will be funded.*
- *Consultant prepares a client draft proposed plan, PRPs review and comment.*
- *Consultant prepared draft proposed plan; EPA and state review and comment.*
- *Consultant prepares draft final proposed plan, public meeting is held, community and stakeholders have 30 day comment period, responsiveness summary is prepared, and final proposed plan is prepared.*
- *Consultant prepares client draft ROD amendment, PRPs review and comment.*
- *Consultant prepares draft ROD amendment, EPA and state review and comment.*
- *Final ROD amendment is prepared by consultant and submitted to EPA HQs for signature.*
- *Any necessary pre-design investigations and pilot testing is performed. (EPA and State will be given opportunity to review workplans and reports)*
- *Detailed design documents are prepared for revised remedy. (EPA & State will be given opportunity to review)*
- *RFP is released to obtain bids for revised remedy, bids are evaluated, and remedial contractor is selected.*
- *EPA will perform oversight of implementation of revised remedy.*

Table 2: Proposed Area Wide Plan Implementation Timeline



Note: This time line is an estimate and may change depending on resources, environmental conditions or other factors.

7

Improve Stormwater Management in the Barge Canal Watershed

Action 7.1: Develop water quality improvements for the Pine Street Barge Canal area as a part of the City's Integrated Water Quality Management Plan.

Timeframe: 1 – 5 Years
Responsibility: DPW
Partners: Vermont Agency of Natural Resources, USEPA

While stormwater within the northern portion of the AWP area, including the Rail Yard and 315 Pine Street, discharges to the City of Burlington Wastewater Treatment Plant through the combined sewer, a large percentage of the AWP Study Area and beyond discharges through either overland flow or stormwater outfalls to the Barge Canal. Comprehensive planning is currently underway for the MS4 area which includes stormwater entering the Pine Street Barge Canal. Stormwater management for the area will be examined during this integrated planning process.

Steps:

- *Identify funding sources for water quality plan*
- *Prepare water quality restoration plan*

8

Explore the Potential for an Urban Soils Facility in Burlington

Action 8.1: Explore the feasibility of establishing an urban soils receiving facility in Burlington.

Timeframe: 1 – 3 Years
Responsibility: DPW
Partners: VT DEC Waste Management

Development in urban centers often is unnecessarily costly due to the presence of lightly contaminated soils that, due to the presence of polycyclic aromatic hydrocarbons, lead, and arsenic, require disposal as solid waste. These contaminants can be present at concentrations in excess of the relevant regulatory criteria due to atmospheric deposition of particles from fossil fuel combustion (e.g. motor vehicle exhaust) or are naturally occurring. To lessen this burden on developers of urban properties, Act 52 allows for soils to be managed outside the typical waste stream through the establishment of receiving sites or categorical facilities that contain equal or greater concentrations of these compounds. To encourage development within its desired growth areas, the City of Burlington could establish a categorical facility to receive waste soils from public or private development projects located within the study area.

Steps:

- *Identify potential City-owned properties that could serve as a receiving site for development soils.*
- *Perform baseline assessment of soil and groundwater quality at the potential categorical facility.*
- *Evaluate costs and a service/business model for such a facility.*
- *Undergo permitting to become a categorical facility, including public outreach, zoning, etc.*

Implementation Summary Timeline

Table 2 provides a summary of the implementation timeline for the actions described above. The timeline identifies timing for major phases of a project's development, including: planning and feasibility analyses; brownfield assessment and cleanup; design engineering and permitting; construction; and on-going implementation.

Funding The Plan

The following provides an overview of programs that would be applicable for funding cleanup, capital improvements and new development in the AWP study area.

EPA Assessment Grants

Hazardous and Petroleum Assessment Grants are available to the Vermont Department of Environmental Conservation (VT DEC) and either municipal or regional planning organizations/ commissions through an application process from the US EPA Region I Brownfield Program. Assessment grants provide funds for site assessment to discern the presence, degree, nature and extent of contamination at sites and to perform remedial planning, as necessary. As part of the grant co-operative agreement, each grantee will form a Brownfield Steering Committee that review applications from interested property owners on a rolling enrollment basis. Specific Targeted Brownfield Assessment grants are also available directly from US EPA to assess individual properties that may require a higher level of assessment.

Range:	Up to $200,000 per parcel
Deadline:	Open for sub-grantees. RPC Applications for
grant	cycle begins each fall with a due date for applications in mid-December. Awards typically are announced around June 1st.
Contacts:	Frank Gardner, Brownfields Coordinator USEPA;
	Patricia Coppolino, Program Manager VT DEC Brownfield Response Program

US EPA Revolving Loan Fund Program

Revolving Loan Fund (RLF) is a funding program that provides loans or grants for an eligible recipient to capitalize a revolving loan fund and to provide subgrants to carry out cleanup activities at brownfields sites. Grants can be made up to $1,000,000 to address sites contaminated by petroleum and hazardous substances, pollutants, or contaminants. RLF grants require a 20% match in money spent, labor, materials, or services for eligible costs. The recipient may request a waiver on the cost share based on hardship.

Range:	Up to $1,000,000 per parcel
Deadline:	Open for sub-grantees.
Contact:	Frank Gardner, Brownfields Coordinator USEPA
	Kirsten Bourgeois Agency of Commerce and Community
Development	(ACCD)

Brownfield Revitalization Fund

Grants and loans for remediation of brownfield sites. The funds are made available to Vermont by the EPA and eligible applicants can be private developers, non-profits, and municipalities.

Range:	Grants are capped at $200,000
Eligibility:	Municipalities, non-profit organizations and private developers.
Deadline:	Rolling
Contact:	Frank Gardner, Brownfields Coordinator USEPA; Kiersten Bourgeois ACCD
Website:	http://www.accd.vermont.gov/business/relocate_expand/capital/brownfields

Community Development Block Grant Program –

The US Department of Housing and Urban Development administers this program on a national basis and awards grants annually to entitlement communities, including Burlington, on a formula basis. In Burlington, CDBG fund are managed by CEDO. Grants are awarded to local organizations and CEDO operates several CDBG-funded programs. Projects within the AWP may qualify for CDBG funding if they meet the program objectives to address needs of the low and moderate income community.

Range:	Varies
Contact:	Marcy Esbjerg, CEDO
Website:	https://www.burlingtonvt.gov/CEDO/CDBG-Program-Overview

New Market Tax Credit Program

This is a federal tax credit program to provide investment into low income communities to support economic development. Through the NMTC Program, tax credits are allocated to Community Development Entities (CDEs) through a competitive application process. CDEs are financial intermediaries through which investment capital flows form an investor to a qualified business located in a low-income community.

Eligibility:	Project is located in a qualified low-income census tract; project has high community impact; total project costs exceeds $3 million; at least 20% of the income from the project will come from commercial use (non-residential)
Contact:	Beth Boutin Vermont Rural Ventures, Inc.
Website:	http://www.vermontruralventures.com

Federal Rehabilitation Investment Tax Credit Program

Federal investment tax credit for 20% of the rehabilitation costs (including labor, materials and architects or other consultant fees) for income-producing buildings listed in the National Register of Historic Places.

Range:	20% of eligible expenditures
Eligibility:	Owners of income-producing historic buildings
Deadline:	Rolling application deadline; file application before construction
Contact:	Caitlin Corkins
Website:	http://www.nps.gov/tps/tax-incentives.htm

State Historic Preservation Grants

State 50:50 matching grants for the repair and restoration of historic buildings listed or eligible for listing in the National Register of Historic Places in Vermont.

Range:	$1,000 - $20,000
Eligibility:	Municipalities and non-profit organizations
Deadline:	Annually in October
Contact:	Caitlin Corkins
Website:	http://www.accd.vermont.gov/strong_communities/preservation/grants/historic_preservation

Bicycle and Pedestrian Program Grants

The Bicycle and Pedestrian Program is administered by VTrans and provides funding for scoping, design and construction of bicycle and pedestrian facilities, including sidewalks, improved pedestrian crossings, lighting, shared use paths, etc.

Range:	No minimum or maximum cost. Local match of 50% for scoping and 20% for construction is required
Eligibility:	Municipalities, RPCs, schools districts, transit agencies
Deadline:	Annually in July
Contact:	Jon Kaplan
Website:	http://vtrans.vermont.gov/highway/local-projects/bikeped

Transportation Alternatives Program

The TAP provides grant funding for scoping, design and construction of on and off-road facilities for pedestrians, bicyclists and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, lighting and other safety and accessibility related infrastructure, environmental remediation related to transportation, community improvement related to transportation, Safe Routes to School programs.

Range:	Up to $300,000
Eligibility:	Municipalities, RPCs, school districts
Deadline:	Annually in October
Contact:	Scott Robertson
Website:	http://vtrans.vermont.gov/highway/local-projects/transport-alt

Recreational Facilities Grants Program

Matching state grants for capital costs associated with the development and creation of community recreational opportunities.

Range:	$1,000 - $25,000
Eligibility:	Municipalities and non-profit organizations
Deadline:	Annually in October
Contact:	Chrissy Gilhuly

Community Facility Loans and Grants

Federal USDA Rural Development loans and grants to assist rural communities develop or improve essential community facilities, including theaters, community centers, museums, libraries, adult and childcare centers, and municipal buildings. Funds may be used for acquisition, construction or improvements to buildings and equipment.

Range:	Grants up to $50,000 or 75% of the project cost, whichever is less. Grant applicants must show financial need. A larger than 25 percent match for grants may be required based on the applicant's service area population and income level (see list on website). Loans have no $ limit and 100% financing can be provided. Interest rates are long term and fixed rates based on municipal bond rates.
Eligibility:	Non-profit corporations and public bodies serving communities of less than 20,000 population (see list on website).
Deadlines:	Ongoing, but contact appropriate Rural Development office early in project development.
Contact:	USDA Rural Development at http://www.rurdev.usda.gov/HAD-CF_Grants.html.

Cultural Facilities Grant Program

The cultural facilities grant program is administered by the Vermont Arts Council in conjunction with the Vermont Historical Society, and the Vermont Division for Historic Preservation. The purpose of the program is to enhance or expand the capacity of an existing building to provide cultural programming. The program awards grants on a competitive basis to nonprofit organizations and municipalities to make improvements to community facilities that provide cultural activities for the public.

Range:	$1,000 - $30,000 and require a 1:1 match. The matching funds must be either cash, or 50% cash and 50% in-kind.
Contact:	Sonia Rae, Artist and Community Service Manager, Vermont Arts Council
Website:	http://www.vermontartscouncil.org

Tax Increment Financing (TIF) District

A TIF District is a tool that municipalities use to leverage new development and increasing tax revenues to fund infrastructure improvements. Burlington has a TIF District in the Downtown and Waterfront areas and could pursue a new district in the South End. The City as well as the State would need to approve a TIF District. Currently, state statutes prohibit the creation of new TIF Districts.

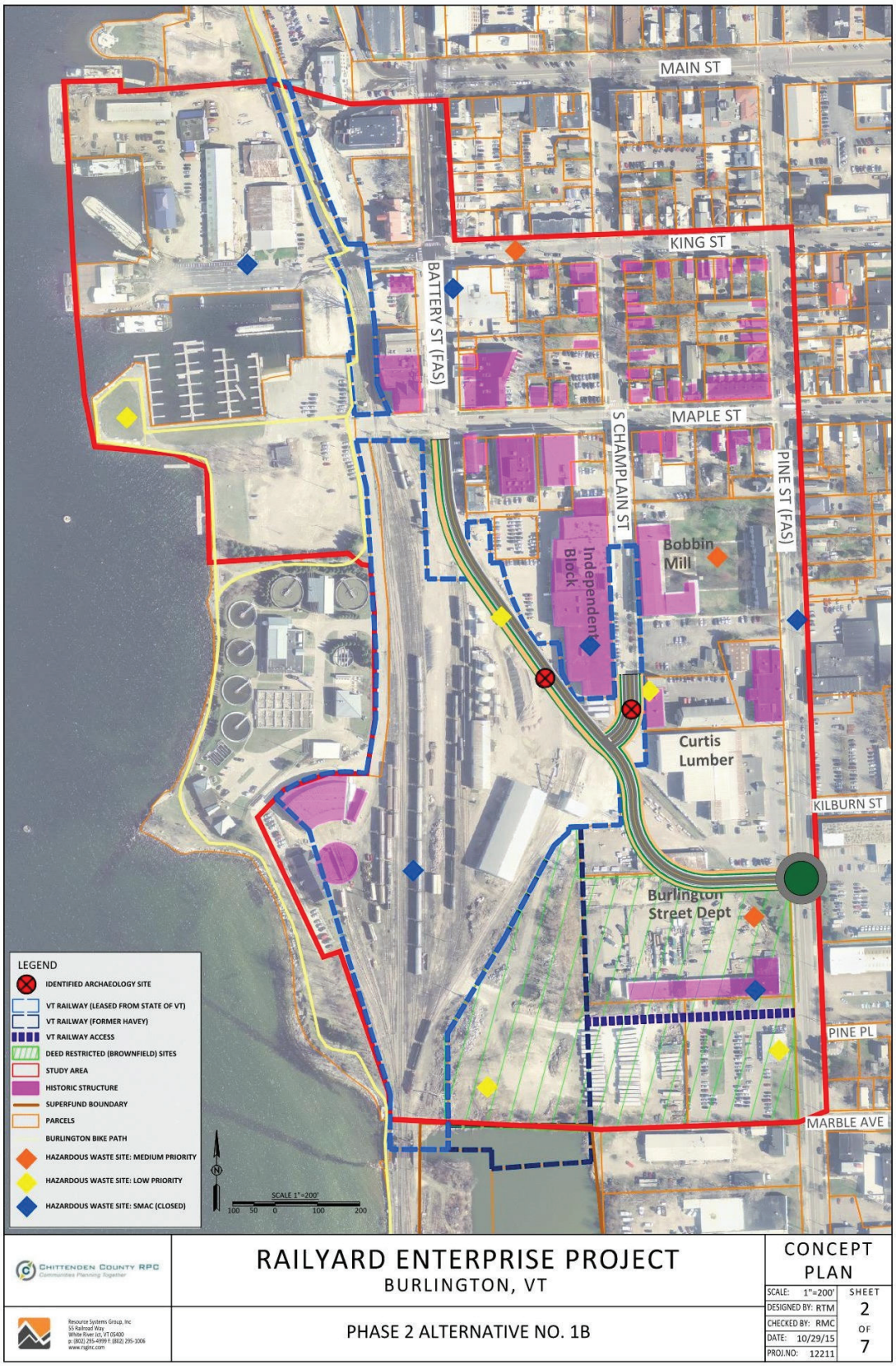
Range:	Varies
Contact:	Fred Kenney, Executive Director Agency of Commerce and Community Development
Website:	http://accd.vermont.gov/strong_communities/opportunities/funding/tif

APPENDICES

A. REP ALTERNATIVES

THE FOLLOWING PLANS DESCRIBE THE THREE ALTERNATIVES FOR THE RAILYARD ENTERPRISE PROJECT (REP) THAT HAVE BEEN ADVANCED FOR EVALUATION UNDER NEPA.

Figure 2: REP Alternative 1B



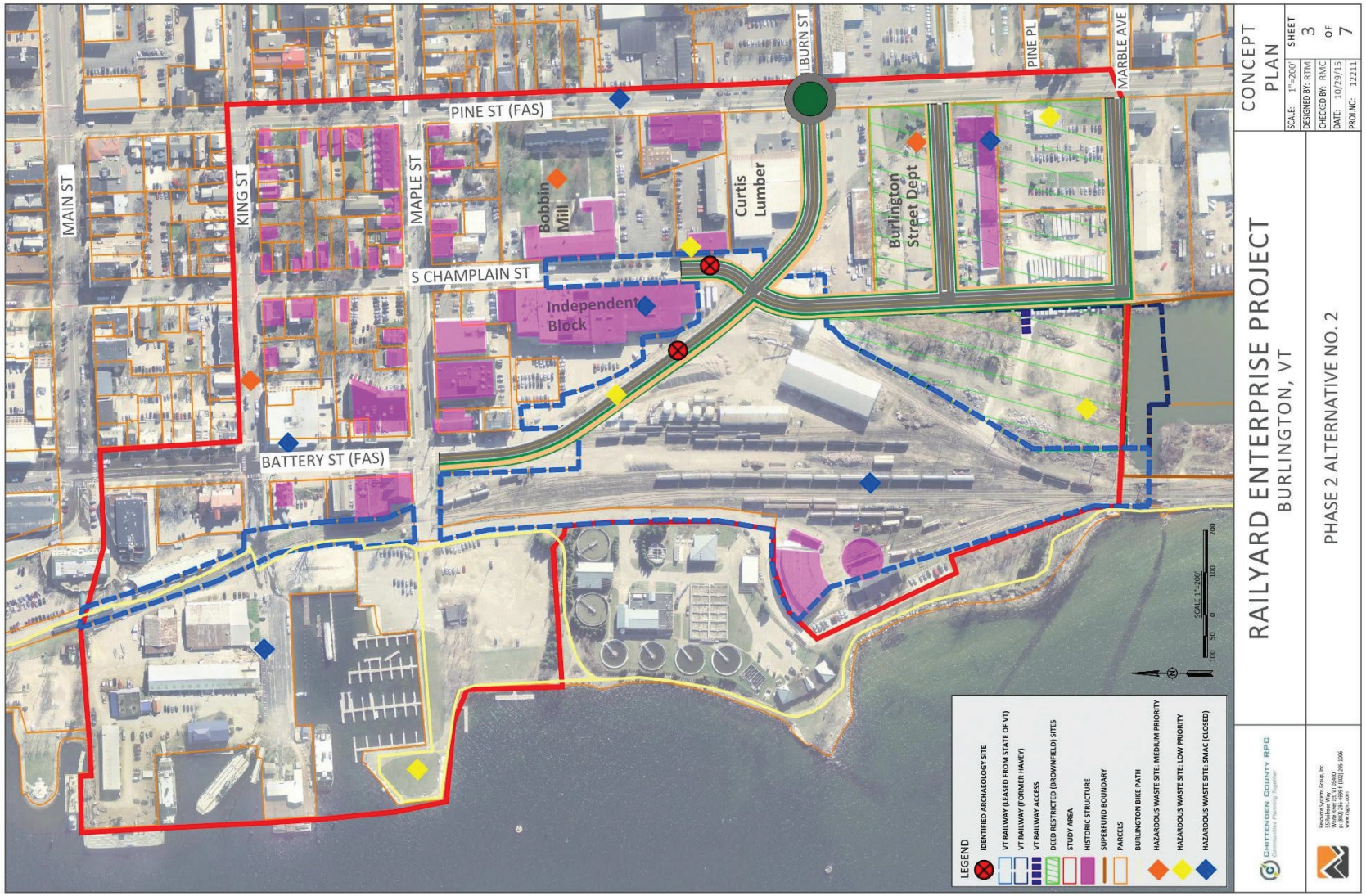


Figure 3: REP Alternative 2

Figure 4: REP Alternative 5B

B. HISTORIC LAND USE

THE FOLLOWING TABLES PRESENT THE HISTORIC LAND USE OF THE PARCELS WITHIN THE STUDY AREA, FROM 1885 TO 1989, AND CONTAMINANTS THAT HAVE THE POTENTIAL TO BE PRESENT ON THE SITE BASED ON THOSE IDENTIFIED LAND USES. FURTHER STUDY WOULD BE REQUIRED TO DETERMINE IF, IN FACT, THERE ARE ANY CONTAMINANTS ON SITE.

Sources: Sanborn Fire insurance Maps; Mannings City Directories; University of Vermont (UVM) Land Use Change Program photo archives

1 MAPLE ST PARCEL ID 6317 SPAN 114-035-17202 OWNER: CITY DPW PARKS REC DEPT

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1885	Manufacturing	Henry Loomis and Elias Lyman Co	Yes	No	Yes	Yes	No	No	Yes	No
1889	Manufacturing	Henry Loomis and Elias Lyman Co	Yes	No	Yes	Yes	No	No	Yes	No
1894	Manufacturing	Henry Loomis and Elias Lyman Co	Yes	No	Yes	Yes	No	No	Yes	No
1906	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Blacksmith/Coal, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Fuel Storage		No	No	No	Yes	No	No	Yes	No

0 PINE ST PARCEL ID 6942 SPAN 114-035-18311 OWNER: CITY OF BURLINGTON

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1919	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

257 PINE ST PARCEL ID 6550 SPAN 114-035-17182 OWNER: BENT PARTNERSHIP LLP

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1885	Manufacturing	Burlington Manufacturing Co Marble	Yes	No	Yes	Yes	No	No	Yes	No
1889	Manufacturing, Railroad	Burlington Manufacturing Co Marble	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Manufacturing, Railroad	Burlington Manufacturing Co Marble	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Manufacturing, Railroad	Burlington Manufacturing Co Marble	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

257 PINE ST PARCEL ID 6550
SPAN 114-035-17182
OWNER: BENT PARTNERSHIP LLP

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1885	Manufacturing	Burlington Manufacturing Co Marble	Yes	No	Yes	Yes	No	No	No	No
1889	Manufacturing, Railroad	Burlington Manufacturing Co Marble	Yes	Yes	Yes	Yes	No	No	No	Yes
1894	Manufacturing, Railroad	Burlington Manufacturing Co Marble	Yes	Yes	Yes	Yes	No	No	No	Yes
1900	Manufacturing, Railroad	Burlington Manufacturing Co Marble	Yes	Yes	Yes	Yes	No	No	No	Yes
1906	Railroad		Yes	Yes	Yes	Yes	No	No	No	Yes
1912	Railroad		Yes	Yes	Yes	Yes	No	No	No	Yes
1919	Railroad		Yes	Yes	Yes	Yes	No	No	No	Yes
1926	Railroad		Yes	Yes	Yes	Yes	No	No	No	Yes
1938	Railroad		Yes	Yes	Yes	Yes	No	No	No	Yes
1942	Railroad		Yes	Yes	Yes	Yes	Yes	No	No	Yes
1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	No	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	No	Yes
1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	No	Yes
1989	Railroad		Yes	Yes	Yes	Yes	No	No	No	Yes

315 PINE ST PARCEL ID 6585
SPAN 114-035-17181
OWNER: PARKVIEW AT TICONDEROGA LLC

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Blacksmith/Coal, Hardware, Manufacturing, Railroad	DW Robinson Planing Mill; estate of L. Barnes, L. Barnes Geo R. Holt Spool and Bobbin	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Blacksmith/Coal, Hardware, Manufacturing, Railroad	DW Robinson Planing Mill; estate of L. Barnes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Hardware, Manufacturing, Railroad	Robinson-Edwards Lumber Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Hardware, Manufacturing, Railroad	Robinson-Edwards Lumber Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Hardware, Manufacturing, Railroad	Robinson-Edwards Lumber Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Hardware, Manufacturing, Railroad	Robinson-Edwards Lumber Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Hardware, Manufacturing, Railroad	Robinson-Edwards Lumber Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Hardware, Manufacturing, Paints/ Painting, Railroad	T.A. Haigh Lumber Company, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Automobile Service, Hardware, Manufacturing, Paints/Painting, Railroad	T.A. Haigh Lumber Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Automobile Service, Hardware, Manufacturing, Paints/Painting,	T.A. Haigh Lumber Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Automobile Service, Hardware, Manufacturing, Paints/Painting,	T.A. Haigh Lumber Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Hardware, Manufacturing, Railroad	T.A. Haigh Lumber Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

339 PINE ST PARCEL ID 6671
SPAN 114-035-17180
OWNER: CITY DPW

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Automobile Service, Blacksmith/Coal, Fuel Storage, Manufacturing, Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Automobile Service, Blacksmith/Coal, Fuel Storage, Manufacturing, Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Automobile Service, Blacksmith/Coal, Fuel Storage, Manufacturing, Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Automobile Service, Fuel Storage,	City of Burlington Street Dept	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Blacksmith/Coal, Fuel Storage, Railroad	City of Burlington Street Dept	Yes	Yes	Yes	Yes	No	No	Yes	Yes

345 PINE ST PARCEL ID 6739
SPAN 114-035-18324
OWNER: HAVEY DENNIS P

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Blacksmith/Coal, Railroad	Hoist and Bigelow Coal Yard	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Blacksmith/Coal, Railroad	Gay and Henderson, E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Blacksmith/Coal, Railroad	Gay and Henderson, E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Blacksmith/Coal, Railroad	Gay and Henderson, E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Blacksmith/Coal, Railroad	Gay and Henderson, E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Blacksmith/Coal, Railroad	E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Blacksmith/Coal, Railroad	E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Blacksmith/Coal, Railroad	E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Automobile Service, Blacksmith/Coal, Railroad	City of Burlington Street Dept, E.S. Aosit Coal Company, E.S. Aosit Coal Company	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Fuel Storage, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Fuel Storage, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

351 PINE ST PARCEL ID 8598
SPAN 114-035-52232
OWNER: VERMONT RAILWAY INC

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Blacksmith/Coal, Railroad	L. Bartley Coal, JNO W. Hayes Coal	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Blacksmith/Coal, Railroad	L. Bartley Coal, JNO W. Hayes Coal	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Blacksmith/Coal, Railroad	Lawrence Bartley Standard Coal & Ice Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Blacksmith/Coal, Railroad	Lawrence Bartley Standard Coal & Ice Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Blacksmith/Coal, Railroad	Lawrence Bartley Standard Coal & Ice Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Blacksmith/Coal, Railroad	Lawrence Bartley Standard Coal & Ice Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Blacksmith/Coal, Railroad	Lawrence Bartley Standard Coal & Ice Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Blacksmith/Coal, Fuel Storage, Railroad	Lawrence Bartley Standard Coal & Ice Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	Bartley Corporation	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Blacksmith/Coal, Railroad	E.S. Hoist Coal Company	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Fuel Storage, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Fuel Storage, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

377 PINE ST PARCEL ID 6852
SPAN 114-035-18315
OWNER: CITIZENS PROPERTIES INC

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Blacksmith/Coal, Railroad	Citizen's Coal Company Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Blacksmith/Coal, Railroad	Citizen's Coal Company Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Blacksmith/Coal, Railroad	Citizen's Coal Company Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Blacksmith/Coal, Railroad	Citizen's Coal Company Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Blacksmith/Coal, Railroad	Citizen's Coal Company Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Automobile Service, Blacksmith/Coal, Railroad	Citizen's Coal Company Inc, Citizens Coal Company, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Automobile Service, Blacksmith/Coal, Railroad	Citizen's Coal Company Inc, Citizens Coal Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Automobile Service, Blacksmith/Coal, Railroad	Citizen's Coal Company Inc, Citizens Coal Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Automobile Service, Blacksmith/Coal, Railroad	Citizen's Coal Company Inc, Citizens Coal Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	Citizen's Coal Company Inc, Citizens Coal Company, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	Citizen's Coal Company Inc, Citizens Coal Company, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes

405 PINE ST PARCEL ID 6899
SPAN 114-035-18314
OWNER: S & S VENDING CO

YEAR OF USE	USE TYPE	BUSINESS NAME	POTENTIAL CONTAMINANTS OF CONCERN							
			CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Railroad	N/A	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

431 PINE ST PARCEL ID 6951
SPAN 114-035-18313
OWNER: MALTEX PARTNERSHIP

YEAR OF USE	USE TYPE	BUSINESS NAME	POTENTIAL CONTAMINANTS OF CONCERN							
			CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Manufacturing, Railroad	Mathews and Hickok Planing Mill Box	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Manufacturing, Railroad	The Malted Cereal Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Manufacturing, Railroad	The Maltex Co, Inc	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

453 PINE ST PARCEL ID 7054
SPAN 114-035-18312
OWNER: DAVIS DERRICK H ET AL

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1889	Manufacturing, Railroad	Bronson Weston Dunham and Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Manufacturing, Railroad	Horatio and Hickok Co, Adirondack Match	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Manufacturing, Railroad	Malted Cereal Co., Horatio and Hickok Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Manufacturing, Railroad	Horatio and Hickok Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Manufacturing, Railroad	Horatio and Hickok Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Manufacturing, Railroad	Horatio and Hickok Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Manufacturing, Railroad	Horatio and Hickok Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Manufacturing, Railroad	E.B. and A.C. Whiting Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Manufacturing, Railroad	E.B. and A.C. Whiting Co	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Manufacturing, Railroad	E.B. and A.C. Whiting Co	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Manufacturing, Railroad	E.B. and A.C. Whiting Co	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

501 PINE ST PARCEL ID 7221
SPAN 114-035-18310
OWNER: MALTEX

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1906	Blacksmith/Coal, Railroad	Burlington Light & Power Company Gas	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1912	Blacksmith/Coal, Fuel Storage, Railroad	Burlington Light & Power Company Gas	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Blacksmith/Coal, Fuel Storage, Railroad	Burlington Light & Power Company Gas	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Blacksmith/Coal, Fuel Storage, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Blacksmith/Coal, Fuel Storage, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Blacksmith/Coal, Fuel Storage, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Blacksmith/Coal, Fuel Storage, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Blacksmith/Coal, Fuel Storage, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

53 LAVALLEY LN PARCEL ID 6471
SPAN 114-035-17201 OWNER: CITY DPW
WATER/WASTEWATER DEPT

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1885	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1889	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1894	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1900	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1906	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1919	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Manufacturing, Railroad	City of Burlington Street Dept Asphalt	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Manufacturing, Railroad	City of Burlington Street Dept Asphalt	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Blacksmith/Coal, Manufacturing, Railroad	City of Burlington Street Dept Asphalt	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Blacksmith/Coal, Manufacturing, Railroad	City of Burlington Street Dept Asphalt	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Automobile Service, Fuel Storage, Railroad	Rutland Rail Shops & Yard	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Automobile Service, Fuel Storage, Railroad	Rutland Rail Shops & Yard	Yes	Yes	Yes	Yes	No	No	Yes	Yes

101 LAVALLEY LN PARCEL ID 6872 SPAN 114-035-17200 OWNER: STATE OF VERMONT				POTENTIAL CONTAMINANTS OF CONCERN							
	YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
	1885	Railroad	N/A	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1894	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1900	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1906	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1912	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1919	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1926	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1938	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1942	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1989	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

101 LAVALLEY LN PARCEL ID 6404 SPAN 114-035-17200 OWNER: STATE OF VERMONT				POTENTIAL CONTAMINANTS OF CONCERN							
	YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
	1885	Automobile Service, Blacksmith/Coal, Railroad	Burlington and Lamoille Railroad Car and Engine Repair Shop	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1889	Automobile Service, Blacksmith/Coal,	Burlington and Lamoille Railroad Car	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1894	Blacksmith/Coal, Railroad	Burlington and Lamoille Railroad Car and Engine Repair Shop	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1900	Blacksmith/Coal, Fuel Storage, Railroad	Lawrence Bartley Corporation, Rutland	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1906	Blacksmith/Coal, Railroad	Rutland R.R Freight, Lawrence Bartley	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1912	Blacksmith/Coal, Railroad	Lawrence Bartley Corporation	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1919	Blacksmith/Coal, Railroad	Lawrence Bartley Corporation	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1926	Blacksmith/Coal, Railroad	Lawrence Bartley Corporation	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1938	Blacksmith/Coal, Railroad	Lawrence Bartley Corporation	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	1942	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	E.S. Aoist Coal Company, Bartley Corporation	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1950	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	E.S. Aoist Coal Company	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1960	Automobile Service, Blacksmith/Coal, Fuel Storage, Railroad	Rutland RR Freight	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	1989	Railroad						No			

332 PINE ST PARCEL ID 6711
SPAN 114-035-17177
OWNER: HULBERT

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1960	Hardware		No	No	Yes	Yes	No	No	Yes	No
1978	Hardware		No	No	Yes	Yes	No	No	Yes	No
1989	Hardware		No	No	Yes	Yes	No	No	Yes	No

400 PINE ST PARCEL ID 6906
SPAN 114-035-18323 OWNER: HOWARD SPACE PARTNERSHIP LLP

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1894	Manufacturing	E.B and A.C. Whiting Tampico Dressing	Yes	No	Yes	Yes	No	No	Yes	No
1900	Manufacturing	E.B and A.C. Whiting Tampico Dressing	Yes	No	Yes	Yes	No	No	Yes	No
1906	Manufacturing	E.B and A.C. Whiting Co	Yes	No	Yes	Yes	No	No	Yes	No
1912	Manufacturing	E.B and A.C. Whiting Co	Yes	No	Yes	Yes	No	No	Yes	No
1919	Manufacturing, Railroad	E.B and A.C. Whiting Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Manufacturing, Railroad	E.B and A.C. Whiting Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Manufacturing, Railroad	E.B and A.C. Whiting Co	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Manufacturing, Railroad	E.B and A.C. Whiting Co	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Manufacturing, Railroad	E.B and A.C. Whiting Co	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Manufacturing, Railroad	E.B and A.C. Whiting Co	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Manufacturing, Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Manufacturing, Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

400 PINE ST PARCEL ID 6865
SPAN 114-035-18323 OWNER:
HOWARD SPACE PARTNERSHIP LLP

			POTENTIAL CONTAMINANTS OF CONCERN							
YEAR OF USE	USE TYPE	BUSINESS NAME	CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1919	Blacksmith/Coal, Railroad	Welch Bros Maple Syrup Packing and	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1926	Blacksmith/Coal, Railroad	Welch Bros Maple Syrup Packing and	Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Manufacturing, Railroad	Penick and Ford Manufacturers of Maple	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

364 PINE ST PARCEL ID 6813
SPAN 1114-035-17179
OWNER: HOWARD SPACE PARTNERSHIP

YEAR OF USE	USE TYPE	BUSINESS NAME	POTENTIAL CONTAMINANTS OF CONCERN							
			CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1926	Fuel Storage		No	No	No	Yes	No	No	Yes	No
1942	Automobile Service		Yes	No	Yes	Yes	Yes	No	Yes	No

444 PINE ST PARCEL ID 7061
SPAN 114-035-18310

YEAR OF USE	USE TYPE	BUSINESS NAME	POTENTIAL CONTAMINANTS OF CONCERN							
			CHLORINATED SOLVENTS	KETONES	METALS	PAHS	PCBS	PESTICIDES	PETRO	HERBICIDES
1926	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1938	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes
1942	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1950	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1960	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1978	Railroad		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
1989	Railroad		Yes	Yes	Yes	Yes	No	No	Yes	Yes

C. MANAGED ENVIRONMENTAL SITES

THE FOLLOWING TABLES PROVIDE INFORMATION ON ALL OF THE MANAGED ENVIRONMENTAL SITES IN THE AWP STUDY AREA.

LAND USE RESTRICTIONS

SITE NO.	SITE NAME	SITE ADDRESS	PRIORITY	SOURCES	CONTAMINANTS	RECEPTORS	LAND USE RESTRICTIONS
890455	Independent Foods	S. Champlain St.	SMAC	UST-Gasoline	Gasoline	Groundwater - Surficial Aquifers, Vadose Zone Soils	Land Record Notice
992592	Burlington Public Works Garage	Pine St.	SMAC	Above Ground Storage Tank, UST-Diesel, UST-Gasoline, UST-Heating Oil, Waste Oil	Waste Oil	Groundwater - Surficial Aquifers, Vadose Zone Soils	Land Record Notice
770042	* Pine Street Barge Canal	King Street	HIGH	Coal Tar, Free Product Present	Coal Tar	Free Product Present, Groundwater - Surficial Aquifers, Surface Water, Vadose Zone Soils	Easement
20043192	453 Pine Street	453 Pine Street	LOW	MGP	Coal Tar	Groundwater - Surficial Aquifers, Surface Soils	Deed Restriction

UNDERGROUND STORAGE TANKS

SITE NO.	SITE NAME	FACILITY ID
770179	Vermont Railway	6582550
20002827	266 Champlain St	5551723
921309	Old Coca Cola Plant	9990335
20033138	Former Kilburn & Gates Industries	1456
20023000	Hershberg Property (Good News Garage)	6552226
992596	Lake Champlain Transportation Co	8649804
992592	Burlington Public Works Garage	822

VT DEC HAZARDOUS WASTE SITES

SITE NO.	SITE NAME	SITE ADDRESS	PRIORITY	SITE STATUS/CLOSURE DATE	SOURCE OF CONTAMINATION
770042	* Pine Street Barge Canal	King Street	HIGH		Coal Tar
770179	Vermont Railway	1 Railway Lane	SMAC	8/29/2008	UST-Heating Oil
870035	Maltex Pond	n/a	NFAP		Coal Tar
870097	Ultramar	n/a	NFAP		UST-Gasoline
890455	Independent Foods	S. Champlain St.	SMAC	5/24/2010	UST-Gasoline
921309	Old Coca Cola Plant	226 Pine St	SMAC	8/1/1994	UST-Gasoline
992592	Burlington Public Works Garage	Pine St.	SMAC	2/2/2011	Above Ground Storage Tank
992596	Lake Champlain Transportation Co	King Street Dock	SMAC	7/10/2000	UST-Gasoline
20002827	266 Champlain St	266 Champlain St	LOW	Voluntary Action	UST-Heating Oil
20023000	Hershberg Property (Good News Garage)	23 King St	SMAC	10/15/2002	UST-Gasoline
20033138	former Kilburn & Gates Industries	20 Kilburn St	SMAC	"Voluntary Action / 5/3/2010"	UST-Heating Oil
20043192	453 Pine Street	453 Pine Street	LOW	Brownfields - BRELLA	MGP
20104042	23 King ROW	33 King Street	SMAC	"Voluntary Action /11/25/2013"	UST-Gasoline
20124348	351 Pine Street	351 Pine Street	LOW	Brownfields - BRELLA	
20134377	Bobbin Mill Apartments	235 Pine Street	MED	Voluntary Action	Other
20154577	Battery Street Extension	203 Lavalley Ln	LOW	Voluntary Action	Above Ground Storage Tank

D. LEVERAGED FUNDS

THE FOLLOWING TABLE SUMMARIZES THE FEDERAL, STATE, LOCAL AND PRIVATE FUNDS THAT HAVE BEEN PROVIDED TO DATE FOR PLANNING IN THE SOUTH END, INCLUDING THE AWP STUDY AREA.

AREA WIDE PLANNING - LEVERAGED FUNDING CITY OF BURLINGTON, VT

SOURCE OF FUNDING	NAME OF ENTITY PROVIDING FUNDS	YEAR	FUNDING ACTIVITY	AMOUNT OF FUNDING EXPENDED
Other Federal Funding	Chittenden County RPC	2015	Plan BTV South End Planning	60,000.00
Other Federal Funding	National Endowment for the Arts	2015	Plan BTV South End Planning	70,000.00
State/Tribal Funding	State Municipal Planning Grant	2015	Plan BTV South End Planning	17,042.00
Local Funding	City of Burlington General Fund	2015	Plan BTV South End Planning	4,000.00
Local Funding	City of Burlington Housing Fund	2015	Plan BTV South End Planning	15,745.00
Local Funding	City of Burlington CIP	2015	Plan BTV South End Planning	105,000.00
Private/Other Funding	Various Private Contributions	2015	Plan BTV South End Planning	22,000.00
TOTAL				**293,787.00**