2010

Revitalization of Cornwall Avenue

A Retail Corridor Overlay Plan for Downtown Bellingham, WA

& Adaptive Reuse of Malls Into Vibrant Urban Villages

Western Washington University
An Urban Transition Studio Project

March 10, 2010

Urban Transitions Studio

Urban Transitions Studio is a collaborative partnership between Western Washington University, the City of Bellingham's Office of Planning and Community Development, and Sustainable Connections, a Bellingham-based nonprofit organization. The partnership aims to promote *new urbanism* and *smart growth* planning concepts by stimulating ideas for transitioning Bellingham into a more urban and sustainable community.

Each year, WWU faculty and project partners select a topic of study for the academic year. This year, the UTS project investigates how to bring major retail back to Bellingham's downtown core, which has been devoid of a major retail anchor since the migration of stores such as JC Penney, The Bon Marche, and Sears to Bellis Fair mall in the 1980s. A corollary project examines how single-use areas, such as the Bellis Fair mall, can eventually revert to more sustainable uses, such as urban villages.

Bellingham's downtown has rebounded significantly since the immediate years following retail's exodus to Bellis Fair and other outlining retail centers. Its remaining retail is still largely comprised of smaller specialty shops with limited consumer draw. This year's project explores how large retail anchor businesses might be lured back downtown in order to stimulate further investment, and to assess what impacts it would have if they came. The project seeks to restore Bellingham's civic center as the community's premier center of retail commercial, entertainment, and civic activity, an important step towards making Bellingham a more sustainable community.

This is the first in a series of coordinated university studies that examine sustainable planning concepts for downtown revitalization and retail mall transition. Upcoming classes this spring and fall will examine financing and plan implementation, marketing strategies, sustainable design features, and the assessment of the environmental impact of the urban planning

concepts. Participating WWU faculty in future studies include Arunas Oslapas (Engineering Technology), Paul Stangl (Huxley College of the Environment), Troy Abel (Huxley College of the Environment), Wendy Wilhelm (College of Business and Economics) and Ed Love (College of Business and Economics).

Winter 2010's Planning Studio is the first in the series of coordinated class investigations that emphasizes the development of an initial planning concept. Future participating classes will further build upon the concepts developed in planning studio. The program is intended to expand student learning by concentrating planning studies over the course of an entire year and incorporates multiple dimensions in planning and policy development to effect change towards sustainable community development.

Study Areas and Definition of the Problem

In the late 1980's, Downtown Bellingham lost its role as the premier commercial retail center of the community as a result of several historic policy actions. Bellingham was one of the nation's last urban communities to fall victim to the relocation of its downtown's commercial retail core to outlying locations. This has led to the fragmentation of the downtown's cohesiveness, the decline of property values, and, as is evident in decentralized land use spatial patterns, contributes to the global climate crisis by fostering greater dependency on the private automobile.

"When a city heart stagnates or disintegrates, a city,

as a social neighborhood of the whole, begins to suffer"

Jane Jacobs

According to new urbanism theory, a commercial retail core constitutes one of the most important *primary* uses of a community's downtown. Other *primary* uses include the concentration of offices, civic functions, housing, entertainment, and cultural uses. The loss of primary retail uses results in the erosion of a downtown's vibrancy and economic vitality, social capital, and, more often than not, has rendered attempts in downtown rehabilitation ineffective. The erosion of downtown retail core functions has resulted in the deterioration to the American urban landscape, increased reliance on fossil fuels to access decentralized retail locations, inefficient consumption of land resources, and overall deterioration of urban quality of life.

Study 1: Transitioning Downtown Bellingham for Retail Primary Uses

Over the past two decades, following the demise of the downtown with the opening of the Bellis Fair Mall, concerted efforts have been devoted towards the revitalization and rehabilitation of Bellingham's downtown, employing strategies that induce investment in new housing construction and improvements to civic and cultural districts. These strategies have targeted redevelopment districts (including Bellingham's Old Town, the intersection of Holly Street and Railroad Avenue, and the Morse Hardware district), and other strategic approaches. The result has been significant in increasing the diversity of uses in the downtown.

This project seeks to further complement rehabilitation measures by developing concepts and strategies for reintegrating primary retail uses within the downtown as a critical strategy in downtown revitalization. Lessons learned from the design of retail malls helps to inform new approaches to planning a downtown retail core with the aim of reestablishing the city's center's primacy as a retail commercial center.

Study 2: Transitioning Bellingham Mall to New Urbanism Neighborhood Village

In concert with the reintegration of major retail functions as part of the downtown's overall redevelopment, opportunities emerge for evaluating alternative uses for developed areas that are currently devoted to single-uses, such as outlining retail shopping centers. This complementary project examines single use retail commercial sites in Bellingham, using the Bellis Fair Mall as a case study, for phased transition as sustainable new urban villages to meet the city's pressing priority in meeting long term population growth forecasts.

Students undertake this project by first locating an appropriate development boundary constituting the urban village site, and determining a range of residential densities and other land uses that would contribute to sustainable neighborhood development. The proposed concept represent a transitional development strategy for maximizing residential development infill. This is accomplished through the re-use of existing areas within the city's boundaries, thereby reducing the further expansion of the city into rural Whatcom County.

The development concepts illustrated in the Planning Studio report represent the first two chapters of this year long Urban Transition Studio investigation. Subsequent studies will append

this report to incorporate considerations of marketability, regulation, financing, and implementation strategies, sustainable design attributes, and the assessment of environmental impact.

Western Washington University is proud to participate in this collaborative effort with our project partners in consider long range strategies to help lead the Bellingham community towards a more sustainable future.

Sincerely.

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Planning Studio

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Chapter 1: History and Character

1.0 Character of Cornwall Avenue

Cornwall Avenue in Downtown Bellingham is part of the center of the commercial core area, and was once an active part of the commercial activity that helped downtown to thrive. Today, Cornwall Ave has experienced a series of changes that have reduced its vitality and importance as the city's commercial core area. Cornwall Avenue has many attributes that give it a great deal of potential in the central business district. Its store lined streets and wide sidewalks with covered awnings make it ideal for pedestrian oriented commercial activity. The streets contain many important human elements such as bike racks, benches, large crosswalks, and tree lined streets. Although the street lacks bike lanes and human scale lighting elements, there are a few traffic calming techniques already in place that make Cornwall a safer place for pedestrians than many other streets in Downtown Bellingham. In addition to traffic calming techniques Cornwall accommodates both parallel and angle parking which benefits pedestrians by shielding auto traffic. There is also a nearby parking garage to the west of Cornwall that serves as a major source of parking for the area as a whole.

Cornwall Avenue also has a unique character due to the mix of building types, heights and ages. Varying architectural styles contribute to the visual interest of the area in many places, while at the same time the different buildings flow together due to a common street and window line. The unfortunate and recent accommodation for drive-thru banks on Cornwall acts as the main disturbance to the street line, but overall most of the buildings fit together in an ideal structure. The street is also home to three buildings on the historic register, further adding to the historic character of Cornwall. The buildings currently contain a variety of uses, ranging from small cafes and restaurants, to theaters, dance studios, specialty shops, a post office, banks, and even a large chain pharmacy. Most of the businesses are oriented to their street front entrances, but some are even making use of their alleyway access. Also, some residential units are present on Cornwall, but in small numbers and there is a great potential to create more mixed use buildings and bring in a larger residential population. There are a few single story buildings currently on Cornwall that have the potential to be built up in order to accommodate more housing, and be an overall more efficient use of space in the Central Business District. While these uses do currently exist, there are a large number of vacant buildings along Cornwall. The largest concentration of vacant property is near the old JCPenney building, in the center of Cornwall Avenue between East Holly Street and East Magnolia Street. It can be concluded that with the relocation of the major anchor stores such as JCPenney, Sears, The Bon Marche, and other retail anchors, that the smaller businesses surrounding it were unable to sustain themselves, and they too fled from the retail core, and relocated largely at The Bellis Fair Mall and other outlying locations. This major change in the downtown area, due to the opening of Bellis Fair Mall in the 1980's, has left Cornwall in the largely depressed and in a semi- vacated state that it is in today.

1.1 HISTORY

In the early 1890's a variety of business districts came together to form the Downtown commercial Bellingham area. At its peak Holly Street and Cornwall Avenue acted as the major defining streets for the downtown area, and a great variety of services were available in the district that these two streets created. This intersection was once the transportation hub for the Bellingham area, drawing many visitors to the retail core of the city. Due to this central attraction to the city, a variety of retail stores, theaters, civic uses, restaurants, hotels, and other services were all available in this area near Cornwall and Holly. "Downtown was a place for people. Prior to the automobile age, people came downtown for all their needs, using public transportation and walking to their many destinations," (Historic Walking Tour). For example, the retail core area once had five theaters which drew crowds at many times of the day. One of the most highly recognized of these theaters was called Becks Theater, owned by Whatcom's pioneer brewer Jacob Beck. Beck was a German immigrant who had a great deal of investment in the Whatcom area, and his theater was originally built as an opera house, but was later converted into the American Theater, a film theater, after his bankruptcy in the early 1900's. The theater was torn down in 1959 to make way for what was considered a better economic use, and replaced by a JCPenny department store.

Figure 1.1: Beck's Theater in 1903.

Figure 1.2: The JC Penney Store on Cornwall in 1960.

Up until the 1950's the business area continued to grow without any major competition, when suddenly the food markets began moving away from the core. The trend of stores moving away from the core continued slowly into the 60's as large discount stores and shopping centers began to develop off of Interestate-5, and ultimately changed the retail dynamics of downtown in 1988 when the Bellis Fair Mall opened off of the Guide Meridian. The Bellis Fair Mall site was originally a tulip field, drawing a

great deal of tourism and character to the Whatcom area each year with the annual tulip festival and parade that took place on the main streets of Bellingham. As the age of the automobile and the freeway continued to develop, the site became more appealing for further development due to a growing trend for automobile convenience.

IMPORTANT CHANGES IN THE 1980'S

During the 1980's the first mall proposal in Bellingham was made for the downtown. The mall development was proposed for the Central Business District, but one of the major issues that the community identified with developing a downtown mall was the major lack of parking. When the community voted on the downtown mall proposal, the idea was rejected due to the parking issue. However, another mall location proposal was made because the City of Bellingham was concerned that the elimination of a mall development would reduce the city's tax base. When the proposal was made for developing a mall off of the Guide Meridian, the idea largely gained the support of the city and the public. In order to build the mall the proposed site was re-zoned from agricultural uses to a commercial use site, and for the first time in Bellingham's history large anchor stores were going to be allowed to exist outside of the downtown. The Planning and Development Commission stated that although the Central Business District should be promoted as the commercial and cultural center of Bellingham, it was not the intent of their goals and policies to "prohibit development of satellite commercial areas in the city," (Staff Report 6, page 35). According to Resolution number 34-1986, "The Bellingham Planning and Development Commission held a public hearing on July 8, 1986, to consider the site plan and land use restrictions as recommended by staff, and whereas, following the public hearing the commission unanimously recommended approval of the application subject to certain conditions." Some of the conditions that were imposed upon the developers of the Bellis Fair Mall project by the City of Bellingham included efforts to mediate the impact on the Downtown Central Business District through means such as participating at a downtown development association, planning for the future of the Central Business District, purchasing five buildings within the downtown area, and making an effort to seek high quality tenants for the vacated spaces in the CBD for the properties which it owns or holds leases. Once the project proposal plans were approved by the Bellingham Planning and Development Commission, the developers General Growth Corporation and Trillium Corporation were able to begin the first phase of the development process of the mall.

As a result of the re-zone and project approval that occurred in 1986, all of the downtown anchor stores that once existed in the Central Business District moved to the mall area, and took with them the active street life that once thrived on Cornwall Avenue and other streets in the downtown core. One example was JCPenny, which used to act as a major attraction to pedestrian activity and retail life downtown. Although today Downtown Bellingham continues to serve and grow as a cultural and civic center, the creation of the Bellis Fair Mall has greatly impacted the success of the downtown retail core, specifically Cornwall Avenue which once contained the major retail anchors. The loss of the major retail stores on Cornwall Avenue resulted in many other small businesses leaving the area too, and essentially draining the life out of the area. This had a great effect on not only the economic and social success of the area, but also on the property owners who were left with vacant buildings. Property owner Doug Tolchin said "the opening of the mall and the entire Guide Meridian retail development vacuumed the Cornwall anchors away." Tolchin, who was able to acquire six properties on Cornwall Avenue after the removal of the anchors, said that between 1989 and 1996 property values on Cornwall plummeted. Rents crashed, reducing from $1.75 a square foot, to $0.25-$0.50 a square foot. This factor alone worked to change the character of the down town area by allowing low vitality tenants to move

into the retail core. The quality of the retail downtown shifted from high end merchandise, to lower end merchandise. In addition to the lack of parking as compared to Bellis Fair Mall, Cornwall Avenue experienced a huge decline in human and retail activity.

In addition to the development of Bellis Fair Mall, the rise of the automobile era played a major role in changing the Downtown Bellingham character. Historically buildings in downtown were developed along major railroad lines and trolley car lines. The buildings were generally multiple stories, and built side by side, fronting the street edge. Retail stores, restaurants, bars and other uses were located on the bottom floor for easy pedestrian access. The upper floors were used for hotels, office spaces, and residences. As the automobile era progressed, and more people became reliant on their own cars, the streetscape and character of the downtown area changed. Parking became a major concern, as well as other means of car accommodation. One of the major changes to accommodate cars that brought great change to the downtown was the addition of drive-thru banks. One example that illustrates this well is the demolition of the Wahl's women's clothing store downtown on the corner of West Holly Street. The building was torn down in 1974 with the intention of a drive-thru bank being easily accessible on this corner to the entire surrounding block. This project was unfortunate because it removed a prominent older building from downtown, while taking some of the downtown character with it. Many similar projects to this were executed in the downtown area, breaking up the street line, altering the character, and further encouraging the use of the automobile.

Figure 1.3: Wahl's ladies clothing store in 1956.

1.2 POLICY

Since these major changes occurred it has been clear that a revitalization of Downtown Bellingham has been a priority of the city. Many of the goals that the city has recognized as important today, are the same goals that have been noted in the comprehensive plans of The City of Bellingham since 1986. These goals for character include ideas on how to continue to develop areas in the downtown in ways that show off their individual neighborhood characteristics, while at the same time develop in a way that is complementary to the commercial core as a whole.

In the City of Bellingham Comprehensive Plan of 2005 it is stated in Land Use Policy 67, that the land use goal for the city center is to "Ensure that Bellingham's City Center retains its role as the dominant cultural, civic, financial and service center for the community. Incentives, including those that encourage commerce and support medium and high density residential development, shall be considered." There are many land use (LU) policies listed in the comprehensive plan that work to support this goal. Some of these policies are listed as follows:

> LU-70 "Maintain and enhance the city center character, which includes pedestrian oriented storefronts and pedestrian scaled streetscapes through specific attention to architectural detail and streetscape components like sidewalks, street trees and street furniture."
>
> LU-76 "Increase mobility within the city center and provide for convenient transit, pedestrian, and bicycle routes to and from the city center."
>
> LU-78 "Encourage development and retention of grocery stores, pharmacies, and other convenience retail businesses and services in the city center to support the area's residential uses."
>
> LU-97 "Maximize efficient use of the City Center land, minimize gaps in the urban landscape, and improve urban form by: encouraging redevelopment of existing surface parking lots; discouraging creation of new surface lots; consolidate parking in strategically located parking structures; and manage parking as a system."

The Comprehensive Plan also lists a variety of ideas more specific to building design and character. In The City Center Design Standards for Bellingham Washington, some basic principles for design involve, maintaining a clear definition of the street edge, including human scale elements on the sidewalk, relating building designs to the current traditional buildings, and preserving the character of historic buildings. In addition, the design standards lay out expectations for commercial buildings downtown that include creating a unified and simple design, using the entire store front as the store image and developing with sustainability and environmental criteria in mind. These basic character expectations describe what the city desires for the downtown center development. The city recommends that "The design of a new building should not necessarily imitate historic buildings, but should be compatible with them," (The City Center Design Standards, pg. 16). New buildings should include architectural elements and materials compatible to existing buildings in the area, in order to maintain the character of the commercial core. It is our goal in this proposal to uphold these standards in addition to our proposed ideas and design concepts.

1.3 IMPORTANCE OF RETAIL CORE AND REVIVAL

The main goal of this project is to provide a new and improved design for the revival of Cornwall Avenue as a retail core of downtown Bellingham. Reviving the downtown is an important part of creating a more sustainable city that acts as a district for people to interact and shop, as well as an efficient community that implements many of the new-urbanist concepts that planners are working towards today when creating communities. By revitalizing Cornwall Avenue through the reincorporation of anchor stores, promoting a lively pedestrian oriented street life, incorporating residential uses, creating new uses for alley ways, and improving public transportation and parking, Cornwall Avenue can

become the city center that it once was historically for the people of Bellingham. Having a strong city center has a variety of benefits for people of the community, as well as for the environment. First, by creating a walkable space that people can come to and interact with others while shopping, eating, and meeting their various needs, Bellingham would be enhancing the sense of community for its citizens as well as providing a positive social outlet for the public. It is also beneficial to revitalize Cornwall Avenue because the transportation network in Bellingham leads people to the Downtown Station just two blocks East of Cornwall. Currently the shopping available downtown is not sufficient when compared to the mall, and therefore by creating a thriving shopping district on Cornwall Avenue more people will be able to access the stores due to the existing public transportation infrastructure. Having more shopping opportunities downtown will be more convenient for the citizens of Bellingham, and with the suggested improvements for public transportation and parking on Cornwall Avenue, the downtown shopping experience will only become easier and more accommodating for the public's needs. From an environmental standpoint, revitalizing Cornwall Avenue will be beneficial because it will help to make Bellingham a more sustainable community. One way it will do this is through cutting down on energy use and carbon emissions from people driving out to the mall. Through having an effective transportation network to and around the downtown, the public will be able to access the services available on Cornwall at a lower energy cost. Also by incorporating more residential uses on Cornwall Avenue, people living downtown will be able to walk easily to a variety of places without depending on personal transportation methods. Overall there are many benefits to this proposed revitalization project that will bring a variety of improvements to the public and the environment.

1.4 ARCHITECTURAL AND DESIGN CHARACTERISTICS

In order to develop a better understanding of the character that this project is attempting to create on Cornwall Avenue in the future, a visual preference survey was conducted. This was done in order to identify elements of the downtown that were found to be more favorable, and things that were found to be less ideal. The results of this analysis are going to guide the design codes and standards for the future development on Cornwall Avenue. The following section is divided into categories based on different elements that are being considered in the future design standards.

WINDOWS

Windows on the older and historic buildings in the downtown follow a similar trend and style, adding to the character of the area. On many buildings the windows are vertically oriented and typically are twice as tall as they are wide. When constructing buildings that are side by side, it is most favorable to keep the window line between the structures in a uniform style. A continual line creates a more cohesive character and style. Attention to detail on and around the windows adds to the overall character of the building, and differing styles in this regard is encouraged between buildings in order to have distinct differences between building facades (see figure 1.4 & 1.5).

Figure 1.4: Desirable historic window lines.

Figure 1.5: Desirable window lines.

BUILDING MATERIALS

The older buildings in downtown Bellingham use many of the same building materials and tend to have a similar building material style. The use of brick for the building exterior is extremely common, and is used in most buildings on Cornwall Avenue. Along with the use of brick and sandstone, large blocks of concrete or granite are typically used throughout the entire building exterior, or sometimes only on the first floor of the exterior or foundation. It is more favorable to have the first floor of the building where retail is located to be made of a different material or a different color than the upper floors of the building in order to distinguish this floor from the others and make it stand out to pedestrians.

Figure 1.6: Example of building materials found downtown.

Figure 1.7: Another example of downtown building materials.

RETAIL SIGNAGE

Orienting retail signs to pedestrians, rather than to automobiles, is an important objective of this project proposals design standards. Retail stores should use small scale sidewalk signs that hang down from awnings or off of building fronts in order to cater to pedestrian retail customers. Additional and larger storefront signage is permitted, however these pedestrian oriented signs are suggested.

Figure 1.8: Encouraged retail signage.

BUILDING HEIGHT

Having a consistent roof line and buildings of similar heights are important elements that help to create a more unified street with a sense of place. Single story buildings are visually unappealing and also are not the most economical use of space in the downtown core. Future buildings on Cornwall Avenue should be at least two stories tall, and ideally three to four stories tall in order promote more mixed uses. Buildings can be taller than four stories, but should aim to blend in with the surrounding developments. Height staggering is a useful method when dealing with buildings of varying heights in order to reduce inconsistency in the roof line.

Figure 1.9: Example of an undesirable difference in building height.

Figure 1.10: Example of desirable staggered building height.

Figure 1.11: Example of desirable awning type.

Figure 1.12: Example of a less desirable awning type.

AWNINGS

Pedestrians in Western Washington know all too well that weather can be an important deciding factor when it comes to outdoor activities, this includes walking in the downtown area. In order to encourage pedestrian use on Cornwall during unpleasant weather, and to make the large buildings on Cornwall seem more human scale, the continued use of retail awnings over sidewalks should be encouraged. Currently there are a great variety of awning styles used on Cornwall Avenue, as well as many varied awning heights and widths. In order to use awnings most effectively, awnings should run in a cohesive line from building to building, and be of a consistent size and style. The most favorable style of awning is one that uses glass, which allows sunlight to pass through and brighten the sidewalks. This style of awning does currently exist on some storefronts in the downtown, but more often less favorable styles are implemented. Less favorable styles of awnings include ones that act as an extension of the building façade, such as the Rite Aid awning currently on Cornwall Ave, and awnings that are too shallow or short to function as a shelter of pedestrian activity.

BUILDING STYLE

Lively downtown areas should incorporate the use of both old and new buildings. On Cornwall Avenue, there are currently three buildings on the National Historic Register, in addition to newer construction, and restored buildings from earlier eras. It is encouraged that a mix of different buildings ages be continued, and that newer buildings take into consideration the architectural styles that currently exist in the area.

Figure 1.13: Historic style construction existing in the downtown.

Figure 1.14: Example of favorable new construction existing in the

BUILDING SETBACK

It is stated in the City of Bellingham Comprehensive Plan that buildings in the downtown core should be built to the sidewalk edge and have no setback. Currently this is not the case on Cornwall Avenue due to drive-thru banks that have broken up the street edge. All future development on Cornwall Avenue should be built to the sidewalk edge and have no setback in order to create the best and most favorable street line.

Figure 1.15: Example of appropriate building setback.

CORNICE

Many buildings downtown currently have intricate cornices along the roof line which add to the building character, making downtown a more visually interesting place. In addition to adding an aesthetic value to a building façade, cornices can conceal gutters and can facilitate drainage as well. Intricate cornices are typically found on older buildings in downtown Bellingham, but are visually favorable and are encouraged for new construction and building redevelopment.

Figure 1.16: Example of a desirable cornice.

ADDITIONAL DESIRED FEATURES

In addition to the design standards listed, there are other elements that should be promoted for new development in the downtown Bellingham area. First, new buildings should be LEED certified. At a minimum, buildings in the downtown core should be LEED silver certified, but higher levels of certification are encouraged. This will help Bellingham to continue to promote its sustainable image and contribute to the environmental goals of the community. Also, recycling should be required for all retail businesses, offices, restaurants and other commercial uses that are located in the downtown core. Recycling is an important action that downtown businesses should take part in, in order to promote more sustainable practices in the wider Bellingham area.

1.5 PROPOSED IMPROVEMENTS

The concept herein for revitalization of the Central Business District is a retail corridor overlay plan, which includes elements such as an improved retail core, a new north and south anchor store,

alleyway improvements, new parking accommodations, and transportation improvements. Each of these elements will help to bring a new life to Cornwall Avenue and promote the urban and sustainability principles desired by the Bellingham Community through the creation of a downtown mall area. The premise behind this overlay plan is to bring in more pedestrian activity through the creation of new anchor stores at either end of Cornwall Avenue, which will funnel retail activity along the street between the anchors and provide business for the smaller retail stores as is commonly seen in a mall like Bellis Fair. Improving the streetscape and alleyways will make Cornwall Avenue a more desirable location for pedestrian activity and will further contribute to the vitality of the downtown area. In addition to these revitalization efforts, the improvements to parking and public transportation will encourage a greater use of the area. The following chapters expand more on these elements and their specific designs for this proposed overlay project that are illustrated by figure 1.17 following below.

Bellingham Retail Core District

Major Retailers, Structured Parking, Major Corridors

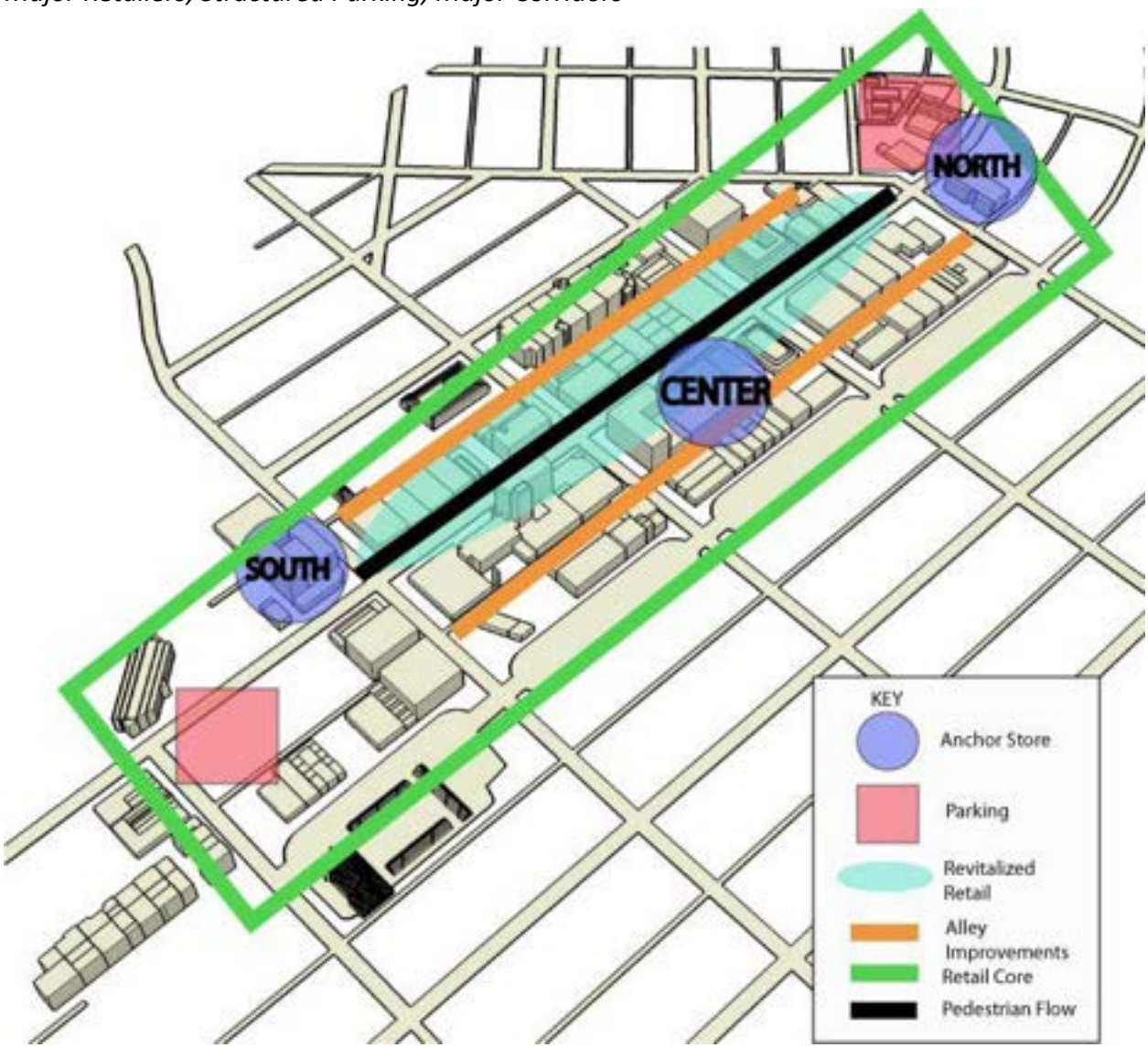


Figure 1.17: Illustrates the Bellingham Retail Core District overlay plan, as described in the following chapters.

Chapter 2: Downtown Bellingham's Retail Corridor Revitalization

2.0 INTRODUCTION TO THE DOWNTOWN BELLINGHAM RETAIL DISTRICT

BELLINGHAM'S CITY CENTER MASTER PLAN OVERVIEW

In August of 2002, the City of Bellingham published a City Center Master Plan that lays out the visions and objectives for downtown. This framework is consistent with the State Growth Management Plan and the comprehensive plan and will help to coordinate public and private investment decisions.

> LU-67: "Ensure that Bellingham's City Center retains its role as the dominant cultural, civic, financial and service center for the community. Incentives, including those that encourage commerce and support medium and high density residential development, shall be considered."

STUDY PURPOSE

With the opening of Bellis Fair Mall in 1990 Bellingham's city center saw a sudden drop of retail that has led to a nearly empty downtown with over 107,000 square feet of vacant space. More recently the Barkley Village development has contributed to this loss of downtown jobs, goods and services at a steady gradual pace. In order to provide a vibrant successful city center where Bellingham residents can live, work, shop, and play, revitalizing the retail core can bring back life to the downtown.

PLAN GOALS AND OBJECTIVES

Create an enhanced pedestrian space where residents and visitors can safely and enjoyably shop, run errands, experience local arts such as films, music, paintings and sculptures, meet friends for a drink or simply relax.

Create a diverse retail corridor for a range of shops from high end to thrift stores that will enhance the shopping experience. This requires a mix of aged buildings where older buildings can provide space for lower rents and newer buildings can lease to more lucrative businesses.

Create a versatile space that can adapt to hold public events and high traffic days, such as street vendors, concerts and the holiday shopping season.

SUMMARY OF FINDINGS

Currently Bellingham's city center lacks major retail and therefore neglects to attract infill businesses that make downtown retail thrive. As Cornwall Avenue, once being home to major retail downtown, holds the capacity and function to serve multiple retail anchors, liner stores, restaurants, and even residential units we feel that this area is ideal to focus our revitalization efforts. Cornwall is also in close proximity to public transportation and houses the capacity for retail to expand in a diverse set of aged buildings. Currently there is approximately 10.7 million usable square feet downtown; with

this proposal you will see an additional 617,261 square feet of usable and attractive square feet for a mix of uses.

Cornwall Avenue is beautifully lined with trees and boasts wide sidewalks that have a zero line setback in most places so pedestrians can easily access businesses' front doors without having to cross a sea of parking. However, parking is a major hurdle for most businesses to locate in the city center. Although, on street metered parking is provided, this is not an ideal situation for employees or those who care to park longer than a meter allows. Addressing the parking issue will help to overcome business owner's fears about a downtown address.

The Leopold, a retirement community, is Cornwall Avenue's only source of residents. The lack of a strong residential community makes Cornwall a dead zone after 5pm and shifts the need for services outside of the city center where the current residential population lives. With the revitalization proposal, an additional 145 potential residential units will help to support the businesses on Cornwall Avenue and downtown Bellingham to create a demand for new growth.

Cornwall is currently home to a number of offices, many of which reside above street level that help to feed many street level businesses during the lunch hour and after hours. During these peak times many office workers leave Cornwall for Railroad Avenue, which boasts a number of restaurants and allows more natural light for pedestrians. Although Cornwall Ave. is narrower than Railroad, it contains many solid awnings, which do not allow the natural light onto the sidewalk. This is especially true between Magnolia Street and Holly Street. Well-lit areas make a more attractive and safe space for pedestrians.

Just as the awnings are a problem for letting light in, they help to protect pedestrians from the elements. As most businesses on Cornwall utilize awnings, there is no real consensus of design. Setting design standards for the awnings on Cornwall will help to ensure pedestrians have protection from the elements and the public space is well-lit.

2.1 DISTRICT REDEVELOPMENT CONCEPTS

CRITERIA FOR REDEVELOPMENT

Cornwall Avenue has an incredible potential to be a thriving center for economic and social activity in Bellingham. Located in the heart of downtown, Cornwall could also serve as a gateway into the proposed waterfront development, making it not just a destination for shopping but a place many people could flow through daily on their way to other areas of town. Luckily, Cornwall boasts a variety of different architectural structures, adding to the character of this area of Bellingham. Unfortunately, however, many of the architectural structures have been tremendously underutilized and their blank facades, dim lighting and surface parking add to the unpleasing effect the area has on the eye. The underutilization of space in the area and presence of aesthetically unpleasing store fronts combined with the impact that Bellis Fair has had on the downtown retail core has given sufficient cause for a revitalization of Cornwall Avenue. This project study offers ideas for possible strategies that could be executed in Bellingham as a civic center plan.

UNDERUTILIZED SITES

As mentioned previously, the underutilization of space is a major factor with Cornwall Avenue. Walking down the avenue there are at least five underutilized spaces in the heart of Cornwall and around ten buildings with multiple vacancies, providing a lot of room for smart growth. Most of the underutilized areas (that are not within existing buildings) are around the Avenue's three banks. These

banks not only create pavement holes in the streetscape, they threaten pedestrian activity by constantly crossing pedestrian pathways with automobiles. To overcome this threat to pedestrian activity this plan would move these banks to safer locations and dedicate those paved areas to buildings and spaces for people instead of cars. Businesses and structures that generate social activity and community ties would be beneficial in creating an atmosphere for Cornwall Avenue that would support a successful retail core; some examples are discussed further in this report.

Figure 2.1: Surface parking is an inefficient use of space

Figure 2.2: Drive-thrus create an unsafe pedestrian atmosphere

Figure 2.3: View of underutilized sites and vacancies on Cornwall

BLANK FACADE

Many of the buildings downtown are in fine condition but are quite boring to look at, making the trip down Cornwall forgettable and often dreary. A successfully revitalized downtown means that people to want to be there and are interested in what they are seeing and experiencing. An easy way to accomplish this is to make the surroundings more interesting, covering many of the blank facades seen throughout the Avenue with artwork or interesting architectural elements. Consistency with many of

the older buildings that are full of character, like the old Key Bank building or the Federal Building, would be desired to create an area that is cohesive and flows naturally from one end to the other. The modern structures that blend well with this character are simple enough; the GreenHouse building is an excellent example. The Green House building is a neutral color and decorated with nice glass awnings that allow light to penetrate into the often times dark Cornwall Avenue,. The Green House also uses decorative signage for advertisement that contributes to the character of the building.

Figure 2.4: Example of black façade on Cornwall Avenue

AESTHETICALLY UNPLEASING

This section relates heavily with the previous in that aesthetics are a major component in deciding where one would like to spend time and money. Blank facades and open lots do not attract people to the area and surface parking is an inefficient use of space. Some of the structures themselves are so unappealing that one may think twice before entering. One of these structures in particular is the Rite Aid building. While having a drugstore/general store in the heart of downtown is beneficial, especially when adding additional residential units to the area like this project calls for, the structure itself is pretty bad to look at. This project has plans for the Rite Aid building that are discussed further into the paper.

Artwork can be integrated within the retail core to acquire desirable aesthetics. This has already been down is some parts of downtown with local artwork being displayed, utility boxes painted by local artists, sculptures serving as public seating, etc. For buildings like the US Bank with a vast wall of one-way glass, instead of preventing people from looking in the window, the window could be used as a display for artwork, making the walk past the structure more exciting and different.

The dreariness experienced by many people who walk down Cornwall Avenue can partially be attributed to the lack of light reaching the corridor. By integrating artwork into lighting we not only make the place more appealing aesthetically, but a higher feeling of safety is enforced when people can see their surroundings.

PARKS AND OPEN SPACES

Parks and open spaces are an excellent way to generate social activity in a given area; they attract people outside and offer a venue to unwind from daily stresses. Open spaces are often destinations for recreational activity but can be just as enjoyable as a place to socialize and rest. Cornwall Avenue has a few vacancies that potentially could serve as pocket parks. This plan illustrates the development of

vacant spaces to generate greater pedestrian activity. Successful parks are safe, attract a variety of people and offer outdoor green space in an urban area. To accomplish this, this project suggests a pocket park with seating, landscaping, and lighting to add to Cornwall's character and safety. An urban park offers not only a downtown retreat, but can generate its own activity as a destination on Cornwall Avenue.

2.2 REDEVELOPMENT STRATEGIES AND CRITERIA

THIRD ANCHOR

Major retail is essential to the success of downtown. With two proposed anchors to the North and South ends of the corridor pedestrian flow is encouraged between the two. With increased traffic flow infill retail will have the incentive to locate downtown on Cornwall. To discourage shoppers from driving from one anchor to the other (approx. 4 city blocks), and to take full advantage of underutilized existing retail space, a third anchor is proposed in the old JC Penny building. With the existing capacity to house a major retailer, adapting to a new anchor will be relatively inexpensive and create a center for Cornwall and downtown's retail.

STREETSCAPE

With the proximity of downtown to Western Washington University, the civic center, adjacent neighborhoods and Interstate-5, the city center has a wide range of users. It is essential that Cornwall Avenue is attractive and accommodating to pedestrians. Design elements such as landscaping, street furniture, pedestrian oriented signage, lighting, different street paving materials and wide sidewalks help to establish a retail district identity. As the waterfront district comes to life, Cornwall Avenue is envisioned as a promenade to connect the two areas. With proper gateway signage, pedestrians are oriented to leisurely explore the retail core and the waterfront district using Cornwall Avenue as a direct route.

RESIDENTIAL

Cornwall Avenue houses the capacity to achieve the urban amenities downtown users desire, such as retail, restaurants, cultural opportunities and above all housing opportunities. With the recent success of mixed-use buildings downtown, market opportunities to provide residential space have been a high priority in this proposal. Downtown residents are key to sustain economic vitality and Cornwall Avenue can provide residents with at least 65 urban units. With retail on the bottom floor and housing above, the North and South ends of Cornwall are ideal opportunities for residents to walk to find goods and services. Within the residential market, there are substantial opportunities for seniors, young professional and students who desire the urban amenities of downtown and Cornwall Avenue.

Figure 2.5: Vicinity Map

CORNWALL TOWN SQUARE

Creating an inviting and safe public space is key to a successful downtown. For the center of the corridor between Holly and Magnolia a town square is being proposed to provide space for public events. Different materials can be incorporated to pave this portion of Cornwall to create a sense of place and set the space apart from other downtown streets. Raising bollards will be used to mark this block as a pedestrian only zone during public events and turn the street into the sidewalk. The bollards will be able to be lowered during regular use and allow automobile traffic to flow on Cornwall Ave. This adaptable solution will be able to provide Bellingham with a public space on weekends and special occasions in downtown that allows residents to create social capital. Town squares help create a sense of place that allows residents to enjoy and identify with their community.

To enhance the experience of a town square, a stage is being suggested for the West end of Cornwall Avenue across from the third anchor. This stage could be a joint public and private effort. In order to achieve this flexibility, a rotating stage with a glass wall as its backdrop will be able to face indoors on a bar/restaurant and rotate outwards for public events. The glass wall is intended to let patrons of the bar/restaurant enjoy a show while being indoors having a drink or a snack and the public to see a show during events. A stage downtown will help attract people to the area while providing entertainment and a gathering space.

Figure 2.6: Site plan of retail corridor

MOVIE THEATRE

Movie theatres help draw people to the area during all hours of the day. This puts eyes on the street creating a safer environment and a more inviting space. A theatre on Cornwall will create a demand for restaurants, bars and nightlife. It will also help to bring the arts to downtown and a place for residents to socialize in walking distance from their home. For those who drive downtown some will most likely park in the proposed parking garage located at the South end of Cornwall across from the South anchor. The proposed theatre will be located towards the North end of the corridor, across East Champion Street from the North Anchor, approximately a 2-block walk from the South Anchor parking garage. Pedestrians using the South Anchor parking garage will create increased pedestrian traffic and exposure to Cornwall's retail.

To discourage moviegoers from parking and racing to catch their movie, a second ticket booth could be placed near or in the South Anchor parking garage. A second ticket booth will increase flexibility for those who come early, get their tickets and leisurely walk to the movies while perhaps shopping or getting a snack. A second parking garage at the North Anchor will serve commuters with a very short walk to the theatre from across East Champion Street. With a plan to revitalize the downtown's alley corridor, alley access to and from the movie theatre will help serve alley and theatre business.

Figure 2.7: Composite Model illustrating added square footage to the downtown retail corridor

Current Square Footage	**8,029,363**
Building Type	**Added Square Footage**
Anchor Retail	246,942
Parks/ Open Space	14,128
Mixed-Use	161,191
Movie Theater	195,000
Total Added Square Footage	**617,261**
Total Square Footage Proposed	**8,646,624**

Figure 2.8: Square Footage Table

2.3 ENIVRONMENTAL CHARACTERISTICS

In this day and age it is impossible to come across a redevelopment plan, like the one proposed for Cornwall Avenue, that does not address environmental elements and impacts. One of the most successful means to address this issue is to think sustainably and employ sustainable building practices for new and remodeled buildings. “LEED for Retail and Redevelopment” offers an appropriate sustainability standard for the retail core.

LEED GOALS

LEED ideals and goals result in an expanse of environmental benefits not seen with traditional construction practices and architectural design. These goals should be employed in the design of any new buildings and site redevelopments. Any new construction should strive to be LEED certified.

Chapter 3: North Anchor Store

3.0 PROJECT DESCRIPTION

The North Anchor Project is a commercial venture that accommodates a department retail anchor, grocery store, independent businesses, offices, and a public/private courtyard. The major draw of the project is the reintroduction of a variety retail department store in downtown Bellingham, similar to what existed prior to the development of Bellis Fair Mall.

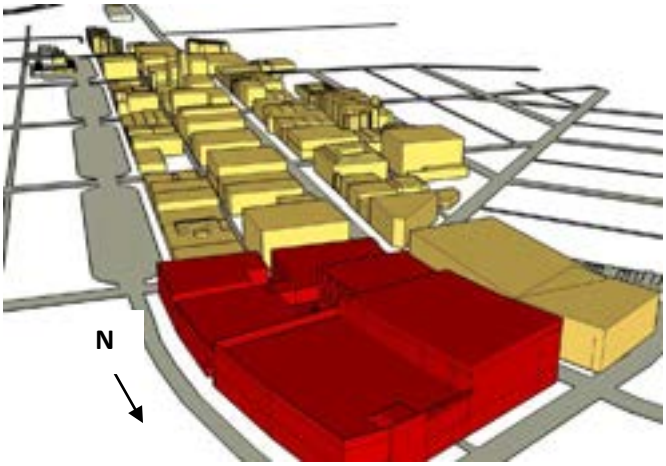


Figure 3.1: North Anchor relation relative to Central Business District

In relation to a widespread downtown revitalization effort, there is a need for several large anchor businesses. Anchors provide a base on which an urban core will flourish upon. They provide a large base of economic and social activity that encourages the subsequent development of other smaller businesses. In downtown Bellingham, anchor businesses will increase the density and vitality of the urban core. This is an important goal of the downtown revitalization effort.

Figure 3.2: View of the southern most entrance along Cornwall Ave.

3.1 ANCHOR DESCRIPTION

The North Cornwall anchor is a large variety department retail store located on a multiuse site that includes small and large retail, offices and parking for bicycles and cars.

North Cornwall Anchor Figures	
Anchor Retail	170,000 (sqft)
Other retail	13,000 (sqft)
Parking	50,000 (sqft)
Parking Spots	250 (individual spaces)
Courtyard	7,000 (sqft)
Office	13,000 (sqft)

Figure 3.3: Use designation.

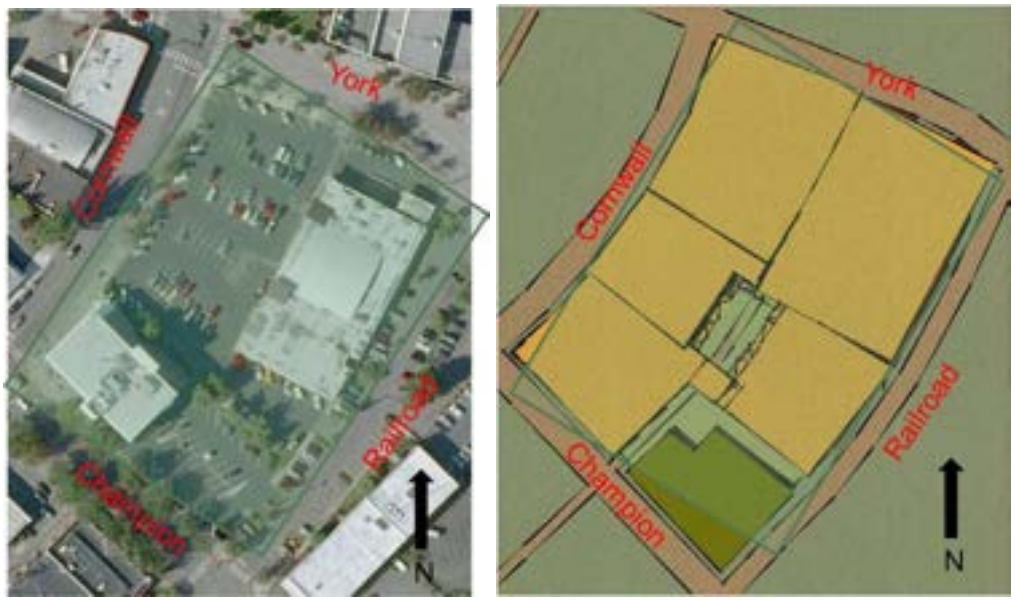
The project reduces displacement by accommodating the existing businesses. The site was designed with both LEED standards incorporated. The middle of the site includes a court yard for the general community and patrons to interact. This anchor site will invigorate the downtown economy and create a more livable urban environment.

Figure 3.4: North Anchor proximity to downtown transit center.

3.2 ANCHOR LOCATION

The project is located at the northern end of the central business district at 1530 Cornwall Avenue. This site is ideal for several reasons. First, and perhaps most importantly, the site exemplifies the concept of Transit Oriented Development (TOD). The site lies kitty-corner to the WTA downtown bus station, which encourages the use of public transportation to and from the development. By structuring development adjacent to public transit, personal automobile dependency has the potential to be reduced.

Furthermore, the development will adaptively reuse a low-density surface parking lot as a dense, multi-use structure.



Figures 3.5a, 3.5b: Pictured left to right, the existing site use with low-density surface parking and the parking lot conversion to a multi-use structure.

In addition, the north Cornwall site should minimize subsequent business displacement and provide room for future expansion. Lastly, this development is designed in relation to another planned anchor located at the southern end of the Cornwall retail district. These two complementary anchors establish the general boundaries of a dense urban retail mixed-use core that constitutes a vital retail corridor running along Cornwall Avenue.

3.3 NORTH ANCHOR OBJECTIVES

The North Cornwall anchor accommodates several retail markets. Primarily, the site attracts people from the City of Bellingham and throughout Whatcom County. Particularly, the retail magnet will draw people away from the current Bellis Fair Mall, as part of a greater plan to transform both downtown and the Bellis Fair Neighborhood. Secondarily, this project markets people from British Columbia and Skagit County. Consumers will be attracted by the vibrancy and prevalence of community interaction within the newly revitalized downtown.

The site is designed based on several sustainable development concepts. First, it is located adjacent to the WTA Downtown bus terminal, which encourages public transportation use. The sustainable design of the project is based on several progressive green building techniques. The building layout was based on the importance of southern exposure, which increases the passive solar absorption. This

Figure 3.6: Photovoltaic panels mounted above fourth story parking garage.

creates a tier effect with the tallest levels of the building to the north, totaling four stories and a gradual decline in building height towards the south, ending with two stories on the most southern part of the site. This decreases the amount of electricity needed and provides a better interior atmosphere through an increase in natural light. Furthermore, the project allows the use of roof-mounted photovoltaic panels as an additional form of renewable energy. Development of green roofs throughout the site incorporating sedums effectively reduces the amount of storm water runoff associated with the development. The Public Market and office structure rooftop contains an urban agricultural garden, growing produce sold on site at Terra Organica and a patio for employee leisure time. Through LEED certification, our site will exemplify sustainable design and be an example for emerging downtown developments.

Figure 3.7: Public market and office building urban garden with patio.

Figure 3.8: Complete rooftop view of North Anchor development.

In addition this project is a pedestrian and bike friendly development. The site is designed with an emphasis on extensive pedestrian circulation. There are four separate entrances to the central courtyard and additional business entrances located throughout the site. The surrounding sidewalks are 15 feet in width. Furthermore, the lights, benches, and furniture are designed on the human scale. The development is physically designed to accommodate for bicycle transportation through a separate bike only "street" entrance. The entrance is designed to provide a comfortable area for bicyclists to arrive and depart. This unique bicycle friendly design includes extensive bicycle parking and a designated maintenance station. This concept exemplifies the development emphasis on alternative modes of transportation and will integrate into the proposed bicycle infrastructure of the downtown revitalization effort. Furthermore, in general, this project will appeal to the environmentally conscious niche market of Bellingham. While traditionally, that niche market may not have been attracted to a large retail anchor, the sustainable design and plan of this project will create an attraction unique from the standard "big box anchors." The environmentally conscious design of this anchor will attract locals interested in sustainability, in addition to the traditional shoppers.

Figure 3.9: Pedestrian, bicycle and automobile circulation throughout site.

Figure 3.10: Human scale building features.

Figure 3.11: Separate bicycle only street

Figure 3.12: General public courtyard.

Another strong feature of the development is a centrally located courtyard. The area is a shared public and private space that is open between the general hours of 7am and 11pm. The courtyard is used for outdoor seating for several businesses, in addition to a general public space for shoppers and pedestrians to socialize. Four separate pathways from different sides of the development lead into the courtyard, allowing for extensive pedestrian connectivity. The south entrance leading into the courtyard provides direct access and view from the alley, effectively facilitating effort s to revitalize alleys throughout downtown.

Figure 3.13: South entrance leading into the courtyard.

A series of architectural design techniques were used to construct the North Cornwall redevelopment project. The first key aspect of architectural design was incorporation of three levels of parking on the Northern end of the building structure, totaling 50,000 ft2 to accommodate 250 parking spots. This accommodates the anchor, other on-site businesses, and additional adjacent businesses. The increased capacity, in effect, helps alleviate current concerns for downtown parking. It is designed with retail on the first floor of the building with parking located atop the first, second and third levels. Parking was incorporated in the building structure to satisfy the parking needs associated with large retail businesses, as well as reducing the walking distance between customer parking and the North Cornwall shopping center destination.

Figure 3.14: View of North Anchor west side façade.

Design vocabulary of the North Cornwall redevelopment project is aimed towards physically unifying the structure with the established Central Business District Design theme by following common design features of existing businesses. Large neutral colored blocks are present on the lower building façade to establish a human scale to the large structure. The upper façade is textured with a traditional brick design, similar to the existing structures in the Central Business District. Large arched windows line the first floor of the structure, with rectangular windows present on additional stories. A detailed roofline and detailed ledges are also used to distinguish between the various building stories. Columns and alternating building textures give the illusion of the large anchor as multiple buildings, creating greater human scale to the structure.

Chapter 4: South Anchor Building

4.0 SOUTH ANCHOR

The South Anchor is created to draw citizens into the downtown business district. The building draws in consumers of all types. The building is located on the current outskirts of downtown to create a flow of people across Cornwall Ave. The building is also a prime location for the Bellingham Waterfront Redevelopment. For the South Anchor inspiration was drawn from numerous areas including the Center Court Building proposal in Eugene, Oregon (Fig. 4.1). To incorporate LEED ideals, ideas were drawn from the Mercy Corps building in Portland Oregon (Fig. 4.2). Inspiration was also drawn from the New York City Library (Fig. 4.3).

Figure 4.1

Figure 4.2

Figure 4.3

4.1 SITE

The location for the South Anchor building is on the Southwest corner of West Chestnut Street and Cornwall Avenue. This site was selected because it is currently only used as a parking lot occupying 5 city plots adjacent to nearby retail. This site is also ideal because it is right inside the downtown Commercial Business District and already zoned for commercial development and will be a comfortable 4 block walk from the North Anchor site. This site also provides a convenient location in relation to the waterfront redevelopment so as to act as a gateway to that development once it is completed. This site was also ideal because there are nearby areas that can be bought up and used as expansion sites for whatever retailer decides to occupy the building. Currently the site is surrounded by numerous businesses including the Shrimp Shack, Kulshan Cycles, Towner Press and Dream on Futon and Eva An Aveda Concept Salon. The presence of the building should compliment these businesses by bringing more people into the immediate area, see Figure 4.4.

Figure 4.4

Figure 4.5

Along with the North Anchor store, the South Anchor will greatly assist in the revitalization of the downtown Central Business District. The building provides space for a major complementing the local restaurants and boutiques that currently comprise the downtown retail core. Such restaurants and boutiques are very unique but have a tendency to go out of business often whereas a major retailer present at the South Anchor site will be a more permanent and secure fixture of the downtown area not to mention able to create many more jobs in the downtown. The design and intended use of this building should not detract from the downtown's character or threaten nearby businesses. (Fig. 4.5)

4.2 ACCESS

Vehicles will have access to the site on both Chestnut and Cornwall but mainly for delivery and pickup services rather than parking. On the southwest corner of the building there will be a loading bay for large delivery vehicles. These large vehicles will be accommodated by an added access road running along the south end of the building coming off of Cornwall Ave with space for large trucks to back up into the loading bay. This space can be provided for by converting most of the parking behind Dream on Futon and Towner Press to turn around space. The loss in parking will be made up for by the proposed parking structure just across the street on Cornwall. The access road will lead out through the existing parking lot behind Dream on Futon and Towner Press and then out onto West Chestnut. The access onto West Chestnut will be provided by converting the parking lot on the West side of Dream on Futon to a road. This fits well with the plans of the Waterfront Redevelopment because that same parking lot is planned to become a secondary arterial extending Commercial Street into the waterfront area. There is an existing alley along the east side of the existing Towner Press building and will be running along

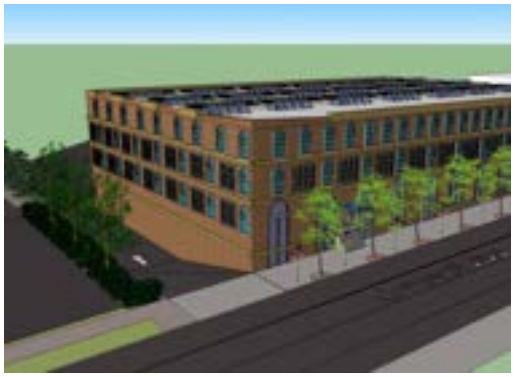


Figure 4.6: North East Elevation.

Figure 4.7: North West Elevation.

the west side of the proposed building, this alley will be used as a small access road for customer pickups which is next to the loading bay. (See Figures 4.6 &4. 7)

4.3 SIZE

The building is a mixed used department store. This store contains hardware, electronics, clothing, large appliances, house ware and outdoor department sections as well as some office space. This type of store would be successful because there are currently few places to buy tools, electronics or other types of hardware downtown. The building is designed as a four story structure and rectangular in shape. The building will be 188 ft X 128 ft. long with 24,064 sq. ft. of ground floor area and a total of 96,256 sq. ft. of floor area. (Fig. 4.8)

Figure 4.8 North Elevation.

This building has uses which compliment the higher end retail of the North Anchor store and provide a wider range of services for the downtown area as a whole. Being a mixed use department store it provides services often tailored to homeowners such as hardware and large appliances which can't be found in the immediate downtown area. This store will bring a variety of clientele not currently in the area. It is a fairly large building so it will be able to draw people from the North Anchor site south and benefit the businesses people pass on their way to the South Anchor store and vice-versa from the South Anchor site, see (Fig. 4.9)

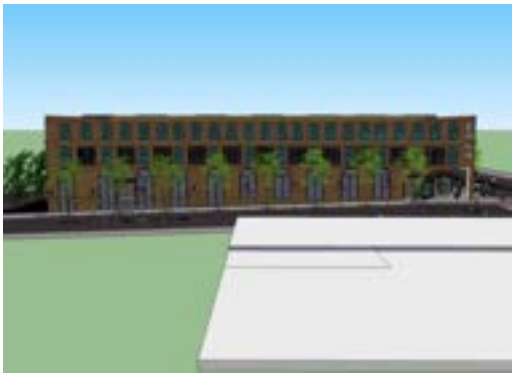


Figure 4.9: East Elevation.

4.4 CHARACTER

The building is a mostly brick exterior with many windows and a mostly flat roof reflecting an older traditional look. The second floor windows will be arches with large floor length windows on the first floor. The building should be LEED certified, yet blend in with the current downtown. The building should be a welcoming, human scale place, yet still function as a large retail store. The appearance of this building fits well with the current downtown architecture of brick buildings with flat roofs and human scale sidewalks, lighting, and building entrances. (Fig. 4.10)

Figure 4.10: Building Entrance.

4.5 SIDEWALKS

To achieve a human scale, the building is brought directly up to the sidewalk with an overhang along the Chestnut Street side of building and is 15' high extending off the building from the top of the second floor. Between Chestnut and the building will be a 10ft sidewalk and 5 ft. for trees and street lighting. There will also be parallel parking off the street to create safety for pedestrians. The main entrance is on the corner of Chestnut and Cornwall with a rotating doorway and four double glass doors. (Fig. 4.11 & 4.12)

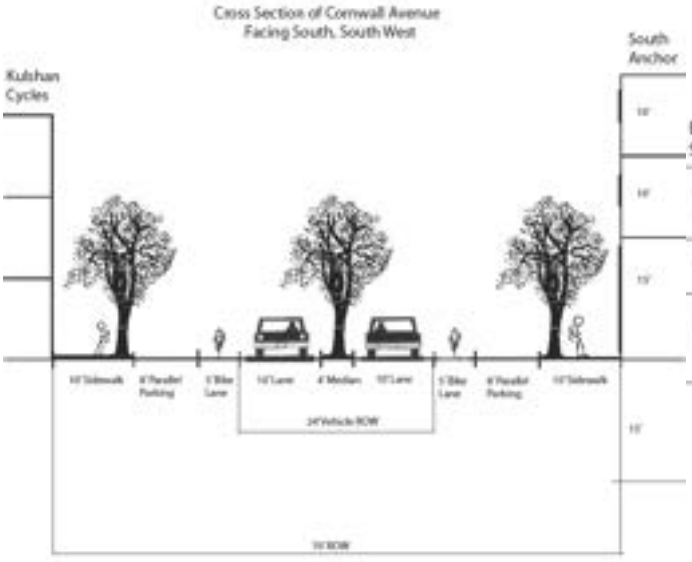


Figure 4.11

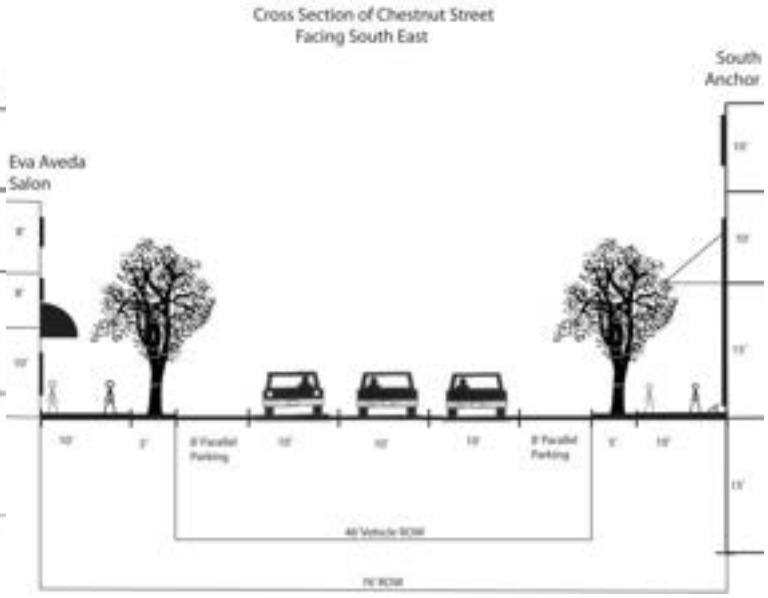


Figure 4.12

4.6 CORNER

In order to create a more developed corner space which reflects nearby corners and promotes the character of the building, the corner of the site has been brought out into the intersection of Chestnut and Cornwall several feet which should slow down traffic turning from Chestnut onto Cornwall and create a shorter distance across the street for pedestrians. The large traffic signals and cobra head lights attached to them at the intersection of Cornwall and Chestnut have been replaced with stop signs instead because they have a less intrusive and more human scale appearance. (Fig. 4.13)

Figure 4.13

4.7 EXTERIOR DETAILS

The exterior face on all four sides of the building will be brick with varying patterns of window designs. The fourth floor will have closely placed rectangular windows with window panes. The windows on this floor will be large, around 7' tall to provide plenty of light and fill in the exterior face so as to avoid blank, unattractive exterior space. The third floor along Cornwall will be similar but the rectangular windows will be interchanged with larger windows to change the style and create a more unique look. The third and second floors along Chestnut however, will have 3 large arch windows with the rectangular portion going from floor to ceiling on the second floor and the 3 arches will be the windows for the third floor along Chestnut. Along Cornwall there will be a series of thinner arch windows on the second floor placed closely together, fitting better with the slope which begins once traveling south on Cornwall. On this same side there is another entrance for shoppers farther down the on the southern end of the building to one day accommodate people coming from the proposed Waterfront Development. The second floor exterior is designed to be a display area for the store and with such large windows provides additional street lighting during evening hours. (Fig. 4.14 & 4.15)

Figure 4.15: North Elevation.

4.8 FLOOR DESCRIPTIONS

The building itself is four stories in height with the first two floors being 15 ft. and the third and fourth floors being 10 ft. tall creating a building that is at the highest point 50 ft. tall. Since our site is on a slope the first floor will not be seen from street level along Chestnut so customers would enter through the second floor. The first floor can be used as shopping space, storage from the loading bay and an area where utilities may be concentrated. The second and third floors are designed exclusively for shopping and the fourth floor can be a mix of shopping and office space. The roof is mostly flat with solar panels facing the east and west to capture morning and evening sun. There are also skylights running parallel to the solar panels to provide additional light and reduce energy use.

With such large floor space for each floor (24,064 sq. ft.), there is plenty of room to change uses. The top floor can be used as office space or can be rented out to a separate business as office space. There is also the possibility of converting some of the first floor to underground parking to relieve stress

from the proposed parking structure next door by providing spaces for employees to park and not take up spaces which customers will desire as well.

4.9 LEED AND ENERGY

The building is pursuing LEED certification. The building makes use of solar panels to provide energy for light but also potentially for solar thermal heating which may be more efficient. Solar thermal heating makes use of a medium (usually water) which is heated by solar energy to provide energy in the form of steam for the building which can power lights or be used as a sustainable way to heat water in the building which will prove valuable and cost saving during the winter months.

For additional building heat there is a nearby gas plant just two blocks from the South Anchor site. Steam produced from this gas plant is redirected through pipes to the South Anchor building and provide year round sustainable heating and meet a LEED goal of having a local and renewable energy source. (Fig. 4.16)

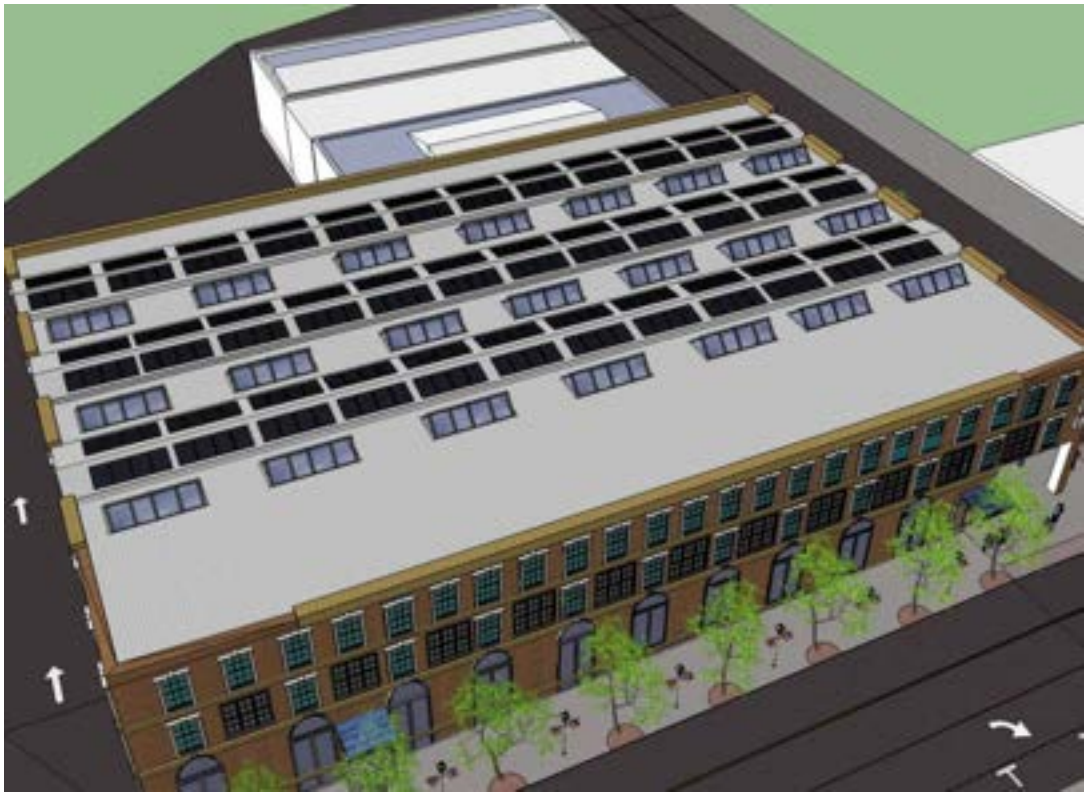


Figure 4.16: Rooftop solar utilization.

Chapter 5: Alleyway Revitalization

5.0 DOWNTOWN ALLEYWAYS

The alleyways in downtown Bellingham are currently underutilized and aesthetically unattractive. They presently contain numerous dirty dumpsters, under a layer of draping power lines supported by aged poles that have been sawed and readjusted over time. Currently the alleyways are lacking life and energy, which is seen though the absence of users and the dirty and uncared for condition of these potentially useful corridors. The location of the alleyways, in the Bellingham central business district between the newly proposed anchor stores and along the key retail corridor, provides enormous potential. The revitalization of the alleys can not only bring additional retail space to add to the city's economy but also pedestrian corridors that can reclaim life in this area and add to the social capital. Considering streets and alleys fill 30% of city space, the alleys serving as predominately pedestrian ways can aid in the flow and connectivity of the pedestrian focused right of ways. Previously, the largest complaint of the downtown area was the lack of space present for businesses to grow. Revitalization of the alleys will increase the building capacity of downtown without adding a square inch of land. This can be done through the implementation of store and restaurant space fronting the alleys which will be further explained below. Therefore, the revitalization of the alleys presents an opportunity to reestablish the highest retail value in Bellingham. The design concept proposes the renewal of the alleys to enhance the appeal and use of this central downtown district as it transitions to primary retail core of Bellingham.

5.1 ALLEY CORRIDORS

Figure 5.1: shows the six alley sections the design team evaluated in Cornwall Avenue revitalization project

	Alley 1	Alley 2	Alley 3	Alley 4	Alley 5	Alley 6	**TOTALS**
Potential Alleyway Store Square footage (**current buildings**)	24, 280 ft^2	25,590 ft^2	14,360 ft^2	15,400 ft^2	17,520 ft^2	13,090 ft^2	**110,240 ft^2**
Potential Alleyway Store Square Footage (**infill buildings and additions**)	16,240 ft^2	8,680 ft^2	8,200 ft^2	19,880 ft^2	4,400 ft^2	8,520 ft^2	**65,920 ft^2**
Total Potential Alleyway Square Footage	40,520 ft^2	34,270 ft^2	22,560 ft^2	35,280 ft^2	21,920 ft^2	21,610 ft^2	**176,160 ft^2**

Figure 5.2: Shows Potential amount of retail square footage for proposed alley building splits

STORES/BUSINESSES

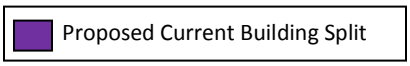
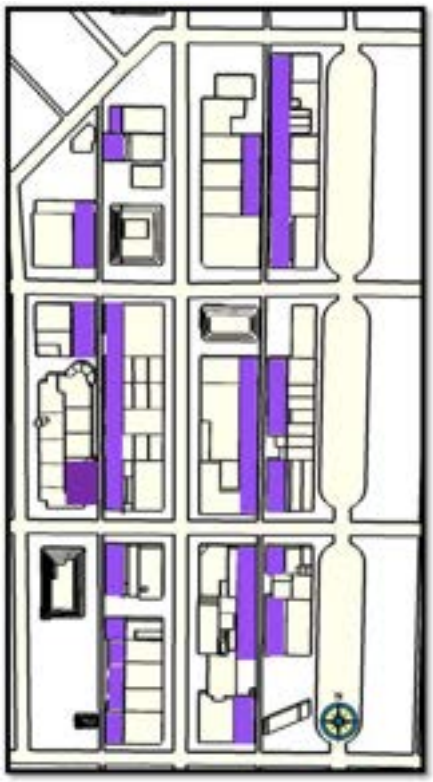
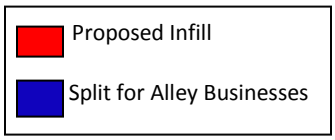


Figure 5.3: Proposed Current Building Split





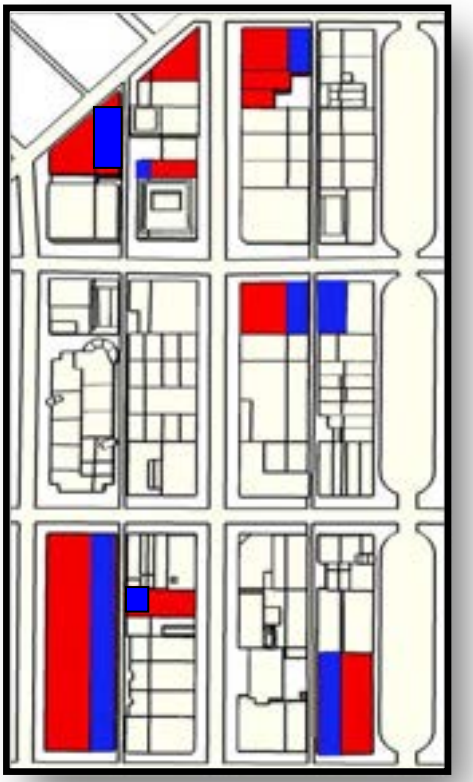


Figure 5.4: Proposed Infill with New building split

When revitalizing an alleyway there are multiple options for what kinds of businesses would do well. Some suggestions for businesses would be: art galleries, coffee shops/cafes, design stores, bookstores, restaurants, and even housing could be introduced. The idea of revitalizing the alleyways and bringing businesses in is to create an intimate private place in a public location. Bellingham has a lot of alleyways that could benefit from a facelift and business introduction. Placing new businesses/housing in the alleyways will overall increase pedestrian/bike flow and bring a tighter sense of community to the area. When more business returns to the CBD there will be a higher demand for retail space that can remedied by splitting/dividing the current building footprints and infilling underused spaces. Developing these typically underutilized spaces prevents further sprawl and promotes the ideas of a "green" livable/walkable community. The project design takes into account the need for more retail on the street front before focusing on the alleyways. The project proposes that a phased in approach is used during the revitalization process and that the alleyways are redesigned after Cornwall Avenue is revamped.

5.2 THEMES

In order to make these alleyway sections easily identifiable and fun the design concept proposes a few themes that could be implemented. These themes would be portrayed throughout murals created by local artists, certain types of businesses in certain sections like art gallery alley, café alley, etc., and food and cultural themes, such as Chinatown. Some of the themes pertinent to Bellingham in particular are, Ski-to Sea, Baker Alley (Mt. Baker but maybe also alley of bakeries), Native American roots, logging roots, and possible food and cultural themes that are not typically associated to Bellingham. The use of themes in the alleyways will create interesting and unique experiences in each alley section. They will also serve as points of reference for out-of-towners because they will be so easily identifiable.

5.3 CAPITAL IMPROVEMENTS

ALLEYWAY PAVEMENT

In order to make the alleyways more attractive and obvious as a pedestrian/bike corridor the design concept proposes to resurface them with a low impact development (LID) pervious surface. To make the pedestrian/bike connections obvious between alleyways an elevated crosswalk in the street, using the same colored pavement as in the alleyways themselves is being proposed. The goal of resurfacing the alleyways is to create an easily identifiable pedestrian/bike way while also improving current drainage in the alleyways. Using a different/material and or color from the streets will add to the interest of the alleyways and provide a visual image for people to follow from one anchor store to the next.

DUMPSTERS

Currently, all of the alleyways contain at least one garbage can or dumpster. These obviously do not add anything to the aesthetic appeal of the alleyways, but they could. The design concept proposes moving all of the dumpsters/cans into one or two locations for each alleyway. This would allow for the dumpsters/cans to be grouped in areas that could be blocked off by a façade decorated to fit the theme of the alleyway. There are spots in each alleyway already that could be converted from private parking spaces to areas that house dumpsters/cans. Some business owners might see having to walk a little farther to throw their garbage out as an inconvenience but the increased pedestrian/bike traffic flow resulting in more business should more than cancel out the inconvenience. If the dumpsters/cans cannot fit in a centralized location we propose painting them to blend in to the murals depicted in that alley. Revitalizing the alleyways and centralizing or painting the dumpsters/cans creates a more appealing area for the employees to enjoy while on break and can even encourage them to support the surrounding businesses.

LIGHTING

There will be sufficient lighting in the alleyways to provide eyes on the street at all times. The lighting itself will fit the character of the theme chosen for the alleyway. One alleyway corridor could even go with a colored light theme for the evening.

ARCHWAYS

The use of covered archways would provide visual appeal and also protect the pedestrians/bikers from rain while perusing the area and shops. The only issue deciding what alleyway sections these could be placed in are the power lines (see below).

BIKE RACKS

At least one bike rack per alleyway section should be installed to promote bike use as more convenient than automobile use.

BENCHES

Seating will be incorporated along the alleyways in front of businesses or between them. Providing seating will promote people to hang out around the shops and enjoy the presence of each other in such an intimate space.

POWER LINES

Currently in a couple of the alleyway sections there are older power lines that appear to be hazardous if the alleyways were to become pedestrian/bike friendly. The lines provide interesting visual appeal so if there was a way to keep them without burying them the design concept suggests that they become incorporated into the chosen theme of the alleyway via artwork. If the lines are buried archways could be put up to shield pedestrians/bicyclists from the rain and also add to the visual appeal of the alleyway.

5.4 RESTRICTED HOURS OF CAR USE

One of the goals of revitalizing the alleyway is to create an intimate and interesting pedestrian/bike corridor. Since businesses need deliveries and currently receive them via the alleyways, the design concept proposes the use of removable bollocks to restrict automobiles in the alleyways during certain hours. It will take some coordinating to find the most suitable time for deliveries but an ideal situation would be to allow automobiles from the hours of 3am to 9 am in the alleyways to make deliveries, etc. This time frame would allow for pedestrians/bikers to have control of the alleyways during the peak day and night times while also accommodating the business deliveries. The ultimate goal of the design concept is to permanently restrict automobiles from using the alleyways but understand that this would be best done with a phased-in approach over time. Creating a pedestrian/bike only corridor will help enhance the character of the downtown by creating intimate, interesting, and exciting walkways for people and bikers to venture down. This will enhance the overall pedestrian/bike traffic flow and bring more people onto the streets and into the surrounding businesses.

5.5 PARKING

Currently, there are some private parking spaces located in the seven alleyway sections examined for this design concept. In order to make the alleyways pedestrian/bike friendly the use of these spaces should be eliminated. To compensate for the loss of parking, the business owners will have the option to park in the new parking structures suggested in the design concept for the downtown area. The design concept takes into account that no one wants to lose parking but it also recognizes that the current downtown is hurting economically. Giving up parking spaces in return for the economic benefits of having a pedestrian/bike corridor and increased foot traffic should most certainly pay off. If this issue becomes too controversial the use of an incentive to business owners that get to work without using a car could be an option. It would be ideal to have the business owners themselves promoting a livable and walkable downtown.

5.6 CASE STUDY

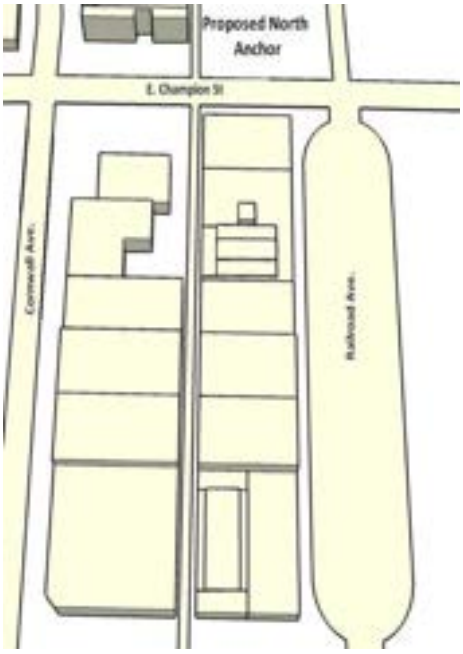


Figure 5.5: Case study footprint showing relation to Proposed North Anchor

The design concept focuses on the alleys on both sides of Cornwall Avenue between East Champion (the North anchor) and East Magnolia (the South anchor). The alley between Magnolia and East Champion serves as the case study to demonstrate the potential for rejuvenating alleys in the CBD. This alley is in close proximity to the North anchor and is also close to the Downtown bus station as seen in figure 5.5. Figure 5.6 shows how some of the buildings footprints have been divided to create two stores, one fronting the alley and the other fronting Cornwall Avenue. Other building footprints have been altered to include multiple entrances or windows to front the alleyways. The site plan also includes the infill of a new building that will serve as the downtown movie theater in the place of the current Jiffy Lube. The movie theater will have multiple entrances to allow for pedestrian traffic to spill into the alley as well as the surrounding streets as figure 5.7 demonstrates. The power lines can be buried under the new decorated pavement. The pavement texture will continue through the entire alley corridor making the pedestrian path clear as figure 5.8 illustrates.

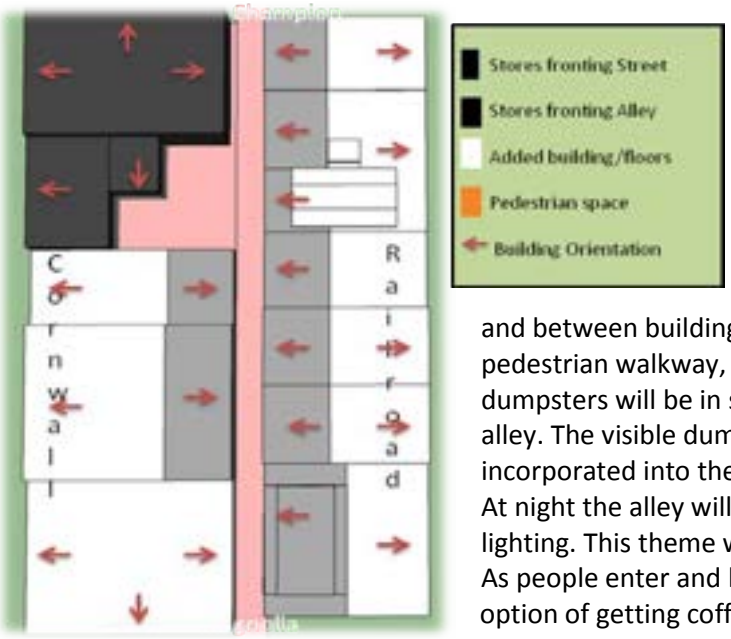


Figure 5.6: Case Study Proposed Footprint

Elevated crosswalks between the alleys will serve as speed bumps for the automobiles as an added pedestrian safety feature. A bike path can be made clear through the difference in pavement textures through the middle of the alley corridor. The majority of dumpsters are relocated to designated communal areas and between buildings accessible to all businesses from the pedestrian walkway, see figure 5.9a and 5.9b. The few remaining dumpsters will be in strategically placed locations throughout the alley. The visible dumpsters could be covered with artwork and incorporated into the mural design and theme of the alleyway. At night the alley will transform through the addition of blue lighting. This theme will continue through the entire alley way. As people enter and leave the Movie Theater, they will have the option of getting coffee, wine, or a bite to eat as they comfortably walk though the lively and lighted alley corridor. This design concept can dramatically increase the retail value in the downtown Central Business District through infill and the division of existing buildings to front the alley ways. In addition, the new pedestrian corridor can provide an increased social capital due to the attraction and multiple amenities that will be present. As a result, the alleys can be used as a lively corridor between anchors for both pedestrians and bikers day and night.

Figure 5.7: Proposed Movie Theatre

Figure 5.8: Revitalized Alleyway Pedestrian Corridor

Figure 5.9a: Proposal to centralize dumpsters

Figure 5.9b: Proposal to centralize trashcans

Alley One Case Study	Potential Retail Space from Existing Buildings	Potential Infill Retail Space	Total Potential Retail Space	Potential Number of Alley Stores
Cornwall Ave Side	6600ft ^{2}	16,240ft ^{2}	22,840 ft ^{2}	16 stores
Railroad Ave side	17,680ft ^{2}	-	17,680ft ^{2}	13 stores
Grand Total of Case Study Alley	24,280ft ^{2}	16,240ft ^{2}	**40,520ft ^{2}**	29 stores

Figure 5.10: Demonstrates the retail potential in the case study alley alone. The implementation of the alley revitalization design concept can aid in reestablishing the highest retail value for downtown Bellingham.

Chapter 6: Parking Structure

6.0 DOWNTOWN REVITALIZATION – PARKING STRUCTURE

In considering the revitalization of downtown Bellingham, the provision of parking is critical in such elements as recruiting anchor stores back to the downtown area. The City of Bellingham's master plan advocates a "systems" approach with different rates, fines and interests in order to promote the most efficient and sustainable use of land and parking structures. In designing a parking structure, we looked to further the visions of the Bellingham City Master Plan in addition to providing a LEED certified structure.

6.1 PLAN GOALS AND OBJECTIVES

In Bellingham's City Center Master Plan, the major objectives outlined included:

- maintain a similar scale to the surrounding environment
- encourage desirable investment and development
- location of parking should be available to a variety of interests insuring that induced parking demand is met.

6.2 STRUCTURE LOCATION

While designing the structure, the objectives outlined in Bellingham's City Center Master Plan should be kept in mind. The first of which, being that the parking structure is in a location optimal to serving a variety of uses in the city center. Based on this desire, the structure will be constructed on an undeveloped parcel at the intersection of Cornwall Avenue and East Maple Street, adjacent from the

Figure 6.1: Location of parking structure on Cornwall Avenue and E Maple.

proposed south anchor site. The structure will mainly accommodate the users of the south anchor site. Other users around the area, such as the proposed infill on Cornwall, Boundary Bay Brewery and the Market Depot were also kept in mind as the amount of parking was calculated. These users will ensure the parking structure will serve as a viable use to the south Cornwall business district.

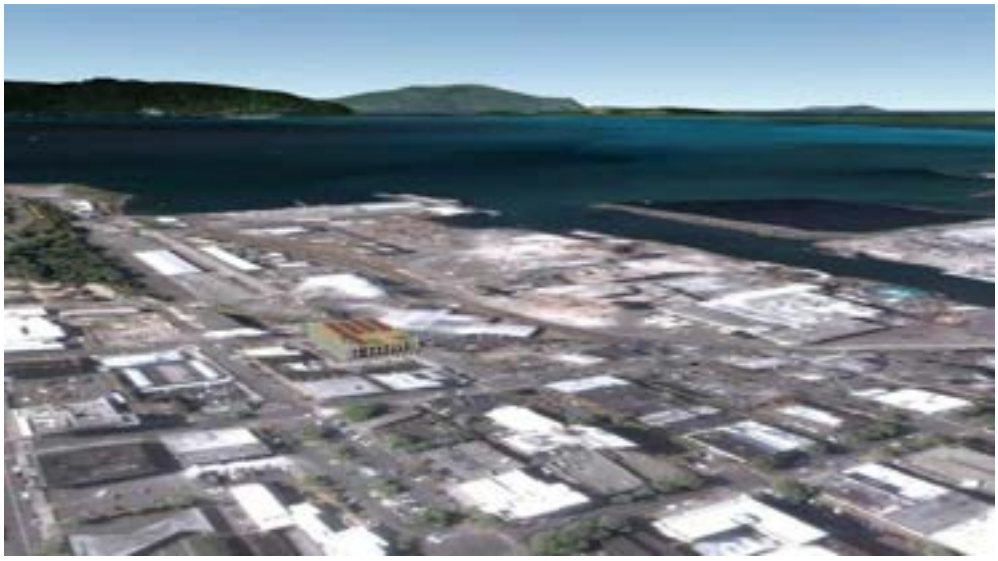


Figure 6.2: View of parking structure in relation to the existing buildings in Downtown Bellingham.

6.3 CONNECTIVITY TO THE CORRIDOR

Included under Bellingham's Master Plan, management of parking resources in the city center should:

- encourage city workers to park in less congested areas.
- provide alternative transportation services.
- promote a safer and healthier pedestrian experience.

Constructing a parking structure for this location should allow for great connectivity to not only the south anchor site, as previously mentioned, but it will also provide excellent connectivity for the city's bike system. Further, it should be well connected to public transportation, with a bus stop located directly outside of the structure and close to the green space on the north side of the facility. The green space on the North side of the structure will also connect to Boundary Bay's beer garden directly behind, providing the pedestrian with an opportunity to take advantage of the new development. Also having the south anchor site directly across Cornwall provides easy access to major retail. Just up the street on East Maple is the Market Depot, housing the local farmers market. The connections here will be ideal for the proposed roof top garden area on the parking structure. Having the availability of growing space close to the market will provide the community with sustainably grown produce at the local farmers market. Having all these amenities within walking distance make the parking structure well connected to the present and proposed downtown uses.

Figure 6.3: The entrance is located on East Maple to reduce traffic on Cornwall Avenue. The bus stop will also be easily accessible for connectivity to the downtown.

6.4 URBAN DESIGN CHARACTERISTICS

In addition to the visions for development of a parking structure, the Master Plan advocates the encouragement of mixed-use development in the city center. The parking structure will feature a mix of uses, with retail and bike lockers and showers on the first story of the structure, which also correlates to the City's Master Plan. The Cornwall parking structure should comply with Bellingham's City Center Master Plan in that the structure's façade should fit in with that of the surrounding area. This structure will not tower over pre-existing buildings in the area, but will rather be nearly level with them and will take little from the view of the waterfront. The structure will accommodate 3 levels of parking and 1 level dedicated to an urban garden, serving the nearby farmer's market. The top level of the garage will take use of the amount of sunlight and exposure to weather. A green house will also be located on the rooftop for year-round productivity.

Figure 6.4: Image of a mixed-use parking structure with an urban garden in Miami, FL.

Figure 6.5: Cornwall Parking Structure showing the retail space located on the Avenue.

6.5 FUTURE PARKING DEMAND

The parking structure will incorporate an additional 260 parking spots to help lessen the demand incurred by the proposed retail structures and encourages alternative forms of transportation in addition to this. Further, it will allow for the incorporation of parking induced from the proposed south anchor retail development project in the near future, and levels can be added, as needed, for growth in the more distant future. The parking structure could potentially provide parking for induced traffic from the future waterfront development project as well.

6.6 SPECIFIC LEED DESIGN FEATURES

The proposed parking structure will comply with LEED standards and is modeled after previously built LEED certified parking structures. Some of the design features considered in designing the parking structure include:

DESIGNATED HYBRID AND CAR-POOL PARKING

Carpooling is an environmentally and economically sustainable form of transportation. The provisions of carpool spaces should reduce the demand for parking spaces in the downtown Cornwall corridor. Carpool spaces will be added or removed from available parking as warranted by need and regular use. Further, adding designated hybrid parking will encourage sustainable transportation solutions.

BIKE LOCKERS INSIDE AND OUTSIDE FACILITIY

Long-term bicycle parking provides employees, students, residents, commuters and others who generally stay at a site for several hours a secure and sometimes a weather-protected place to park bicycles. *(http://www.portlandonline.com/auditor/index.cfm?c=31608&a=38510)*

Figure 6.6: Racks located outside facility provide commuters with the option of bicycling.

SHOWERS PROVIDED TO BICYCLE COMMUTERS

Some employees will not consider biking to work without the assurance that they can shower when they arrive.

WATER OBTAINED FROM STORED RAIN WATER RUNOFF

This would be used to collect and store rain water runoff, typically from the roof of the structure via rain gutters. Rainwater tanks are devices for collecting and maintaining harvested rain. Rainwater tanks are installed to make use of rain water for later use, reduce main water use for economic or environmental reasons, and aid self-sufficiency. For example, stored water may be used for watering the urban garden and flushing toilets. *(http://www.epa.gov/watertrain/transient/fcp.ppt)*

GROUND FLOOR RETAIL SPACE LOCATED ON CORNWALL AVENUE

There are three approaches to mixed use in development today.

1. increase intensity of land uses
2. increase diversity of land uses
3. integrate segregated uses together in one designated location

(*Grant. 2002. Mixed Use in Theory and Practice. APA Journal 68, no. 1: 71-84.)*

SOLAR ENERGY CAPABILITIES ON ROOF

The energy obtained from the panels on top of the facility would supply enough power to the building to light the facility at night and heat the showers during the day.

Figure 6.7: A LEED certified parking structure incorporating solar panels, Santa Monica, CA.

URBAN GARDEN ON ROOF

Designated space on the top floor of the structure will be available to the public for growing space. A green house will ensure year round growing possibilities. With the location close to the Market Depot, it would make it the perfect location. Community gardeners would collectively assume responsibility to improve their neighborhoods, initiate a sense of pride in their city, and grow fresh, organic food close to home and/or provide to the farmers market. *(http://www.dug.org/gardens.asp)*

Figure 6.8: Space on the north side of the building will provide a peaceful pedestrian meeting place.

DESIGNATED PEDESTRIAN FRIENDLY SPACE

Creating a space pedestrians can use on a daily basis has been proven healthy for nearby businesses. Connecting the space on the site with the nearby Boundary Bay Brewery and having push-cart vendors located in the space make the area an ideal pedestrian and recreation zone in for the Cornwall District. *(http://www.transalt.org/files/newsroom/reports/soho_curbing_cars.pdf)*

Figure 6.9: Designated pedestrian zone on the North side of the facility

SELECTION OF BUILDING RECYCLED MATERICALS FROM LOCAL SOURCES

Industrial materials recycling (IMR) helps accomplish the goal of conserving natural resources and decreasing energy use and greenhouse gas emissions in new construction. (*http://www.epa.gov/osw/conserve/rrr/imr/pdfs/recy-bldg.pdf.)*

Chapter 7: Downtown Transportation

7.0 TWO-WAY STREETS

In considering the option of two-way streets in the downtown core, one must first weigh the goals and aspirations of Downtown revitalization efforts. Essentially, the intention this project is to revitalize the downtown so as to maximize connectivity, accessibility, and economy throughout the site. To this end, two-way streets would far exceed the existing one-way streets in serving all of the aforementioned concerns.

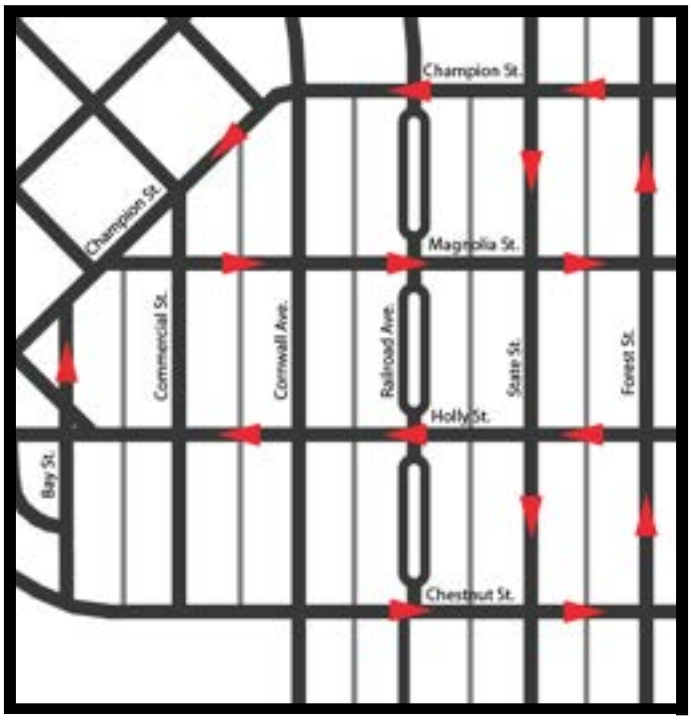


Figure 7.1: Displays the existing street system with directional arrows (shown in red) indicating the direction of traffic flow for all one-way streets within the site area.

The existing one-way street grid which prevails throughout the downtown area is counter to revitalization efforts for a number of reasons. Perhaps the most pressing argument against the present one-way street system in the downtown core is its economic affect. Businesses operating on one-way streets receive essentially half of the exposure to passing traffic as do similar businesses operating on two way streets. Indeed, businesses on two-way streets on the whole fare significantly better than do comparable businesses on one way streets, and businesses on one-way streets which have transitioned to two-way streets have been shown unequivocally to fare better following a transition from one-way to two-way streets (Ehrenhalt, The Return of the Two-Way Street).

Secondly, and perhaps more pressing, is the matter of safety. It is argued by some that one-way streets, due to their mono-directional nature, are less confusing to pedestrians and thus safer than their more complex two-way counterparts. This argument is suspect for several reasons. On roadways of low to mid-range speeds (such as those present in the downtown area), confusion – and the hesitation it

typically causes - often results in greater safety. Indeed, some of the most 'confusing' intersections in the country are also the safest (Duany, Suburban Nation). This is largely because they force drivers to engage in the surrounding environment and consider choices more carefully. In such scenarios, the term 'confusing' is simply a divisive word for 'requiring thought'. In driving scenarios, locations which require thought tend to receive it, even if only for reasons of pure self interest. This is evidenced by the fact that conversions to two-way streets are often accompanied by a reduction in accidents. Furthermore, one-way streets typically host higher speeds: one of the most crucial concerns facing pedestrian safety. Two-way streets serve to slow traffic, making for an environment more conducive to the comfort and safety of pedestrians.

Connectivity, too, is hindered by one-way streets. Drivers are forced to take lengthier, indirect routes to reach locations that would require much shorter, faster trips were they host to two-way streets. On one-way streets, one who accidentally passes their destination cannot simply turn around at the nearest parking lot; rather, they have no choice but to loop around for a second pass. Such inconvenience often results in patrons resolving to seek out a more convenient alternative, and often makes a negative impact on one's experience of the city's core. But connectivity is an issue which concerns more than mere convenience. Many law enforcement officials complain that one-way streets result in circuitous routes which hinder response times to emergencies. Two-way streets, on the other hand, offer safe and direct routes for drivers, cyclists, and emergency response units to get from one place to another. One-way streets pose a particular hazard to visitors who are unfamiliar with the area. Hardly a day passes without some unwary visitor accidentally turning down a one way street to the alarmed honks of all locals in observance. Such confusion not only poses a serious safety hazard; visitors who experience such a misadventure will be more prone to harbor a negative impression of Bellingham's downtown.

To the downtown area surrounding the focus site of Cornwall Street, this proposal suggests a nearly universal conversion of one-way streets to two-way, including North Forest, North State, Bay, East and West Champion, East Magnolia, East Holly, and East Chestnut. Not included in the proposed transition are the Northeastern-most portion of Bay Street and the Southwestern-most portion of Ellis St. Due to their unique locations and minimal lengths, the two sections of street function appropriately as one-way streets, while their conversion to two-way would result in superfluous and redundant intersections. Thus, those street portions are excluded from the proposed conversion. Figure 2 (below) displays the increases in connectivity resulting from the proposed conversion to two-way streets.

Figure 7.2: The site area is within and includes the area framed by East and West Champion Street, Bay Street, East Chestnut Street and North Forest Street.

	Lateral Routes (One-Way)	**Lateral Routes (Two-Way Conversion)**	**% Increase in Connectivity**
Northeast:	5	6	20%
Southwest:	4	6	50%
Northwest:	2	4	100%
Southeast:	2	4	100%
Total:	13	20	53%

As displayed in Figure 2, two-way streets would dramatically increase connectivity, particularly with regard to streets with Northwestern and Southeastern orientation (East Champion, East Magnolia, East Holly and East Chestnut). In the site area discussed, conversion to two-way streets would yield a 53% increase in connectivity in terms of lateral routes, and would thus significantly improve accessibility and movement throughout the downtown area. Some claim that one-way streets reduce congestion by increasing speed, but consider that by instilling in the Downtown area a two-way street network, the number of alternative routes available to drivers will increase by 53%, and thus will serve to decrease congestion more than one-way streets ever could. Consider too the crucial manner in which the two strategies relieve congestion. One way streets attempt to alleviate traffic by ushering cars out of the downtown as quickly as possible; a strategy counter to the objectives of a vibrant and bustling downtown. Two-way streets, on the other hand, alleviate congestion by offering all roadway users a variety of routes in which to reach their destinations. They disperse traffic throughout the downtown area while simultaneously allowing roadway users to experience the downtown in new ways, on new routes, exposing them to parts of the City they otherwise may not have discovered. Two way streets allow people to get where they are going by experiencing the city, rather than by swiftly expelling them from it.

7.1 BIKE-SHARE PROGRAM

The City of Bellingham has several precious resources that are waiting to be utilized. Every year, Western Washington University is left with a fleet of abandoned bicycles left unclaimed and unwanted on campus. And each year University students scour job-listings searching tirelessly for internships and experience-building opportunities that will meet the growing demand for qualifications relating to sustainability and entrepreneurship. Throughout the city, residents pride themselves on being members of an increasingly green community, and are searching for new ways to bolster and justify this image. The Re-Cycle Bike-Share Program is an opportunity to utilize all of the above, while simultaneously decreasing congestion, noise, pollution while simultaneously increasing community health, civic involvement, and the very image of the City of Bellingham itself.

With an initial fleet of between 30 and 100 bicycles, the site area of downtown would establish itself as the preeminent cycling hub of the Northwest. Past attempts at local bike-share programs in the Bellingham area have been relatively small scale efforts, operating on the honor system in good faith that those who use the bicycles would return them in good time. This is where such programs have typically gone awry. Their bicycle stocks quickly disappeared, and although *most* patrons of such systems would return their bicycles, it only takes a few disreputable users to topple such programs. This fundamental problem can be easily addressed, and will be by the program proposed herein. Operating as a hybrid of a rental-car service and a public library, the proposed Re-Cycle Bike Share program will require of its users a basic process of registration in which they will provide photo identification, address of residency, and a form of credit card or collateral which would ensure retribution in the event of misuse of loss of equipment. Once registered, citizens may obtain a bicycle simply by presenting valid identification or swiping their WTA card. The unit they are presented with will be documented, and the recipient will thereafter be responsible for its well being. In the event that a recipient fails to return their unit within the specified time, they will be charged a late fee for each day that they fail to return it, until either the unit is returned or the value of the unit is recouped.

Bike Share programs are not a new concept. Such efforts have been surfacing since the late 1960's, and successful programs have been implemented in New York City (http://www.nybikeshare.org/).

Critical elements in successful programs include user accountability, distinct and clearly identifiable equipment, and strategic and adequate placement and provision of stations at which bicycles may be dropped off or picked up. The initial implementation of the bike-share program would include three such stations, including one at the Downtown Transit Station, one at the proposed parking structure, and one at a strategic location within the Phase 2 area of the Trolleybus proposal (see Figure 11) yet to be determined. Providing a fleet of distinct and readily identifiable equipment would require a more substantial initial investment but would ultimately serve to better ensure the program's success.

Bicycling is an important mode of transportation which must be promoted for the health and welfare not only of the Downtown site, but for the greater Bellingham area. According to the Bellingham Pilot Project on Individualized Marketing of Transportation Choices, "The average number of private car trips in Bellingham is 986 per year. More than 80% of that figure (782) is trips within the city limits. Forty-nine percent of trips within the city are from 0 to 3 miles from the origination location." Such trips are ideal for cycling, and according to the aforementioned study, efforts at transportation behavior modification geared towards reducing auto transit can be highly successful. The proposed bike share program could help modify behavior for a significant portion of daily trips with a relatively small investment compared to the alternative of expanding and maintaining additional auto-infrastructure. The bike share program would contain three bike-share pick-up and drop-off stations. The first would be located at the WTA Transit Center to coincide with transit bus stops which would promote non-motorized travel. The second station would be located in the parking garage next to the potential south downtown anchor store. The third location for a bike share station could be located by the Bellingham Library to account for the concentrated civic buildings located around Lottie Street such as the post office and City Hall. These station positions would be to ensure non-motorized travel close to high-traffic demand and high trip generating land uses.

Figure 7.3: displays a typical station at which users can drop off and pick up bikes. As shown, a uniform fleet gives the bike-share program a signature look, while the distinctive design discourages theft.

Figure 7.4: displays a patron swiping his transit card in order to return his cycle. Automated stations allow fast, easy, and accountable patronage.

Figure 7.5: This picture shows the proposed bike share locations where patrons would check-in and check-out bicycles.

7.2 BELLINGHAM TRAIL CONNECTIVITY

Bellingham holds a reputation of a "green" city in that its citizens are very environmentally conscious and it upholds an ideal of striving away from automobile dependence towards more sustainable non-motorized travel modes. One way to achieve this goal is by promoting pedestrian and bicycle mode choices and discouraging motorized vehicle use. The implementation of a more connected trail system would greatly encourage non-motorized travel and improve city goals toward a sustainable future. Installing a trail to connect the heavily used South Bay Trail to the southwest of downtown to the scenic Whatcom Creek Trail is the

Figure 7.6: This figure displays the existing trail locations of the Whatcom Creek Trail to the North and the South Bay Trail to the south of downtown Bellingham.

goal to improve overall trail connectedness within Bellingham. The proposed trail connector could come up from the South Bay Trail to the alleyways between Cornwall Avenue and West Holly Street. The trail connection could pass by businesses such as Boundary Bay, Bank of America, Horseshoe Café, and Rite Aid. The trail could then rejoin street traffic by making a right onto East Champion Street briefly then turning northward on Railroad Avenue bringing the trail near the WTA transit center. The trail could then finally connect to the Whatcom Creek Trail via a small parking lot adjacent to Banner Bank, and Bellingham Athletic Club.

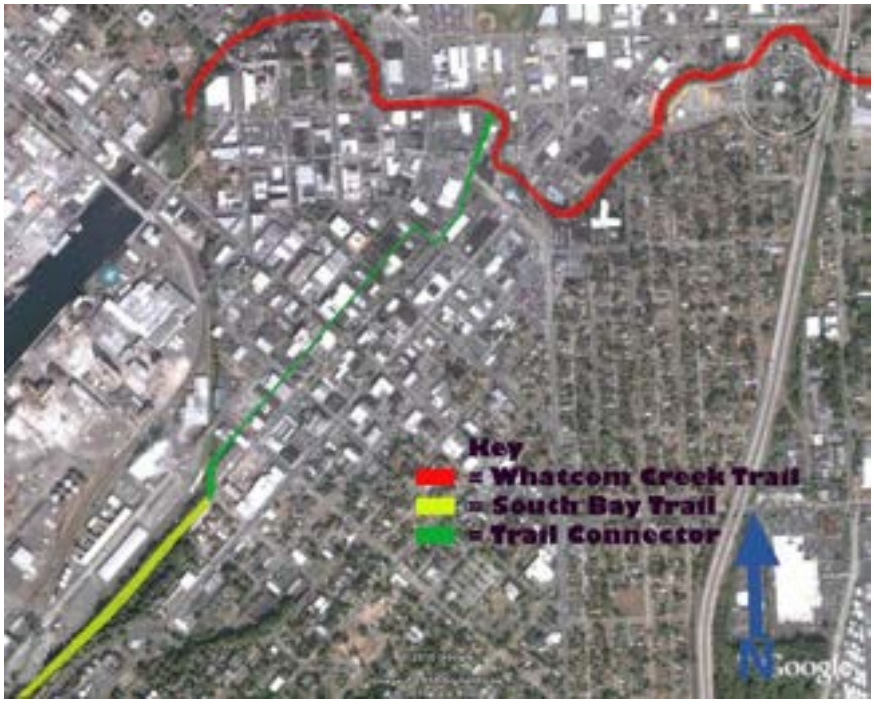


Figure 7.7: This figure contains the proposed trail connection along with the existing trails. The trail connection runs through the alleyways of downtown Bellingham.

This trail connection would provide the much needed explicit direction for trail patrons coming from either the South Bay Trail or the Whatcom Creek Trail to very easily make the transition to a lesser traditional trail for a short amount of time in the downtown area to then get back onto the more non-motorized orientated trail network. The trail connection would provide a very direct path between the north and south trails, making it well known where the trail is located and allowing the trail to be easily signed clearly. Utilizing the alleyways would greatly protect trail patrons from mingling with automobile traffic making the trail much safer than a roadside non-motorized path. Although alleys bring people off the road, intersections are where non-motorized and motorized transportation modes come into most collisions and injuries; with this in mind while looking at the proposed trail connection it is to be noted there are 6 total instances where the trail intersects with roadways this would need to be remedied through well-lighted crosswalks that stop traffic to allow for continuous travel of trail users. Another possible problem for trail patrons is the trail connection wouldn't connect to the Whatcom Creek Trail at the end of it to make a continuous link flowing from the end of one trail to the beginning of another but; well placed signs can alleviate such a problem by directing trail patrons. Costs to make the trail safe by adding lighting, artwork on adjacent buildings, lighted crosswalks at intersections, enforcing the replacement of dumpsters, and reconstructing a new path would make for a relatively costly project. Even with larger costs and possible traffic conflicts, the trail connection could provide tourist opportunities in addition to the non-motorized travel connectivity that would ensue by implementing such a plan thereby, reducing motorized travel modes. The intersections where the trail connection would meet with street traffic could be an opportunity to justify for increased traffic calming practices such as two-way streets and for motorists to become more aware, cautious, and respectful to non-motorized travelers.

7.3 TROLLEYBUS MASS TRANSIT

Figure 7.8: Here is an example of what a Trolleybus looks like. It has electrical connections to run completely off of the city grid or it can run of fossil fuels when going onto a recently expanded route. These buses have wheels and can drive wherever an automobile can.

To enhance the mass transit system of Bellingham and to augment its popularity and overall ridership; implementation of a trolleybus transit system could be very successful. A plausible proposal is made to account for areas with potential high demand for increased mass transit. The Trolleybus would cater to those wanting to move from either end of downtown and for those wishing to avoid driving around downtown Bellingham. Free fares, short wait times, and a long schedule of service are the aspects of the trolleybus that would create high ridership throughout the day and ridership into the later hours of Bellingham's nightlife. The route would begin at the WTA Transit Center where buses could be stored when not in use. This would also contribute to transit connectivity to combine the trolleybus routes with the existing bus transit routes. Each stop would be an area where the riders can view a display of current real-time bus positions to provide estimates on wait times. Times spent at stops should be kept to a minimum due to the free fares and multiple doors that riders can board and depart the trolleybus. It is estimated that each stop should take on average 20-40 seconds; although this could take longer or shorter depending on rider characteristics and usage. A total loop without stops is estimated at just under 5 minutes in the first phase of the route and a total loop with stops is estimated to take just under 10 minutes which is the ideal maximum length of wait time for a bus.

PHASE 1

The first phase could provide a loop around the core of downtown starting out along Cornwall Avenue then would make a right onto York Street, continue to State Street then move back onto E Maple Street to the Transit Center. This loop encompasses 7 stops total and 7304.34 feet of roadway. This route would feature Cornwall Avenue and State Street which are two of the most traveled roads in downtown; adding in these roads should ensure long-term and high frequency ridership. They surround Railroad Avenue which contains much of Bellingham's commerce and heavier density land uses.

Figure 9: This first phase would encompass most of downtown Bellingham providing large coverage for riders.

PHASE 2

The second phase would provide an additional loop to incorporate the civic buildings located to the farther northwest of downtown. Key buildings include the Bellingham Museum, Bellingham Public Library, City Hall, and the US Post Office. This loop could first be a route that is utilized for part of the day to account for commuters to such buildings restricting the running of that particular route to the morning and evening. Once more demand arises then the route could serve midday hours to accommodate people going to the various civic buildings along with businesses nearby. The phase encompasses 5 stops total and 3,425.79 feet of roadway.

Figure 7.10: This second phase encompasses a much larger area for coverage to account for future density increases and ridership demand.

PHASE 3

The third phase in the trolleybus route could include the waterfront district that is to be redeveloped in coming years. We chose to include this site due to the likely possibility that the site will be developed into a mixed-use development with high density residential. The incorporation of this site into the trolleybus route regardless of what is zoned would promote mass transit and decrease automobile dependability from the new trip generations and attractions that the site would create. The estimate is 1262.09 feet of roadway for this route with about 3 stops.

Figure 7.11: The third phase of the trolleybus incorporates the largest coverage of service to account for future high-density land use within the downtown area.

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Adaptive Reuse of Malls Into Vibrant Urban Villages

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Table of Contents

Abstract

This project explores the redevelopment possibilities for single-use retail locations in Bellingham using the Bellis Fair Mall site as a case study. This study examines potential adaptive reuse of the site through sustainable development into a dense and highly populated urban village to meet the long term demand for residential growth in order to meet Bellingham's population forecast.

Chapter 1: Introduction

1.0 Design Context

This design anticipates a fundamental shift in consciousness happening in the United Sates that affects large-scale resource consumption including land use and development patterns. Americans are recognizing that inefficient, over-consumptive land uses which turn their back on the neighborhoods they inhabit, such as big box stores with oversized parking lots, are unfavorable. Americans are becoming discontent with spending most of their waking hours in their car. Instead they would rather spend time with their family, enjoying the outdoors or being involved in their community. *Land use patterns that allow Americans to adopt this lifestyle are becoming more desirable than the sprawling, single-use development patterns that isolate Americans from each other and produce a reliance on the single-occupancy automobile.*

Fortunately, there exists an alternative to the current development paradigm and its production of a way of life Americans are finding unfavorable. New Urbanism presents an urban design paradigm that engages and provides a solution for the aforementioned shift. *New Urbanist sustainable development provides a higher quality of life for residents through traditional neighborhood design creating unified neighborhoods with walkable district centers as the heart of community life.* Mixed-use development provides a mix of jobs, housing, retail and economic activity into the district center to directly serve residents. New Urbanist neighborhoods encourage diversity with a variety of housing types and encourage the use of alternative transportation in designing areas for pedestrians and public transit instead of exclusively for the car. Additionally, New Urbanism creates a higher quality of life as it creates social capital with frequent, accessible public spaces designed with the priority of celebrating the unique local character of the place.

In anticipating and responding to the emerging shift in the American landscape, this project examines the trend of continued closure of single-use big box retail stores and malls and looks at the possibility of adaptive reuse of these sites into sustainable urban villages. This trend in big box retail is an integral part to the emerging shift happening in the United States. As single-use retail locations struggle in harsh economic conditions many stores and malls are forced to close leaving behind large, vacant pieces of land in prime locations. This design proposes a concept to redevelop sites like these for sustainable residential development using the Bellis Fair Mall site as a case study. This design applies the alternative development paradigm of New Urbanism in redeveloping vacant mall sites in order to meet the needs of growing Whatcom County community and satisfy the priorities of a community seeking to remain vibrant and healthy. This concept is based on the assumption that tides are in fact turning and

sprawling developments no longer meet the needs of the populations they were designed to serve. As an alternative this concept proposes a design that will accommodate for urban growth within existing city limits while fostering a higher quality of life and strong sense of community.

This project explores a concept for converting the Bellis Fair mall into Bellingham's newest urban village development within the Meridian neighborhood.

One may ask, "Why convert one of Whatcom County's largest revenue sources into an urban neighborhood?" *However, two major trends manifesting themselves in the American landscape reinforce the assertion that Whatcom County is on the cusp of major change: the decline of big box retail and the forecast of major population growth.* In anticipating these upcoming concerns, citizens and planners must work together to creatively plan their community's response to these issues. An out of the box approach is needed to address these challenges because populations have never dealt with them before. New responses are required for these new issues cities face.

1.1 Trends in Mall Development

In April of 2009, one of the largest mall operators in the United States declared bankruptcy because of its massive debt and inability to refinance. This same mall operator, General Growth Properties, owns Bellis Fair mall in Bellingham. Although Bellis Fair seems to be doing fine, one must look at the bigger picture: more than 400 of the 2,000 largest malls in the U.S. have closed in the past two years (The Week 2009). Shopping malls nationwide are seeing vacancies higher than ever before. The Wall Street Journal notes that fourth quarter vacancies in malls are at a high of 8.8%, the highest level on record since 2000 (Pruitt 2010).

This reality and its effects on the Bellingham community can be seen with just a look across the street. On the other side of the Guide Meridian across from Bellis Fair numerous big box stores sit vacant. The Meridian Corridor has the second highest commercial vacancy rate (17.5%) among major retail areas in Bellingham. About 320,000 square feet of office, commercial and industrial space sit vacant on along the Meridian Corridor (Whatcom County Real Estate Research Committee 2009).

What is a growing city to do with this space? *These large lots of land still possess great value in their potential to meet the needs of the communities they inhabit. This design takes these trends in mall closures into account to plan a response if Bellingham were to end up with a vacant piece of land where Bellis Fair now sits. This project takes a responsible, proactive approach to planning in examining current trends and looking into adaptable reuse of single-use retail sites. With Bellis Fair as a case study, this design explores one example of the redevelopment of these big box retail sites through means of urban infill in order to meet the growing population needs of Whatcom County.*

1.2 Population Forecasts for Whatcom County

Regardless of how fast populations are expected to increase in Whatcom County, trends in population growth rates suggest that significant growth will occur everywhere. As a means for accommodating this growth, urban sprawl causes concerns with the issues of traffic congestion, water quality, land conservation, and high property taxes associated with providing infrastructure to distant areas. These issues accompanying the urban sprawl development paradigm cause huge problems for growing cities and beg for new development models. *The current growth projections for Bellingham and*

Whatcom County make a great case for the type and scale of infill offered by the Bellis Fair redevelopment plan.

Whatcom County's population is estimated to grow to 250,000 by 2031. Bellingham's most recent population estimate of 76,130 is expected to receive 45% of Whatcom County's growth, resulting in approximately 26,000 more people for a total of over 100,000 people within city limits by 2031. *The 10,000 residential units* this growth will require will be forced to fit within an already constrained Urban Growth Area (UGA). Assuming development would occur at Bellingham's average density of 4.9 units/acre, this would require 2,000 acres or 25% of the current 7,337 acre UGA which is already constrained by previous development and environmental features (Aucutt 2009)*

However, things get tricky if projections are off. Whatcom County's additional 60,000 residents is a middle-ground forecast within a wide range of 30,000 to 140,000 population increase. In the extreme case of projected Whatcom County growth, Bellingham would potentially need to accommodate 70,000 new residents instead of 26,000. The current UGA will not be enough to satisfy this need because the City Planning Commission has only recommended an Urban Growth Area (UGA) associated with a lower forecast. Greater incoming populations than expected would force development even further out into the 5-Year Review Areas.

1.3 Urban Infill as an Alternative

The New Urbanist development paradigm has an advantage over sprawl not only because it celebrates community identity and creates social capital; moreover, it holds efficient and conservation-oriented land use as a top priority. In emphasizing infill with high density, mixed-use development standards instead of the current practice of greenfield development, *New Urbanism provides a solution for the exponential urban growth Whatcom County anticipates in the future*. The concept of high density urban villages is a New Urbanist principle. Urban villages increase urban density within existing city boundaries by redeveloping brown and grayfield sites and through adaptive reuse of existing sites. In building up and not out, cities can accommodate new residents and save rural land while maintaining vibrancy and life in urban centers. Urban villages are designed for residents to live, work and recreate in the common walkable neighborhood. This not only reduces residents' reliance on automobiles, it encourages the formation of social capital and a neighborhood community as residents share life together.

Urban infill is strongly advocated and well recognized among Bellingham's citizens because it offers an extremely space efficient alternative. ***The proposed 140 acre Bellis Fair site with densities of 14 units/acre is estimated to create living space for over 7,000 individuals and accommodate about 2,000 units. The Bellis Fair site has the potential to single-handedly accommodate 27% of Bellingham's expected growth in only 7% of the space historically required.*** At these densities the entire growth projection of 26,000 incoming residents could fit into just 700 acres, only 10% of the current UGA. This is exciting news for a city looking to limit sprawl and remain within its current UGA. The potential for a large population boom in the next twenty years is enough of an incentive to take full advantage of infill opportunities like the Bellis Fair site and the many of the vacant box-stores on Meridian with higher efficiency urban village designs.

* Projected Pop. / (Ave. House Size x Vacancy Rate) = # New Res. Units Needed
[26,000/ (2.61x1.05) = 9,487]
2.61= Average number of persons/household in Bellingham
Vacancy rate = 5%

1.4 Design Considerations

An examination of the evidence confirms that a new approach to urban development is in order. This design concept is broken down into four major sections. This comprehensive introduction was intended to give an overall sense of what this design will to achieve. *In order to break this vision into practical, applicable elements, this plan is divided into the sections focusing four important components: Social Capital, Residential, Transportation and Environmental.* In the following pages you will find the details of how this vision of a vibrant, growth-accommodating neighborhood will be created on the site of what is now a regional mall.

Figure 1.1 Master Land Use Plan. Key pieces of this design concept are highlighted in this Master Land Use Plan for the Bellis Fair site

- Through adaptive reuse the existing mall building becomes a neighborhood town and civic center.
- Housing density is achieved through townhouses denoted in blue.
- Environmental restoration and open green space characterize the site as denoted in green.

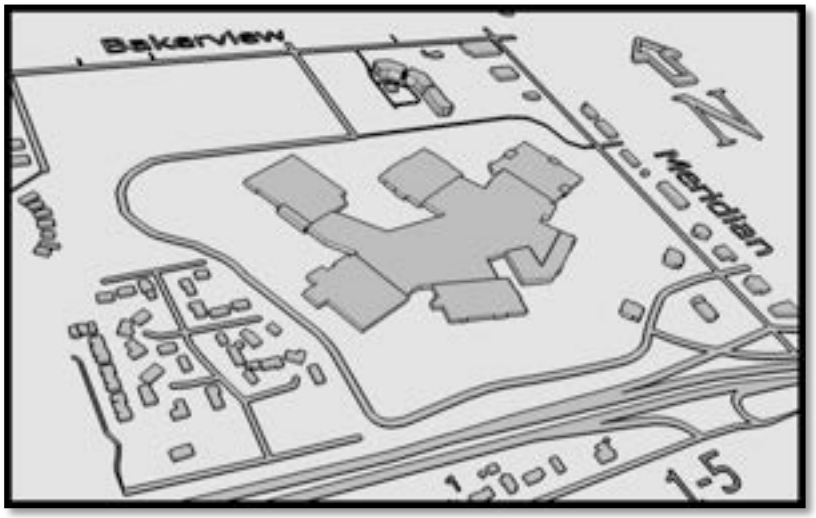

Figure 1.2 Existing density

Figure 1.3 Proposed Density

Chapter 2: Social Capital

Figure 2.1 social capital example

2.0 Overview

As communities are looking for better development solutions to meet their changing needs, they must first identify the foundation of a vibrant community: social capital. Social capital is characterized social cohesion and citizens' investment in their community. Robert Putnam writes extensively about social capital as the meaningful human contacts that characterize communities and strengthen the connection between people in their roles as neighbors, co-workers and fellow citizens. (Putnam 1995)

The formal design of an area can foster or detract from the development of social capital either encouraging civic engagement and social connectedness or keeping citizens socially and physically separated. The design and development of many American cities today have led to the decrease of social capital because of single-use, land intensive policies that prioritize single family homes as the reigning residential model and force people to rely on automobiles for daily activities. The social cost of these policies has resulted in a lack of neighborhood engagement with neighbors being isolated from each other. *The elements that enrich a neighborhood's social infrastructure by fostering meaningful interaction between neighbors ultimately result in the development of social capital are comfortable urban design, uses fostering local economic productivity, and opportunities for civic engagement.*

2.1 Urban Design

This concept for a Bellis Fair urban village proposes a design for a traditional urban neighborhood characterized by high density, mixed uses, centralized services and comfortable, satisfying urban design. These physical design elements shape residents' lifestyles in ways that encourage social interaction and build social capital. This development will be characterized by dense residential units and convenient neighborhood services while maintaining a connection to the commercial core of downtown Bellingham in order to stimulate its growth. The urban design of this site will create a healthy neighborhood community through an urban design intended to foster human connection and community trust.

Figure 2.2 Mixed use neighborhood core example

Instead of segregated single-use development, the Bellis Fair urban village is characterized by a fine-grain mix of uses. The site will integrate housing, workplaces, shopping, recreation and institutional uses on a neighborhood scale. This mixed use design allows for residents to have their everyday needs met by their neighborhood community instead of driving to different destinations throughout the day. Not only does this allow residents to lead simpler, more convenient lifestyles it fosters casual social connections between neighbors and fellow residents. Additionally, the vertical mixing of shops and apartments increases the number of "eyes on the street," creating safe, comfortable urban environment at all times. *The creation of a synergy of uses in a neighborhood community acts as a natural bridge between residents, ultimately building community trust and wellbeing.*

Figure 2.3 High density residential development.

Similarly, high density development builds social capital by way increased neighborhood populations fostering more interactions between a larger number residents. As citizens live in high-density residential units such as townhouses or apartments they share common spaces with their neighbors. These shared spaces can take the form of parks, trails, community gardens, rooftops or plazas. *High densities will create a healthy, comfortable atmosphere when complemented by with well-designed, enjoyable common space.* (Duany 2000).

Figure 2.4 Lively neighborhood commercial core

Finally, the centralization of services in a neighborhood center also acts as an important urban design element that builds neighborhood social capital. This design for the Bellis Fair urban village proposes the creation of a Town Center, Live-Work units, and Civic Center within the existing Bellis Fair mall building. These spaces will act as small-scale and self-sustaining neighborhood core within the greater city of Bellingham. By creating a space that every resident of the neighborhood frequents daily,

increased human interaction is inevitable as people gain a sense of familiarity within large social networks (Wirth 1938)**.** Such intense use of the central area greatly decreases the possibility that any place will feel dead or exclusive.

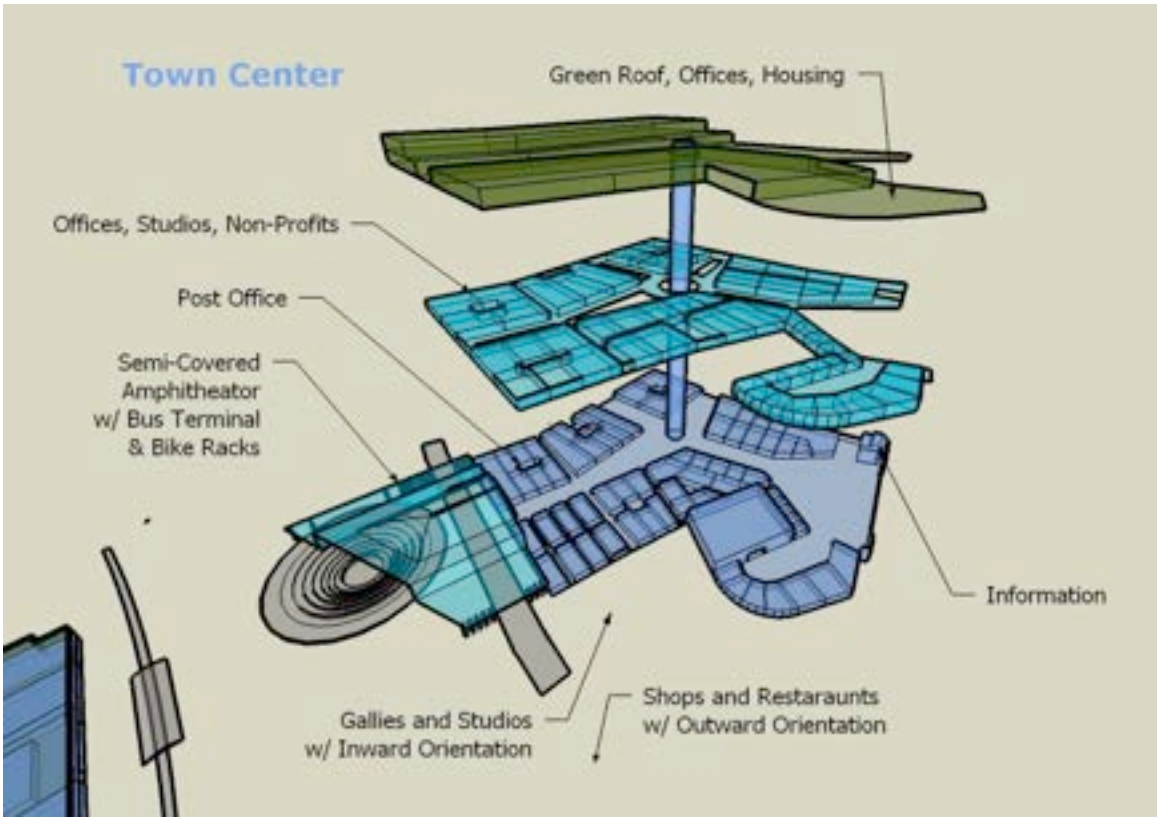

Figure 2.5 Exploded view of the Town Center

The Town Center (figure 2.5) is the adapted remains of the central mall building into a large scale, mixed-use building with retail and office space acting as the key element in stimulating social and economic vibrancy. The ground floor, adjacent to a main bus stop, will include a post office, locally-owned shops, manufacturers, restaurants, galleries, and a multi-faith center for worship. Meanwhile, the upper floors will integrate studios, offices, non-profits, residences, and a large green roof including seating and Bellis Fair's great view of the Chuckanuts to the south. So much activity in such a small area increases the opportunity for chance encounter with fellow community members. This is building block of social capital as random conversations can spark prospects for social and economic activity. Quality of life is also improved because residents can easily walk to run errands, pick up the kids from school, and get to work, home, or the bus.

Figure 2.6 Human scale urban design creating a comfortable, high density environment.

Finally, this great variety of urban design elements must come together in a comfortable way that prompts residents to consistently use and enjoy common neighborhood areas with their fellow residents. First, human scale street design with inviting store fronts, a well-connected street grid and small blocks create an environment where the pedestrian feels valued and safe. Secondly, walkability, with most destinations located within a five-minute walk of each resident's home allows residents feel that it is comfortable and convenient to walk to the store instead of drive. The Bellis Fair site is the perfect size for a walkable neighborhood with its quarter mile radius from edge to center. Finally, interesting and well-designed open spaces make it more enjoyable for residents to inhabit community spaces than stay isolated in private spaces.

Each of these urban design elements fosters the development of social capital. Furthermore, *all of these urban design elements come together to create a neighborhood characterized not only by a satisfying urban environment but by countless opportunities to experience community life with fellow residents.* This urban design which fosters social capital stands in stark contrast with urban design that makes pedestrians feel unsafe or forces residents to drive to most destinations. Only when urban design elements work together to create a desirable neighborhood environment will residents frequent the spaces and, in turn, connect with their fellow residents building neighborhood cohesion and trust.

2.2 Fostering Local Economic Productivity and Vibrancy

The next element of developing and maintaining social capital within this neighborhood concept is ensuring economic stability and productivity on the site. In contrast with current business models that are reliant on private automobiles and are often spatially isolated from each other and the communities they serve, the Bellis Fair urban village will encourage shared spaces and business incubation. The variety lifestyles made possible with features like the Live-Work units and a mix of neighborhood uses will cultivate meaningful personal connections that in turn encourage responsible, community-based business practices. *Businesses being directly invested in the communities are a part of social capital because they are connected through much more than the exchange of money.*

A key strategy in supporting economic development is the provision of business incubation. Creating spaces for shared facilities and services reduces transaction and communication costs, facilitating the quick and easy trade of services and information (Stegman 1996). This increases the likelihood of successful start-ups and creates a diversity of cooperative partnerships. Local manufacturers could benefit from shared spaces combining businesses such as a carpentry shop, frame store, and theater guild prop-shop. Renewable technology focused businesses and shared artist studios are two more ideas for business incubation spaces. *Business incubation is that idea that when businesses who offer similar services share a space this fosters meaningful productivity among local entrepreneurs and business owners.* Offices would also benefit from incubator businesses that could supply services such as: networking and marketing assistance, financial management, help with loans, and paper services. Designing for these incubators will ultimately reduce production costs and allow for a greater diversity of income levels, helping the movement from low to high incomes, students to working class, and homeless to hopeful.

The live-work units that surround the central building create a strong element of community investment. These are units that combine a shop at street level and living quarters on top of the store and can currently be found all around downtown Bellingham. These units' proximity to public services, other businesses and a large residential community in the neighborhood would make these units very desirable for small local business owners. *The appealing lifestyle these units provide encourages ownership of and ultimately long term investment in the community.* Live-Work residents, along with owners of townhouses and single family homes, will have a great stake in the workings of the neighborhood and are likely to become key players in civic meetings.

As the tables below show, regardless of how the central Town Center is used, a balance of retail and office can be achieved. The amount of retail and office space we've provided for our estimated population is about three to four times larger than Anton Nelessen, a renowned urban designer, would recommend for a residential based community (Nelessen 1993). However, the space provided is also about a one third to one half of that implemented in several redeveloped malls which also became central civic areas (Congress for the New Urbanism 2005).

There are many reasons behind these decisions on how much retail and office space to integrate into core of the neighborhood. First off, as a primarily residential district with a focus on accommodating growth, less commercial function is needed as more intense commercial use will be directed Downtown. The second reason, in conflict with the first, is that this site is a location that naturally calls for more commercial activity than the average residential area. Because it at the junction of the Guide Meridian, a major connection to Lynden, and I-5 the site is naturally is a commercial node or gateway to Bellingham, serving as a city anchor, much like the Old Town District. Third, the site's proximity to the Whatcom Community College supports a demographic that prefers living near immediate activity. Finally, the sites placement between the Meridian and Guide Meridian/ Cordata Parkway neighborhoods makes it a prime candidate to fulfill some, but not all of the surrounding communities commercial and civic needs.

Floor:	**Town Center Intensity of Use by Floor**		
	Low	Med	High
1	33% Retail 66% Office	66% Retail 33% Office	100% Retail
2	66% Office 33% Housing	100% Office	

3	100% Open Space	60% Office 40% Housing	100% Office
4	N/A	Additional Housing	

Total Square Footage			
Retail (+ 120,000 sf live-work units)	40,000 (160,000)	80,000 (200,000)	120,000 (240,000)
Office	160,000	200,000	220,000
Housing	40,000	60,000	80,000

Figure 2.7 Town center intensity and square footage

2.3 Phasing

Making the transition from an intensely developed commercial area to an equally intense residential neighborhood will require the careful consideration of a redevelopment phase plan. As "Malls into Main streets," an in-depth guide to transforming dead malls into communities, describes, a successful redevelopment plan will begin only when conditions are ripe. The process will require close engagement from the surrounding community, business professionals, policy makers, and investors if it is ever to get off the ground. (Congress for the New Urbanism 2005). A simple, three-stage phase plan might go as follows:

- Assessment – Once the economic condition of the mall has fallen enough to encourage store relocation downtown, a thorough assessment of the area's population and market conditions will help guide a successful redevelopment plan.
- Civic Engagement – In order to create a vibrant community and promote private investment, the Meridian and Cordata neighborhoods are encouraged to attend meetings and guide the developments direction.
- Changing Infrastructure – A major redevelopment of the area will start with habitat restoration, the remodeling of Bellis Fair into the Civic and Town Centers. These will provide initial public services and attract the continuing growth of residences, roads, utilities, and urban vegetation until infill is complete.

While a strong commercial center is not the site's main objective, maintaining consistent and healthy economic activity which complements Bellingham's downtown is necessary for success. In order for people to recognize this concept's feasibility they must first see that conditions provide an incentive for action and that development will be carefully planned. After such time growth can be assured through a balance of uses and local investment into the versatile retail space offered. Real success will be achieved as start-up businesses grow, make room for others and continue to contribute to the community's well-being.

2.4 Civic Engagement

Finally, neighborhood civic engagement is that last a crucial element in building a foundation of social capital within this development. Civic engagement can take a variety of forms from the random, economically-oriented encounters between business owners in the town center to more regular interactions between neighbors as the use the transit systems or trails together. All of these experiences create a sense of neighborhood trust and investment. These opportunities for civic engagement and meaningful interactions are the focus of many design decisions for this site. Techniques for fostering civic engagement are as simple as creating a unique sense of place, fostering an educational environment, or encouraging the public to get involved in deciding the direction of the community. Each these goals will be accomplished through the provision of a Civic Center including educational facilities and services and through a neighborhood identity and focus on environmental stewardship.

Creating a unique sense of place is critical to engaging all community members even if they have little time for social gatherings. The designated sustainable neighborhood character is meant not only to restore habitat and maintain the site's environmental features, but also create a beautiful place full of open green space, native plant and species life, green roofs and walls, and living buildings each reinforcing the identity of the entire district as a desirable place for residents and visitors to spend time. The sense of place is then enhanced through informative road signs, pedestrian directories, information booths, and open bulletin boards to create a convenient way-finding system and community forum for anyone in passing.

Between information booths and a neighborhood Civic Center in the existing mall building educational opportunities will be found virtually everywhere. While information booths could provide general knowledge of neighborhood and city amenities, the Eco-District and the Parks Department's Environmental Education Center, located toward the northwest portion of the site, will inform trail users of local bio-diversity and park and trail conditions.

The Civic Center (Figure 2.8) however will carry the bulk of the site's opportunities for civic engagement within a large redeveloped box store. It could easily include a library, neighborhood meeting hall, child care center, homeless accommodations, and a shared elementary school and adult education center. Consolidating these uses into one space is beneficial as "…networks of civic engagement foster sturdy norms of generalized reciprocity and encourage social trust," Robert Putnam writes. (Putnam 1995.) Here, children and adults can engage in public discourse, use the library, and learn from the life experiences of others. Possibly the most significant outcome is the neighborhood center is a sense of trust and cohesion within one's community not based on cultural or economic exclusion. The center's walkable proximity to other uses then turns the entire area into a learning experience. Parks and trails communicate the need environmental and physical health, the Town Center provides a look into business and possible career paths, the nearby Cordata Station could teach youth to use public transportation, and galleries and studios can inspire hopeful artists. All community members whether they be young, old, jobless, concerned about public policy, or just looking to learn a new skill are encouraged to learn and share their experiences.

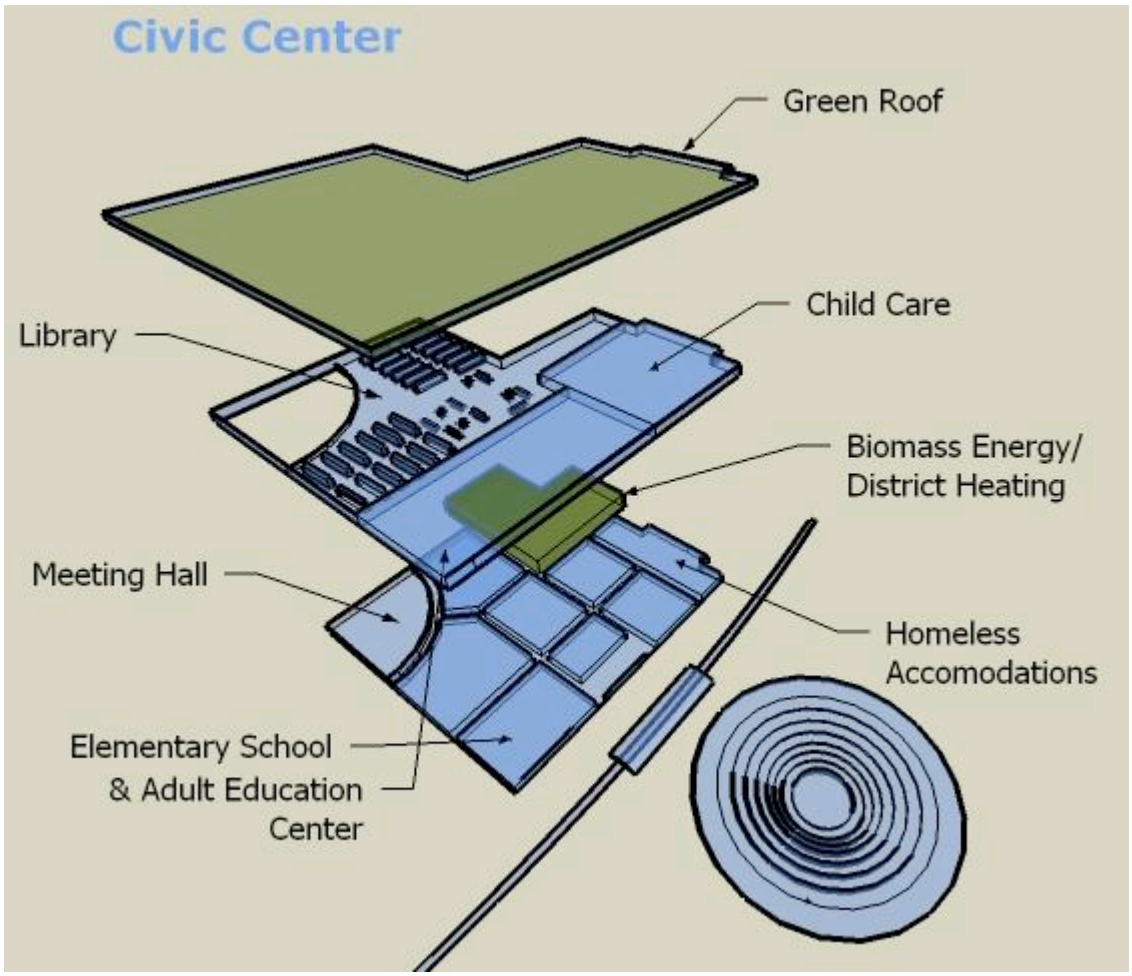

Figure 2.8 Exploded view of Civic Center

Finally, continuing to involve the public in decisions affecting the community is perhaps the most important step toward civic engagement. This sites' prominent and central location in relation to the Meridian and Cordata neighborhoods makes it a good candidate to house neighborhood meetings in a new civic meeting hall. This kind of consolidation could produce some interesting cooperative projects throughout Bellingham. Likewise, the sustainable neighborhood's engagement opportunities include policy and environmental stewardship dimensions. People would be encouraged to get involved in choosing design standards throughout the district's designation and maintenance processes. Volunteers will be needed for habitat restoration in the initial stages of redevelopment and throughout its life-span. This gives residents the opportunity to become a part of "building" or "restoring" their neighborhood. Residents would also have the opportunity to help maintain urban vegetation and a network of community gardens. This is the kind of involvement, both political and physical, gives people the chance to directly invest in their neighborhood.

In conclusion, civic engagement fosters social capital with a unique sense of place, education, and involvement in neighborhood policy decisions. These features ultimately create a beautiful place people trust enough to invest their time and effort into. As a place is built by its community members it not only improves their social and emotional health, it builds a foundation of investment and community identity among neighbors ultimately making this Bellis Fair urban village a vibrant neighborhood.

2.5 Personal Profiles

In an effort to craft a design concept which is relevant to potential neighborhood residents in meeting their lifestyle needs and preferences, actions were taken to engage real people around this idea of an urban village on the site of an existing regional mall. Below, you will find four profiles of potential neighborhood residents: a local small business owner, an active senior citizen, a Whatcom Community College student and a large family.

Figure 2.9 Local Business Owner Travis Linds

Green Conversions is a local business created by Travis Linds who hopes to spread sustainable technologies and practices throughout his community. While he has only been able to keep it alive on his free time, Linds offers diversity of services including: engine conversion, bio-fuel supply, use of grey water for homes, irrigation and energy, and production of sustainable aquacultures. This first aspect of his business would benefit greatly from a large shop to convert vehicles and filter and store waste vegetable oil. This shop could be a shared space for partnerships with others working on renewable energy technologies or supplying services related to passive environmental building designs. Waste from preparing vegetable based fuels is also completely compostable and could add to a community compost system for on-site gardens. Linds' aquaculture endeavourers involve growing coral in aquariums in order to preserve reefs from being further harvested. This is an exciting opportunity that could be shared with other sustainable aquaculture ideas or even waste water treatment. By cutting costs and providing stable jobs, these kinds of shared spaces could be a great source of interaction and education that will further develop the use of solar, wind, and grey water into our daily lives. Green Conversions would fit right into the Eco-District them and its economic status makes it a perfect candidate to benefit from the lower production costs associated with shared facilities, services, and partnerships.

Figure 2.10 Active senior citizen Mrs. Shaw

Mrs. Shaw is a single 75 year old woman who has resided in Whatcom County for 36 years. In hearing about the Bellis Fair urban village project she mentioned that one of those "urban village monstrosities was threatening to invade her neighborhood." However, after hearing more about the intention behind urban villages as ways to use land more efficiently and reduce sprawl she also mentioned that the rural area she lives was just annexed into city limits. She liked that even less than the urban village that was threatening her rural neighborhood. When asked whether or not she would move into a high density urban neighborhood she said, "Yes, but only if I had room for my gardens." This confirmed the designs for all of the open green space, community gardens and environmental restoration factored into the design concept. Mrs. Shaw's hobbies include gardening and working around the house; the freedom to garden and personally invest in her home and the neighborhood are a vital part of this concept.

Mrs. Shaw's social connections center around the church she has been attending for many years. Yet she mentioned that she has a lot of time to fill and when she's not gardening, she enjoys visiting places where she is able to meet people. These types of locations include movie theatres and local restaurants with nice, not-too-expensive food where she feels comfortable conversing with others. Mrs. Shaw remarked that she doesn't like to go out alone however if she lived in a lively area where there was a lot of people around she would go out and engage in the community more.

If Mrs. Shaw were to move to an urban village she would like to see neighborhood uses that fit her lifestyle. Mrs. Shaw mentioned that if she was close enough to her destination she would certainly walk or ride public transit. "That would be fun!" she said. Mrs. Shaw does still work and needs a car drive to different parts of the county and surrounding areas. However, if just needed to be downtown she would hop on a bus to get there. Additionally, within the neighborhood Mrs. Shaw would like to have access to restaurants for nice yet inexpensive meals, a convenience store to pick up last minute items, a dry cleaners, a place of worship and other uses that encourage social connections and making new friends.

Figure 2.11 Whatcom Community College student Kari Reindal

Figure 2.12 Kari's daily destinations

Kari Reindal is just one example of many Whactom Community College students who would benefit from the lifestyle the Bellis Fair urban village could provide. One of her most important needs is easy access to transit and major travel routes because her family lives in Mill Creek, Washington, just an hour south along I-5. The highway is immediately adjacent to the site, making it convenient to jump in her car or, even better, on the bus and get going. Her proximity to the Guide Meridian and downtown also make it very convenient for her parents to come visit, stay in a nearby hotel, and for the whole family to take advantage of the many shops and restaurants the city has to offer. Like many of her fellow students, Kari is new to Bellingham, so exploring parks, trails, and the waterfront is a great source of weekend entertainment. Finally, as a graphic design student, the many businesses both in the neighborhood Town Center and downtown Bellingham could offer a wide range of potential internship and future career opportunities.

Figure 2.13 Stacy and Mark Rensik's large family

Stacy and Mark Rensink are the parents of 5 young children, 2 of whom they have adopted. In speaking with Stacy about her daily needs as a stay at home mom she said that a neighborhood with more open space and parks, a branch of the library and wide sidewalks with safe crosswalks would be ideal. These features would add ease to the family's daily activity. In designing open spaces and streetscapes for walkability, safety is the top priority for a family with young children. Families will walk to the park or library only if it is safe to do so, Stacy Rensink reiterated. Wide sidewalks that accommodate a mother pushing a stroller with 4 other children in tow while allowing another resident walking their dog to comfortably pass are desirable. Crosswalks that are well-delineated and that drivers respect are key for safety and a family's choice to walk to a location.

Other neighborhood elements that would be desirable for the Rensink family are a convenience store for last minute items and community uses such as a farmer's market where parents can shop for produce, the kids can play with other children and the family can eat lunch together. The Rensink family would be more civically engaged in their neighborhood community if there were more uses that provided opportunities and benefits for parents and children. In responding to the question as to whether or not a neighborhood could satisfy the family's needs without a car, Stacy Rensink explained that certain errands require a car in order to haul and transport the goods and children back home. Driving to the grocery store is vital because she has no way to bring the groceries and children back home without it. Overall, a large family's neighborhood needs include uses that accommodate quick trips and family-friendly outings. A neighborhood grocery store is impractical for a large family because they have no way to haul the groceries back home. Uses for last minute items (convenience store) or that don't require the transportation of goods (dry cleaning or library) are ideal for the large family.

Chapter 3: Environment

3.0 Overview

The Bellis Fair site is currently a sea of parking lots with a scarce amount of trees and vegetation. As the environmental team, the project goal is to start with nothing but cement and box stores and to create an eco-district with a number of green features throughout the neighborhood. The site will have a variety of green features that will not only make an enjoyable place to live, work, and visit, but will also ensure the site is sustainable by restoring natural habitat. Corridors throughout the site will create diverse access points to the surrounding environment.

The general layout of the site will include a wetland park in the northwest corner of the site with a stream exiting from the south end. The stream will be directed through the site along the west end neighborhoods and will meander through the parks and along the mixed use building in the center of the site and continue to the retention pond in the southwest corner of the site. In addition, a bioswale system throughout the site along the roads will serve as a storm water runoff system flowing into the retention pond allowing for prevention and recycling of rainwater on the site. To connect neighborhoods around the site, provide movement within the site, and promote walkability, a series of a small greenway system of trails and parks will be put in place to attach all green features, allowing for residents and visitors to enjoy the natural features of the site.

3.1 Wetlands

Four Category 1 wetlands will be created, primarily in the northwestern portion of the site. The largest of the wetlands will be located in the northwest corner; three other smaller wetlands will also be located in the northern portion of the site. Prior to the construction of Bellis Fair Mall, several large wetlands existed on the site, while the recreated wetlands will not cover as much space as the former wetlands, they will still provide a great deal of habitat to the area.

Figure 3.1 Wetland concept

The wetlands will be incorporated into an interconnected trail system and will be surrounded by open space around them. Additionally, two of the wetlands will have boardwalks across the water and signs to educate residents about the purpose of the various wetland features (figure 3.1). In reconstructing the wetlands, we hope to restore the natural aspects of the site and create habitat for native plants and animals as well as park area for the residents to enjoy. The park surrounding the largest wetland will be approximately ¾ acre in size with a safe buffer distance of 25 feet to allow people to access and view the park from the surrounding space (figure 3.3).

Figure 3.2 Boardwalk concept

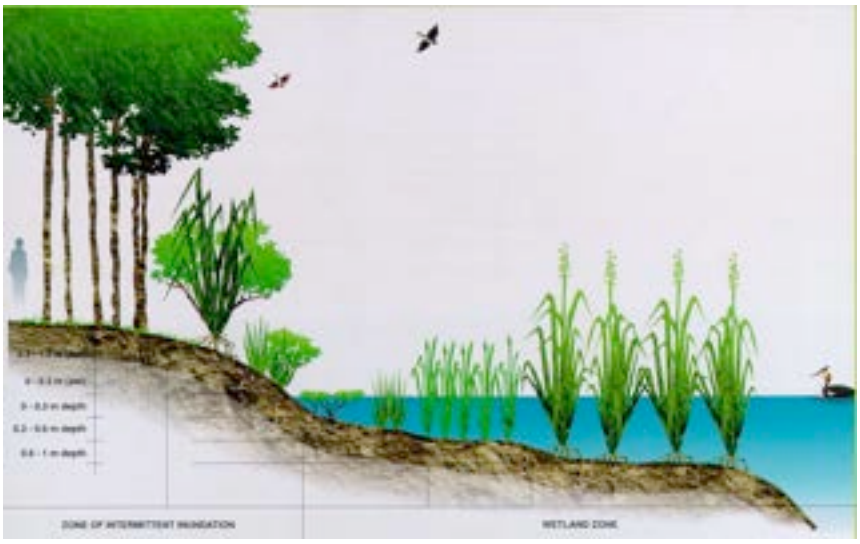

Figure 3.3 Wetland buffer concept

3.2 Stream

In order to bring nature into the center of the site, an intermittent stream will be created that will meander from the wetlands through the site and end at the retention pond. The stream will serve as a natural feature of the neighborhood and strengthen the resident's appreciation of nature. A riparian buffer of native plant species and trees will protect the stream and provide habitat. The stream will have a narrow depth to ensure safety of the residents. Four bridges will be built over the stream in various connection points of trails and greenways across the stream.

Figure 3.4 Stream bridge concept

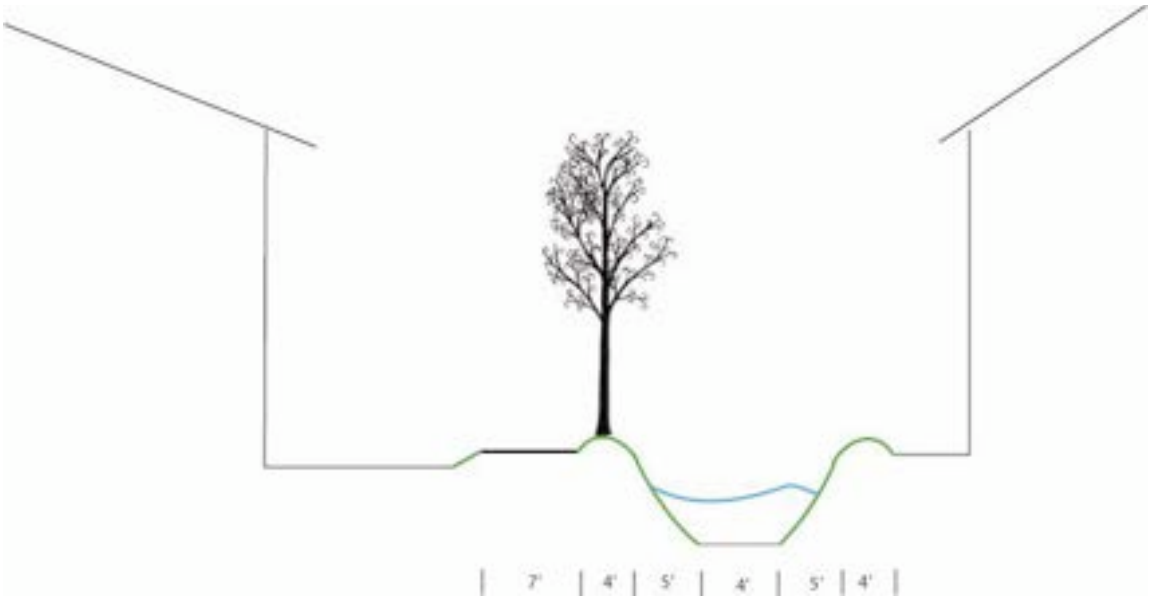

Figure 3.5 stream diagram

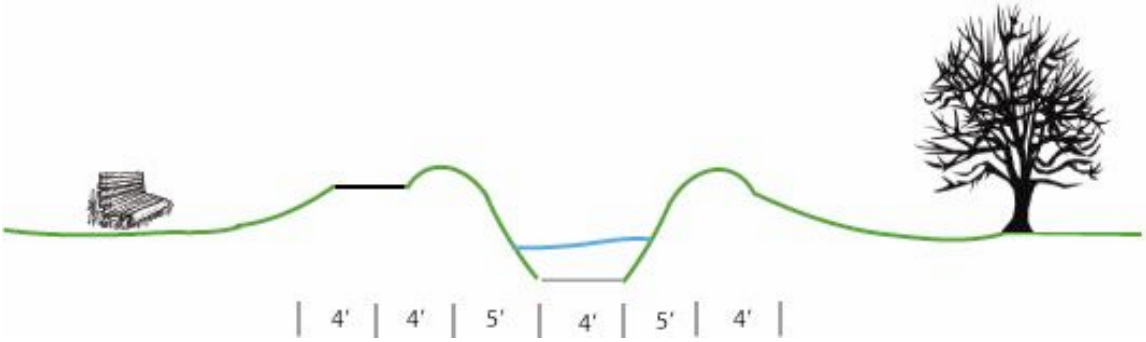

Figure 3.6 stream diagram

Figure 3.7 Stream concept

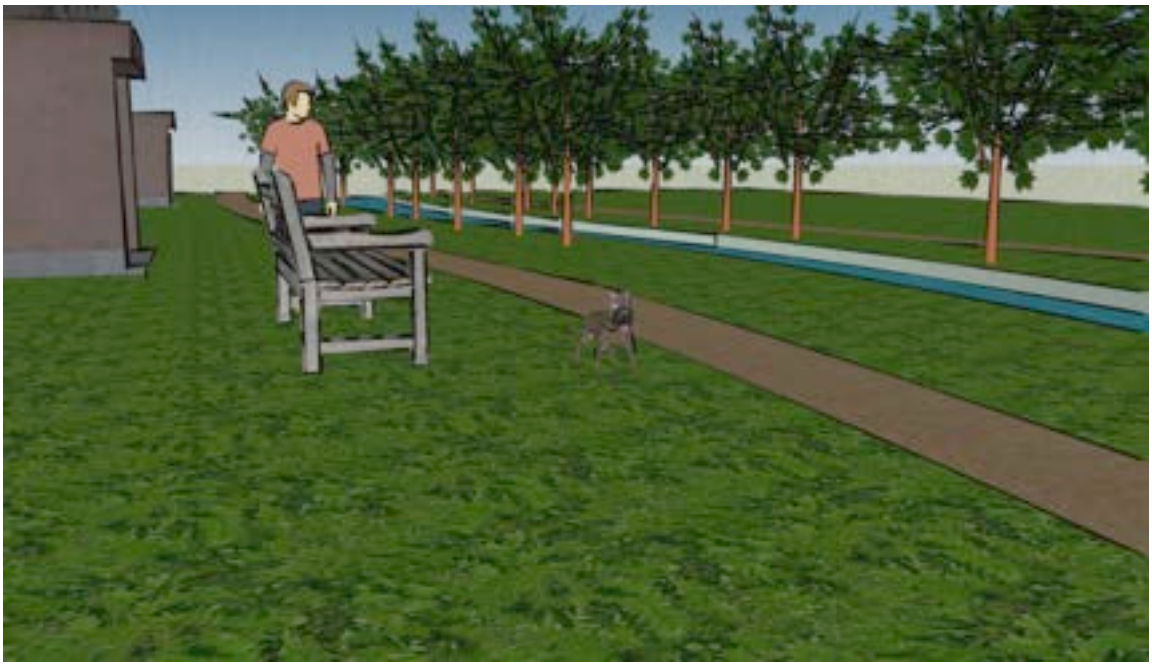

Figure 3.8 stream concept

3.4 Bioswale System

Throughout the site, a series of bioswales will line the roads to provide drainage and water filtration. A bioswale is essentially a linear rain garden that collects, filters, absorbs and transports storm water. Natural vegetation will be planted within the bioswale to provide natural filtration as well as being aesthetically pleasing. Bioswales have been shown to be very effective in removing heavy metals, total suspended solids and oil and grease from water. Water that isn't reabsorbed into the soil will flow into the retention pond.

Figure 3.9 Bioswale concept

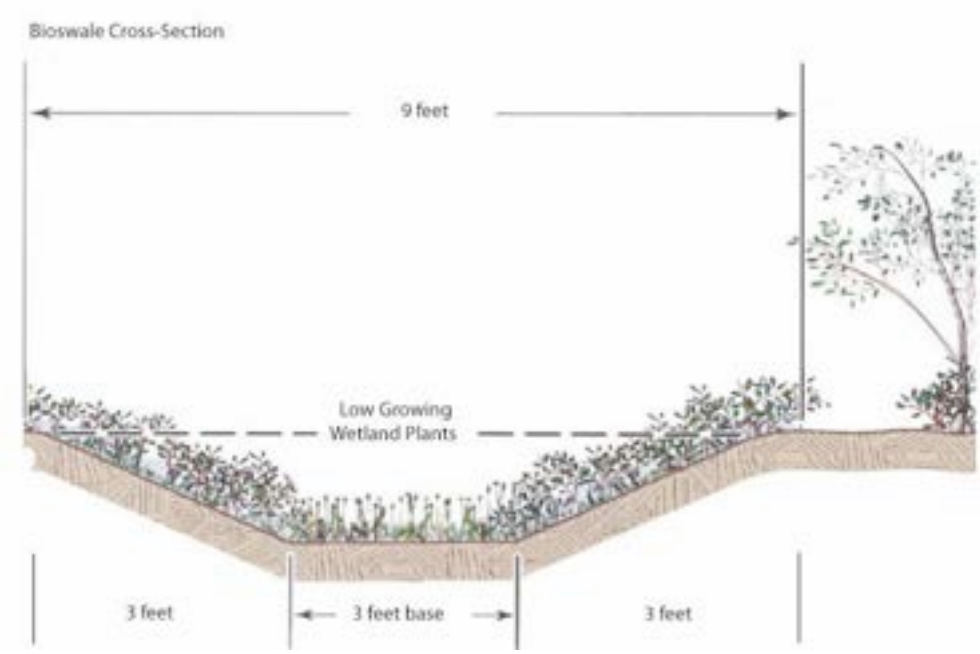

Figure 3.10 Bioswale cross section

3.5 Retainment Pond

A ¼ acre retention pond will be created in the southwest corner of the site to serve as an endpoint to the stream and the bioswale water system. Possible reuse options of the water could be used for watering the neighborhood parks, used for toilet water, water to clean the outside of buildings or for a community car wash station. The filtered water can be used for most water needs throughout the site except for drinking water.

The retention pond will have a functional purpose as a way to manage storm water runoff as well as being another natural area people can enjoy on the site. A fountain will be placed in the pond to aid in aeration of the water and natural vegetation surrounding the pond will create a beautiful and enjoyable place for recreation. Surrounding the pond will be a dog park, sports fields and trails that will encourage outdoor recreation and community activities.

Figure 3.11 Retention pond concept

3.6 Parks, Open Space, and Greenways

Figure 3.12 Park concept

Parks will serve as an active green space for the residents of this site. A large park will be located in the northeast part of the site around the wetland and another park will surround the retention pond. Several other smaller pocket parks will be included near the residential and commercial buildings.

Figure 3.13 Park concept

The greenway and trail system will connect the surrounding neighborhoods to the Bellis Fair site as well as providing a pleasant walking environment for people within the site. A direct trail will be available to connect pedestrians on the east and west sides of the site in an efficient manner. Other more meandering trails will go through the wetlands, parks and near the streams to connect the green spaces.

Figure 3.14 Park concept

Types of Green Space	Square Feet	Acres
Wetlands	469,000	11
Bioswale	45,840	1
Stream/Stream Buffer	25,300	.5
Parks/Open Space	451,950	11
Trails	50,380	1
Retention Pond	45,225	1
Total Green Space	1,088,600	25
Total Site Space	4,825,000	110

Figure 3.15 Greenspace chart

Chapter 4: Residential

4.0 Vision

This concept's aspiring vision for converting the roughly 150 acres of the Bellis Fair area is to accommodate the projected population growth for the City of Belling ham. Within this concept is an extensive effort to support a dense population by creating the maximum amount of living spaces possible with a focus on sustainability and a strong community identity. In addition, this concentrated community will contain a range of housing types, as well as flexibility in the form each housing type will take.

The vision pays close attention to zoning by creating a transitional ambience, with each block of the development flowing into the other, resulting in a connected urban fabric. This method of planning will create a neighborhood feel and will aesthetically blend with the vernacular architecture that Bellingham currently values so dearly.

Figure 4.1 Land uses in this development range from primarily townhouses and live/work units, to apartments and condos along the Eastern border.

4.1 Housing Types

To create density this concept is designed with lot sizes that serve two functions. The first function is to maximize the use of space within each block. This maximization of space was achieved first

by analyzing compact residential building types and then choosing the best building that would accommodate the goals of the project. Through this examination, townhouses will be the most efficient housing type (Figure 4.2). The other housing types included in this site are live/work units (Figure 4.3), apartment/condo buildings, and a small number of single-family residential units in the already existing residential area.

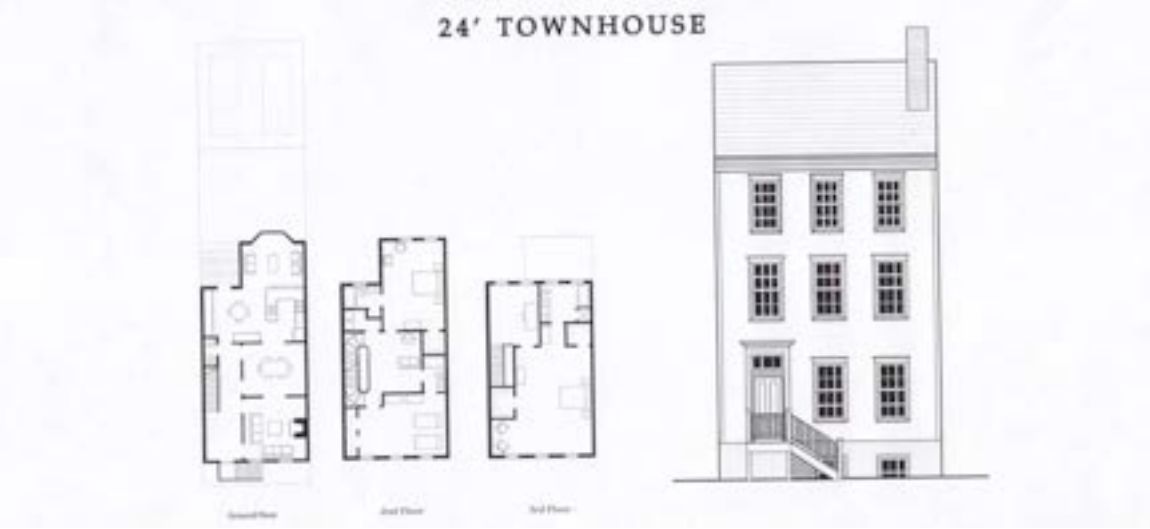

Figure 4.2 Townhouses would be the most efficient housing type. This plan includes 738 total units.

Figure 4.3 The other housing types we have included in this site are live/work units. This plan includes 84 total units.

The second function focused on is to increase the density. This development plan deals with the sizes of the housing units that are being employing, as well as the number of stories each type of dwelling unit has. The plan attempts to reduce the size of these buildings below what the normal standards are. The reasoning for doing this was the ability to include more dwelling units in the site. Specifically, the proposed townhouse units measure 24'x40' (Figure 4.4); the live work units measure 30'x50' (Figure 4.5); the apartment/condo units measure 60'x90', and the single family units measure 25'x30'. The number of stories each unit has ranges from 3-4 stories.

Figure 4.4 In this illustration, each townhouse measures 24 feet wide in an effort to produce greater density.

Figure 4.5 This illustration shows the streetscape along the live/work section of the development. Each live/work unit measures 30 feet wide.

4.2 Population Projections

The estimated population of this development is approximately 7,210 people. This number was obtained by calculating the average of the low population estimate and the high population estimate of each housing type, and then adding these numbers together to get a total population figure (Figure 4.6). In total, the site offers a density of 48 people per acre, or 7 to 21 dwelling units per acre. The low and high population estimates for each housing types reflect the flexibility in living styles each housing unit incorporates. For example, the townhouses which consist of three stories can either be used by one

family inhabiting all three floors (low population estimate), or the unit can be inhabited by three separate families, each occupying one floor of the unit (high population estimate). In order to calculate the population of the neighborhood, a family is assumed to be made up of 2.61 persons, according to the U.S. Census.

	Square Footage	Number of Units	Population (Low/High/Average)		
Townhouse	1,411,200	738-2214	2,505	7,516	5,010
Live Work	252,000	84	168	336	252
Apartment/Condo	1,334,400	312-624	1,292	2,603	1,948
		Total Average:			Total Average:
	Total: 2,997,600	2,028			7,210

Figure 4.6 This table shows how the estimated population was calculated. Density of the site is 48 people per acre, or 14-21 dwelling units per acre.

Looking into the future of Bellingham's expected population growth, this development serves two purposes. One, it is within the Urban Growth Area (UGA). This addresses the cities goal of reducing the percentage of growth occurring outside the UGA to 6%. Building off this benefit, this project accounts for approximately 23% of the expected population growth of 30,000 people between now and the year 2031 (Bellingham Planning Department 2004).

Chapter 5: Transportation

5.0 Existing Transportation Conditions

Bellis Fair mall has very little connectivity. Current transportation options in accessing the mall consist primarily of private automobile and moderate transit. Currently there are two bus routes that serve the ring road every fifteen minutes on routes between the Cordata station and downtown. The opportunities for bicyclist to access the property are severely impeded by the absence of bike lanes, trails and adequate bicycle parking. Pedestrian activity flows along the same level, very slim to none. The absence of sidewalks on two of the three major access points and a ten foot security fence around the perimeter of the property reduce the likeliness of anyone walking to and from the mall. Fences such as these are used to prevent crime through reduced access. By restricting the flow of traffic to the easily monitored access points, malls can increase the safety of their businesses from crime. This is deemed necessary by malls for they do not have eyes on the street as do traditional neighborhood designs and new urbanism neighborhoods. The removal of the fence would remove the castle effect of the site and add to the walkable streets and open spaces. This type of land use pattern is designed around the automobile and restricts the access of even nearby residents from having the opportunity to enjoy a walk from their home to the shopping mall. In the conversion from a regional shopping mall to an urban village, many changes in infrastructure would be needed to increase the opportunities for alternative modes of transportation.

Figure 5.1 Before and after connectivity diagrams

5.1 Pedestrian Connectivity

Bellis Fair would be the location of an urban village with opportunities for alternative types of transportation that the last thing people would be worried about is finding a place to park. Designed with many new urbanism characteristics, the site would have walkable neighborhood streets with sidewalks that line all roads. These sidewalks would provide the opportunity for someone to walk from one street to another with minimal traffic interference. Studies on pedestrian activity have shown that the most important aspect of city and neighborhood streets is the connectivity of sidewalks. Sidewalk connectivity ensures that the pedestrian can walk with ease, with their mind on other aspects of the environment than worrying whether or not they are going to be hit by a car. To further enhance pedestrian safety, the streets are to be narrow enough to cause a traffic calming effect while still allowing traffic to pass through the site.

5.2 Accessibility

Maximizing street and trail connections to surrounding areas that were previously cut off from the site will increase regional connectivity and accessibility. For example, Meridian street which borders the east side of the redevelopment will be connected to allow all forms of transportation, private or public, to flow easily through the site. Meridian will also be transformed from a car-centric arterial into a neighborhood friendly boulevard with bike lanes, slower speed limits, walkable sidewalks and a day lighted stream. This will become the prototype for expanding the boulevard to the north to serve future neighborhood developments to the north.

Figure 5.2 Meridian concept

Figure 5.3 Meridian concept

5.3 Street Design

Within the neighborhood, New Urbanism street design characteristics, such as the modified street grid with short residential blocks roughly averaging 250X350 feet. Frequent intersections and functional alleyways will also be used to help promote connectivity. Residential parking will be located behind houses in the alleys which will further contribute to the physical aesthetics of the streetscapes and pedestrian scale. On street parking will also be provided on all streets within the neighborhood to provide for the parking needs of neighborhood visitors. Eliminating surface parking lots will drastically improve the quality and efficient use of public space. The focus on alternative modes of transportation

and the nature of the local neighborhood activities eliminates the need for surface parking or a parking structure. Having on street parking as a street buffer is also an effective way to calm traffic and increase the comfort of pedestrian street users. The road navigating around the city center will provide angled parking to serve the live work units. On this street there will be approximately 660 parking spaces including 30 foot intersection setbacks. Reduced parking footprint is a LEED for Neighborhood Development credit and is achieved through not providing off street parking lots. The street hierarchy ranges from a 24 foot alley, all the way up to a 96 ft boulevard (Figures 5.4-5.12).

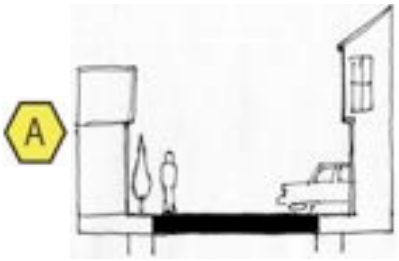

Figure 5.4 Alley: 3 ft sidewalks and 18 ft driveway. 24 ft total.

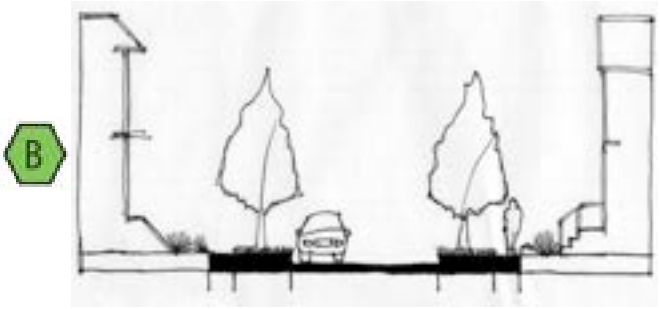

Figure 5.5 Narrow Residential Street: 3 ft sidewalks, 7 ft side walk medians, 1 row of parking and one lane of traffic. 38 ft total.

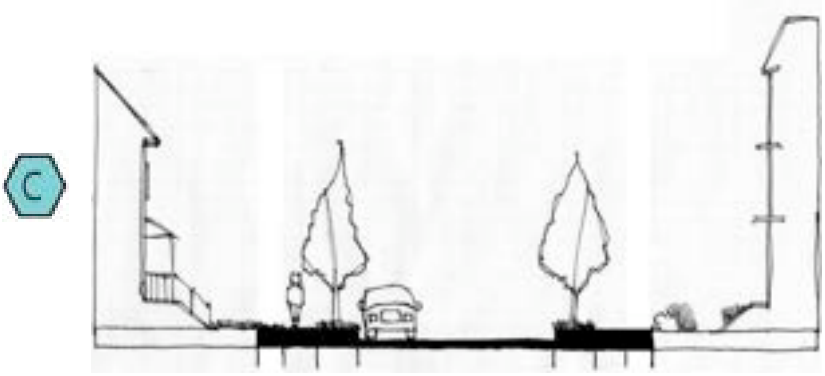

Figure 5.6 Residential Street: 4 ft utility easement, 4 ft sidewalks, 5 ft sidewalk medians, 1 row of parking and two lanes of traffic. 50 ft total.

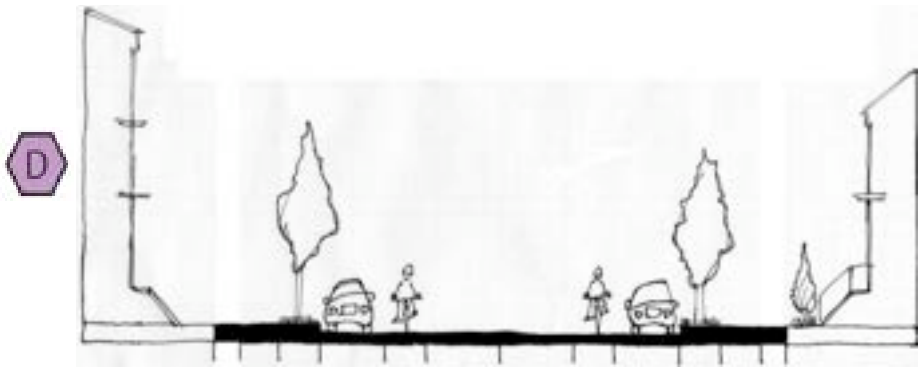

Figure 5.7 Inner Ring Road: 4 ft utility easements, 5 ft sidewalks, 5 ft sidewalk medians, two 8 ft rows of parallel parking, 5 ft bike lanes and two 9 ft lanes of traffic. 70 ft total.

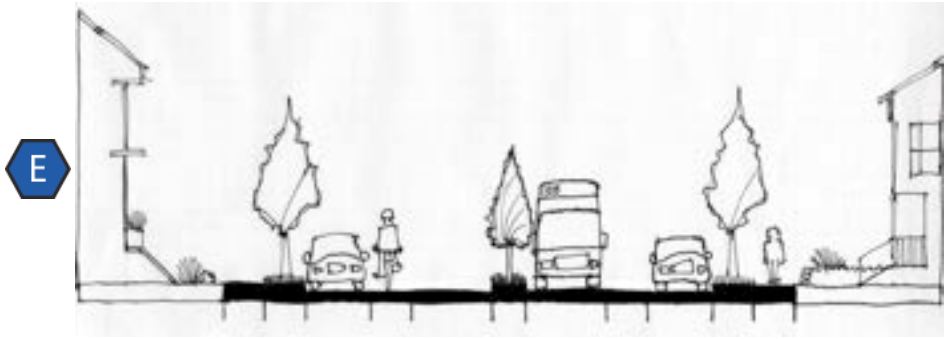

Figure 5.8 Ring Road: 5 ft sidewalks, 5 ft sidewalk medians, two 8 ft rows of parallel parking, 5 ft bike lanes, 4 ft center median and two 10 ft lanes of traffic. 76 ft total.

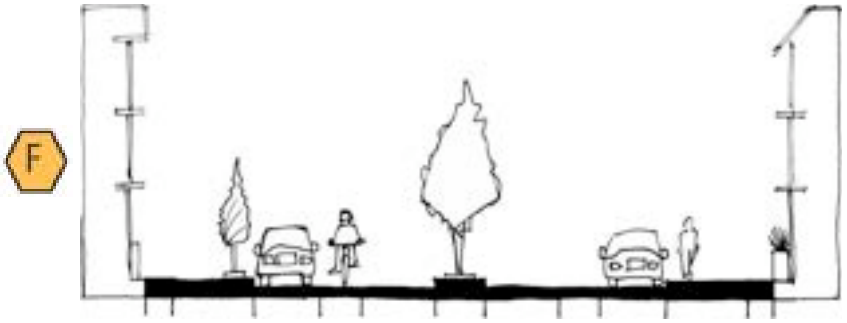

Figure 5.9 Cordata: 5 ft sidewalks, 5ft sidewalk medians, two 8ft rows of parallel parking, 5 ft bike lanes, two 9 ft lanes of traffic and 6 ft center median. 76 ft total.

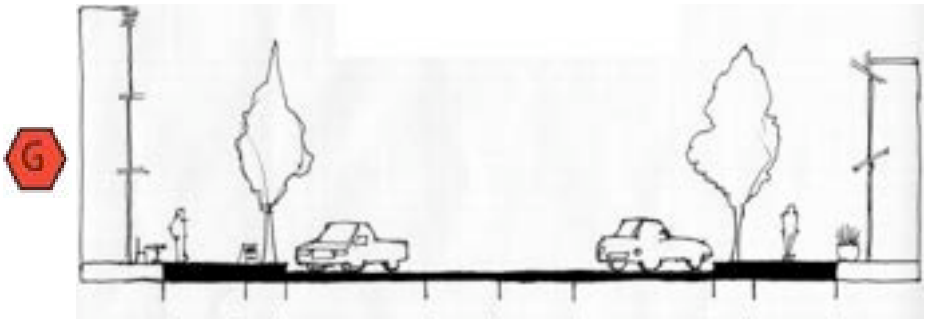

Figure 5.10 Commercial Core Road: 10 ft sidewalks, 5 ft sidewalk medians, 17ft angled parking and two 9 ft lanes of traffic. 82 ft total.

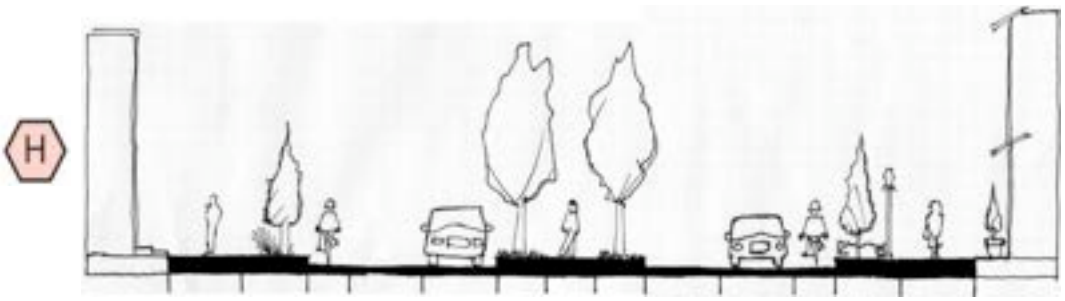

Figure 5.11 Arterial (Bakerview or Meridian): 9 ft sidewalks, 8 ft sidewalk medians, 5 ft bike lanes, four 9 ft lanes of traffic and an 18 ft median. 96 ft total.

Figure 5.12 Street type legend

5.4 Public Transit

Within a half mile of the new Whatcom Transportation Authority Cordata transfer station, busses will have a number of stops within just a few minutes of every residence. This ability to reach bus stops will entice ridership with the comfort and ease of timely pickups and increased social opportunity on the way to their destination. The main stop within the new Bellis fair community center is to be completely enclosed within the building similar to the shopping mall in Ottowa, Ontario (Figure 5.13). A quarter of shoppers at this mall use public transit partly because of this front door service convenience. Riders would not have to worry about finding a parking spot outside in the rain when they could ride the bus into an enclosed shelter at the front door of the climate controlled shopping strip.

Making riding the bus more convenient than driving will help to gear the neighborhood towards sustainable, transit oriented development. Transit demands for about 7,000 new residents in the development will be met with the addition of an express bus between the Cordata station and downtown that stops in the central Bellis fair station. The existing 15 and 331 bus routes will also serve the area more frequently and with shorter stop intervals as demand necessitates. As land use transitions from regional shopping along Meridian to residential growth, bus routes could be added along meridian (Figure 4.13).

Figure 5.13 Indoor transit station concept

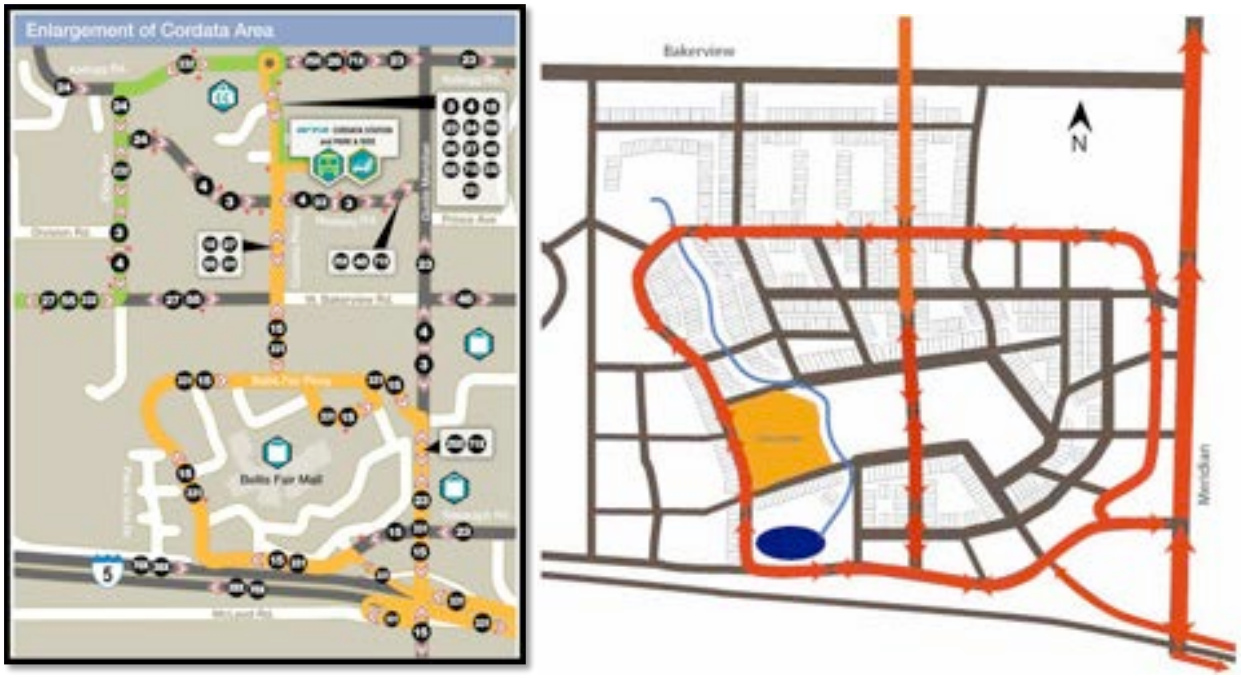

Figure 5.14 Current and proposed bus routes

5.5 Bicycle infrastructure

The bicycle will also enhance the efficient transportation orientation of our site due to an extensive network of well marked trails and connected bike lanes. This continuous network of streets with bike lanes, streets with calm traffic, bicycle friendly intersections (Figure 5.15), and separated right

of ways will promote bicycle safety and make cycling more accessible to novice riders. A completely enclosed bicycle storage shed within the town center would provide a place for cyclist to park their bike out of the elements and away from vandalism (Figure 5.16). Bicycle racks in community areas and prominent street corners and at every multi family residence would also give residents the opportunity to have a quick means to travel and recreate. Trails extending along restored wetlands and streams throughout the property will also promote cycling as a form of recreation.

Figure 5.15 Bicycle friendly intersection concept

Figure 5.16 Examples of bike intersection and storage designs

5.6 Sustainability

All streets would have an innovative street design to help reduce the impacts of runoff. These designs would be used force water off the street into enclosed bio swales that would force water to a retention pond at on the south of the site, as well as water plants on the way. LEED credits relating to transportation, such as reducing automobile dependence, reducing parking footprint, providing transit and bicycle facilities will also contribute to reducing the environmental impact of our neighborhood.

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Figure 3.1 “South Los Angeles Wetland Park." *Curbed*. Web. 1 Mar 2010. <http://curbednetwork.com/cache/gallery/3617/3619726841_03ecc3a531_o.png>.

Figure 3.2 "The Main Bridge at Sungei Buloh Wetland Reserve." *Wetland Bridge*. Web. 1 Mar 2010. http://farm1.static.flickr.com/114/289319709_491c6d1257.jpg

Figure 3.3 "Lake and Wetland Management System." *Operations system*. Web. 4 Mar 2010. <http://plwmos.putrajaya.net.my/images/image005.jpg>

Figure 3.10 "Retention Pond." *Waterfall*. Web. 1 Mar 2010. <waterfallsrock.com>

Section 4: Plan Implementation

Chapter 1: Project Feasibility

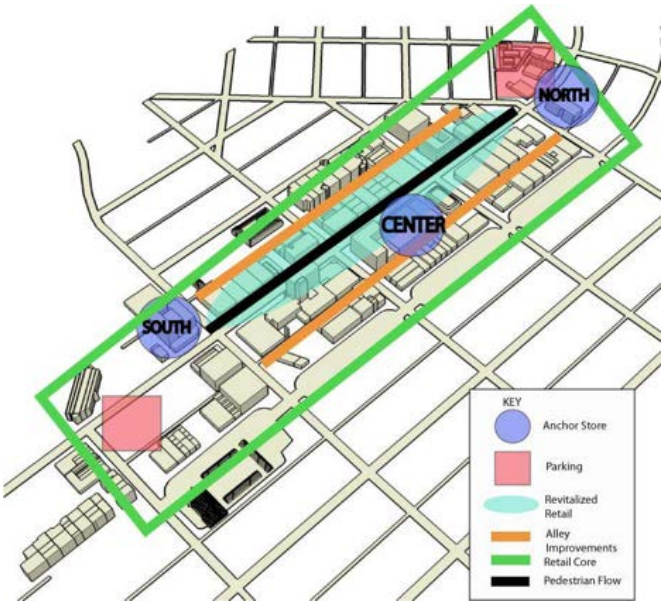
Prepared by Lauren Squires, Haylie Miller and Corey Havens

1.0 Introduction

Lauren Squires

Winter quarter of 2009 marked the beginning of the Urban Transition Studio with the first of a series of Planning Studio classes created a vision and plan for the revitalization of Cornwall Avenue in downtown Bellingham. Following the creation of this vision, the next quarter's Planning Studio: Implementation class researched how this vision would become a reality by analyzing private and public sector costs of the vision's major proposals, recommending economic policies to finance the proposed projects and developing a form-based code to guide this new development.

The major proposals of the Winter 2009 Planning Studio vision included many different projects to pedestrianize Cornwall Avenue such as the construction of public plaza space, alley way revitalization and an emphasis on alternative transportation. The revitalization plan is based on the revitalization of downtown Bellingham through the development of downtown retail particularly with two anchor retailers on the north and south ends of Cornwall Avenue. The feasibility analysis analyzes the costs associated with both of these anchor stores. Additionally, the revitalization vision proposes parking improvements for downtown with the addition of 500 parking spaces with half of those included in a new parking structure on the south end of Cornwall Ave.



1.2 Scope of Analysis

Lauren Squires and Corey Havens

As a next step following the visioning of the revitalization of Cornwall Avenue, this chapter analyzes the feasibility of the revitalization plan by looking at the private and public costs associated with the major construction proposals in the original vision. This cost analysis gives a sense of where these proposals fit into current market realities and inform the phasing of development. This analysis has found that if funds and economic policies are properly prioritized and managed, sufficient public and private funds can carry out the level of redevelopment proposed in the Cornwall revitalization plan.

In order gain a better view of the scale of redevelopment the Cornwall revitalization plan suggests, the cost-analysis data is accompanied by a phasing plan, market development suggestions and demographic, population growth and anticipated absorption data. This context rounds out the feasibility analysis giving the reader a sense the achievable realities surrounding the revitalization of Cornwall Avenue. The analysis of the amount and kinds of growth the area will see in the future reminds the reader of the demand Bellingham will need to generate in order for this level of development to be successful. Finally, this feasibility analysis concludes with marketing suggestions for drawing people to the downtown area. These suggestions seek to give citizens a good reason and incentive to spend their time and money downtown.

Feasibility analysis goal: What financial data and cost analysis support can be found to support the feasibility of the downtown revitalization proposal?

- When is what going to happen?
- How much of the Cornwall revitalization proposal is likely to be implemented in the next twenty years?

1.1 Public and Private Costs

Corey Havens

This section addresses the cost of each major element proposed in the Cornwall revitalization plan. Along with an explanation of how and why calculations were made this analysis offers brief recommendations for more financially feasible alternatives to those proposed in the original plan and, while these designations are open for interpretation, this analysis suggests possible sources of expenses from the public, private or both sectors.

General cost estimates for land development and construction, shown in Table 1, were a major portion of this analysis and could not have been made without the help of several community members. Building construction cost estimates were provided by several local developers, namely: Ted Mischaikov, Jeff McClure and Rick Westerop. Tim Wynn, WWU's

Facilities Manager was able to provide demolition estimates for the public market and Tara Sundin and Darby Galligan of Bellingham's Community Development Department confirmed many of the public construction estimates. (Contact information located in Appendix A).

These numbers will be discussed in greater detail as needed, and they are simply meant to give a ball-park estimation of expected project costs (see summary in Table 2). Any in-depth analysis would likely take months to complete even for individual projects. That level of research is generally taken on by private planning and design firms.

Table 1: Construction Costs

		$/Unit
Land Acquisition		$30/sf
Building Shell Construction		$120/sf
Alleys	Power lines	$ ½ million per block
	Improvements	$25/sf
	Retail Split	$1,000/ft of frontage*
Structured Parking		$25,000/space
Street Improvements		$1,600/ft, 70' ROW $1,700/ft, 80' ROW
Plaza Space		$75/sf
Park Space		$75/sf
Demolition		$5/sf
'Soft' Costs (Includes financing fees, impact fees, Permitting, Sales tax, architectural and engineering fees, etc…)		30% project value
LEED certification		3% project value

Table 2: Project Cost Summary (*= Private, #= Public)

		Total Cost
Bike Share #		$45,000 - $120,000
Pocket Parks #/*		$1,785,000
Street Improvements #		$3,720,000
Alleyway	Power Lines #	$3,000,000
	Improvements #/*	$290,000
	Retail Split *	$2,756,000
Parking Structure #		$10,670,000
South Anchor*		$16,000,000
North Anchor*		$36,390,000
Total		~$74,700,000

Public Costs

Bike-Share

The possibility of a bike-share program is exciting both because of its relatively low cost and the extreme benefits that may result. The original proposal suggests the downtown area take on as many as 30 to 100 publicly-owned bikes to be incorporated into Bellingham's public transportation system. As Table 3 suggests, the feasibility analysis has found these programs to be so promising that this analysis proposes an expanded bike-share system that could be phased into use for the CBD, its surrounding areas, and then on to the rest of Bellingham. There are two kinds of programs available: Smart Card and Call-a-Bike. Each system has strengths and weaknesses and is "strongly recommended that each agency have an independent assessment of community needs, economics, technologies, logistical issues, service area, etc.." by the Alta Planning and Design agency[1] in order to discover what system will work best for specific cities.

Table 3: Bike-Share Implementation Costs

Phase	# of Bikes	Dial-a-Bike system ($500-1,500/bike)	Smart Card system ($3,000-4,000/bike)
1	30	$15,000-45,000	$90,000-120,000
2	+70 = 100	$50,000-150,000	$300,000-400,000
3	+200 = 300	$150,000-450,000	$900,000-1,200,000

[1] "Bike Sharing/Public Bikes: A summary of Program, Vendors and Technologies." Alta Planning & Design. Received from: www.marinbike.org/Resouces/bike_sharing_whitepaper.pdf

Smart Card systems are now used world wide and could potentially fit right into Bellingham's current WTA bus card operations. Ease in operations is the primary benefit and is achieved through the installment of electronic kiosks where bikes are unlocked and managed with the swipe of a card.

Dial-a-Bike systems have been very successful in Germany and provide a much cheaper alternative to the infrastructure needed for smart cards. The bikes have a locking mechanism build right into them which allows for more flexible parking, but requires more planning on the users part, who must call to unlock it.

Regardless of which system is chosen the public benefits of a well used bike share program outweigh the costs. The maintenance costs of such a program are said to be covered almost completely (80-100%) by the user fees. For the public it is cheap to maintain, will help relieve the burden on busses downtown, and is the cheapest public improvement presented in the proposal. Citizens and private business will likewise stand to benefit a great deal. Besides individuals spending less money on gasoline and car maintenance, biking will strengthen the health of their environment and themselves. And for retail downtown, bike-share users have shown to spend more money. One report on Leadville, Colorado's recent bike-share program shows that the average biker spends 18$ a day and ultimately increased their sales tax revenue by 19%[2]!

[2] "Economic Benefits of Bicycling in Urban Environments." Marin Country Bicycle Coalition. www.marinbike.org/Resouces/EconomicBenifitsOfBicycling

Street Improvements

Cornwall currently has a ROW (right of way) of about 65 feet with ten foot sidewalks on both sides of the street, making it more pedestrian friendly than its more used neighbor, Railroad Avenue. The street improvements proposed: plaza space on Cornwall between Magnolia and Holy and larger ROWs on Cornwall and Chestnut surrounding the South Anchor (see Table 4), will present new opportunities for the public and encourage the revitalization of this underutilized space. While the widened ROW will mostly have the effect of improved traffic for both automobiles and bicycles, the plaza space could be a huge draw for the public and create financial opportunities for local businesses. While general street improvements such as benches, street lighting, and landscaping would be seen across all high street improvements, the plaza space would mean the use of a higher quality concrete to better define and beautify the space. Here, bollards could be erected to preserve the area for pedestrian use for public events such as street fairs, concerts, or even as market space for local artists and vendors.

Table 4

Plaza	(400'x 80') x $75/sf = $2.4 mill
Cornwall 70' ROW	500' x $1,600/ft = $0.64
Chestnut 80' ROW	400' x $1,700/ft = $0.68

Total = $3.72 million

Public/Private Partnerships

Pocket Parks

The Cornwall Revitalization Plan suggests 14,000 square feet of pocket park space and defines two potential areas: a vacant lot between Magnolia and Champion and adjacent to the new parking structure. Placement of the additional 3,800 square feet is suggested by the circled areas in the map below. Each of these spaces, due to their public nature and close proximity to a limited number of businesses, offer the opportunity for joint public/private investment. Of the 14,000 square feet proposed, most would be located in the northern vacant lot and adjacent to the parking structure.

Alley Way Improvements

There are three main elements for the six blocks of alleyway reconstruction that have major public, private and shared cost considerations. The first major cost consists of the city burying of the power lines, which has already begun, and would cost about a half million dollars per block. Opportunities for joint, public/private spending may arise in the effort to pedestrianize alley way spaces with improvements such as lighting and seating. The last major cost would consist completely of private spending, perhaps with some public incentives, in order to split existing retail space so as to create additional, alley fronting shops and cafes. This mixing of public and private interests in the space makes it a great opportunity to create more flexible, incentive based regulations that encourages more innovate and long-term private projects. Here retailers will work with the public to create more retail space as the financial means become available to them.

Table 5

Power Lines	6 blocks x $1/2 mill per block = $3 mill
Pedestrian Accommodations	2,900’ x $100/ft = $0.29 mill
Retail Split	110,240sf x $25/sf = $2.756 mill

Private Costs

North Anchor, South Anchor & the Parking Structure

These three structures will undoubtedly be made possible only through proper public incentives, but the primary funding will most certainly be from large, private anchor retailers. The main elements of cost involved with these three structures are land acquisition, parking, and building shell construction (given below in Table 6).

Originally the plan proposes an extremely grand North Anchor, which would incorporate both local and regional retail, offices, residencies, and parking equivalent to the 260 spaces offered by the proposed Parking Structure. This makes it an extremely expensive anchor store at around thirty six million dollars, which may not be impossible to attract, but will be difficult in Bellingham's current economic situation.

While the North Anchor mixes uses, the South Anchor includes only local and regional retail. Likewise, the parking structure consists of only parking and green space. One cost saving alternative to the original plan could be to share the area's parking needs between the South Anchor and the proposed parking structure. This change to the original plan will make use of the day-lit parking opportunity already provided by each site. This means that both locations' ground floors naturally open to the street because of the slope of the hill they are on and would not need ramps installed which take up a great amount of possible parking spaces. This new design proposes both sites as large, mixed-use anchors with parking as well as local retail on the ground floor, and retail anchor, office or housing space on the upper floors.

Table 6

North Anchor ($36.39 million)

Land	Demo.	Uses (#)	Hard Cost	Soft Costs (30%)	LEED Premium (3%)
113,000sf x $30/sf = 3.39mill	25,730sf x $5/sf =0.12865 mill	Parking (250 spots)	6.25 mill	2.3685 mill	0.2368 mill
		Retail & Office (196,000sf)	23.5 mill		
		Plaza Space (7,000sf)	0.525 mill		
			30.275 mill		

Table 6 (continued)

	Land Value ($30/sf)	Site Demo.	Uses (#)	Hard Cost	Soft Costs (30%)	LEED Premium (3%)
South Anchor (16mill)	24,000sf x $30/sf =0.722mill	N/A	Retail & Office (96,256sf)	11.55 mill	3.465 mill	0.3465 mill
Parking Structure (10.67 mill)	30/sf x 29,250sf = 0.88mill	N/A	Parking (260 spots)	6.5mill	2.2mill	0.22mill
			Retail (5,800sf)	0.87mill		
				$7.37		

1.2 Downtown Growth Trends

Haylie Miller and Lauren Squires

Absorption

The following table (below) details the number of units built in downtown from the years 1997 to 2010. Based on these findings, this analysis estimates downtown Bellingham, given the current market situation and economic policies, could absorb about 75 residential units per year in new development. This means that downtown revitalization efforts should focus on filling the vacancies during the first phase. Bellingham's current economic state cannot support new construction if there is already a 30% vacancy rate in the downtown. New construction will take place in phase 2 (see Section 1.4 Phasing) with the new development on Cornwall taking the form of either residential or retail units, given the vast amounts of vacant office spaces, especially on Cornwall Avenue.

Build-Out Rates in Downtown Bellingham

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Units	36	0	0	0	8	47	115	76	9	151	177	20	0	0

Number of residential units built per year.

Land Value

In order to understand the reasons for the Cornwall office space vacancies, this analysis compares the downtown commercial office space rents to the rents in other competing areas in Bellingham. Barkley Village, a developing commercial and retail center in Bellingham, offers office space ranging from 18-24 dollars per square foot whereas Cornwall Avenue office space rents ranges from 12-16 dollars per square foot.[3] Based on these numbers, the assumption is that Barkley is filling up faster than downtown and is able to charge a higher rent rate due to its location at the crossroads of two major highways surrounded by residential development and the vast amount of available parking for employees. Cornwall Avenue lacks employee parking accommodations and the developed services and surrounding residential mass Barkley offers potential tenants. In order for the land value and rents to rise in downtown Bellingham more services, parking accommodations and residential population mass needs to develop downtown. This synergy of an urban population supported by attractive services and residential units will raise the land value in downtown and begins with innovative public legislation and investment (See Section 1.4 Phasing).

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[3] Barkley Village rents: http://barkleyvillage.com/leasing/available_space/;
Downtown Commercial Rents : http://www.commercialmls.com/index.cfm

1.3 Creating a Market for Downtown Development

To gain a better understanding for how much and the type of development Cornwall Avenue can absorb, this analysis looks into Bellingham's current and projected population growth and demographics. This research informs the potential markets and incentives that could be created to draw citizens and developers downtown. Certain niches could be developed downtown that are attractive to targeted demographics. Ultimately, jobs and services are the most important draws to bring people to the area and build up energy downtown. The Waterfront Development also presents an exciting opportunity for the revitalization of downtown.

Population Growth and Demographics

The 20 year growth forecast for Bellingham is estimated at 81, 454 according to the United States Census Bureau. Between 2002 and 2020 an estimated 51.4% growth will occur in Bellingham.[4] Due to this growth rate this analysis sees the opportunity for downtown to provide residential units to help meet this growing demand for housing. Infill in downtown Bellingham would be an effective Growth Management technique for Bellingham to develop and accommodate a growing population within the existing Urban Growth Area. Cornwall Avenues can certainly accommodate these residential units due to the number of vacancies and this development of an urban population would jump start the revitalization of downtown. However, urban infill and downtown redevelopment is not feasible for most developers at this point due to the high costs and low land value and rents downtown. This is why it is integral that land values rise and a return on investment is created for developers before they can invest in downtown. Innovative legislation from the city such as the lowering of impact fees, speeding up the permitting process for redevelopment will begin this process of raising the land value downtown (See Section 1.4 Phasing).

[4] http://factfinder.census.gov/servlet/ADPTable?_bm=y&-geo_id=16000US5305280&-context=adp&-ds_name=ACS_2008_3YR_G00_&-tree_id=3308&-_lang=en&-_caller=geoselect&-format

Niches and Themes

According to Bellingham's future and current demographics this analysis proposes some niches and themes Cornwall Avenue could create an identity around and accommodate specific populations. The creation of an identity and role for Cornwall Avenue in relation to the whole Central Business District (CBD) is crucial for the revitalization investment made on Cornwall to complement and benefit the downtown as whole.

Retired Population

On Cornwall specifically, a large population of retired individuals live in the Leopold Retirement Center. The presence of this existing demographic acting as strong urban population suggests that Cornwall needs of amenities and services in close proximity to this building on the south end of Cornwall. This large population living downtown (a rarity for the CBD) has the capacity to support Cornwall retailers and service providers. A local developer mentioned that this population has money to spend on goods and services and ample time to spend it. Development catered to the needs and preferences of this urban population will make retail and commercial development feasible on Cornwall.

Young Professionals

A population Cornwall could potentially attract is the young working class. If development sought to create urban lifestyle opportunities with affordable rents for Western Washington University students, recent graduates and young single professionals, Cornwall could become a thriving urban center. However, development must be tailored to the needs of this demographic with affordable rents and appropriate goods and services. This is an exciting niche Cornwall could seek to fill in Phase 2 of the revitalization (See Section 1.4 Phasing). Young professionals are more apt to adopt the car-less lifestyle reducing parking accommodation costs for the developer. Additionally, a young urban population could keep downtown lively throughout all hours of the day. These young urbanites will support bars, restaurants, and theatre and music venues into the night if development provides these tailored opportunities for nightlife. The demographics for Bellingham indicate only 3.5% of the population in makes above $150,000.[5] This informs the downtown development as there is currently only a market high-value, affordable residential units and not for condominiums or expensive dwellings.

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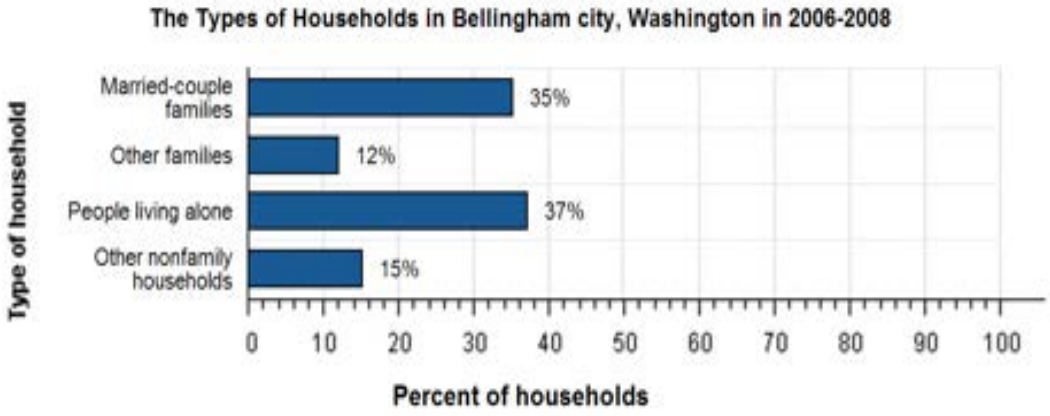
[5] http://factfinder.census.gov/servlet/ADPTable?_bm=y&-geo_id=16000US5305280&-context=adp&-ds_name=ACS_2008_3YR_G00_&-tree_id=3308&-_lang=en&-_caller=geoselect&-format

Families

Another demographic that speaks to a development opportunity on Cornwall Avenue is the fact that in the city of Bellingham 37% of Bellingham housing consists of people living alone and 35% of housing is family housing (See table below). Based on these percentages, giving that the rate of single housing is the highest, Cornwall could provide single dwelling units in either the vacant buildings or through new construction as the market allows. Family housing could also have a place on the north end Cornwall Avenue. The north end of Cornwall would be favorable for family living due to its close proximity to other neighborhoods, the Bellingham Public Library and schools such as Bellingham High School. There is more land for new, family-tailored development on the north end of Cornwall. However, family housing would only be made possible in a later phase of the Cornwall revitalization after incentives were created and the demand and land values were high enough for developers to create this niche. This analysis sees this niche developing only after the Bellingham population has grown to such an extent that families are willing to downsize and live an urban lifestyle.



Source: American Community Survey, 2006-2008

Waterfront Development

A feasible vision for the revitalization of Cornwall Avenue works in relationship with the waterfront redevelopment. In order to create a vibrant downtown the working class, employers and potential urban residents need compelling reasons relocate downtown. The Waterfront development is a perfect opportunity to provide the biggest incentive to draw populations downtown: employment and job opportunities. The provision of jobs on the waterfront as it becomes a center for environmental technologies, for example, allows Cornwall to take on the role of providing of residences and services to support the populations working on the waterfront. The waterfront redevelopment has the capacity to attract large employers who would support a large workforce needing a place to take their lunch break, do their grocery shopping and pick up their dry cleaning on their way home from work. This report recommends that efforts to revitalize Cornwall work in close relationship with the waterfront development in order to create synergistic uses for the two areas to work symbiotically to efficiently support an urban population.

The waterfront development also directs and informs where Cornwall revitalization investments should be made first, on the south end of Cornwall. In order to work with the investment the City of Bellingham is already planning to make on the waterfront, revitalization monies would be best used on the south end of Cornwall filling vacancies, developing residential and commercial opportunities and developing the South Anchor site proposed in the original Cornwall revitalization vision. The south end of Cornwall could become the gateway to the waterfront.

Cornwall Revitalization Plan Feasibility Analysis
Proposed Phasing Timeline

Prepared by Lauren M. Squires

1.4 Phasing

Corey Havens, Lauren Squires & Haylie Miller

After spending three months delving into the complexities behind the level of redevelopment proposed in the Cornwall revitalization plan, this report has taken the perspective gained in these past months and simplified it into a phasing strategy to map out the progression of how this vision will become a reality. This phasing strategy in no way addresses all of the aspects of this redevelopment and is simply an educated guess as to how this development might be expected to progress.

The phasing strategy contains three phases beginning with Phase 1 where the City of Bellingham should incite development interest in downtown through innovative policy solutions. The focus of Phase 1 is to fill vacancies on Cornwall and raise downtown land values. Phase 2 focuses on attracting major retail anchors and private sector investment to support new construction in downtown. In Phase 3 this report envisions a thriving, dense downtown Bellingham where growth will continue upward through flexible policy and innovative development schemes.

Phase 1: (5-20 years): Filling up the Downtown Vacancies

Following the innovative policy and creative leadership coming from the City (detailed below), the downtown's vacancies will begin to fill up as downtown development becomes more feasible and people start gravitating toward the downtown services and atmosphere. Innovative policy and public projects to begin the creation of this downtown atmosphere and identity is critical before new construction can be supported downtown. Once an attractive downtown identity is created revenue will start coming into downtown. This will begin an on-going back and forth between private growth gaining funds for public investment. Public expenditures should be prioritized to achieve the greatest and most immediate benefits:

- Bike share program: Comes around the 10 year mark and grows throughout the revitalization process)
- Plaza & Park Spaces
- Street & Alleyway improvements
- Public and alternative transportation improvements

Attractive Policy for Bellingham's Unique, Small Business Character Corey Havens

Phase 1 will kick everything off with new policies and innovative legislation to incite interest in downtown as a burgeoning center for life and commerce in Bellingham. These policies will excite Bellingham citizens and the development community with the potential benefits and opportunities these policies will create. These policies involve everything the Economic Development Chapter (Ch. 2) will discuss and more. For example, zoning that encourages a mixed-use and pedestrian friendly atmosphere, innovative public project funding programs, and permitting programs could roll out the red carpet for developers to invest in downtown and for citizens to want to spend more time and money downtown.

However, the most important aspects of any legislation that the City may pass are the needs it addresses and the action it stimulates. The city must pass redevelopment-encouraging legislation that addresses the wants of the public and the cries of the development community. Legislation that doesn't address the public's concerns or the major roadblocks that keep developers from investing downtown will not evoke the positive response and action it hopes for. For this reason, this chapter of the report encourages all proposals brought forward by the Economic Development workgroup in Chapter 2 to adapt their policy techniques to the unique needs and desires of the Bellingham community. These policies should be flexible and adaptive in order to serve as many stakeholders as possible. These policies should also be open to input from all members of the public for maximum public value. These policies should also cater to the values of visibility, and they should be fun to encourage great development in Bellingham's CBD!

Visibility is important in these innovative policy decisions because many residents can become frustrated with government and have had negative experiences with the City being difficult to work and coordinate development decisions with. Working out the value of visibility in the redevelopment process might simply mean providing information online of funding goals, processes, and status. As long as these processes and goals are easily readable, clearly understood, and allow people to follow their money, people may be more open to getting involved.

In seeking to address the question, "How can the city satisfy as many interests as possible?" this analysis suggests that finding funding for projects could be as simple as making suggestions for public-private partnerships and providing an online forum so those who would seriously consider investing their money in the downtown's future can easily interact.

Policies and legislation must also be flexible in the sense that as many interests can be involved as possible. The full character of the city (rooted in the character and preferences

of the city's residents) should be included in the new opportunities the city has found to revitalize the core. This means providing financial incentives for all scales of business not just anchor retailer but from the kiosk vender to the craftsmen and artists to the thriving local businesses. Supporting this kind of diversity requires legislation with a heavy focus on managing the intent of the law over controlling the process of the law.

A brief list of ideas for creating policy and development-encouraging projects that are as attractive to as many groups as possible follows:

1. Cheap- To begin the revitalization process, the City should focus on the investing in the projects that play off of the downtown's existing strengths. Initial proposals and projects can be cheap as the city implements projects that give the biggest bang for their buck.

2. Green- The City should create policies that incentivize green building, sustainable development and LEED requirements.

3. Local/Small Scale orientation – Policies should seek to support a diverse variety of businesses. This focus will encourage development that is true to the character of Bellingham. While all scales of business should be provided for kiosk space, alleyway splits and pedestrian-only designations are exciting opportunities.

4. Fosters Public Engagement – Policies and the revitalization effort should be led by public interest and priorities. The City could propose projects and what need to happen and then let the public fill in the blanks.

5. Visible – A policy and project implementation framework should be developed so people can follow where their money is going. Especially for transit-oriented legislation where people pay for what they use credit should be given to the people/businesses/groups that funded the projects.

Phase 2: (20-40 years): New Construction and Development

As vacancies begin to fill, property values will raise in the downtown area. As land values rise a return on investment will develop making it feasible for developers to invest in downtown redevelopment. With this increase in feasibility anchor retailers will become interested in locating downtown thus setting off other private investments to develop retail and commercial space following the anchor stores. These smaller scale private investments will fill the retail core of Cornwall Avenue. In this phase, the anchor stores and parking structure proposed in the Cornwall revitalization vision become feasible as a strong market

develops downtown with the ability to justify large public and private investments. However, in the beginning of phase two new development will be focused on the south end of Cornwall Avenue in order to work synergistically with the waterfront development. As the market continues to develop in downtown façade improvements will be well underway, alleyway improvements can begin, LEED additions, pocket park space, and even alleyway splits to provide more retail space could become feasible.

Phase 3: (40 + years): Thriving Downtown Bellingham Builds Up

As vacancies become a thing of the past and private improvements become the norm there will no doubt be a great demand for residential units in the area. Buildings that are not worth improving will make way for higher structures to accommodate the population growth downtown and more intensive public investments like the trolley system will be feasible for implementation. All of this development will now be taking place in a lively, thriving downtown that has a unique draw and atmosphere of its own.

Chapter 4: Plan Implementation, Economic Policy

4.1 Public Corporations

WHAT PUBLIC CORPORATIONS ARE

Public corporations are development organizations that are known in Washington State as Public Development Authorities (PDA's). Under the Revised Code of Washington, local governments may establish PDA's as special purpose quasi-municipal corporations that act essentially as a sub-agency of a municipality. They possess some but not all features of a local government, with no defined territory. A PDA is connected a city through a public and private partnership. The purpose for creation of a public corporation is to improve the administration of authorized federal grants or programs, including revenue sharing. They also operate to improve government efficiency, services and living conditions for the general public within an area. Many communities have established PDA's for a variety of purposes. Often they are best used to participate in unusual endeavors that parent local governments would not want to undertake.

HOW PDAs WORK

Obligations of a PDA are to locate developers and capital for improvement projects specified by the local government. Since cities usually are not experts in development, PDA's locate experts and create funding and knowledge which brings improvement projects to realization. They have the ability to borrow money from banks and determine the best route to raise funds for public projects. Although a PDA is not considered a municipal corporation, it is subject to the gift of public funds and lending of credit prohibitions specified by the state constitution that apply to municipal corporations. Creation of a PDA as a separate legal entity allows the organization to perform any lawful public purpose, function or redevelopment authorized by the local government or state constitution.

WHY A PDA IS SUITABLE FOR BELLINGHAM

A PDA is suitable for Bellingham and the Cornwall revitalization project because Bellingham already has the Bellingham Public Development Authority (BPDA) which was established in July 2008. The BPDA is a separate public corporation created by the City of Bellingham to focus efforts towards achieving sustainable development through expertise and leadership in revitalization on the waterfront, downtown and other city-owned real estate. The corporation encourages redevelopment through a number of means. The BPDA is responsible for hiring and directing experts with special skills to achieve the City's development goals and possess the ability to request management responsibility for redevelopment of City properties. They work with public and private entities to assemble property for potential development. The council determines locations in areas such as downtown, the waterfront and Old Town where construction, improvements and restoration of buildings and infrastructure are necessary. Sites are selected based on city plans, policies and regulations. Areas of reuse and utilization for public and private facilities are determined by sites that best serve the needs of the public and contribute to economic, cultural and recreational revitalization. Other factors taken into consideration when determining proposals for development include; public benefit, economic viability, financial return on investment, long term economic impacts and effects on nearby developments.

WHO WOULD BE INVOLVED IN BELLINGHAM

The Bellingham Public Development Authority (BPDA) was formed in 2008 to implement the City's plans for development of city-owned real estate within the city and at the Waterfront District. The governing board of the BPDA is responsible for hiring and directing professionals with expert skills essential to achieving the City's development efforts. Multiple parties are included in the BPDA development process including; the BPDA including Executive Direct James Long, the Mayor who provides consulting objectives, the Bellingham City Attorney who approves lease and purchase agreements, professional consultants, experts, developers tenants, marketing and the City Council who ensure development is consistent with City plans.

HOW A PDA APPLIES TO THIS REVITALIZATION PROJECT

Downtown is an area in Bellingham that the BPDA considers for project proposals based on how to best utilize and maximize resources within the area. Currently Cornwall Avenue already has two areas on the north and south ends that are priority areas for the BPDA. The north end location is currently owned and managed by the BPDA and the south location is an upcoming management transfer. Using the BPDA helps assist in determining which aspects of the project are best for development, approaches to fund raising, hiring consultants, however the BPDA is too new to finance the project with bonds.

ADVANTAGES AND DISADVANTAGES TO PDAs

Development through the BPDA has numerous advantages. Using a development authority limits liability for the City for any debts incurred by the BPDA and any liabilities incurred are satisfied by assets and properties of the development authority. Another advantage of using a public development agency is their ability to provide financial funding and expertise in various aspects of the development process. Using the established BPDA also removes some of the political burden of development away from the City. Since the BPDA is a group elected by the City specifically for development tasks, if interest groups have objections to construction they address the development agency and not the City. One disadvantage of using the BPDA is that members of the Council were selected by Mayor Dan Pike, not by the general public. This poses the potential for development that is not consistent with public

4.2 Tax Increment Financing

WHAT TAX INCREMENT FINANCING IS

Tax Increment Financing (TIF) is a tool that can be used in a jurisdiction for redistributing property tax collections within designated areas to finance public infrastructure improvements. The purpose of this economic development tool is for the revitalization of communities. There are four different types of TIFs such as the Local Infrastructure Financing Tool (LIFT), Hospital Benefit Zones (HBZ), Community Revitalization Financing (CRF), and Local Revitalization Financing (LRF), which all have different purposes and procedures.

Once one form of a TIF is chosen, the jurisdiction determines a designated area for where the TIF will take place. The choosing of where the TIF boundary will be is very important because the property owners inside that boundary will be the ones paying the extra taxes as a result of the TIF. The purpose of creating a boundary is to charge the people who will be benefitting most from the public facility projects that the TIF is funding, because these improvements will increase their property values. After the boundary is chosen, it will need to be established through some sort of official process, depending on the type of TIF. Once the TIF boundary or district is in place, there is a base tax value that is set for that area. The tax increases that occur incrementally throughout the years will occur over the base, and these taxes will then be collected towards the payment of the public improvements.

LOCAL INFRASTRUCTURE FINANCING TOOL (LIFT)

After evaluating the four different types, the LIFT form of TIF would be best suited for this revitalization project. The LIFT program in Washington was created in 2006 and allowed certain local governments to use this tool for financing local public improvement projects, which are intended to encourage economic development or redevelopment. There are many different types of public improvements that may be financed through a LIFT, from street and road construction or maintenance, to storm water and drainage management systems, to parking, terminal, and dock facilities.

In order to implement a LIFT, the jurisdiction must determine a revenue development area (RDA), which is a geographical area that is "deemed in need of economic development or redevelopment." The RDA essentially is the taxing district from which annual increases in revenues from the local sales or use taxes and local property taxes are measured and used. The taxes that are collected from the RDA will be used to pay for the local public improvements in that RDA, as described earlier in the general TIF description. It is important to recognize that the RDA must be approved by the Community Economic Revitalization Board (CERB), as a part of the state LIFT approval process. In order for a LIFT to be approved, the proposed public improvements must be reasonably likely to “increase private residential and commercial investment within the RDA, increase employment in the RDA, improve the viability of existing communities that are based on mixed-use development within the RDA, and generate state excise tax allocation revenues and state property tax allocation revenues derived from the RDA equal to or greater than the respective state contributions,” (MRSC). In addition, the RDA must be established through the adoption of an ordinance by the local government and the "anticipated private development must be consistent with the countywide planning policies, comprehensive plan and

development regulations," (MRSC). Through the CERB's approval of the LIFT and RDA, the jurisdiction begins to receive a state contribution for funding the proposed public improvement projects.

By using a LIFT form of a TIF, it creates the opportunity to bring in a State contribution as a form of funding for these projects. The state gives the contribution for 25 years, but the contribution ends after the 25 years or when the bonds for the public facility have been paid off, depending on which circumstances occur first. As a part of the LIFT, the state can contribute a maximum of $7.5 million statewide to the LIFT program per fiscal year, and the state contribution to a local jurisdiction is also restricted by not being allowed to exceed $1 million per state fiscal year. By using a LIFT, there is also the opportunity for the public improvements in the RDA to be financed on a pay-as-you-go basis for the first five years of the state contribution.

APPLYING LIFT TO BELLINGHAM

The reasoning for the use of a LIFT is because there is an existing LIFT in Bellingham as a part of the Waterfront District redevelopment project. As a result of this, our original intent was to expand the existing LIFT in order to include Cornwall Avenue and a few blocks east and west of it. However, a local jurisdiction is restricted from changing the boundary of a LIFT that is already in use. Therefore, we are proposing that a new RDA and LIFT be created to bring in funding for the redevelopment of the Cornwall Avenue area. It is being proposed that a boundary be formed in the geographical area east of the

existing LIFT, with E Chestnut Street being the southern boundary, North State Street as the eastern boundary, York Street as the northern boundary, and Flora Street/ Prospect Street as the western boundary (See Figure 2.1). This proposal involves the LIFT to work in conjunction with the tax exemption plans, in order to bring in revenue as well as higher economic generating businesses into the Cornwall area, which is discussed in more detail in the tax exemption section.

Once this RDA boundary is established and approved through a public hearing and by the Community and Economic Revitalization Board (CERB), and the ordinance is adopted to designate the RDA, the LIFT can begin to take place. After the base tax is set, the LIFT property taxes start in the second calendar year following the CERB approval of the application. As for the sales and use tax, it may not be imposed before July 1st of the second calendar year following the approval of the application. Throughout the taxing time period, the incremental taxes are collected and given to the Public Development Authority (PDA) to be distributed to the bonds in order to pay off the debt of the public improvements. The incremental property taxes are no longer imposed on the taxing district when the costs of the public improvements are no longer needed. The incremental sales and use tax ends either on the date of the contractual obligation are met, or 25 years after the tax was first imposed on the RDA.

WHO WOULD BE INVOLVED IN THIS PROCESS

Throughout this taxing process, the different parties involved would most likely be the State of Washington, the City of Bellingham, Bellingham's Public Development Authority, the property owners and business owners inside the proposed RDA, and the public.

4.3 Tax Exemption

WHAT TAX EXEMPTION IS

In various tax systems it is possible to grant a tax exemption to an individual, organization, income, property, or other taxable item. Tax exemption status provides a potential tax payer complete relief from tax, a reduced rate tax, or only a portion of the taxable items subject to tax.

HOW IT WORKS

Currently in the State of Washington any new or existing manufacturers, research and development firms, and certain high technology companies quality to benefit from tax incentives like deferrals, exemptions and credits. These tax incentive programs are intended to encourage the creation of "family-wage jobs", and encourage development of these types of industries. A tax incentive can encourage development of specified industries by granting relief from tax for a defined period and in a defined location. This exemption is incredibly appealing to developers who are looking to build in the specified industries due to the large cost savings, and therefore municipalities can encourage their desired type of growth and development through this type of incentive.

HOW IT COULD WORK IN BELLINGHAM

This type of tax exemption incentive could theoretically be used in downtown Bellingham as an incentive for the development of the North and South Anchor stores, bringing "big box" or chain retail back to downtown. Since convincing developers to build new retail anchors downtown will be difficult due to the currently depressed economy, having a property tax exemption for the newly developed stores could act as a major draw for development downtown. When implementing a tax exemption program for the downtown core of Bellingham, and Cornwall Avenue specifically, there would be a couple of steps that would occur. First, once the current LIFT boundary was expanded to accommodate the revitalization area by extending the boundary east the North State Street, and north to York and Flora Street, the defined area for the exemption would be clearly identified. This would enclose the retail core and revitalization area that this project focuses on within the tax program boundary, and allow for any exemptions or future increment financing to apply to the desired locations of the North and South Anchor stores. In order to ensure that only the North and South Anchor stores quality for the exemption, the policy would state that any retail store between 24,000 and 100,000 square feet that is located within the newly proposed LIFT boundary qualifies for the tax exemption, and then future tax increment financing.

The tax program would apply for a 20-30 year period and would be implemented in two phases. In the first ten year phase would allow large retail stores between 24,000 and 100,000 square feet to apply for a ten year property tax exemption. This square footage limitation will create a situation where the North and South retail anchors will be the only downtown retailers in the Cornwall retail corridor

who will qualify for this tax exemption. It is the hope of this policy that the exemption from property tax for a period of ten years will act as enough of an incentive to draw ideal retailers downtown, and have the smaller stores follow the larger stores into the newly proposed retail core. Such retailers include large chain stores that will cater to the character of Bellingham, with examples including R.E.I, Nordstroms, Macys, or Sears. This theory matches the mall concept that inspired the broad concepts and ideas of this project, and ideally provides the tax incentives for the anchor retail stores that will help this theory to work for Cornwall Avenue. The second phase of this 20-30 year tax incentive program will occur once the 10 year tax exemption has expired. At this point the retail businesses that are within the LIFT boundary and are between 24,000 and 100,000 square feet will qualify for tax increment financing, as is explained in the Tax Increment Financing section of this proposal.

ESTIMATED ANCHOR TAX SAVINGS

Based on estimates made by the economic analysis group involved in the implementation process of this project, the costs to build that anchor stores in the retail core are estimated at $36,390,000 for the North Anchor, and $16,000,000 for the South Anchor. According to the City of Bellingham the estimated property tax is about $10.91 per $1000 of assessed value. When taking this tax rate into consideration it can be estimated that the North Anchor will save $397,014.90 a year on property taxes when the tax exemption program is in place, for a total ten year property tax savings of $3,970,419. Based on the estimated building cost for the South Anchor of $16,000,000 it can be estimated that the yearly property tax savings for the South Anchor would be $174,560. This would result in a total ten year property tax savings under the tax exemption program of $1,745,600.

CALCULATIONS

North Anchor

Estimated Building Cost: $36,390,000

$36,390,000 / 1000 = $36,390 x $10.91 = $397,014.90 (yearly property tax)

$379,014.90 x 10 years = $3,970,149 (10 year savings)

South Anchor

Estimated Building Cost: $16,000,000

$16,000,000 / $1000 = $16,000 x $10.91 = $174,560 (yearly property tax)

$174,560 x 10 years = $1, 745,600 (10 year savings)

4.4 The Main Street Program

WHAT THE MAIN STREET PROGRAM IS

The Main Street Program provides the framework for helping communities to revitalize their economy, appearance and the image of downtown and commercial districts through the application of the Main Street Approach. The success of the Main Street Program is derived from the fact that it capitalizes on the assets of the individual community to which it is applied and also because of the fact that it is comprehensive, flexible and applied in increments. The Main Street Program has been in operation in Washington since 1984, but was created in 1977 because of threats to suffering downtowns across America by the National Trust for Historic Presentation. Initially, it was a three-year project tested on three pilot communities, but expanded to the scope of today.

HOW THE PROGRAM WORKS

The Main Street Program's Four-Point Approach includes Design, Organization, Promotion and Economic Restructuring as a means of revitalizing downtown and commercial cores. Design involves improving the physical appearance of downtown through not just the building appearance, but also window displays, sidewalks and all other elements critical to showing an ideal image of downtown. Organization involves creating constructive cooperation through both public and private entities involved in downtown. Promotion is the marketing of downtown, advancing a positive image of downtown and promoting activities downtown. Finally, Economic Restructuring involves strengthening the existing economic base of downtown and also creating a great deal of diversity through helping

existing businesses and also bringing new businesses, as well as converting unused space into productive space.

The Main Street Approach's success relies on eight principles, including addressing comprehensive areas involved in downtown revitalization, relying on the quality of development, maintaining the public-private partnership in making long-term revitalization, changing attitudes toward downtown, emphasizing existing assets, a self-driven desire for change, taking an incremental approach to change and prioritizing major issues in implementation. Through the eight principles, a successful downtown revitalization is a possibility, with the allowance of adequate time to pass. One of the most common failures of Main Street Programs occur when areas do not allow adequate time for the Main Street Program to be intact and abandon before 3 years of its inception, when economic gains are often not visible. The Main Street Program has been successful when economic growth has been realized in the area in which it is implemented and downtown has been restored in accordance with the vision in place.

APPLICATION TO BELLINGHAM

The main application to Bellingham of the Main Streets Program would be in providing a unified guideline for development of the downtown district. Implementing a Bellingham Main Street Program would provide the opportunity to bring together invested parties in order to create a vision of downtown Bellingham that is agreed upon by all, and also to insure that it is carried out in a reasonable and fluid manner. Since the construction of the Bellis Fair Mall in Bellingham in the late 1980's, retail has been shifting in location from downtown Bellingham to the Bellis Fair Mall, resulting in many vacancies in the once occupied downtown district. Though these vacancies still exist in rather large numbers today, downtown Bellingham is regaining a great deal of its appeal through events and stores that appeal to its users.

The Main Street Program would offer an organized means of implementing different economic policies simultaneously in a cohesive way that would also take the needs of downtown Bellingham users into account. The Main Street Program would work to make downtown Bellingham more appealing and would also create a unified vision of what downtown Bellingham should become. The first step in creating a Bellingham Main Street program is building support for a commercial revitalization program. To do so, all stakeholders in downtown Bellingham should come together in order to create a working

group in order to spread the news of implementing the Main Street Program downtown, and also to work on creating a vision of downtown Bellingham. This would contain planners, residents, business owners, property owners, merchants, the PDA, the chamber of commerce and any other invested parties. During these meetings between stakeholders, discussions of downtown Bellingham's strengths can be discussed, as well as pictures representing where we currently are and where we intend to be.

The next step would be applying for designation as a Main Street Program, using the compilation of all information attained from stakeholder meetings. If Bellingham were approved, we would receive a handbook, outlining the financial demands of the Main Street Program, as well as means of organizing the program. Next, an organizational model must be implemented, which could either be directed by an independent organization, a city government, the chamber of commerce, downtown merchants association or even an existing development organization, but would likely be best guided by an independent, private organization. This brings about the objectivity (particularly if this body is nonprofit) that other options could not provide, in that a downtown merchants organization would take a preference to the visions of retail, specifically, and may overlook other needs of the Main Street Program. Utilizing a non-profit organization would require application with the IRS to gain tax exemption.

Next, the Bellingham Main Street Program would need for form committees and recruit board members, which would ideally include individual representing other economic policy measures and others from the working group originally created. Having individuals from the community would also be ideal. Drafting a budget which corresponds with the plan would be the next step, and also determines whether it is financially possible to hire a program director. Next, the details of each committee member's position must be made, as well as training each member in the committee. Next, a fund-raising plan must be developed in order to determine where monetary resources will come from, as well as a work plan, outlining the vision, mission statement and goals for the downtown district.

After the plan has been developed, regular meetings must be scheduled and held in order to track progress. Also, volunteers should be hired in order to maintain ease of implementation, as well as for leading events and activities. The program must also be continually promoted in order to attain the support of the public in implementing it. Finally, information of existing resources and policies must be compiled into one easily accessible place so that it can be referred to throughout the implementation of the Main Street Program. This also provides a way for members of the Main Street Program to stay

connected with other members and to easily contact other parties who may be concerned with these measures.

Funding for the Main Street Program in downtown Bellingham could be derived from a variety of sources, to include: the city government, memberships, corporate donations, Parking and Business Improvement Areas (PBIA's), fundraising events, products sales, sponsorships, retail fees, foundation donations, hotel/motel tax, volunteers, service fees and subsidies from profitable businesses. Through a combination of these means, implementing the Main Street Approach in downtown Bellingham is a possibility. The ideal distribution of funding would be: 30% city funding, 30% downtown business and property owners, 30% other contributors, to include citizens, and major businesses and industries, and 10% special events and fundraisers.

WHO WOULD BE INVOLVED IN THE PROCESS

- Property Owners
- Chamber of Commerce
- Merchants
- Financial Institutions
- Civic Clubs
- Historic Preservation Organizations
- Consumers
- Government
- Planning
- Schools
- Media

Because the Main Street Program works to unite a variety of interests in order to develop a program that best represents the needs of an area, a variety of participants would be required in order to ensure that the Main Street Program best represents the vision of a particular area. In this sense, it would act as a blanket, organizing program to unite the goals of downtown Bellingham into one cohesive unit operating towards the same purpose. While some of the other economic policies work to achieve different goals than the Main Street Program, it would work to bring all stakeholders together

throughout the entirety of revitalization of downtown. The overall Main Street Program will act as a means of providing this unity and it will also provide individual benefits to the involved parties, as well.

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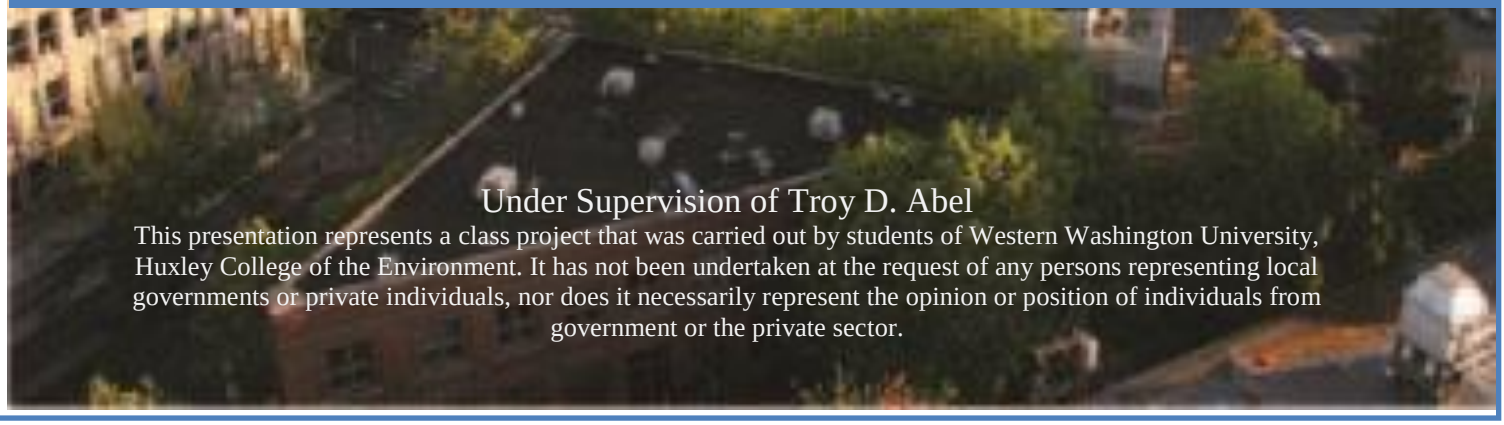
Cornwall Avenue Revitalization

South Anchor Site

ESTU 436: Environmental Impact Assessment
Huxley College of the Environment
Western Washington University

Greg Jilek
Jesse Jones
Kathlyn Kinney
Matt Kurle
Haylie Miller

Fall 2010



Under Supervision of Troy D. Abel

This presentation represents a class project that was carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector.

Environmental Impact Assessment
Huxley College of the Environment

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Signature _____ Gregory Jilek

Signature _____ Jesse Jones

Signature _____ Kathlyn Kinney

Signature _____ Matthew Kurle

Signature _____ Haylie Miller

Signature _____ Troy Abel

Date 11/29/2010

Huxley College of the Environment
Western Washington University
516 High Street
Bellingham, WA 98225

November 10, 2010

Dear Interested Party:

Enclosed you will find the environmental impact assessment for the Cornwall Avenue South Anchor Retail Revitalization project. This assessment encompasses the portion of Cornwall Avenue between Holly and Maple Streets. Proposed for this area is a new major retail structure, a 260-car parking garage, residences and offices added onto existing structures. This project is part of a greater proposal for the entire stretch of Cornwall Avenue between York and Maple streets, designed to draw quality business to the core commercial area through the placement of anchor retail and additional parking spaces. Development is to proceed in keeping with new urbanist principles, reducing vehicular traffic, encouraging mixed use, and enhancing the historical value of the downtown district.

This document employs the Washington State Environmental Policy Act (SEPA) review process. Through completion of the SEPA checklist, the assessors have arrived at a Determination of Non-Significance for the proposed project. This concludes that the elements of the proposal will impose no probable significant negative impact on the human or natural environment. However, an alternative proposal that involves certain mitigation measures has been included for consideration.

Regards,

Greg Jilek, Jesse Jones, Kathlyn Kinney, Matt Kurle, Haylie Miller

Fact Sheet

Title:
Cornwall Avenue Revitalization: South Anchor Site

Project Description:
This project proposes a revitalization of the downtown area of Bellingham, WA, in an attempt to reestablish the city center's primacy as a commercial center. This EIA focuses on the southern section of the entire proposal.

New development proposed for this project includes a four-story mixed use department store on the corner of Chestnut Street and Cornwall Avenue as well as a 260-space, four-story, above-ground parking structure on the corner of Cornwall Avenue and East Maple Street Mixed-use infill is also proposed for existing structures on Cornwall Avenue

Addressing transportation issues, the project proposes that certain one-way streets be converted to two-way streets in the downtown area, a bike-share program be implemented, the trail system be further interconnected, and a trolleybus incorporated into the mass transit system.

Location of the Project Site:
The area bordered by Commercial Street, Railroad Avenue, Maple Street and Holly Street
Bellingham, WA 98225

Parking Structure: Corner of Cornwall Avenue and Commercial Street
Bellingham, WA 98225
South Anchor Store: Corner of Cornwall Avenue and Maple Street
Bellingham, WA 98225

Lead Agency: Western Washington University

Responsible Official:

Environmental Studies 436 students, Fall 2010

Authors:

Greg Jilek: Historical and Cultural Preservation, Traffic and Parking.

Jesse Jones: Earth, Air, and Water.

Kathlyn Kinney: Environmental Health, Land and Shoreline Use, Public Services and Utilities.

Matt Kurle: Plants, Animals, Energy and Natural Resources.

Haylie Miller: Traffic and Parking.

Date of Issue:

Wednesday, December 8, 2010

Public Presentation Date, Place, and Time:

Wednesday, December 1,2010

Bellingham City Hall, 210 Lottie Street

5:30-7:30 pm

Ackowledgements:

Troy Abel, Assistant Professor, Western Washington University

Chris Comeau, Transportation Planner, City of Bellingham

Joshua Fleischmann, Planner II, Whatcom County Planning and Development Services

Darby Galligan, Development Specialist, City of Bellingham

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Huxley College of the Environment

Western Washington University

Bellingham, WA 98225

Table of Contents

1.0 Executive Summary

Changes in the downtown area due to the opening of Bellis Fair Mall in the late 1980s have left Cornwall Avenue in a largely depressed, semi-vacated state. The project revitalizes economic activity along Cornwall Avenue by creating an urban, downtown retail corridor.

This environmental impact assessment (EIA) analyzes a range of alternatives and management actions for the proposed retail, office, and residential revitalization of Cornwall Avenue. It assesses the impacts that could result from continuation of current management (the no-action alternative) or the implementation of either of two other action alternatives. Through this analysis the alternative to the proposed action has been identified as the preferred action for the revitalization of Cornwall Avenue. Overall the alternative action retains the same features as the proposed action, with several minor changes designed to reduce its environmental impacts.

1.1 Historical Background

Prior to the automobile age, Bellingham residents came downtown for all of their needs, using public transportation or walking to their destinations. As the automobile era progressed and parking became a major concern, stores began to move away from the downtown retail core to areas lining the I-5 corridor. Ultimately, the development of the Bellis Fair Mall off of

Beck's Theater, Historic Cornwall Avenue.

Guide Meridian in 1988 drastically affected the retail dynamics of downtown. Large anchor stores on Cornwall Avenue moved to the mall area, taking with them the active street life that fed many smaller businesses, and negatively impacting the area's economic vitality.

Wahl's, Historic Cornwall Avenue

1.2 Existing Conditions

Existing Conditions

Currently, Bellingham's city center lacks the major retail and infill businesses that make a downtown area thrive. Cornwall Avenue, once home to major retail anchors, liner stores, and restaurants, with the capacity for retail and residential units to expand in a diverse set of aged buildings, is an ideal focus of revitalization efforts. This proposal adds 617,261 usable and attractive square feet to the current 10.7 million usable square feet downtown.

Also in close proximity to public transportation, Cornwall Avenue is beautifully lined with trees and boasts wide sidewalks with a zero line setback in most places. However, parking is a major hurdle for most

businesses located in the city center. Although on-street metered parking is provided, this is not an ideal situation for employees or their customers. Addressing the parking issue will help overcome business owners' fears about a downtown address.

Storefronts along Cornwall Avenue

The Leopold retirement community is currently Cornwall Avenue's only source of residents. The lack of a strong residential community means many businesses have no reason to stay open after 5pm, and shifts the need for services outside of the city center. With the revitalization proposal, an additional 145 potential residential units (37 of which are in the south anchor site) will help create demand for growth on Cornwall Avenue and in downtown Bellingham.

Cornwall is currently home to a number of offices, many above street level, with the potential to support street level businesses during lunch and after hours. Yet during these peak times many office workers leave Cornwall for Railroad Avenue, which boasts a number of restaurants and allows

more natural light for pedestrians. Cornwall is narrower than Railroad, and features solid awnings with no real consensus of design. Setting design standards for the awnings on Cornwall will afford pedestrians consistent protection from the elements and a well-lit public space.

1.3 Proposed Action

The concept herein for revitalization of the Central Business District is a retail corridor overlay plan which will promote the urban sustainability principles desired by the Bellingham community. The premise behind this plan is to bring in more pedestrian activity through the creation of new anchor stores at either end of Cornwall Avenue, providing business for smaller retail stores between anchors as is commonly seen in a mall like Bellis Fair. Improving the streetscape and alleyways will make Cornwall Avenue a more desirable location for pedestrians and further contribute to the vitality of the downtown area. In addition, improvements to parking and public transportation will encourage a greater use of the area. The biggest of these traffic changes include the changing of one-way streets to two-way streets, and the installation of a trolleybus mass transit system downtown.

Parking Structure

South Anchor Building

For the South Anchor site, a four story parking structure, as well as a four story anchor building will be erected. Some additions will be made to existing buildings within the project reach. The specific designs for the proposed overlay project are illustrated by figure 1 below.

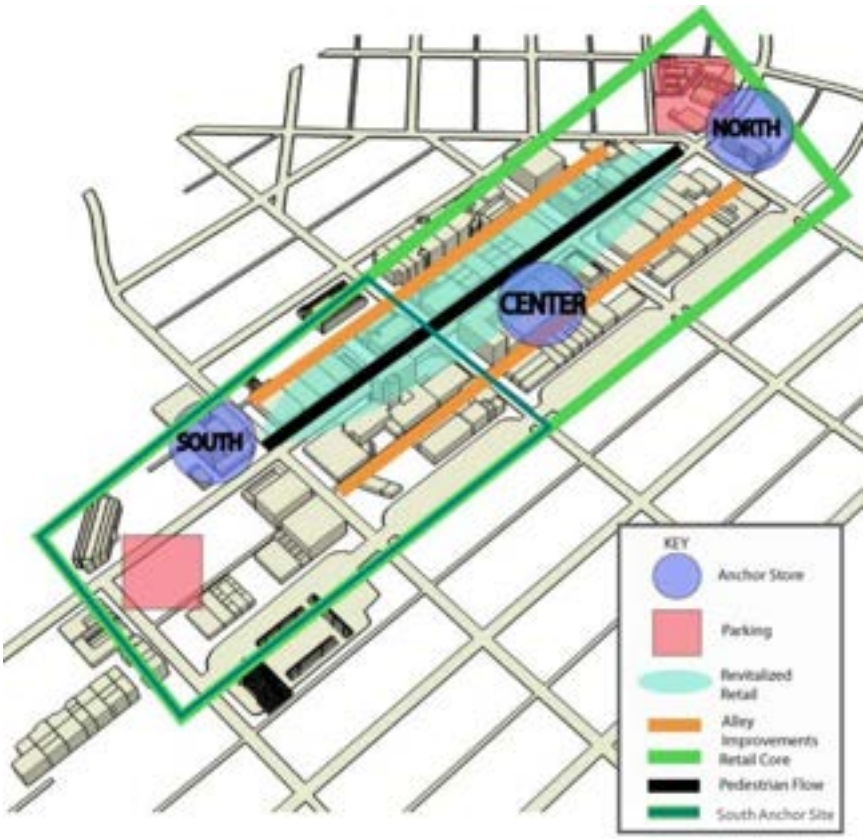


Figure 1. Cornwall Revitalization project overlay. The South anchor project site encompasses the southern half of the retail corridor.

1.4 Alternative Action

Currently, storm water runoff picks up pollutants as it travels over impervious surfaces to storm drains and enters Whatcom Waterway untreated. To address impacts to surface water from storm water runoff, we first recommend that pervious asphalt be used to pave the loading area behind the south anchor store to decrease surface runoff and allow for on-site infiltration.

Second, we propose that a bioretention cell be installed in the pedestrian area of the parking structure site to filter out total suspended solids (TSS) and other pollutants. The parking structure will contain rainwater collection tanks designed so that water is diverted into the bioretention cell once the tanks become full. The bioretention cell, modeled off of a study by

Diblase et al. (2009) will contain a mixture of soil, sand, and organic matter planted with vegetation. After percolating through the porous medium, the water will discharge from the end of the bioretention cell into the City of Bellingham's storm water system.

Finally, we recommend that pre-existing buildings on Cornwall Avenue install green roofs to further reduce imperviousness of the project area. Green roofs contain vegetation planted in a soil medium that covers the surface of the roof, resulting in a decreased volume of relatively clean runoff from the roof surfaces.

With regard to transportation, we recommend a more modest plan, replacing the proposed trolleybus line with an additional WTA bus route. Also, the proposed conversion of one-way to two-way streets will not be implemented. These alternative actions will cause less interference with downtown traffic and minimize traffic impacts.

1.5 No Action

If no actions are taken to revitalize Cornwall Avenue, there will be no improvements to the retail corridor, and the economic difficulties for retail in downtown Bellingham will stay as they are. There will be no new north or south anchor buildings helping to draw in customers, and alleyway improvements will not take place. Without the construction of a parking garage, vehicle storage will continue to be a limiting factor to retail development. New development will occur in a haphazard, incoherent manner. Proposed improvements to transportation will not occur, and pedestrian utilization of downtown will remain as is.

1.5 Decision Matrix

		Proposed Action	Alternative Action	No Action
Natural Environment				
Earth	Soil	0	0	0
	Slope	0	0	0
	Impervious Surface	1	2	0
Air Quality		-1	-1	0
Water	Surface	1	2	0
	Groundwater	0	1	0
	Water Runoff	1	2	0
Plants	Terrestrial	1	1	0
Animals	Terrestrial	0	0	0
	Aquatic	0	1	0
	Endangered Species	0	1	0
Energy		1	1	0
Built Environment				
Environmental Health	Health Hazards	0	1	0
	Noise	-2	-1	0
Land and Shoreline Use	Land Use	2	2	0
	Shoreline Use	0	0	0
Aesthetics		0	1	0
Recreation		2	2	0
Historical and Cultural Preservation		1	2	0
Transportation	Traffic	-2	1	0
	Parking	2	2	0
Determination		MDNS	DNS	DNS

Legend			
2	Strong Positive Impact	-1	Slight Negative Impact
1	Slight Positive Impact	-2	Strong Negative Impact
0	No Impacts	(?)	Unknown Impacts
DNS	Determination of Non-Significance	MDNS	Mitigated Determination of Non-Significance

2.0 Impacts to the Natural Environment

2.1 Earth

Existing Conditions

Currently, the area of the project proposal contains mostly altered soils and impervious surfaces. The USDA soil classification for this area is "Urban Land", meaning that the USDA has not been able to classify the soils in this area due to it being covered by development (USDA 1992). It also notes that the downtown area is terraced. In general, development requires removing much of the natural soil profile and replacing some of it with fill. Currently, the areas where the parking garage and anchor store are to be built contain mostly impervious surfaces, which prevent infiltration into the soil.

Proposed Action

The main environmental concerns with the proposed action are grading and erosion during the construction phase. The proposed action will necessitate a small amount of further grading of the area in order to build the parking garage and anchor store. However, it is not likely to cause significant environmental impact, which is why we rated the category of "slope" at (0) on the decision matrix. During the construction phase there is some concern about erosion, as it will require the soil to be exposed. However, laws exist that require a construction site to prevent erosion. In general, small construction sites are required to control erosion and sedimentation from construction activities (Washington State Department of Ecology 2005). This yields a rating of (0) on the decision matrix regarding soil impacts. The proposed action slightly reduces imperviousness in the area by installing rainwater collection tanks on the parking structure,

which is why we rated the category of "impervious surfaces" on the decision matrix as (1). The proposed action is not likely to cause significant adverse impact to the earth.

Alternative Action

The alternative proposal still contains the same risks of erosion during the construction phase as the proposed action does. This is not likely to significantly negatively impact the soil, due to erosion prevention laws during construction, which is why we rated the impacts to the soil as (0) on the decision matrix. The slope also gets a rating of (0) since the amount of grading will be minimal. The pervious pavement proposed in the alternative action will allow for slightly more infiltration into the soil compared to current conditions. The green roofs on existing structures also reduce imperviousness. This is why we rated the imperious surfaces category on the decision matrix as (2). The alternative action is not likely to cause significant adverse impact to the earth.

No Action

If there is no action taken the ground will continue to be mostly covered with impervious surfaces, which will continue to prevent infiltration into the soil. Because there will be no change compared to current conditions, we rated the impact to impervious surfaces as (0) on the decision matrix. No further grading or infill will occur in the area, and there will be no increased risk of erosion from construction sites, so the categories of "soil" and "slope" also get a rating of (0) on the decision matrix. However, if infill development does not occur on this proposal site, it is possible that currently undisturbed soils will have to be altered in order to accommodate for future growth in outlying areas.

2.2 Air

Existing Conditions

Within the City of Bellingham, PM2.5 is the only air pollutant monitored consistently. PM2.5 is particulate matter of a diameter less than or equal to 2.5 micrometers. PM2.5 is formed when gases emitted from combustion, such as sulfur dioxides and nitrogen oxides, react in the atmosphere. A big source of PM2.5 is vehicle exhaust, but other sources include road dust and the burning of wood (Zheng et al., 2002). This pollutant is especially harmful to human health because the particles are small enough to get embedded into lung tissue, not to be easily removed by the body (EPA 2010). There are an estimated 16,300 daily vehicle trips during peak hour (4:00PM -6:00 PM) to the proposal area, which contribute to air pollution.

The Northwest Clean Air Agency is the local air quality agency with authority in Whatcom County. According to the Regulation of the Northwest Clean Air Agency, Section 403, the 3-year mean concentration of PM2.5 shall not exceed sixty-five (65) micrograms per cubic meter of air (ug/m^3) for the 98^{th} percentile of measurements, or fifteen (15) ug/m^3 when all measurements are included (Regulation of the Northwest Clean Air Agency 403.1).

Currently, the PM2.5 levels in Bellingham, as measured at the Yew Street monitoring station, are well below the threshold limits. The three-year mean of the 98^{th} percentile of measurments is 19.99 ug/m^3 (Figure 2), which is 45.01 units below the threshold limit. The three-year mean of concentrations when all measurements are included is 6.6 ug/m^3 (Figure 2), which is 8.4 units below the threshold limit.

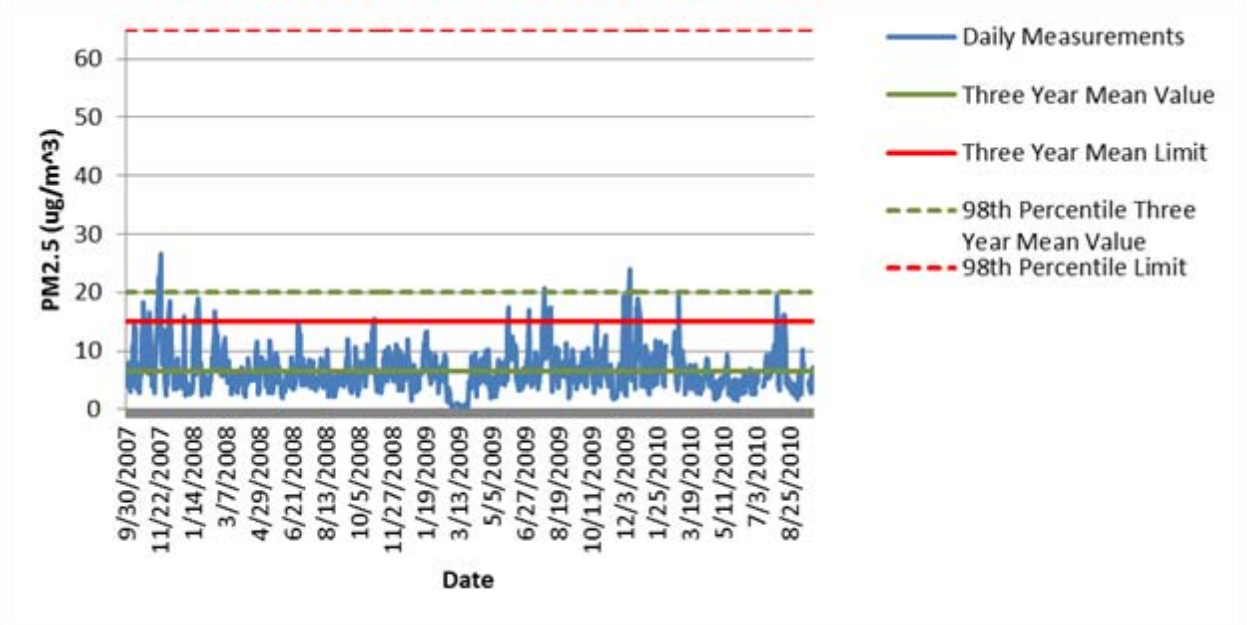


Figure 2. PM2.5 concentrations measured at the Yew St monitoring station in Bellingham, WA, from 09/30/07 to 09/30/10. The mean 98th percentile and 98th percentile threshold limits are shown as dotted lines. The mean and threshold limits, all data included, are shown as solid colored lines.

Proposed Action

We estimate that this project will result in an additional 266 vehicle trips per day during peak travel time (4:00-6:00 PM), which creates a risk of increased pollution from automobile exhaust. This is an estimated increase of vehicle trips of ~1.6%. The concentration of PM2.5 in Bellingham is well below the regulatory limits (Figure 2). As such, it is unlikely the exhaust from the increased vehicle trips will cause significant adverse impact to the air quality, based on the air quality data available and our estimate of increased vehicle trips. We scored the proposed action as (-1) on the decision matrix because although it is unlikely it will result in unhealthy air quality, the increase in vehicles to this area will still result in a slight increase of air pollution.

Alternative Action

As it is unlikely that the proposed action will result in significant adverse impact to air quality in Bellingham, the alternative action does not discuss any mitigation measures. The alternative

action will likely result in the same increase of car trips downtown compared to the proposed action. As such, it is unlikely that air quality will be significantly negatively impacted by the alternative action, and we scored it as (-1) on the decision matrix.

No Action

If there is no action taken, the predicted increase in vehicle traffic from the proposal will not occur. There will be no risk of increased air pollution from automobiles in this area. Thus, we scored the no action alternative as (0) for air quality on the decision matrix. However, if the no-action alternative were to take place, it could lead to more sprawl into Bellingham's urban growth areas (UGAs), eventually leading to increased vehicle traffic and decreased air quality in the region in the long term.

2.3 Water

Existing Conditions

Most of the downtown area, including the area of the proposed project, is covered with impervious surfaces. On the site of the anchor store there are small patches of grass in between areas of asphalt, allowing some infiltration into the soil. However, a relatively small portion of the water that falls on this is able to infiltrate, and instead becomes surface runoff. The City of Bellingham's storm water system draining the proposal site carries runoff through a network of pipes and discharges it into Whatcom Waterway with minimal treatment (Figure 3). The only form of treatment the storm water receives is when it falls into catch basins, which can allow for some suspended solids to fall out of suspension.

Surface runoff picks up pollutants as it makes its way into the storm water system. Some pollutants, such as polycyclic aromatic hydrocarbons (PAHs), are not water-soluble and attach to total suspended solids (TSS) particles (Diblasi et al., 2009). PAHs are a class of suspected carcinogens which originate from oils and are a by-product of combustion (Menzi et al., 2002; ATSDR 1996). Other common pollutants found in storm water runoff include pesticides and heavy metals such as lead, iron, copper, and cadmium (Pitt et al., 1995).

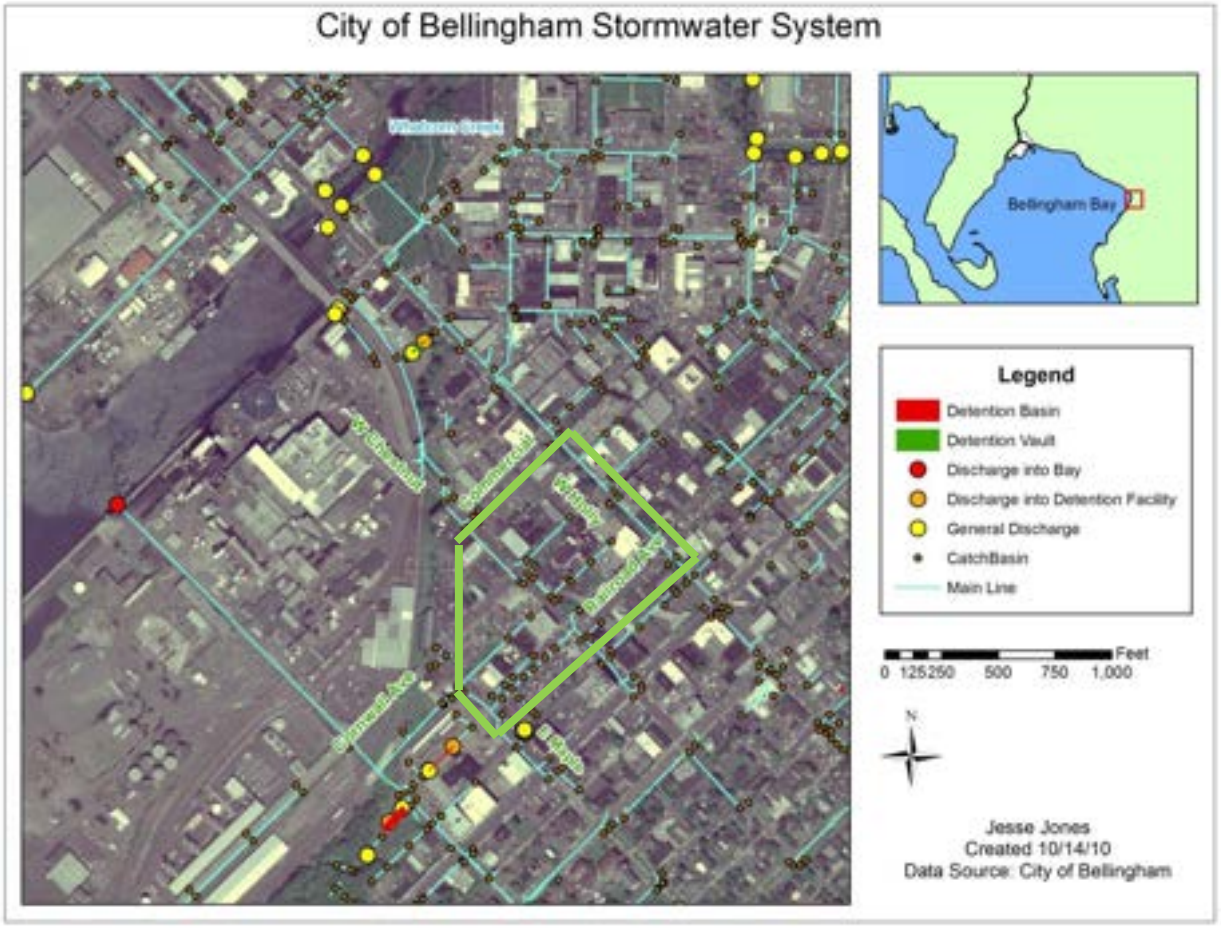


Figure 3. Stormwater system of the City of Bellingham, WA, showing discharge points of the main lines. Outlined in green is the approximate area of our proposal site.

Proposed Action

The proposed action will result in approximately the same amount of imperviousness in the area as currently exists. However, the proposal stipulates that the parking structure have collection

tanks to store rainwater from the structure's gutters, to be used to water the roof gardens or possibly to flush toilets in the restrooms. This measure slightly reduces the amount of surface runoff coming from the proposal site, which is why we scored it as (1) for water runoff on the decision matrix. The proposed action does not allow for more infiltration into the soil profile, which is why it yielded a score of (0) for groundwater. It was given a score of (1) for impacts to surface water because the collection tanks will result in slightly less runoff carrying pollutants into Whatcom Waterway compared to current conditions. The proposed action is not likely to cause significant adverse impact to water.

Alternative Action

As part of the alternative action, we recommend that a bioretention cell be installed in the area of green space adjacent to the north end of the parking structure in order to reduce the impact of surface runoff. A bioretention cell filters out suspended solids and attached toxicants from storm water before it is discharged into a natural body of water or a storm water network. Diblase et al. (2009) determined that by filtering TSS out of storm water with the bioretention cell, attached PAHs were also filtered out. They found a mean total PAH (dissolved + particulate) reduction of 90% (range: 31%-99%). Not only does a bioretention cell filter out solids and toxicants, but allowing water to slowly percolate through soil before entering a natural water body mimics water movement in an unmodified watershed.

Guidelines for bioretention recommend that a bioretention system occupy 5-7% of the drainage area (EPA 2000). In order to achieve the magnitude of reduction in Diblase et al. (2009), the proportion of retention cell area:drainage area was 6%. Our proposal site could contain a

bioretention cell in the green space area on the north end of the parking structure with the dimensions of 140' x 12', which is slightly less than 6% of the total drainage area. This size should be adequate to provide a reduction of pollutants that enters the storm water system from the parking structure. This measure will further reduce the parking structure's impact on nearby water bodies compared to current conditions.

Figure 4. An example of a bioretention cell. Notice the vegetation in the landscaping of the cell, which could contribute to the aesthetic value of the pedestrian space near the proposed parking structure. Credit: USDA's Natural Resources Conservation Service (www.ia.nrcs.usda.gov/features/urbanphotos.html).

As part of the proposed action, the parking structure will contain rain water collection tanks that store water that makes it into the structure's rain gutters, to be used for watering gardens on the rooftop or flushing toilets in the structure. As part of the alternative action, the rain collectors could still be used to store rain for watering plants. However, as most of the rainfall in Bellingham occurs during the winter months when there will be lowest demand for watering plants in the gardens, we propose that a system be built that allows rain gutters divert rainwater into the bioretention cell once the collection tanks become full. Once water travels through the cell it could be discharged into the City of Bellingham's storm water system, which flows into Whatcom Waterway (Figure 3).

A bioretention cell is fairly low-maintenance. Its soil is replaced approximately every 5-10 years (EPA 2000). It begins filtering pollutants immediately, and over time, the soil loses its capacity to adsorb pollutant particles to it. When this happens, the soil should be replaced to keep the cell functioning.

Another measure we propose is taken to further reduce impact to surface water compared to current conditions is to pave the loading area of the south anchor building with pervious asphalt. Unlike typical asphalt or cement, pervious pavements allow rainfall to percolate through them and into the soil. This would result in less surface runoff and reduced pollutant loadings into Bellingham Bay. As it allows more infiltration into the soil profile, the alternative action receives a score of (1) on the decision matrix for groundwater.

Finally, we propose that pre-existing buildings on Cornwall Avenue carry out green roof construction. This would further decrease imperviousness in the area, resulting in less surface water runoff and pollutant loading into Bellingham Bay.

Specific layers in a green roof may vary, but a typical green roof consists of an array of plant species planted in a soil substrate, a geotextile, a drainage layer, and a waterproof membrane at the bottom (EPA 2000). A 3-inch substrate depth has been shown to reduce runoff of rainfall by 50% (EPA 2000), and the water that does run off will be cleaner, as it is filtered through the vegetation and soil. Vegetated roof covers also offer such benefits as extending the life of a roof

and providing thermal insulation, which provides other environmental benefits, as energy use for heating and cooling can be decreased.

All three of the abovementioned ways to lessen impacts to water result in less imperviousness and cleaner runoff, which is why we scored the alternative action as (2) for water runoff and (2) for surface water on the decision matrix.

No Action

If no action is taken, the amount of imperviousness in the project area will remain the same as it currently exists. Most of the water that falls on this area will continue to move over impervious surfaces into the storm water system and be discharged into Whatcom Waterway with minimal treatment. The no action alternative does not change anything compared to current conditions, thus it receives a score of (0) for surface water, (0) for groundwater, and (0) for water runoff on the decision matrix. However, if the infill development on this site does not occur, it is possible that growth will sprawl into places of Bellingham that are not currently covered with impervious surfaces, further contributing to the problem of non-point source pollution coming from storm water runoff.

2.4 Plants

Existing Conditions

The south end of Cornwall Avenue is an urbanized environment near a highly industrialized waterfront. The ground is mostly covered by impervious surfaces such as roads, sidewalks, and buildings, giving little chance for natural vegetation to colonize this area of downtown. Some invasive species such as Reed Canary Grass, the Himalayan Blackberry, Morning Glory, and

English Ivy have managed to colonize the few remaining non-impervious surfaces within the southernmost end of the project reach (where the south anchor and parking structure will be erected). There are also many landscaped/potted plants lining the sidewalks and storefronts. Much of the landscaped vegetation is composed of evergreens, alders, or maples; as well as potted flowering plants, shrubs, and a few small patches of grass. No endangered or threatened species were found within the South Anchor project site.

Proposed Action

Parking Structure – Rooftop Garden

According to plans for the south anchor site, some naturally occurring vegetation will be removed. However, the only naturally occurring on-site vegetation is composed of invasive species. Removal of such species will not adversely impact the environment. Proposed landscaping includes planting trees along sidewalks, in rooftop green spaces, and along the street median. The parking structure will have a rooftop urban garden as well as a greenhouse serving as a source of goods for the nearby farmers market. Rooftop Storm water runoff will be collected and used to water plants in the garden rather than letting it drain into Bellingham's storm water system, which flows directly into Whatcom Creek and Bellingham Bay. The proposed action will likely increase biodiversity among plant life and bring more native vegetation to the site, which is why we gave this option a score of (1) in the decision matrix.

Alternative Action

The alternative action would encompass the same plans for green spaces and urban gardens within the project reach. However implementation of a bioswale, constructed storm water treatment wetland, or some other functioning bioretention system is advised due to an expected rise in contaminant and sediment loading in storm water runoff. Rain collection systems are also advised for the south anchor building, helping to alleviate impacts due to storm water runoff. The alternative action received a score of (1) as well, because it too will provide a more diverse biological community downtown, but is not expected to have a strong positive impact.

No Action

If no action is taken, vegetation within the project site will remain as is. No bioretention system will be built to help filter storm water runoff entering Whatcom Creek and Bellingham bay. Invasive species will not be removed from the few remaining non-paved surfaces, and vegetation will not be planted in the parking garage's rooftop garden. There will be no changes to the site, which is why we gave this option a score of (0) for no impact.

2.5 Animals

Existing Conditions

Steelhead Trout

Downtown Bellingham is an urban environment and does not provide necessary functions required to support diverse populations of wild animals. However, some typical urban species do enter the Cornwall Avenue corridor as well as

nearby Whatcom Creek. Songbirds and the occasional stray deer can be found within the project site. There are currently salmon, trout, and shellfish populations within Whatcom Creek and Bellingham Bay, which receive storm water leaving the project site (Figure 3). Threatened Puget Sound Chinook and Steelhead populations utilize Whatcom Creek for spawning habitat, and shell fishing occurs within Bellingham bay (Forester, 2009). Thus any potential water quality issues arising from the Cornwall revitalization project have the ability to affect wildlife within the above mentioned systems.

Chinook Salmon

Whatcom Creek flows west from Lake Whatcom to Bellingham Bay through an urban setting. Water from Lake Whatcom is released into Whatcom Creek, with flow regulation primarily managed to maintain the lake's appropriate water level (Madsen & Nightengale 2009). Water flowing into the creek is typically high in fecal coliform units, and often exceeds the core summer salmonid habitat aquatic life use designation of 16C (City of Bellingham, 2009). On June 10th, 1999 a gas pipeline adjacent to Whatcom Creek ruptured, releasing up to 227,000 gallons of gasoline. The gasoline then caught fire and caused considerable short term damage to the already sensitive urban ecosystem (Owens, 2001). Environmental conditions have greatly improved since the incident, but great care is needed to preserve and enhance this delicate aquatic environment. (City of Bellingham, 2009)

The main aquatic species of concern within Whatcom Creek are the federally listed, threatened populations of Puget Sound Chinook salmon and Steelhead trout. Other federally listed species

of concern that utilize Whatcom Creek include Coho salmon, Pink salmon, and Cutthroat trout. Bird species that have been documented to be present within the Whatcom creek burn zone are listed in table 1 (Madsen & Nightengale, 2009).

Table 1. Bird species of concern known to be within the Whatcom Creek watershed

Bald eagle	Priority Species (Criterion 1 – Species of Concern)
Merlin	Priority Species (Criterion 1 – Species of Concern)
Pileated woodpecker	Priority Species (Criterion 1 – Species of Concern)
Vaux's swift	Priority Species (Criterion 1 – Species of Concern)
Great blue heron	Priority Species (Criterion 2 - Vulnerable Aggregations)
Hooded merganser	Priority Species (Criterion 3 - Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable)
Wood duck	Priority Species (Criterion 3 - Species of Recreational, Commercial, and/or Tribal Importance that are Vulnerable)

Bellingham Bay is important habitat for marine species and was listed in 1998 on the DOE 303d list for contaminated sediments. pH and fecal coliform are also pertinent water quality issues. These sediments pose an issue to marine and public health as contaminants can move up the food chain, potentially harming wildlife as well as human beings. Source control and monitoring activities are currently being implemented; however non-point source pollution continues to be an issue. Eleven storm drains empty directly into the bay, while another 64 are located in watersheds that drain to the bay, including the Nooksack River and Squalicum, Little Squalicum,

Whatcom, Padden and Baker Creeks (DOE, 2001). The south anchor project reach is within the Bellingham bay and Whatcom Creek watersheds, with one storm water drain emptying directly into the mouth of Whatcom Creek, and two more directly into the bay (Figures 5 and 6).

Figure 5. Storm water drainage systems in downtown Bellingham. The south anchor project reach is outlined in black.

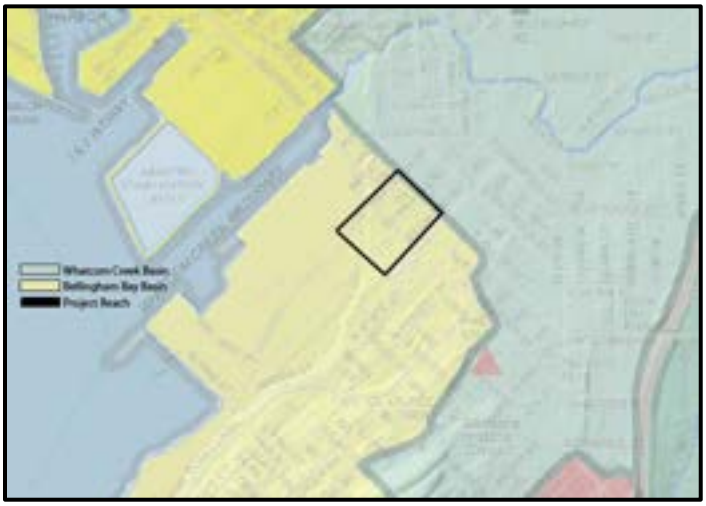


Figure 6. Downtown Bellingham watershed boundaries. The south anchor project reach is outlined in black. The Bellingham Bay watershed is highlighted in yellow and Whatcom Creek in green.

Proposed Action

The proposed action does not have any plans directly impacting wildlife or habitat, and has received a score of (0) for no impacts to terrestrial or aquatic organisms. Within the urban environment, impacts to wildlife will not be significant and primarily involve the removal of landscaped vegetation. Rainwater collection systems and rooftop gardens will help reduce levels of rooftop storm water runoff reaching Bellingham's waterways. The parking structure will provide a covered area for cars to park, and in doing so will contain non-point source pollution from automobiles. This will also help to mitigate adverse environmental impacts arising from increased auto traffic to the area.

Alternative Action

The alternative action will take into account non-point source pollution arising from the proposed construction on Cornwall Avenue. Implementation of the original plans for rain collection and rooftop garden will still be encompassed in the alternative action. However a bioretention system shall be installed on the south side of the parking structure, allowing for natural filtration of urban storm water runoff. Rain collection systems should also be implemented in the design of the south anchor building The bioretention system will help decrease sediment loading to Whatcom Creek and Bellingham Bay, as well as common contaminants commonly found in urban storm water runoff such as PAH's and other common petroleum based constituents. Many contaminants sorb to soil particles and are carried into the environment via storm water, so the retention of sediments is crucial in reducing contaminant loading to Whatcom waterways (Hoffman, 1984). If this plan is implemented, there will likely be slight positive impacts to storm water leaving the site, improving water quality for aquatic organisms, which is why this option received a (1) in the decision matrix. This option scored a (0) for impacts to terrestrial animals, as there are very few that utilize the site as habitat. This option also scored a (1) for impact to endangered species, as Chinook and Steelhead spawn in nearby Whatcom creek, and will benefit from improvements to storm water runoff.

No Action

No buildings will be built, wildlife will not be affected, and the south anchor project site will remain as is. This option will score a (0) for no impacts, as no changes will be made to the site.

2.6 Energy and Natural Resources

Existing Conditions

The site is located within a previously developed, industrialized area of downtown Bellingham on the southern end of Cornwall Avenue. Natural resources are not extracted from the area, and energy is currently supplied by Puget Sound Energy (PSE). There are 3 buildings near the project site that have implemented green building practices. Kateri Court located on 110 E Chestnut St is Leed NC certified, the Depot Market Square located on 1100 Railroad Avenue is Leed Registered, and Boundary Bay Brewery located on 1103 Railroad Avenue has implemented reinforced grass paving for the outdoor beer garden (City of Bellingham, 2010).

Encogen natural gas plant

There is an existing Natural Gas plant located near the site that will supply clean energy to the proposed structures. Encogen, which is a clean burning natural gas plant, is owned by Puget Sound Energy and is located at 915 Cornwall Avenue Bellingham, Washington 98225. This plant was built to supply energy and water from condensed steam to the Georgia Pacific mill. Since the mill has closed, PSE relies on the plant to produce energy in times of drought or peak energy use, when hydropower supplies are insufficient. The plant creates energy by burning natural gas in a combustion turbine that drives an electric generator. Heat from the combustion process is also used to

generate steam that drives a steam turbine, generating additional electricity. Spent steam from the turbine is then condensed and recycled. (Puget Sound Energy, 2007)

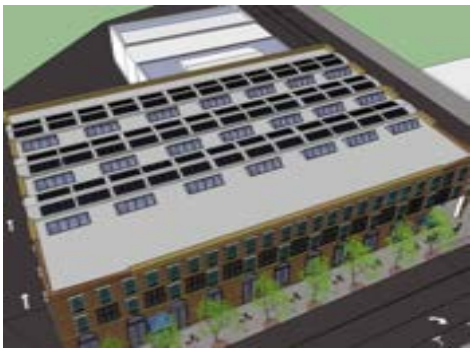
Proposed Action

The Proposed action includes energy conservation plans for the south anchor building as well as the parking structure. The proposal will not affect the potential use of solar energy by adjacent properties, as there will only be minimal additions to existing buildings north of the south anchor site. The parking and south anchor buildings within the site will be limited to four stories in height, and will be nearly level with existing structures (WWU, 2010).

Energy conservation features included in the proposed action will help to conserve energy and lessen natural resource impacts related to the project. Both buildings will use as many recycled building materials as possible, conserving natural resources, decreasing energy use, and lessening greenhouse gas emissions from new construction. The project as a whole intends to localize the downtown retail environment, reducing distances travelled by residents for shopping and entertainment.

South anchor building

The south anchor building will have large street level windows as a display area for stores, which also provide additional street lighting during evening hours. The roof will be mostly flat with solar panels facing the east and west to capture morning and evening sun. Skylights will run parallel to the solar panels, providing additional lighting to the top floor and reducing energy usage. The building makes use of solar panels to provide energy for light but also creates the potential for solar thermal heating, which may be more efficient. Solar thermal heating makes use of lar energy to provide energy in the form of steam for the building. This energy can power lights or be used as a sustainable way to heat water in the building which will prove valuable and cost saving during the winter months (WWU, 2010).



South anchor building – aerial view

For additional energy, there is a nearby gas plant just two blocks from the South Anchor site. Steam produced from this gas plant will be redirected through pipes to the South Anchor building, and provide year-round clean energy. The proposal cites this energy source as a renewable and sustainable energy source, however obtaining energy from natural gas fulfills neither of these requirements. It is however clean burning, and will continue to be in operation whether or not the south anchor project is implemented.

The parking structure will employ similar energy sources, with solar panels providing energy to light the garage at night and heat water for showers. Rain collection systems will be implemented, and the collected rain water can be used for the urban garden, flushing toilets or other non-potable uses. Collection of rooftop runoff will help to reduce on site storm water pollution.

Parking Structure

These building are LEED certified structures, and as so implement modern sustainable design, and will likely have some positive impacts to the area. This option scored a (1) in the decision matrix because it calls for use of onsite sustainable energy, and will likely encourage other businesses and residents to do the same.

Alternative Action

The alternative action shall include all proposed actions for energy use and conservation; however rain collection systems will also be implemented on the south anchor building. By collecting and recycling storm water runoff from both structures, increased pollution due to heightened auto traffic may be effectively mitigated, and storm water can be used for steam power to the building. This action also received a score of (1) as the proposed action called for

the use of sustainable onsite energy, and will also recycle storm water for potential steam energy generation.

No Action

In the case where no action is taken, existing parking areas will be left as is, no buildings will be built, and no additional parking will be available for downtown Bellingham. No extra energy will be required on site, and there will be no interference to the availability of solar energy to surrounding infrastructure, which is why this option scored a (0) in the decision matrix.

3.0 Impacts to the Built Environment

3.1 Environmental Health

3.1.1 Health Hazards

Existing conditions

Soil contamination: Though the nearby waterfront houses the former Georgia-Pacific pulp mill, a source of mercury, zinc, cadmium and phenolic pollution, the proposed redevelopment, located uphill from the shoreline, stands at low risk of contamination from waterfront industrial uses. Nonetheless, the slope of the land permits contamination from former dry cleaning, photo printing, and automotive uses on or east of the site. (Environmental Solutions Association, 2009). Historical fire insurance maps show that such businesses all existed on the site between 1913 and 1963 (Sanborn Map Company, 1913-1917 & 1913-1963, p. 55).

Atmospheric contamination: Asbestos, banned from most construction uses in 1989 (US EPA, 1999), poses another risk of exposure to hazardous material during demolition. In the absence of a survey by an accredited inspector, asbestos must be assumed present in the surfacing and insulation of any building constructed during or prior to 1980 (Washington State DOE, 2010). After an engineering survey is performed to determine the structural integrity of the building, asbestos must be tested and removed before demolition can commence (Washington State Legislature, WAC 296-155-775(9)). Workers must be trained to recognize and handle asbestos. If previously undetected asbestos is encountered, testing and removal must be completed before further demolition.

Hazardous waste handling: Toxic wastes must be disposed of in accordance with the Whatcom County Disposal of Toxics Program. These include paint thinner, turpentine, latex, lead- and oil-based paints, mercury switches, roofing tar, adhesives, caulks, resins, fluorescent tubes and contaminated rags. After proper reduction and handling, these materials can be delivered to the Disposal of Toxics facility (Whatcom County Public Works Administration, 2007).

Emergency response: In the event of a hazardous waste incident, the Whatcom County Division of Emergency Management provides trained staff and technical assistance (Whatcom County Division of Emergency Management, 2007, Hazardous Materials). The Emergency Operations Center disseminates information to the public through the Emergency Alert System in a major disaster (Whatcom County Division of Emergency Management, 2007, Emergency Operations Center).

Proposed action

Soil contamination: The excavation of the proposed South Anchor site and Cafe Akroteri parking lot will expose workers to any soil contamination present. Former dry cleaning, photo printing, automotive or gasoline operations pose risk of contamination, however, excepting improper disposal, illegal dumping, catastrophic spills or poor housekeeping practices, these are not probable causes of significant impact (Environmental Solutions Association, 2009).

Asbestos handling: The refacement of the Bank of America and south Leopold buildings could subject workers to asbestos exposure without adherence to the above proper procedure. It is assumed these steps will be followed in the proposed action.

Because these forms of hazardous waste must be identified and properly handled by law, the proposed action is anticipated to have a neutral impact of (0).

Alternative action

Waste mitigation: Waste generated during demolition will be contained and, to the fullest extent practicable, salvaged and reused as raw material. Local demolition contractors such as Lautenbach Industries (www.lautenbachind.com) and the RE Store (www.re-store.org) are able to haul waste for recycling and salvage. This requires determining what waste streams must be separated for recycling and allowing sufficient space for separation. Materials for construction will be purchased if possible from reused sources. By redirecting a waste stream toward new construction, these measures earn the alternative action a positive score of (1).

No action

If demolition and construction do not proceed, any existing soil contaminants and asbestos will remain undisturbed, leaving an impact of (0). Eventually, cleanup under the TSCA may be required.

3.1.2 Noise

Existing conditions

A small degree of operational noise from industry and demolition on the waterfront reaches the proposed redevelopment site. Traffic, waste collection, road work and construction also contribute to mild noise levels.

Proposed action

Noise generated during construction and demolition will adversely affect the surrounding neighborhood in the short term. This will likely occur during daytime business hours. Long term noise will result from increased vehicular and pedestrian traffic on the site. Encouragement of busing and bicycling, and in particular bicycling, will reduce vehicular traffic. However, the proposed trolleybus will increase levels of traffic noise, and the proposed short term construction in close proximity to businesses and elderly residents is anticipated to have a heavy negative impact of (-2).

Alternative action

Sources of construction noise most likely to engender complaints include back-up alarms, slamming tailgates, and hoe rams (US DOT, 2008). Measures to reduce the noise of back-up alarms will be implemented, such as volume monitors, a traffic pattern that minimizes backing,

or the use of an observer rather than an alarm. Noise from slamming tailgates will be mitigated with rubber gaskets, controlled speed of closure, or bottom dump trucks. Hoe rams will be quieted with a noise shroud (New York City DEP, 2008).

Quieter available models of equipment, such as US-made European environmental label, will be used. Vibratory or hydraulic impact pile drivers and hydraulic cranes will be preferred over regular models (New York City DEP, 2008). Employing electric or hydraulic equipment will in general produce less noise than diesel-powered equipment. Using jack hammers with molded intricate mufflers will reduce noise levels by 15 decibels at 50 feet (US DOT, 2008). Overall noise levels tend to depend on the operating power of the equipment. Particularly in hoe rams and vacuum trucks, power will be reduced to lowest levels required for operation (US DOT, 2008). In addition, the replacement of the trolleybus with a WTA bus line will mitigate long term traffic noise impacts.

Although unable to eliminate noise completely, these measures will serve to reduce impacts over the short and long term, together earning the alternative action a (-1).

No action

Noise will continue at current levels in the absence of the proposed project, for a score of (0).

3.2 Land & Shoreline Use

3.2.1 Relationship to Existing Uses, Zoning & Designations

Existing conditions

Current use: The proposed redevelopment site is currently home to mainly commercial uses, with a block of residences east of Cornwall between Holly and Chestnut. Sizeable amounts of public parking are located between Chestnut and Holly, as well as considerable vacant space. The area adjacent to the south belongs to the Port of Bellingham and features marine and industrial uses.

Figure 7. Current land uses. www.cob.org/documents/gis/maps/neighborhoods/CBD-CurrentUse.pdf

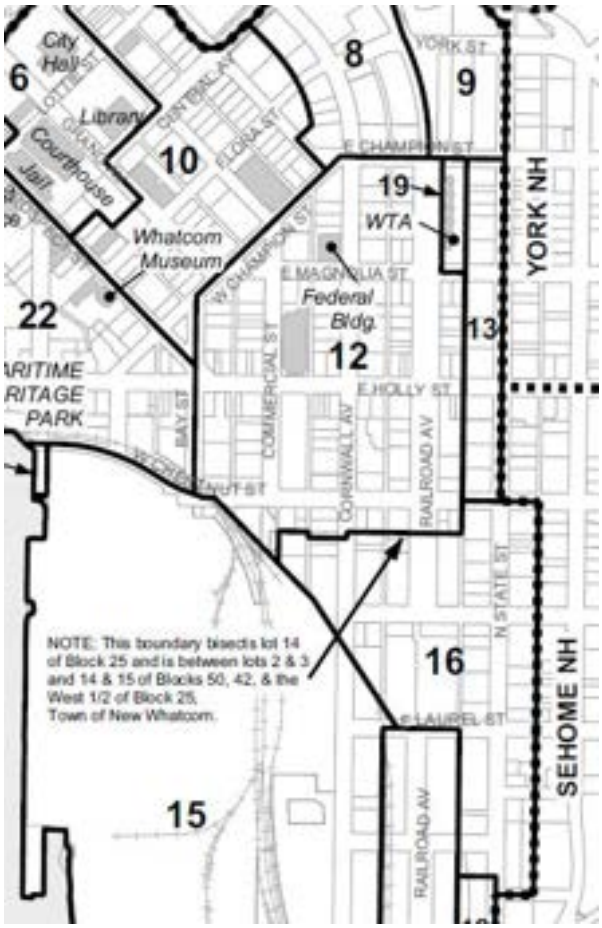


Figure 8. Current zoning. www.cob.org/documents/gis/maps/land-use/CBD-bwLandUse.pdf

Zoning: The site falls within Areas 12 and 16, both zoned as Central Commercial (City of Bellingham Planning Department, 2008). Area 12, designated as the commercial core, is intended to accommodate complete commercial facilities within convenient walking distances. Area 16, meant to bridge the commercial core to the north with the industrial area to the south, is allowed mixed commercial and light industrial uses (City of Bellingham Planning Department, 2008, Central Business District Neighborhood Plan), which include public garages, utilities, warehousing and light manufacturing (City of Bellingham, 2008, City of Bellingham Municipal Code, Title 20).

Comprehensive Plan designation: Consistent with current zoning, the comprehensive plan designates the site as core commercial. This entails maintaining the site as the city's dominant cultural, civic, and commercial center. Businesses and pedestrian traffic should be welcomed, underutilized space should be redeveloped for efficient use, and building height and design should reflect the central, historical character of the neighborhood (City of Bellingham, 2005, Bellingham Comprehensive Plan).

Shoreline Master Program designation: The Bellingham Shoreline Master Program regulates land uses within 200 feet of the ordinary high water mark, and thus does not directly affect the proposed redevelopment site, but adjacent properties (City of Bellingham Planning Department, 2008, CBD Neighborhood Plan, Section 3: Shoreline Master Program). The Bellingham Bay waterfront is designated High Intensity Urban Maritime, and Whatcom Creek, Urban Conservancy (City of Bellingham Planning Department, 2005, Introduction to the Shoreline Master Program Update). The site redevelopment will affect the Whatcom Creek watershed insofar as the storm water lines from north of Chestnut Street run to an outlet at the mouth of the creek. For full descriptions of designations and allowed uses, see City of Bellingham (2009) Bellingham Municipal Code, Title 22).

Proposed action

The proposed redevelopment seeks to bring the Central Business District into alignment with its comprehensive plan designation through the attraction of anchor retail and reorientation of the streetscape toward pedestrians. For its close adherence to existing zoning, uses, and designations, as well as interfacing with future development on the waterfront, the proposed plan earns a positive (2).

Alternative action

The aim of the alternative action remains essentially the same as that of the proposed action, retaining a score of (2).

No action

If no action is taken, outlying retail will continue to usurp the Central Business District's role as a core commercial area. Downtown, left as is, fails to provide a complete suite of convenience services and shopping opportunities. Out-of-character construction, vacancies, and minimal pedestrian usage will persist on the site. With no alterations to the current course of development, this action earns an impact of (0).

3.2.2 Structural Elements & Housing

Figure 9. Bank of America building on Cornwall & Holly. Building height and blank façade should be adjusted to reflect the character of the historic Leopold Residences in the foreground.

Existing conditions

Structures: The most prominent structure on the site is the Leopold Retirement Residences, surrounded by businesses such as the Bank of America, Ideal art gallery, Green House furnishings and décor, Café Akroteri, and further south, Eva Salon, Shrimp Shack and Kulshan Cycles. These buildings exhibit a mixture of desirable and less desirable characteristics, most fronting the sidewalk and some with consistent façades, but many with variable awnings, inconsistent material use, or sloping exteriors. Sub-optimal building heights are found on the Bank of America and Shrimp Shack properties. Underutilized space is present in the surface parking north of Café Akroteri, below the southern wing of the Leopold, and south of Chestnut Street. Vacant real estate is found adjacent to the Shrimp Shack and Eva Salon.

Proposed action

Modifications to existing structures: Added building height has been proposed for the Bank of America building and the southern portion of the Leopold Residences. While the proposal does not specifically require their demolition, the buildings will likely have to be reconstructed or at least refaced to bring them up to standard. The investment in new construction would warrant their complete demolition.

The Innate, India Grill, and Café Akroteri buildings are proposed for façade redevelopment. Residences will be added above the Shrimp Shack structure, and the surface parking adjacent to Café Akroteri will be replaced with mixed use development.

Figure 10. Eva Salon building on Cornwall & Chestnut. Façades should be brought outward and awnings extended over the sidewalk to provide a consistent pedestrian experience.

Housing: The complete project will add at least 65 housing units on the Cornwall site. At an average of 1000 sq. ft. per unit, the portion under consideration will offer approximately 37 new units. According to the proposal, these are intended to provide housing opportunities to seniors, students, and

Figure 11. Underutilized surface parking adjacent to Café Akroteri.

young professionals (ESTU 470 Urban Transitions Studio, 2010, p. 17). Yet, depending on the success of revitalization of the site, these housing units may experience increased demand and heightened rent prices, displacing low income demographics.

Alternative action

In order to reduce the impacts of displacement, the Bank of America might be relocated across Holly Street to the old National Bank building, and temporary accommodations might be made for residents of the 47 units in the southern Leopold.

If the construction of additional residences above the existing Leopold and Shrimp Shack structures is shown insufficient to offset the impacts of heightened rent on low income residents, then certain rules regarding tenant income or age might be implemented. This may be addressed by retaining added residences under the ownership of the Leopold, or stipulating that the same number of rooms be reserved for seniors upon completion of the project.

No action

If, on the other hand, additional housing is not included in the project and development not concentrated within the Central Business District, projected growth will extend into the 5-Year Review Areas, creating heavier sprawl and traffic-related issues (City of Bellingham, 2004, How Should Bellingham Accommodate Growth?).

3.2.3 Light & Glare

Existing conditions

Current lighting on the site consists of minimal glare from storefronts and street lamps in the evening. Some light from the cogeneration plant and demolition site may reach the proposed development during nighttime hours.

Proposed action

Light from businesses during the early evening may interfere with views from residences on Cornwall or further uphill. Increased lighting can be expected to correspond with the current evening hours of Bellis Fair Mall, between 6 and 9 pm Monday through Saturday (Bellis Fair, 2010). However, the project will produce less glare than a conventional mall due to its urban infill nature. Parking and shopping concentrated in multi-story structures rather than sprawled lots will minimize the need for large overhead lighting. Surrounding buildings will serve to block light from reaching neighboring streets.

Alternative action

Further features to reduce glare impacts could include downward-facing, contained street lights, tree cover along streets, awnings on lower stories and blinds on upper story windows. Otherwise, street-level lighting will be encouraged to promote safety and public use.

No action

Lighting will be maintained at current levels, for a score of (0).

3.2.4 Aesthetics

Existing conditions

The site of the proposed development consists of two surface parking lots. The one east of Cornwall is publicly owned, and west of Cornwall, privately owned.

Figures 13 and 14. Site of the proposed South Anchor retail (above right) and parking structure (above).

Proposed action

The proposed South Anchor building, 50 feet at its highest point, will stand three stories tall in the front and four in the back. The brick exterior lined with windows reflects the traditional character of the neighborhood (Figure 12).

Design inspirations are shown below (Figures 13 and 14).

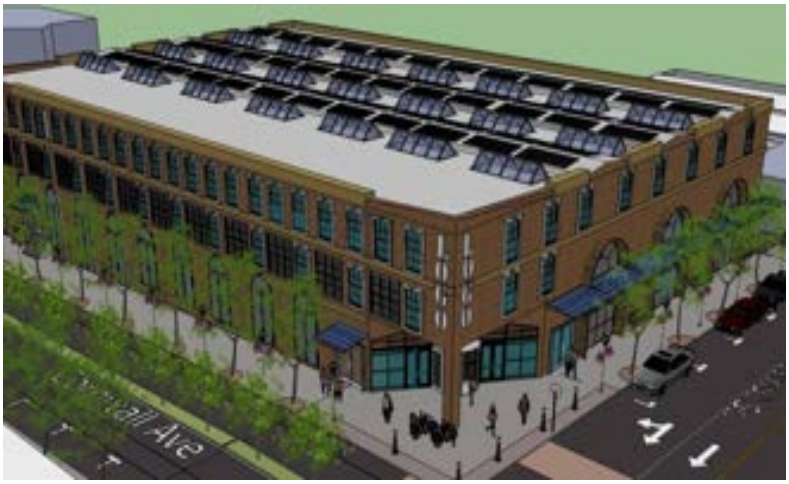


Figure 12. South Anchor retail design concept. Credit: ESTU 470 Planning Studio 2010, South Anchor Building.

Figures 13 and 14. South Anchor retail design concepts. Credit: ESTU 470, 2010, South Anchor Building.

The proposed three-story parking garage will consist of brick and concrete walls with glass partitions that partially reflect the character of the surrounding area (Figure 15 – ESTU 470, 2010, Parking Structure, aerial view). Some more modern design inspirations are shown below (Figures 16 and 17).

Figure 15, 16 and 17. Parking garage design concepts. Credit: ESTU 470, 2010, Parking Structure

To mitigate aesthetic impacts, the proposed structure features open construction to admit some light, limited retail space on the lower level, tables, seating, human-scale street lights, trees, plants, lawn and a fountain on the north side, planter boxes in windows and hanging baskets on street lamps. The design includes an urban roof garden to serve as a rain catchment system and supply the farmers' market with local produce (ESTU 470, 2010, Parking Structure, aerial views).

Building height additions will raise the Bank of America building from 1 story to 6, the southern portion of the Leopold from 4 stories to 6, and the Shrimp Shack building from 1 to 3 stories. Views obstructed by the proposed development will include those from the back of the Boundary Bay Brewery and adjacent furniture store, and from the Leopold Residences across the current Café Akroteri surface parking.

By removing aesthetically uninspiring surface parking lots, the proposed development scores a positive impact. However, the design features of the proposed structures, particularly the blank walls of the parking garage, are found lacking. Blockage of view corridors from infill, especially across from the Leopold Residences, also has the potential to negatively affect the neighborhood, resulting in an overall impact of (0).

Alternative action

In designing the parking structure, architectural details such as decorative pilasters or cornices will be considered to add interest. More ground-floor retail, roadside boutiques or mural art will be added to alleviate blank walls, particularly on the alleyway. Modern designs that make use of traditional materials will aid in fusing new and existing construction. Larger windows on the

mixed use development across from the Leopold to reflect maximum light will reduce impacts on views for the residents. These measures help to score a positive impact of (1), recognizing that, with input from professional architects and designers, more might be done to improve the aesthetics of the proposed redevelopment site.

No action

Without the proposed development, the two surface parking lots south of Chestnut, and the site of the proposed parking garage in particular, will remain in their present, aesthetically unappealing state. The Café Akroteri surface parking may provide some continued benefit by admitting sunlight onto Cornwall, but will not add substantially to the aesthetic character of the neighborhood. These contribute to a neutral score of (0).

3.2.5 Recreation

Existing conditions

The site currently fosters some road biking and walking, as well as boating and related uses in the adjacent marina.

Proposed action

The proposed project will enhance biking, walking, and waterfront access. The interurban trail system will benefit from increased connectivity. Bike parking and storage lockers and showers for cyclists will be provided in the new parking structure (ESTU 470, 2010, Cornwall Parking Structure, p. 3). In addition, between 30 and 100 bicycles will be offered through the proposed bike share program (ESTU 497g Urban Transitions Studio II, 2010, Growth Projections, p. 2).

Opportunities for leisure and social gathering will be afforded through widened sidewalks, seating areas, and open lawn space. The park adjacent to the proposed parking garage will connect to the Boundary Bay Brewery beer garden, while revitalization of the southern anchor site will promote access to the farmers' market and proposed waterfront development (ESTU 470, 2010, Parking Structure Report, p. 2 & South Anchor Building Draft Proposal, p. 1).

The extensive addition of recreational opportunities, and in particular the interconnection of the Cornwall site to adjacent uses, earns the proposal a positive score of (2).

Alternative action

All provisions for recreation in the original proposal would be maintained in the alternative proposal, retaining a score of (2).

No action

Existing recreation activities would persist as usual, giving an impact of (0).

3.2.6. Historic & Cultural Preservation

Existing conditions

The downtown area features a number of distinguished historical landmarks. Of those on or adjacent to the site, three are listed on the National Historic Register – the Leopold Hotel (1224 Cornwall), the Bellingham National Bank (101-111 E. Holly) and the Washington Grocery Building (1133-35 Railroad).

Proposed action

The proposal does not indicate any alterations to registered historical structures, only to adjacent properties. Though these are to be developed generally in keeping with the historical character of downtown, details are not specified, earning a score of (1).

Alternative action

Figure 20. Historic Lighthouse Block on the site of the current Bank of America, torn down in 1959 (above).

In the alternative, the historical National Bank and Leopold Residences are to be not only preserved but used as a model for subsequent development. To the extent possible, the Bank of America and southern Leopold Residences should be rebuilt to reflect the character of the original Hotel Leopold and Lighthouse Block. (Downtown Bellingham Partnership, 2008).

Figure 21. Original southern wing of the Hotel Leopold before demolition. Credit: www.downtownbellingham.com/documents/DowntownWalkingTour.pdf

This proposal upholds a conception of the downtown retail area in which the destruction of historic landmarks since the 1950s is not merely halted, but reversed, earning a score of (2).

It is possible, but unlikely, that this project would uncover any unknown artifacts of cultural or archeological importance. Recently, crews digging below Magnolia Street found old street car lines and communications vaults that were built in place with brick and mortar. It is unknown if any cultural artifacts of importance will be unearthed. Any resources found must be assessed by a professional archaeologist according to applicable county and state laws. The archaeologist would determine whether the materials were evidence of a previously unknown site or feature, or if the materials were of no cultural significance. If the object(s) were considered to be significant by the archaeologist, the Nooksack Tribe of Indians, Lummi Nation, and the Washington State Department of Archaeology and Historic Preservation would be contacted.

Should human remains be unearthed during the course of construction, earth movement, clearing, or other site disturbance, all work would immediately halt until the significance of the find could be evaluated. The contractor would be required to promptly notify the following groups and agencies:

- The Whatcom County Medical Examiner
- Whatcom County Sheriff's Office
- The Lummi Nation
- Nooksack Tribe of Indians
- Washington State Department of Archaeology and Historic Preservation

No action

Historical register buildings would remain as is, however, adjacent buildings would not be refaced to match their character. This earns a score of (0).

3.3 Public Services & Utilities

Existing conditions

Water, storm water, and sewer lines are currently provided by the city (City of Bellingham, City IQ Map Viewer), while electricity and natural gas are provided by private utilities Puget Sound Energy and Cascade Natural Gas.

Proposed action

Parks & Recreation: The Bellingham Parks & Recreation Department will be providing amenities for the planned open space north of the proposed parking structure. Of the four classifications available, this open space meets the description of a neighborhood park, whose purpose is to serve the "active and passive recreation activities" of "a wide variety of age and user groups", creating "a sense of place by bringing together the unique character of the site with that of the neighborhood" (City of Bellingham Parks Department, 2008, p. 17).

The responsibility of the Parks Department to provide parking spaces will be met by the adjacent parking facility. Bike racks will also be provided by the same entity that constructs the parking facility, while seating, tables, trash receptacles, lawns and landscaping will be provided and maintained by the Parks Department. (City of Bellingham Parks Department, 2008, p. A1).

Water, storm water, and wastewater: The site is currently fitted with adequate amenities to accommodate the proposed development. No capacity issues limit service to the site. On-site storm water treatment is only required if water flows to a non-tidally influenced body of water,

such as Whatcom Creek above the dam line; as it is, water would flow to Bellingham Bay, a tidally influenced body.

On-site retention is required only if 50,000 sq. ft. of new paved surface, exposed to precipitation, is added for automobile use. In the case of the proposal, the parking garage will be built on already-paved land and will be covered by a roof. Furthermore, that roof will feature vegetation, doubly satisfying run-off mitigation requirements.

Alternative action

Parks & Recreation: Parking spaces reserved for disabled and senior citizen users should be located in closest proximity to the park. Public restrooms should potentially be located in the parking garage. Other features such as artwork should be included to enhance the unique character of the park.

Storm water: The alternative proposal includes further measures to remove contaminants from runoff, such as pervious asphalt behind the south anchor structure, a bioretention cell in the open space adjacent to the parking garage, and green roofs on existing buildings.

No action

Demand for public services and utilities would increase at the low rate of projected development. No new services would be required at this time. No new parks would be put in place, and no mitigations of existing runoff would be implemented.

3.4 Transportation

Existing Conditions

Downtown Bellingham's current street grid is partially comprised by one-way streets. There are 16,300 PM peak vehicle trips currently downtown daily. These streets carry automobile, bicycle, and pedestrian traffic. The WTA Bellingham Station is located three blocks away from the south anchor site and serves all of Whatcom County. The WTA Gold Line runs along Cornwall Avenue north of the site and the WTA Red Line runs along State Street two blocks away from the site. Also the South Bay Trail begins just south of the south anchor site, connecting the proposed project to Fairhaven.

A new trolley bus route is proposed for the project

Parking in Bellingham's central business district is provided by a mixture of on- and off-street public parking, and private off-street parking lots and garages. The majority of the on-street parking is time restricted. Of those with time limitations, the majority are metered, with time limitations ranging from one-half to six hours, and more than 75 percent with two hours or less for parking. These 1,000+ time-limited spaces are intended to serve the patrons of businesses downtown. Within this area, there are almost 2,700 off-street parking spaces, including another approximately 100 short-term parking spaces within City of Bellingham-owned parking structures. In addition approximately 1,000 parking spaces are open to the public,

either in small lots that directly serve customers of businesses on the same premises, or in small privately operated parking lots that charge a small hourly or daily fee. Of the approximately 3,800 total spaces, 1,600 off-street parking spaces are available by permit only and primarily serve employees and business owners in the downtown core (Downtown Bellingham Parking Strategy).

Proposed Action

The proposed action will increase vehicular trips taken in the PM peak volume time roughly by 260 trips; this increases the need for parking and continuous transportation. The proposal for the project includes the addition of a trolleybus route providing a loop around the core of downtown, starting along Cornwall Avenue, then making a right onto York Street, continuing to State Street, and moving back onto E Maple Street to the Transit Center. The route would feature Cornwall Avenue and State Street which are two of the most traveled roads in downtown. Adding the trolley on these roads would ensure long-term and high frequency ridership. This will have a significant negative impact on the built environment. The trolleybus could interfere with existing vehicular and bicycle traffic. The trolleybus will add more noise downtown from the metal on metal contact, and will adversely impact the aesthetics downtown with the addition of electric cable (First Hill Street Car). The trolley stops and platforms created will greatly limit the number of on-street parking and could possibly interfere with major utilities in the area.

A parking structure was also proposed for the project. The structure is to be located on the corner of E. Maple Street and Cornwall Avenue and create an additional 260 spaces to incorporate the induced traffic from added retail spaces. This will have a positive impact on downtown congestion due to accessibility to downtown businesses and allow for easy access to additional

parking in the retail corridor. The structure is well connected to the retail corridor, providing many opportunities for alternative transportation such as biking, walking and access to the additional bus stop.

To increase connectivity downtown, two-way streets were proposed. To the downtown area surrounding the focus site of Cornwall Street, this proposal suggests a nearly universal conversion of one-way streets to two-way, including North Forest, North State, Bay, East and West Champion, East Magnolia, East Holly, and East Chestnut. In the site area discussed, conversion to two-way streets would yield a 53% increase in connectivity in terms of lateral routes, and would thus significantly improve accessibility and movement throughout the downtown area. Although the two-way street system is said to increase connectivity downtown; the project will have a significant negative impact on congestion and traffic flow. "A Circulation Study, which did not include the Waterfront District Redevelopment proposal, clearly documented that converting *only* Champion and Chestnut to two-way streets would cost $4.5 million, would require the removal of pedestrian bulb-outs, and would have marginal improvement value for access and circulation" (Downtown Bellingham Circulation Study 2006). The two-way streets and addition of turn lanes would create longer wait times at traffic lights and decrease pedestrian space for movement downtown and cost millions of dollars.

The implementation of a more connected trail system would greatly encourage non-motorized travel and improve city goals toward a sustainable future. Installing a trail to connect the heavily used South Bay Trail to the southwest of downtown to the scenic Whatcom Creek Trail will have a positive impact on mobility downtown and will improve connectedness within Bellingham.

To further increase mobility downtown, a bike share program starting with an initial fleet between 30-100 bicycles was proposed. According to the Bellingham Pilot Project on Individualized Marketing of Transportation Choices, "The average number of private car trips in Bellingham is 986 per year. More than 80% of that figure (782) is trips within the city limits. Forty-nine percent of trips within the city are from 0 to 3 miles from the origination location." Such trips are ideal for cycling, and according to the aforementioned study, efforts at transportation behavior modification geared towards reducing auto transit can be highly successful.

Alternative Action

Instead of adding the new turn lanes and constructing the routes for a trolleybus downtown, we propose to add a Whatcom Transportation Authority Go-Line through the site and around Cornwall Avenue. The proposed route and stop locations for the trolleybus would remain the same but a WTA bus will be used instead. The bus will have fewer impacts than the trolley because it will be using the existing right-of-way streets and will not require dedicated platforms.

The impacts with keeping the existing one-way street system are significantly lower than reconstructing a two-way street system. We propose to keep the one-way street system downtown to keep the pedestrian space available on Cornwall Avenue, and maintain the flow of traffic downtown.

Because of the congestion that would be created on major downtown thoroughfares and truck routes by transitioning the existing one-way street network to a two-way street network we have given traffic in the proposed plan a (-2) rating in our decision matrix. These negative impacts would be compounded by the confusion to drivers and pedestrians a trolleybus would bring, further justifying a negative score. Without these changes we feel there would be a positive effect on transportation downtown by the inclusion of alternative modes of transportation,

Two-way streets require extra turn lanes

such as the proposed bike-share program and extending the trail network giving the traffic alternative action a rating of (1). Because we did not propose any changes to parking under the alternative action, we gave both the proposed action and the alternative action a rating of (1) in the decision matrix.

No Action

If no action is taken, the impacts downtown will remain the same and will cause no additional vehicular trips or effects on parking spaces.

4.0 Summary of Findings

The purpose of this environmental impact statement was to evaluate the proposed action for the South anchor Cornwall revitalization project, determining if there are any potential impacts that may arise from the plan, as well as to create and evaluate alternative actions. A summary of our

findings, which rates impacts based on their prominence, is found in the decision matrix. We found there to be a mitigated determination of non-significance (MDNS) for the proposed action, and a determination of non-significance (DNS) for the alternative action, as our plans in the alternative call for mitigation measures of the proposed action.

5.0 References

Tables & Figures

Figure 1 - WWU - Urban Transitions Studio. 2010. ESTU 470 planning studio W2010 Final Report. pp.1-109.

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LEED Neighborhood Development

South Anchor

Western Washington University
Environmental Impact Assessment

Fall 2010

LEED Neighborhood Development

Revitalization of Cornwall Avenue

South Anchor Site

This project was prepared by Western Washington University students

Environmental Studies 436 Environmental Impact Assessment under the supervision of Professor Troy Abel

Huxley College of the Environment

Fall 2010

Prepared by:

Cory Ragan

Cameron Zapata

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Environmental Impact Assessment
Huxley College of the Environment

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Signature _____
(Calen Clark)

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(Karsten Lundquist)

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(Cory Ragan)

Signature _____
(Cameron Zapata)

Date 12/3/2010

Contents

Fact Sheet

Title
LEED Neighborhood Development: Revitalization of Cornwall Avenue—South End

Lead Agency
Abel Environmental Consulting
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Troy Abel-WWU Professor

Issue Date: December 8, 2010
Public Presentation: December 1, 2010

Letter to Citizens

Huxley College of the Environment
Western Washington University
516 High Street, Bellingham WA 98225

November 2010

Dear concerned citizens,

As part of our comprehensive curriculum preparing us for professional careers in the burgeoning environmental field, a group of Huxley students from a diverse range of disciplines collaborated as part of our capstone course in Environmental Impact Assessment (ESTU 436) to bring you the following document. The United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design for Neighborhood Development (LEED ND) is a standard established by pioneers in the field of green development designed to ensure sustainable methods are incorporated into elements like site selection, design, and construction. LEED ND is a holistic approach to urban planning that is especially focused on creating strong connections between communities and their built environments.

This checklist is a part of the third phase of the Urban Transitions Studio project, a collaboration between Western Washington University, the City of Bellingham's Office of Planning and Community Development, and the nonprofit organization Sustainable Connections. The focus of this multiphase project has been the revitalization of downtown Bellingham as the retail core of this community. The construction of Bellis Fair mall on Meridian in the 1980s caused major retail anchors to vacate downtown real estate, generating volatility for remaining specialty stores and boutiques. By attracting retail anchors back downtown with strategically placed 'anchor' buildings on the north and south ends, as well as developing alleyways into pedestrian friendly pathways, it would create a retail corridor that would stabilize and benefit the entire downtown business community.

By applying the LEED ND framework to this proposal, we were able to assess the many social and environmental facets of this project from a variety of viewpoints. We believe the following evaluation accurately reflects these impacts, and we hope that you, the citizen, are pleased with the results.

Sincerely,

Calen Clark

Cory Ragan

Karsten Lundquist

Cameron Zapata

Purpose of LEED-ND

The Leadership in Energy and Environmental Design for Neighborhood Development Rating System (LEED-ND) promotes sustainability and green building through the values of smart growth and urbanism. The location and design of the project must meet high levels of environmental responsibility and sustainable development to achieve LEED certification. It is based on a 110 point scale with four award levels that increase as more points are earned. Earning LEED certification is not required by the government but is used as an evaluation tool and means to give incentives to give to developers and businesses. It is based on four focus areas:

Smart Location and Linkage (SLL)
Neighborhood Pattern and Design (NPD)
Green Construction and Technology (GCT)
Innovation and Design (ID)

The LEED credits encourage and transition development ideas of sprawl to urban revalorization potential by encouraging walkable developments and infill on already developed land to reduce land consumption. The objective for this type of development is to reduce greenhouse gas emissions, dependency on expensive and non-sustainable energy sources, threats to human health by encouraging daily physical activity through the reduction of automobile dependency, and improve land and air quality to build sustainable communities.

Site Map


Bay St
Commercial St
W Holly St
Cormeal Ave
Commercial St
W Chestnut St
Cormeal Ave
E Holly St
W Chestnut St
Cormeal Ave
E Chestnut St
Railroad Ave

Evaluation Matrix

	Current Action	Alternative Action
	Percent of Credits Earned	
Smart Location and Linkage 27 credits total	**63%**	**85%**
Built Environment	26%	40%
Natural Environment	7%	15%
Social/Economic Impacts	30%	30%
Neighboorhood Pattern & Design 44 credits total	**59%**	**98%**
Built Environment	16%	50%
Natural Environment	2%	5%
Social/Economic Impacts	18%	70%
Green Construction & Technology 29 credits total	**21%**	**86%**
Built Environment	17%	69%
Natural Environment	3%	17%
Social/Economic Impacts	-	-
Innovation & Design Process 6 credits total	**0%**	**0%**
Built Environment	-	-
Natural Environment	-	-
Social/Economic Impacts	0%	0%
Total Percentage over all three sub-criteria	**46%**	**86%**

Certification Levels
Certified: 40-49 credits (38-46 %)
Silver: 50-59 credits (47-56 %)
Gold: 60-79 credits (57-74 %)
Platinum: 80-106 credits (>74%)

Current Action
-The development remains the same with no changes.
-49 Credits awarded (meets LEED Certification)

Alternative Action
-Potential to meet 91 credits (Platinum LEED certification). Through more sustainable development practices.

Smart Location & Linkage (SLL)

SLL Prerequisite 1: Smart Location

Required Prerequisite – Met

Purpose:

"Planning processes such as 'smart growth' and 'urban infill' help to better manage development and slow down sprawl. Central to smart growth are brownfields and infill development, because smart growth strives to use underdeveloped areas within the urban environment more efficiently. Urban infill, such as brownfields redevelopment, holds the promise of enabling cities and communities to grow and evolve over time through many incremental changes. By creating places of enduring value and by restoring and reusing buildings and other urban spaces, we can build common ground between sustainability and historic preservation efforts, and provide alternatives to developing greenfield sites" (Dorsey, 2003)

The proposed location of the South Anchor at the southwest corner of the Cornwall and Chestnut intersection represents a smart choice not only in its location at the heart of the Central Business District, but also in its intended purpose of revitalizing downtown as the retail core of Bellingham. The area is a haven for restaurants and specialty boutiques, and the South Anchor will complement these preexisting businesses by attracting a broader customer base and creating more jobs downtown.

Current Evaluation: (Option 1)

The project is located on an infill site which occupies five city blocks and is currently being used as a low-density parking lot. The site lies within a publicly owned water and wastewater service area, which means additional infrastructure to provide this project with service will be minimal.

Alternative Action: No alternative action is needed.

See Appendix B: Map 1

SLL Prerequisite 2: Imperiled Species and Ecological Communities

Required Prerequisite – Met

Purpose:

Imperiled species and ecological communities should be protected and conserved in accordance with the federal and state law pertaining to endangered species. This prerequisite is met only under the condition that the proposed project does not disturb any endangered species that may be present.

Current Evaluation: (Option 1)

No threatened or endangered species are found to be present on proposed site.

Alternative Action: No alternative action is needed.

SLL Prerequisite 3: Wetland and Water Body Conservation

Required Prerequisite – Met

Purpose:

To preserve the general quality of water bodies and wetlands, and the ecosystem functions which they provide, development should be diverted from sensitive areas and should occur beyond a set buffer zone (50 feet for wetlands and 100 feet for water bodies) to minimize impact.

Current Evaluation: (Option 1)

The proposed project lies far beyond 100 feet of the nearest water body and is not near any wetlands.

Alternative Action: Not required.

See Appendix B: Map 2

SLL Prerequisite 4: Agricultural Land Conservation

Required Prerequisite – Met

Purpose:

"As metropolitan areas expand, developers are willing to pay farmers higher prices for nearby agricultural land. As outlying agricultural lands are developed, the unique characteristics and quality of life of the rural environment become increasingly compromised by traffic congestion, housing developments, more roads, car-dominated boulevards, parking lots, and miles of strip malls. Meanwhile, the urban centers and older suburban areas get caught in a cycle of neglect, degradation, and abandonment, which continues to motivate development to move on and relocate, literally, in 'greener pastures'" (Dorsey, 2003)

To protect legacy agricultural land, forest lands, and prime soil resources by avoiding development in areas exhibiting these attributes.

Current Evaluation: (Option 2)

The proposed project location is an infill site in the central business district that is currently being used as a parking lot, and as a result is mostly paved over. This is an optimal place to build as it represents smart planning and growth as opposed to continued sprawl towards agricultural areas.

Alternative Action: No alternative action is needed.

SLL Prerequisite 5: Floodplain Avoidance

Required Prerequisite – Met

Purpose:

To protect both life and property, as well as promote open spaces and conservation of habitat, by avoiding developing an area that is susceptible to the natural disaster of flooding.

Current Evaluation: (Option 1)

The proposed project is located on an infill site that does not have any land falling within the 100-year high or moderate-risk floodplain as defined by FEMA.

Alternative Action: No alternative action is needed.

See Appendix B: Map 3

SLL Credit 1: Preferred Location

Purpose:

By pursuing development within existing city boundaries, environmental and public health issues related to sprawling development will be reduced. As a result, natural and financial resources required for construction and maintenance of infrastructure will be conserved.

Current Evaluation: Points Earned (5/10)

The project is located on an infill site that is also a previously developed site, which earns the full 5 points available under Option 1. The connectivity of street intersections does not come within the 200 intersections per square mile to earn additional points.

Calculations: 143 / 0.785 = 182.07

Intersections per square mile = 182

Alternative Action: Points possible (8/10)

Option 3 of this credit awards 3 points for being a designated high-priority location, which is earned from the alternative action proposed in NPD credit 4 that would provide affordable housing options in our mixed-use dwelling units.

See Appendix B: Map 4, Map 11

SLL Credit 2: Brownfields Redevelopment

Purpose:

To encourage reuse of land previously contaminated by industrial uses, reducing the need to develop upon pristine lands and reducing patterns of sprawl.

Current Evaluation: Points Earned (0/2)

The South Anchor's proposed location is not a site that has been contaminated previously by industrial uses and is therefore not defined as a Brownfield by any overseeing agencies and is also not classified a High-Priority Redevelopment Area.

Alternative Action: Not required.

SLL Credit 3: Locations with Reduced Automobile Dependence

Purpose:

"Clearly, the move to the suburbs reflects a lifestyle preference shared by many Americans. Such a major shift in the nation's demographics and in the form of our environment might also be expected to have health implications, both positive and negative. Some of these effects relate directly to heavy reliance on automobiles: air pollution, automobile crashes, and pedestrian injuries and fatalities" (Frumkin, 2002)

To promote alternative to motor vehicle transportation by locating project near existing mass transit infrastructure. Reducing automobile usage has positive impacts including the reduction of greenhouse gas emissions, air pollutants that cause smog, and the various related environmental and public health effects.

Current Evaluation: Points Earned (7/7)

The project is located less than a ½ a mile walk from the Bellingham Transit Station, the main station for bus traffic in Whatcom County, and is thus serviced by many different transit trips from across the region. The total amount of weekday and weekend trips exceeds LEED ND requirements of at least 320 and 200 trips, respectively. A table of bus stops follows:

Route	Weekday	Weekend
3 Maplewood	12	9
4 Hospital	13	9
14 Fairhaven/Downtown	30	24
15 Cordata/WCC/Downtown	28	22
25X Lynden/Bellingham	2	0
43/44 Yew St.	13	9
49 Bakerview/Downtown	9	4
50 Gooseberry Pt./Downtown	8	6
70X Blaine/Bellingham	5	0
71X Everson/Nooksack/Sumas	2	0
72X Kendall/Bellingham	10	4

80X Bellingham/Mt. Vernon	16	8
105 Fairhaven/Downtown	17	15
107 WWU	22	9
108 Samish Way	12	9
190 Lincoln Creek/Downtown	25	9
196 WWU-Lincoln/Downtown	4	5
197 Lincoln-WWU/Downtown	3	4
232 Downtown/Cordata	50	23
331 Cordata/WCC/Downtown	50	23
401 Fairhaven/Downtown	50	24
512 Sudden Valley/Downtown	13	10
525 Barkley/Downtown	16	13
540 Silver Beach/Downtown	13	10
Total	**423**	**249**

Alternative Action: No alternative action is needed.

See Appendix B: Map 5

SLL Credit 4: Bicycle Network and Storage

Purpose:

"Because large proportions of people in the US live in the low-density and exclusively residential environments associated with low levels of active transport, land use and transportation policies may already be having a substantial but generally undocumented negative impact on public health. Professionals from numerous fields are concerned that we have built communities so it is difficult, and in many cases dangerous, to walk or bicycle and have thus 'engineered' physical activity out of our daily lives…there is a public health imperative to evaluate environmental and policy variables and their associations with active transport, recreational physical activity, and total physical activity" (Sallis et al, 2004)

To promote healthy lifestyle choices and support energy efficient modes of transportation and the reduction of *vehicle mile traveled* (VMT).

Current Evaluation: Points Earned (1/1)

The South Anchor project meets requirement (a) of being within a ¼ mile range of an existing bicycle network at least 5 continuous miles in length. The project is two blocks from the start of the South Bay Trail, which heads south towards Fairhaven and meets up with the Interurban Trail. The bicycle storage requirement (b) is met by the proposed parking structure across the street on the northwest corner of the Cornwall Avenue and East Maple intersection. This adjacent site will provide bike lockers both inside and outside the facility, as well as showers for bicycle commuters who prefer to shower when they arrive.

Alternative Action: No alternative action is needed.

See Appendix B: Map 6

SLL Credit 5: Housing and Jobs Proximity

Purpose:

This credit encourages balanced communities with a diversity of uses and employment opportunities.

Current Evaluation: Points Earned (2/3)

The South Anchor qualifies for option 2 of this credit, as an infill project with a residential (mixed-use) component of at least 30 percent of total development footprint. It lies within a ½ mile walk of the Bellingham Transit Station, which connects it with residential communities throughout Bellingham and the surrounding area.

Calculation: Residential Square Footage: 334,305/ 555,623= .60= 60%

Alternative Action: Possible Points (3/3)

By including the affordable housing component proposed in NPD Credit 4: Mixed-Income Diverse Communities, this credit will achieve option 1 and provide housing options that ensure that at least 15 percent of all planned units will be no greater than 50 percent of the area median income in price.

SLL Credit 6: Steep Slope Protection

Purpose:

To curtail the threat of erosion to natural habitats and water systems by avoiding development on steep slopes and maintain their natural state.

Current Evaluation: Points Earned (1/1)

The project meets Option 1 requirements and has no slopes over 20 feet in height and no existing slopes greater than 15%.

Alternative Action: No alternative action is needed.

See Appendix B: Map 7

SLL Credit 7: Site Design for Habitat or Wetland and Water Body Conservation

Purpose:

To conserve native plants, wildlife habitat, wetlands, and water bodies.

Current Evaluation: Points Earned (1/1)

Option 1

The project site location is not situated on or within 100 feet of significant habitat or wetlands. Significant habitat is defined as:

- Habitat for species that are listed in state or federal endangered species acts, habitat for species of special concern in the state, or habitat of species listed by the NatureServe.

  See Appendix C: Table 1
- Locally or regionally significant habitat of any size, or patches of native vegetation (>150 acres).
- Habitat flagged for conservation for regional or state conservation, of green infrastructure plan.

The project site is located on previously developed land, which is land altered by pavement, construction, or land use that would usually require permitting to initiate; this area is not considered a wetland, body of water, or buffer land that must be protected.

See Appendix B: Map 13

Alternative action: No alternative action is needed.

SLL Credit 8: Restoration of Habitat or Wetlands and Water Bodies

Purpose:

To restore native plants, wildlife habitat, wetlands, and water bodies that have been harmed by previous human activities.

Current Evaluation: Points Earned (0/1)

This proposal does not include any plans to use native plants, restoring predevelopment conditions totaling an area equal or greater than 10% of the development footprint.

Alternative action: Possible points (1/1)

Project should use native plants for landscaping (shown in *Appendix C: Table 2*). To earn full credit, a long-term plan working with a qualified biologist that complies with the natural structure of the land that ensures native species assemblages, hydrology, and other habitat characteristics that were likely to occur in predevelopment conditions must be included in the proposal. For example, land can be set aside for conservation, or donated to a land trust of relevant public agency. The proposal must have ongoing management activities, funding, and responsible parties so that the area is maintained no less than three years after the project is built or restoration is complete. Conservation can be done with Stewardships such as Whatcom Land Trust.

SLL Credit 9: Long-Term Conservation Management of Habitat or Wetlands and Water Bodies

Purpose:

To conserve native plants, wildlife habitat, wetlands, and water bodies.

Current Evaluation: Points Earned (0/1)

The proposal does not include a plan to create and commit to a long-term (at least 10 years) management plan for new or existing native habitats, water bodies, wetlands, or create a guaranteed funding source for management.

Alternative action: Points possible (1/1)

To earn full credit, work with a qualified biologist or professional from a natural resource agency or consulting firm a long-term management plan that is at least ten years must be created and implemented for the new/ existing native habitats, water bodies, and wetlands, and have available funding.

The plan is to include:

1. The procedure—including how to carry tasks out and maintain the area
2. Estimated implementation costs and funding sources
3. Identify threats the project poses for habitat/ water resources

Neighborhood Pattern and Design

NDP Prerequisite 1: Walkable Streets

Purpose:

"…Sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce the people in buildings along the street to watch the sidewalks in sufficient numbers. Nobody enjoys sitting on a stoop or looking out a window at an empty street. Almost nobody does such a thing. Large numbers of people entertain themselves, off and on, by watching street activity."- Jane Jacobs (The Death and Life of Great American Cities)

Promotes alternate modes of transportation associated with walking to reduce vehicle miles traveled. To create safe, appealing, and comfortable street environments that will encourage walking and support public health by encouraging daily physical activity.

Required Prerequisite – Met

The Proposal has met the requirements of:

- 90% of the new building frontage, a principal functional entry on the front façade faces a public street, and is connected to a sidewalk or other provision for walking.

- At least 15% of existing and new street frontage within the project border has a minimum building height-to-street ratio of 1:3

  See Appendix D: Figure 1 and 2
- Continuous sidewalks are provided along both sides of 90% of streets within the project. New sidewalks are 10 feet wide, meeting the 8 foot minimum requirement on this retail block.
- No more than 20% of street frontages are directly facing a garage or service bay openings

Purposed action:

The proposed South Anchor building is located on the corner of Cornwall Ave, and Chestnut ST. were all of the public entrances are facing the public sidewalk. Sidewalks are shown to be 10 feet wide around the proposed new building. Though not all buildings are addressed, at least 15% of the buildings within the project border have a minimum height-to-street ratio of 1:3. No more than 20 of the street frontages are faced directly by garage and service bay openings.

NDP Prerequisite 2: Compact Development

"*Community cannot for long feed on itself; it can only flourish with the coming of others from beyond, their unknown and undiscovered brothers.*"- Howard Thurman

Purpose:

Promotes a project that is well connected to the community with high levels of internal connectivity. To encourage development within existing communities that promote transportation efficiency through alternate modes of transportation that encourages daily physical activity by walking.

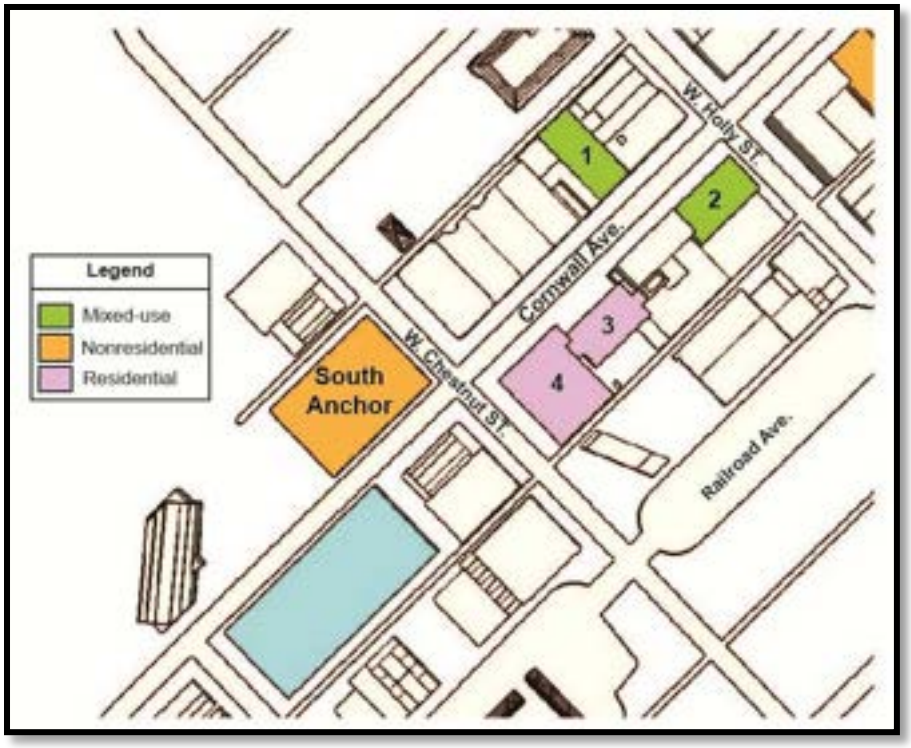
Required Prerequisite – Met

Option 1

The proposal meets this prerequisite because it meets the density requirements in SLL Credit 3 of:

- 12 or more dwelling units per acre of buildable land
- For nonresidential components within walking distance of the project boundary have an FAR of 0.8 or greater

These calculations are based off of rough estimations using Google SketchUp



Building 1		6,875 ft sq.
Building 2	6,814 X 5=	34,070 ft sq.
Building 3	10,840 X 4 =	43,360 ft sq.
Building 4	125,000 X 2=	250,000 ft sq.
Total residential square footage		**334,305 ft sq.**

Building 1		6,875 ft sq.
Building 2		6,814 ft sq.
Building 3		10,840 ft sq.
Building 4		125,000ft sq.
South Anchor	24,064 X 4=	96,256 ft sq.
Total nonresidential square footage		**245,786 ft sq.**

Total square footage **555,623 ft sq.**

Total footprint area **17,348 ft sq.**

Residential	**60%**
Nonresidential	**40%**

334,305 ft sq. / 900 ft sq. = 371 Dwelling Units

(Total site area= 173,593 ft sq.)

173,593 sq ft. X 60% Residential= 104,156 sq ft.
104,156 sq ft. / 43,560 (sq ft/ acre)= 2.39 Acres
371 DU/ 2.39=**155 DU's/ Acre**
173,693 sq ft X 40% Nonresidential= 69,477 sq ft
245,786 sq ft. / 69,477 sq ft. =**3.54 FAR**

NPD Prerequisite 3: Connected and Open Community

"We cannot live only for ourselves. A thousand fibers connect us with our fellow men." -Herman Melville

Purpose:

This Prerequisite encourages projects that have high levels of connectivity and are well connected to the community. It promotes development within existing communities that encourages transportation efficiency.

Required Prerequisite – Met

The option 2 requirements are met; there are 91 intersections within a quarter of a mile of the project boundary.

See Appendix B: Map 11

NPD Credit 1: Walkable Streets

Purpose:

This prerequisite promotes transportation efficiency including reduced vehicle miles traveled. It supports public health by encouraging walking through safe, comfortable, and appealing street environments which reduces pedestrian injuries.

Current Evaluation: Points Earned: (8/12 points)

The proposal meets these requirements:

1. At least 80% of the total linear feet street-facing buildings have a setback of no more than 25 feet
2. At least50% of the total linear feet street-facing buildings have a setback of no more than 18 feet
3. At least 50% of the total linear feet of mixed-use and nonresidential street-facing buildings have a setback within 1 foot

The proposal complies with the Bellingham Comprehensive Plan to have no setbacks, and that the building is built on the sidewalk edge

4. All ground-level retail, services, and trade uses facing public space have clear glass on at least 60% of their façades between 3-8 feet above grade
5. No more than 40% of the length of the building or 50 feet (whichever is less) is blank

6. On-street parking is provided on a minimum of 70% of both sides of new and existing streets
7. Continuous sidewalks are available along both sides of the street within the project. New sidewalks must be at least 10 feet wide on retail or mixed-use blocks, and at least 5 feet on others
8. In nonresidential or mixed-use projects
    a. 50% or more of the office buildings include groundfloor retail along 60% of the street-level façades
    b. 100% of the mixed-use building include groundfloor retail along at least 60% of the street-level façade
    c. All businesses on the ground floor are accessible directly from sidewalks along a public space
9. At least 40% of all street frontage within the project has a minimum building-height-to-street-width ratio of 1:3
10. 70% of new nonresidential/ or mixed-use streets are designed for a target speed of no more than 25 mph
11. At-grade crossings with driveways account for no more than 10% of the length of sidewalks within the project

Alternate action: (11/12 points possible)

This project can easily earn more points by adding more details into its plan. Actions that should be taken are:

1. Having functional entries to the building at an average of 30 feet or less along nonresidential or mixed-use buildings or blocks to fulfill both the 75 and 30 distance requirement
2. Ground level retail windows to be kept visible at night
3. At least 50% of ground floor dwelling-units have elevated finished floors no less than 2 feet from the sidewalk grade

Items achieved	Points
2–3	1
4–5	2
6–7	3
8–9	4
10	7
11	8
12	9
13	10
14	11
15–16	12

NPD Credit 2: Compact Development

Purpose:

Conserves land, promotes livability, walkability, and transportation efficiency while supporting transit investments. The development should promote public health by encouraging daily physical activity by walking and/ or riding a bike.

Current Evaluation: Points Earned: (6/6 points)

- Components located within the walk distance: .8 FAR or greater of buildable land available for non-residential use—lot located east of the South Anchor site
    - Refer back to NPD Prerequisite 2: Compact Development calculations

Residential density (DU/acre)	Nonresidential density (FAR)	Points
> 10 and ≤ 13	> 0.75 and ≤ 1.0	1
> 13 and ≤ 18	> 1.0 and ≤ 1.25	2
> 18 and ≤ 25	> 1.25 and ≤ 1.75	3
> 25 and ≤ 38	> 1.75 and ≤ 2.25	4
> 38 and ≤ 63	> 2.25 and ≤ 3.0	5
> 63	> 3.0	6
DU = dwelling unit; FAR = floor-area ratio.		

Alternative Action: No alternative action is needed

NPD Credit 3: Mixed-Use Neighborhood Centers

Purpose:

"Locating jobs and businesses close to residential buildings should reduce travel distances and convert vehicle trips to walking and cycling" (Cervero, 2006).

Encourage balanced communities with a diversity of uses and employment opportunities. Reduce energy consumption and pollution from motor vehicles by providing opportunities for shorter vehicle trips and/or use of alternative methods of transportation. The following table demonstrates the amount of credits earnable and the number of diverse uses *(See Appendix A)* that are required.

Figure 3.1 Number of Uses	Percentage of project occupancy at which uses need to be in place	Points Earned
4-6	20%	1

7-10	30%	2
11-18	40%	3
19+	50%	4

Current Evaluation: Points Earned: (4/4)

With the proximity of downtown to Western Washington University, the civic center, adjacent neighborhoods and Interstate-5, the city center has a wide range of users. The proposed plan intends to create an enhanced pedestrian space. 50% of the current dwelling units are within ¼ mile of over 19 diverse uses, earning the available 4 points.

See Appendix B: Map 12.

Alternative Action: No Alternative Action is required.

NPD Credit 4: Mixed-Income Diverse Communities

Purpose:

"Lowering concentrations of public housing and developing more mixed income communities offers a means to reconnect socially excluded public housing tenants to mainstream society; second that a balanced social mix is a prerequisite for the development of 'inclusive', 'sustainable' and 'cohesive' communities" (Arthurson, 2002).

Promote social equality by allowing for a wide range of citizens from different economic levels and age groups to live within a community.

Current Evaluation: Points Earned: 0/7

There are no rental units that have been officially made part of the focus area. All buildings are currently privately owned and no scheme has been made to assume affordable rental housing.

Alternative Action: Points Possible: (6/7)

In order to meet this credit, a plan would have to be adopted that established affordable housing in future development. This plan would then have to be implemented in future development within the focus area. Examples of a plan would be to incorporate at least 15 percent of the total rental units be priced at up to 50 percent of the area median income, or at least 15 percent of the total rental units be priced at up to 50 percent of the area median income and an additional 15 percent of the total rental units be priced up to 80 percent of the area median income. Meanwhile, in all three cases, these units must be maintained at levels that are affordable for at least fifteen years.

NPD Credit 5: Reduced Parking Footprint

Purpose:

"Mobility, as with the broader localized urban process, is political and ideological, and this is particularly true with contemporary debates about automobiles and parking in cities" (Henderson, 2009).

The intent of this credit is to promote pedestrian orientation of the project and reduce the environmental impacts of parking facilities and by accommodating other modes of transportation other than just vehicular.

Current Evaluation: Points Earned: (0/1)

A bicycle share program with anywhere from 30 to 100 bicycles is to be provided to the Downtown retail core. Also, The Trolleybus would cater to those wanting to move from either end of downtown and for those wishing to avoid driving around downtown Bellingham. The parking structure proposed will incorporate an additional 260 parking spots to help lessen the demand incurred by the proposed retail structures and encourages alternative forms of transportation. Bicycle racks and storage would be provided, as well as carpool only parking. Further, it will allow for the incorporation of parking induced from the proposed south anchor retail development project. The parking structure could potentially provide parking for induced traffic from the future waterfront development project as well.

See Appendix B: Map 9

Alternative Action: Points Possible: (1/1)

This credit can be achieved by using no more than 20% of the total developments footprint for surface parking facilities and ensuring that no parking facilities are orientated toward the front of the project. The proposed parking structure would obtain more than 20% of the site. Additional requirements ask that the project has bicycle parking within two hundred yards of the building, and 10% of the parking spaces be provided for bicycles and or vehicles used for ridesharing/carpooling. Alternative modes of transportation need to be made more readily available and well marketed to the public. The Trolley bus is not a feasible solution for the site. More Bus stops and more pick-up schedules can help in reducing the parking footprint. If this can be done successfully the proposed parking structure could be significantly downsized and the credit could then possibly be earned.

NPD Credit 6: Street Network

Purpose:

"...frequent streets and short blocks are valuable because of the fabric of intricate cross-use that they permit among the users of a city neighborhood." (Jacobs, 1961)

This credit is intended to promote a variety of transportation opportunities, greater connectivity, promote land conservation, and overall encouragement of physical activity that provides health benefits.

A maximum of two credits are available for this requirement if the project is seven or fewer acres and the grid density within a quarter of a mile radius of the project must be between twenty to twenty nine center line miles per square mile (1 credit) or thirty or more center line miles per square mile worth the maximum number of credits.

Current Evaluation: Points Earned: (2/2):

143 Intersections within the quarter mile

Alternative Action: No alternative action is required.

See Appendix B: Map 11

NPD Credit 7: Transit Facilities

Purpose:

The intent of this credit is to encourage the use of public transportation.

Current Evaluation: Points Earned: (1/1)

To earn this credit the following criteria was met: provide partially enclosed covered shelters with at least one bench, at least one transit stop in the project area, foot candles must light the transit stop, and provide local transit information through a kiosk, bulletin board and or signs. Information of bus schedule and route information of each transit stop will also be provided.

See Appendix B: Map 5

Alternative Action: No alternative action is required.

NPD Credit 8: Transportation Demand Management

Purpose:

"The more people who live, work and study in close proximity to public transit stations and corridors, the more likely those people will use the transit systems". (San Francisco Metropolitan Transportation Commission, 2005)

The intent of this credit is to encourage the use of public transportation. To earn this credit the following criteria must be met:

Option 1 is worth 1 credit and requires the developer to encourage greater ridership of transit services by subsidizing the cost of public transit passes at 50% below cost for 3 years.

Option 2 is worth 1 credit and requires the developer to provide a shuttle service that has 45 daily weekly trips and 30 weekend trips. The shuttle service must have at least one stop to a 28 popular location and must be operational for three years. Additional require that a bus shelter be provided and bicycle racks.

Current Evaluation: Points Earned: (0/2)

With no action the development area does not reach the requirements for NPD Credit 8 because there is no program aimed at working to reduce weekday peak period trips, subsidized transit passes, developer sponsored transit passes, a vehicle sharing program within ¼ mile of 50% of the dwelling units, or unbundled parking. More transit riders equates to fewer vehicles on the road and less energy consumption, motor vehicle pollution, and congestion.

Alternative Action: (2/2)

The alternative project will follow the guidelines of OPTION 2 and provided subsidized transit passes for eligible residents. The subsidized permits will be provided at the following prices:

	Current Prices		**Subsidized Prices**	
	Monthly	Quarterly	Monthly	Quarterly
Regular	$25	$70	$12.50	$35.00
People w/ Approved Disability	$13	$35	$6.50	$17.50

In order to publicize the available subsidized transit passes all buses lines that run through and around the project area will have information available for all riders about the new subsidized passes. Information about the subsidized passes will also be available at all community meetings pertaining to the development of the south Cornwall project area.

Subsidized bus passes will be available at:
WTA Bellingham station
WTA Cordata Station
Bellis Fair Mall (Business office near JC Penney)
Community Food Co-op (Downtown and Cordata Locations)
Fairhaven Pharmacy
Haggen Stores: Barkley, Fairhaven Market, Ferndale, Meridian and Sehome
Lummis Employment and training Center
Whatcom Community College Bookstore
o http://www.ridewta.com/node/19

NPD Credit 9: Access to Civic and Public Spaces

Purpose:

The intent of this credit is to encourage greater physical and mental health by providing a variety of open spaces close to work and home that encourage social networking, civic engagement, physical activity and time spent outdoors.

This credit can be achieved by locating the site within ¼ of a mile walking distance of a square, plaza, green space, and park.

Current Evaluation: Points Earned (1/1):

The proposed action will meet the requirements needed by being located near the civic center and close to downtown parks.

Alternative Action: No Alternative Action is needed.

See Appendix B: Map 15

NPD Credit 10: Access to Recreation Facilities

Purpose:

The intent of this credit is to encourage greater physical and mental health by providing a variety of open spaces close to work and home that encourage social networking, civic engagement, physical activity and time spent outdoors.

This credit is achievable by locating the site so that it lies within ½ of a mile walking of a public recreational facility. If the facility is outdoors it must be 1 acre and if indoors it must be 25,000 square feet. Outdoor facilities must consist of physical improvements like a baseball field or track.

Current Evaluation: Points Earned (1/1): The proposed action will not meet the requirement by being located within 1 mile of the YMCA which meets the 25,000 square feet of needed recreational space.

Alternative Action: No alternative action is required.

NPD Credit 11: Universal Accessibility and Design

Purpose:

The intent of this credit is to provide housing for a large spectrum of people regardless of age or ability and to encourage the participation of people with diverse abilities to in community life.

To achieve this credit incorporation of a universal design plan is need. This universal design must be applied to 20% of the projects total residential units and must meet at least five of the universal design features required by LEED ND.

Current Evaluation: Points Earned (0/1):

The current proposed development currently has no plans to meet the requirements to meet the points of credit 11.

Alternative Action: Points Possible (1/1)

The alternative project will meet the requirements under Option 1, by stipulating in the CC&R that all developers must meet a minimum of 20% of the universal design features described.

NPD Credit 12: Community Outreach and Involvement

Purpose:

"Local communities increasingly want more influence over their surroundings and governments and professionals are increasingly interested in involving local people more to avoid the alienation created by much planning over recent decades." (Wates, 2000)

To encourage community participation in the project design so that the people who live in the community are involved in deciding how the area should be improved.

Current Evaluation: points earned (1/2)

The proposed action meets with the requirements of Option 1. The meetings held by the City of Bellingham and Western Washington University provided input into the design of the project. Meetings to generate public input were held at City Hall to present and discuss the design proposals for Cornwall Street.

Alternative Action: Points Possible (2/2)

As part of the community outreach program any developer who takes on this project will implement a charrette, interactive workshop, to discuss the community development. The workshop will be two days, open to the public, and include participation by nearby property owners.

Public Input Meetings

- Wednesday January 5, 2011-Introduction, Character, and Boundary Identification
- Wednesday January 12, 2011-Public Realm: Streets, Neighborhood Connections, Public Spaces
- Wednesday January 19, 2011-Development Character: Uses, Design, Scale and Neighborhood Transitions
- Wednesday January 26, 2011-Summary of Public Input and Discussion of Alternatives

NPD Credit 13: Local Food Production (0/1 points)

Purpose:

To promote community-based and local food production in order for communities to have better access to fresh food and decrease transportation miles for food delivery.

Current Evaluation: Points Earned (0/1)

The proposed action will not meet this requirement.

Alternative Action: Points Possible (1/1)

In order to have access to community-based and local food developers may propose that a Community Supported Agriculture program (CSA) be implemented for the South Anchor site. Since little land is left available for agriculture within the South Anchor site, implementing a CSA is an easy way for citizens to have access to fresh, local food (Sustainable Table, 2009).

NPD Credit 14: Tree-Lined and Shaded Streets

Purpose:

The intent of this credit is to encourage multimodal transportation. These credits aim to: reduce heat island effect, improve air quality, slow down motor speed, reduce cooling in buildings, and to increase evapotranspiration (heat absorbed to the energy of the sun).

To earn the credit the project must provide tree-lined streets along 60% of the projects border and have a professional deem the trees planted are all native.

Current Evaluation: Points Earned (1/2):

The trees within the project area range in distance of 17-40 feet apart, depending on the sidewalk width. In addition, with the addition of the trees and redevelopment of the buildings at least 40% of the lengths of the sidewalks are shaded.

See Appendix B: Map 15

Alternative Action: Points Possible (2/2)

The project should include tree-lined streets along 60% of the projects border and have a professional deem the trees planted are all native to achieve full credit.

NPD Credit 15: Neighborhood Schools

Purpose:

The intent of this credit is to provide housing opportunities that are in close proximity of schools. In doing so student health will improve do to a larger portion of students bicycling and walking to school. To promote community interaction and engagement through integrating

schools into the neighborhood fabric. The project residential component for the project must include 30% residential and 50% of such units must be within ½ of a mile walking distance of any public school.

Current Evaluation: Points Earned (1/1):

There is a middle school and elementary school located within the ½ mile buffer as well as one high school within the one mile buffer. All streets within the project boundary have sidewalks.

Alternative Action: Points Possible (1/1)

No alternative action is required.

See Appendix B: Map 13

Green Infrastructure & Buildings

GIB Prerequisite 1: Certified Green Building

Purpose:

To encourage the design, construction, and retrofit of buildings that utilizes green building practices.

Required Prerequisite – Met

New construction and redevelopment of the south anchor site will incorporate LEED for New Construction, LEED for Existing Buildings: Operations & Maintenance, LEED for Homes, LEED for Schools, LEED for Retail: New Construction, or LEED for Core and Shell (with at least 75% of the floor area certified under LEED for Commercial Interiors or LEED for Retail: Commercial Interiors), or through a green building rating system requiring review by independent, impartial, third-party certifying bodies as defined by ISO/IEC 17021.

GIB Prerequisite 2: Minimum Building Energy Efficiency

"Advanced Buildings Core Performance is a prescriptive program to achieve significant, predictable energy savings in new commercial construction. The program describes a set of simple, discrete integrated design strategies and building features. When applied as a package, they result in energy savings of at least 20 to 30% (depending on climate) beyond the performance of a building that meets the prescriptive requirements of ASHRAE 90.1-2004, and at least 25% to 35% beyond a building that meets ASHRAE 90.1-2001. This program is the revised and updated version of the Advanced Buildings Benchmark program released previously." (Advanced Buildings and Core Performance, 2007)

Purpose:

To encourage the design and construction of energy-efficient buildings that reduces air, water, and land pollution and adverse environmental effects from energy production and consumption.

Required Prerequisite – Met

The current proposal does not meet LEED certification in that new buildings must demonstrate 10% improvement over ASHRAE Standard 90.1-2007.

Alternative: Met

For LEED certification, the building of less than 100,000 sq. ft. will demonstrate at least 10% improvement over the ASHRAE Standard 90.1-2007. The building will be in compliance with the Advanced Buildings Core Performance Guide sections 1 and 2.

GIB Prerequisite 3: Minimum Building Water Efficiency

Purpose:

The purpose of this prerequisite is to reduce effects on natural water resources and reduce burdens on community water supply and wastewater systems.

Required Prerequisite – Met

In 2003 Washington State Legislature passed the Municipal Water Law to address increasing demand on our state's water resources. A Water Use Efficiency Program (WUE) was established and became effective in 2007. It gave responsibilities that water suppliers must fulfill: Water Use Efficiency Program, Distribution Leakage Standard, Goal setting and Performance Reporting, Metering Requirements.

"These programs offer new buildings conservation kits that contain a 2.5 gallons per minute (gpm) showerhead ,2.0 gpm kitchen faucet aerator, 1.5 gpm bathroom faucet aerator, toilet tank bank (flushes with 1 gallon less of water), and water conservation information." (Water Use Efficiency Program, 2008)

Alternative Action:

All new construction will continue to utilize the best available technology that helps minimize effects on water infrastructure.

GIB Prerequisite 4: Construction Activity Pollution Prevention

Purpose:

To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust generation.

Required Prerequisite – Met

All new construction will make use of best management practices (BMPs) to create and implement erosion control plans. The plan will incorporate phasing, seeding, mulching, filter socks, stabilized site entrances, and preservation of existing vegetation. The plan will make note of how the following objectives were accomplished:

a. Prevent loss of soil during construction by stormwater runoff and/or wind eroision, including but not limited to stockpiling of topsoil for reuse.
b. Prevent sedimentation of any affected stormwater conveyance systems or receiving streams.
c. Prevent polluting the air with dust and particulate matter.

The erosion and sedimentation control plan must describe how the project team will do the following:

a. Preserve vegetation and mark clearing limits.
b. Establish and delineate construction access.
c. Control flow rates.
d. Install sediment controls.
e. Stabilize soils.
f. Perfect slopes.
g. Protect drain inlets.
h. Stabilize channels and outlets.
i. Control pollutants.
j. Control dewatering.
k. Maintain the BMPs.
l. Manage the erosion and sedimentation control plan.

The BMPs will be approved by the Washington State Department of Ecology's *Stormwater Management Manual for Western Washington, Volume II, Construction Stormwater Pollution Prevention* (2005 edition), or locally approved equivalent, whichever is more stringent, and must comply with all federal, state, and local erosion and sedimentation control regulations.

GIB Credit 1: Certified Green Buildings

Purpose:

To encourage the design, construction, and retrofit of buildings that utilize green buildings practices.

Option 2: Projects of All Sizes

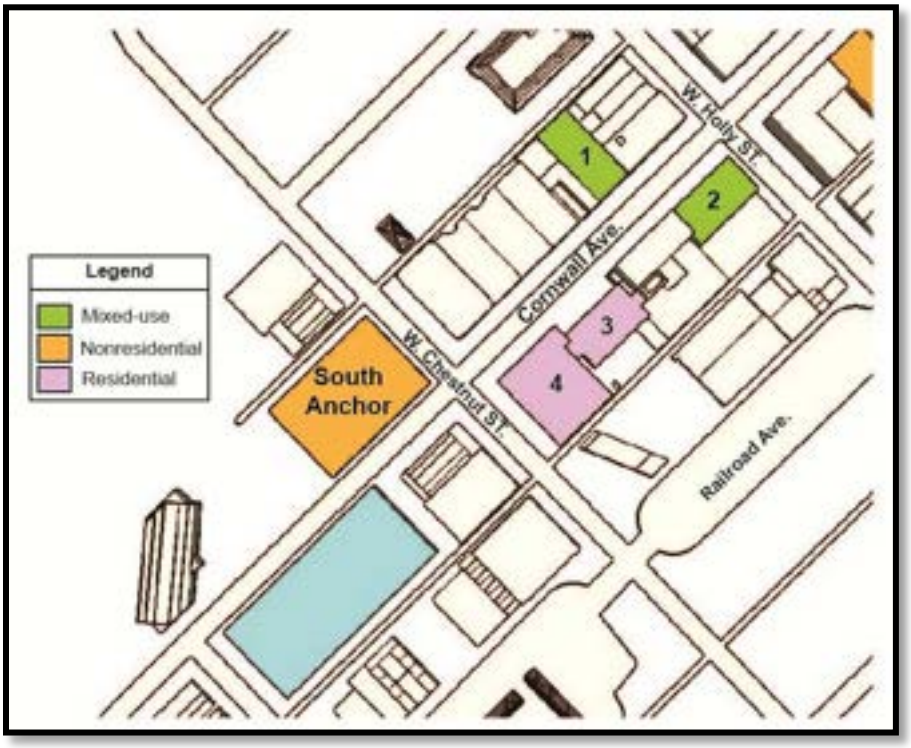
Design, construct, or retrofit a percentage of the total project building square footage, beyond the prerequisite requirement, to be certified under one of the LEED green building rating systems listed above or through a green building rating system requiring review by independent, impartial, third-party certifying bodies as defined by ISO/IEC 17021.

Table 1. Points for green building certification

Percentage of square footage certified	Points
≥ 10% and < 20%	1
≥ 20% and < 30%	2
≥ 30% and < 40%	3
≥ 40% and < 50%	4
≥ 50%	5

Current Evaluation: Points Earned (1/5):

The current proposal has 1 building and a parking garage that is pursuing LEED certification. The building has 24,064 sq. ft. and the parking garage has 36,992 of ground cover; the total site has a total of 175,094 sq. ft. The percentage certified equals 34%, gaining 3 points.



Alternative Action: Point Earned (5/5):

Along with the south anchor and the parking garage (in blue), the site will have 2 new mixed-use buildings and 2 more new residential buildings that will pursue LEED certification, and make up 94,282 sq. ft. of the total 175,094 sq. ft. of ground cover. This equates to 53% of the square footage pursuing LEED certification. The amount of square footage that will be certified by LEED will be over 50%, gaining all 5 points for this credit.

GIB Credit 2: Building Energy Efficiency

Purpose:

To encourage the design and construction of energy-efficient buildings that reduces air, water, and land pollution and adverse environmental effects from energy production and consumption.

Current Evaluation: Points Earned (0/2):

The current proposal of a building under 100,000 sq. ft. makes use of large floor length windows for maximum lighting, solar panels on the roof and sky lights running parallel with the panels to provide additional light and reduced energy.

Alternative: Potential Points (2/2):

"The Core Performance program also represents a comprehensive approach to the energy performance aspects of the LEED program. The USGBC has adopted Core Performance as a prescriptive achievement path for LEED." (Advanced Buildings and Core Performance, 2007)

New construction will be in compliance with the Advanced Buildings Core Performance sections 1 and 2. The standards in the Core Performance Guide state at least a 26% improvement over ASHRAE Standard 90.1-2007. If certain criteria in Core Performance are not met by the new building construction then alternate strategies can be constructed. Energy modeling may be used as the alternative if it achieves the same level or better of energy performance.

GIB Credit 3: Building Water Efficiency

Purpose: To reduce effects on natural water resources and reduce burdens on community water supply and wastewater systems.

Current Evaluation: Points Earned (1/1):

Water conserving fixtures are not mentioned in the project proposal, but the updated Washington State Building Code calls for water conserving fixtures in all new construction and remodels of commercial, residential and industrial facilities under the Uniform Plumbing Code. This code will ensure that the new development in this project will meet water efficiency standards outlined in LEED ND 2009 guidelines. Also, the implementation of rainwater storage tanks to be used for toilet flushing will mean even less potable water allocated towards plumbing, and increased conservation across the board.

Alternative Action: Not required.

GIB Credit 4: Water Efficient Landscaping

Purpose: To limit or completely eliminate the use of potable water and other natural surface or subsurface water resources on the project site, for landscape irrigation.

Current Evaluation: Points Earned (0/1):

Currently there is only one building in the South Anchor area that incorporates water efficient landscaping methods. The proposed parking structure on the east corner of Cornwall and Maple would include in its plans a rainwater runoff system that would store excess water in tanks and use the water for landscape watering and flushing toilets. The South Anchor building does not include this feature, which in effect wouldn't reduce potable water usage below 50% of mid-summer base line.

Alternative Action: Points Possible (1/1):

The South Anchor building could meet this credit by incorporating tanks to conserve rainwater runoff for urban garden irrigation. This design element being present in both of the new buildings planned for this area would reduce potable water usage, and could even be used for toilet flushing in the winter when outdoor gardens don't need to be watered and rainwater is abundant.

GIB Credit 5: Existing Building Reuse

"We are not to throw away those things which can benefit our neighbor. Goods are called good because they can be used for good: they are instruments for good, in the hands of those who use them properly." - Clement of Alexandria

Purpose:
To conserve resources, reduce waste, and reduce adverse environmental effects of new buildings by reducing manufactured materials and transportation; this is done by extending the life cycle of existing building stock.

Current Evaluation: (1/1 points)
The proposal reuses existing buildings; achieving the greater of the following benchmarks:

a. 50% of one existing building structure and envelope
b. 20% of the total existing stock

The proposal reuses at least 20% of the total existing stock:

Of the 5 buildings being proposed only 2 of them are completely new buildings; and no existing buildings are being demolished.

Alternative action: No alternative action is needed

GIB Credit 6: Historic Resource Preservation and Adaptive Use

Purpose: To encourage the preservation and adaptive use of historic buildings and cultural landscapes that represent embodied energy and cultural value, in a manner that preserves historic materials and character-defining features.

Current Evaluation: Points Earned (1/1):

In order to meet this requirement there must be at least one historic building or cultural landscape present on the South Anchor project site. The only building present on our project site that fits this description is The Leopold, an old hotel built in 1889 that was converted into a retirement community in the 1980s. The building is on the National Register of Historic Places, and has been the focus of restoration efforts since then. This building will not be disturbed by the proposals in this project, and we hope it will serve as a vibrant cultural center served by the new retail corridors established by this project.

Alternative Action: No alternative action is needed.

GIB Credit 7: Minimized Site Disturbance in Design and Construction

Purpose:
To preserve noninvasive trees, native plants, and pervious surfaces

Current Evaluation: (1/1 points)
Option 1:
100% of the project site is located on previously developed land and can be classified as infill development; causing zero disruption to unaltered land.

GIB Credit 8: Stormwater Management

"I would feel more optimistic about a bright future for man if he spent less time proving that he can outwit Nature and more time tasting her sweetness and respecting her seniority." -Elwyn Brooks White, *Essays of E.B. White*, 1977

Purpose:
To emulate natural hydrologic conditions to reduce pollution and hydrologic instability from stormwater, reduce flooding, promote aquifer recharge and improve water quality.

Current Evaluation: (0/4 points)
The proposals' storm water management is very minimal; it includes a rain catchment system on the parking garage roof, where there is space for a community garden. Rain water tanks are used for rainwater collection where it can be stored and used for later use. The percentage of water that is being collected does not earn the proposal any points because it is not collecting a high enough percentage.

Percentile rainfall event (total volume to be retained)	Points
80%	1
85%	2
90%	3
95%	4

Points for retaining water onsite

Largest rain event in Bellingham: 5.02" (NOAA)
Total area footprint: 173.593 ft sq

Percentile storm event	Square feet	Rainfall (inches)	Gallons captured	Points earned
100%	173,593	5.02	871,437	4
95%	173,593	4.77	827,865	4
90%	173,593	4.52	784,293	3
85%	173,593	4.27	740,721	2
80%	173,593	4.02	697,140	1

Footprint of parking garage: 36,992 ft sq.
36,992 ft sq X 5.02 inches = 185,700 gallons

185,700 gallons/ 871,437 gallons= .21= **21%** from only the parking garage

Alternative Action: (4/4)
To earn full credit, the site must be collecting rainwater at the 85th percentile, requiring 555,022 gallons or rain capture on at least 147,554 sq ft. of the site. Because the site will be developed on a previously developed site and is transit ready meaning; it earns at least 2 points in NPD Credit 1-Walkable Streets, 2-Compact Development, and 3-Mixed-Use Neighborhood Centers. Rain capture can be accomplished by implementing more rainwater catchment systems on 147,554 sq ft of the proposed buildings, installing a bioretention cell, greenroof, or pervious pavement on parking lots or driveways, or the proposal can select a storm water management plan from the *Washington State Department of Ecology's Stormwater Management Manual for Western Washington, Volume V, Runoff Treatment*, or something equivalent. If these suggestions are to be adopted, these methods should include season-specific maintenance for the system to remain working and efficient.

GIB Credit 9: Heat Island Reduction

"Urban heat islands are a clear, well-documented example of an anthropogenic modification to climate that has an atmospheric, biological, and economic impact… As urban areas continue to expand, there is a heightened awareness that scientific knowledge of the urban heat island must be more effectively communicated to architects, engineers, and planners and translated into intelligent urban design. Green roof technology is a case in point. This and other technologies are being slowly adopted, and research published since 2003 suggests that the

pace with which many practical applications are put into practice should accelerate." (Yow, 2007)

Purpose:

The purpose of this credit is to minimize the impact of urban heat islands for the safety of human and wildlife habitat.

Current Evaluation: Points Earned (0/1):

There are no mitigation measures in place at the present time to reduce Heat Island Effect in the south anchor.

Alternate Action: (1/1)

The redevelopment will include a written contract to secure non-roof construction to reduce heat island effects.

50% of the non-roof landscape will provide shade from open structures using an open grid pavement system, use paving materials with a Solar Reflectance Index (SRI) of at least 29, and provide tree canopy shade (including roads, sidewalks, courtyards, and parking structures).

GIB Credit 10: Solar Orientation

Purpose:

To encourage energy efficiency by creating optimum conditions for the use of passive and active solar strategies.

Current Evaluation: Points Earned (0/1):

The current layout of the south anchor does not meet the requirements stated by LEED. The buildings longer axis does not lay less than 15° of geographical east-west. Therefore this credit cannot be met with its current design.

Alternate Action (0/1)

The current buildings do not meet the standards required by LEED; buildings must be plus or minus 15° of geographical east-west to achieve this point.

GIB Credit 11: On-site Renewable Energy Sources

"Bellingham Washington has become one of the nation's leading communities in green power procurement. The city government has committed to meeting 100 percent of its electricity demand with green power and works with local businesses and residents to increase community green power purchases. The Bellingham community is purchasing a total of 76 million kWh of green power annually, greater than 11 percent of total community electricity use, and participation reached a total of nearly 2,000 households and more than 100 businesses." (epa.gov)

Purpose:

To encourage on-site renewable energy sources to reduce the adverse environmental and economic effects associated with fossil fuel use.

Current Evaluation: Points Earned (1/3):

The current plan of the new building is to make use of solar panels for not only light, but also solar thermal heating which may prove to be more efficient and cost effective. The current proposal lightly mentions using a nearby gas plant to redirect steam for thermal heating.

Alternate Action: (3/3)

Encogen Generating Station (ENC) is located on 915 Cornwall Avenue. ENC already exports 7.2 MGD to the adjacent Georgia Pacific paper facility and provides electricity to the PSE electrical grid. The facility has three heat recovery steam generators that could be linked to the South Anchor site.

The building will be able to use the steam generated by the nearby gas plant to be used for year round sustainable heating. The redirected steam will at least account for 15% of annual electrical and thermal energy costs, and with the use of solar panels that will add another 5% energy costs savings, the two renewable energy sources will account for 20% cost savings.

See Appendix B: Map 10

GIB Credit 12: District Heating and Cooling

"District heating and cooling systems are thermal energy networks that distribute hot water, chilled water, or steam through insulated pipes to serve commercial, residential, institutional, and industrial energy needs for space heating, space cooling, and industrial purposes. District heating and cooling systems permit energy, as distinguished from fuel, to be bought and sold as a commodity." (District Heating and Cooling in the United States, 1985)

Purpose:

To encourage the development of energy-efficient neighborhoods by employing district heating and cooling strategies that reduces energy use and adverse energy-related environmental effects.

Current Evaluation: Points Earned (0/2):

Bellingham currently does not offer a district heating and cooling system. However, there have been considerations for initial development.

Alternate Action:

"The energy source for the Bellingham project is reject heat recovered from the Intalco aluminum plant located in Ferndale, Washington. Reject heat would be recovered from

fumehood ducts and used to produce 220° hot water. Approximately 40% of the low quality heat generated at Intalco can be effectively applied to space and water heating in the city of Bellingham to serve as many as 20,000 residents and commercial buildings. Peak load of the system would be about 120 MW(t). The aluminum plant is 12 miles from the city and other district heating energy sources are under consideration for the initial development of the system." (Olszewski, 2009)

If this system were to be implemented in Bellingham, it would make use of underutilized resources and serve residents and businesses in the downtown area.

GIB Credit 13: Infrastructure Energy Efficiency

Purpose:

To reduce adverse environmental effects from energy used for operating public infrastructure.

Current Evaluation: Points Earned (0/1):

The current infrastructure in place right now does not make use of energy efficient technology.

Alternate Action (1/1):

The new building will design, purchase, or work with the municipality to install all new infrastructure, including but not limited to traffic lights, street lights, and water and wastewater pumps, to achieve 15% annual energy reduction below an estimated baseline energy use for this infrastructure. The baseline is calculated with the assumed use of lowest first-cost infrastructure items.

GIB Credit 14: Wastewater Management

Purpose: Reduce pollution from wastewater and encourage water reuse.

Current Evaluation: Points Earned (0/2):

Since wastewater will be handled offsite by a nearby treatment plant, there are no proposals for onsite minimal treatment for non-potable uses. In the design for the South Anchor building, however, they do propose the potential for solar thermal heating, which uses water as a medium.

Alternative Action: Points Earned (0/2):

Solar thermal heating would use the sun to provide energy in the form of steam for the building which could power lights, or be used to heat water in the building. Though the use of onsite minimally purified wastewater (not including sewage) would be unlikely to reduce potable water usage below even 25%, it would still reduce the total environmental impact of the building and put innocuous gray water to a good use.

GIB Credit 15: Recycled Content in Infrastructure

Purpose:

The purpose of this credit is to use recycled and reclaimed materials to reduce the adverse environmental effects of extracting and processing virgin materials.

Current Evaluation: Points Earned (0/1):

The current proposal does not make use of recycled materials in new construction and the redevelopment of the South Anchor site. Using recycled materials in new construction would greatly reduce adverse environmental impacts.

Alternate Action (1/1):

New construction can make use of industrial materials recycled (IMR) as an alternative to virgin materials and building products. Every year in the United States industries produce over a half billion tons of potential scrap materials like: coal combustion products, construction and demolition materials, spent foundry sand, used tires, and slags. Along with this recycling program there is also the ReStore Company on Meridian St. that can provide extra recycled materials to meet the postconsumer and preconsumer recycled content so that it constitutes at least 50% of the total mass of infrastructure materials. The materials that will be used will help construct roadways, sidewalks, parking lots, water retention tanks and vaults, base and subbase materials, stormwater, sanitary sewer, steam energy distribution, and water piping.

GIB Credit 16: Solid Waste Management Infrastructure

Purpose:

To reduce the volume of waste deposited in landfills. Promote the proper disposal of hazardous wastes.

Current Evaluation: Points Earned (0/1):

The Sanitation Service Company provides service to the downtown area and the South Anchor. This includes the basic services like that of a neighborhood with the collection of garbage, recycling, and composting. There is not a designated recycling and composting station or hazardous wastes drop off in the site area.

Alternate Action (1/1):

The project will include a reuse station dedicated to the separation and collection of materials for recycling and also a drop-off spot for potentially hazardous office wastes (paints, solvents, oils, and batteries). At least one composting station will be included in the project for the drop off of food and yard waste. On every block or at least 800 feet (whichever is shorter) there will

be recycling containers adjacent to other receptacles or recycling containers integrated into the design of the receptacle.

Four of the five requirements as stated in LEED must be met to gain this point. With at least four of these requirements met, the benefits of these stations and availability will be publicized.

GIB Credit 17: Light Pollution Reduction

Purpose:

To minimize light trespass from the project sites, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce adverse effects on wildlife environments.

Current Evaluation: Points Earned (0/1):

The redevelopment of the South Anchor site does not mention light pollution reduction techniques. The proposal states that large traffic signals and the cobra headlights attached to them at the intersection of Cornwall and Chestnut have been replaced with stops signs instead because they have a less intrusive and more human scale appearance. The second floor will be a designated display area for the store and such large windows will provide additional street lighting during business hours.

The South Anchor falls under the category of LZ2 under LEED; areas predominantly consisting of residential, business district, light industrial with limited nighttime use, and mix-use areas.

Alternate Action (1/1):

The redevelopment of downtown will incorporate many new light structures. The South Anchor will reduce light pollution by cutting the allowable light trespass by the standards in LEED. For LZ2 zone, the maximum horizontal and vertical luminance at the site boundary will be 0.10 or lower. At specified distance beyond the site boundary is .02 at 10 ft. The maximum percentage of fixture lumens emitted above 90° or higher from nadir will be 1%. 50% of the external luminaries will have fixture-integrated lighting controls that use motion sensors to reduce light levels by at least 50% when no activity has been detected for 15 minutes.

Lighting zone requirements are as follows:

Table 1. Allowable lighting power densities, by **light zone**

	Lighting zone				
	LZ0	LZ1	LZ2	LZ3	LZ4
All exterior improved areas (except those listed below)	0.04 W/sf	0.04 W/sf	0.06 W/sf	0.10 W/sf	0.13 W/sf
Walkways	0.7 W/lf	0.7 W/lf	0.7 W/lf	0.8 W/lf	1.0 W/lf
Landscaping	No allowance	0.04 W/sf	0.05 W/sf	0.05 W/sf	0.05 W/sf
Entrance door (per linear foot of doorway)	20W	20W	20W	30W	30W
Entry canopy	0.25 W/sf	0.25 W/sf	0.25 W/sf	0.40 W/sf	0.40 W/sf
Illuminated building façade	No allowance	No allowance	2.5W/lf	3.75W/lf	5.0W/lf

sf = square feet; lf = linear feet.
Note: The total exterior lighting power density allowance for all shared exterior applications is the sum of the specified allowances for individual illuminated areas. The following lighting is exempted when its controls meet the above requirements and are independent of the controls for nonexempt lighting:

a. Specialized signal, directional, and marker lighting associated with transportation.
b. Advertising and directional signage.
c. Lighting integral to equipment or instrumentation and installed by its manufacturer.
d. Lighting for theatrical purposes, including performance, stage, film, and video.
e. Lighting for athletic playing fields.
f. Temporary lighting (installed for no more than 30 days and then removed for at least 30 days).
g. Lighting for industrial production, material handling, transportation sites, and associated storage areas.
h. Theme elements in theme or amusement parks.
i. Lighting to highlight features of public monuments and registered *historic buildings* or landmark structures.

Appendix A: List of Diverse Uses

Food Retail

Supermarket

Other food store with produce

Community-Serving Retail

Clothing store or department store selling clothes

Convenience store

Farmer‘s market

Hardware store

Pharmacy

Other retail

Services

Bank

Gym/Health club/Exercise studio

Hair care

Laundry/dry cleaner

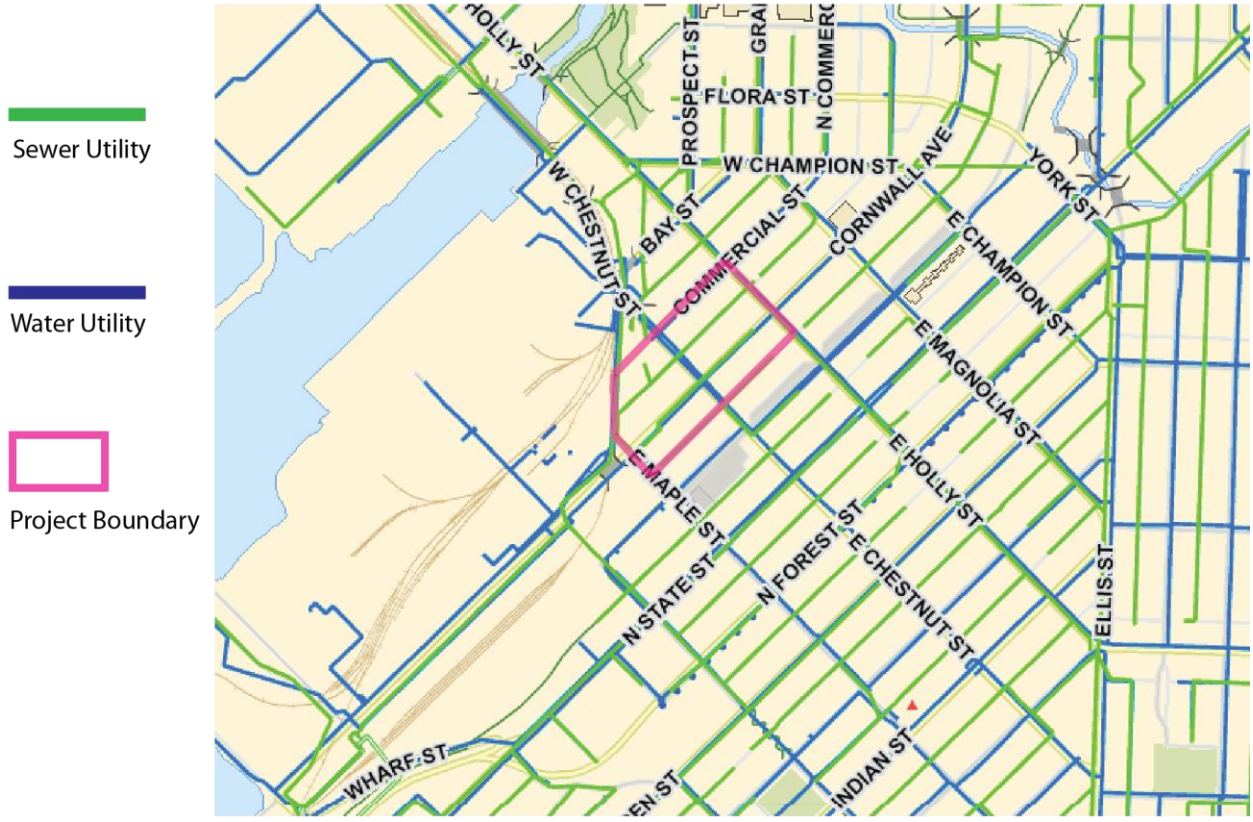
Restaurant/café/diner (excluding establishments with only drive-throughs)

Civic/Community Facilities
Adult/senior care (licensed)
Child care (licensed)
Community/recreation center
Cultural arts facility (museum, performing arts)
Educational facility (including K-12 school, university, adult education center, vocational school, community college)
Family entertainment venue (theater, sports)
Government office where the public is served on-site
Place of worship
Medical clinic or office where patients are treated
Police or/fire station
Post office
Public library
Public park
Social Service Center

Appendix B: Maps

Appendix B: Map 1.

Location of Existing Water and Wastewater Infrastructure



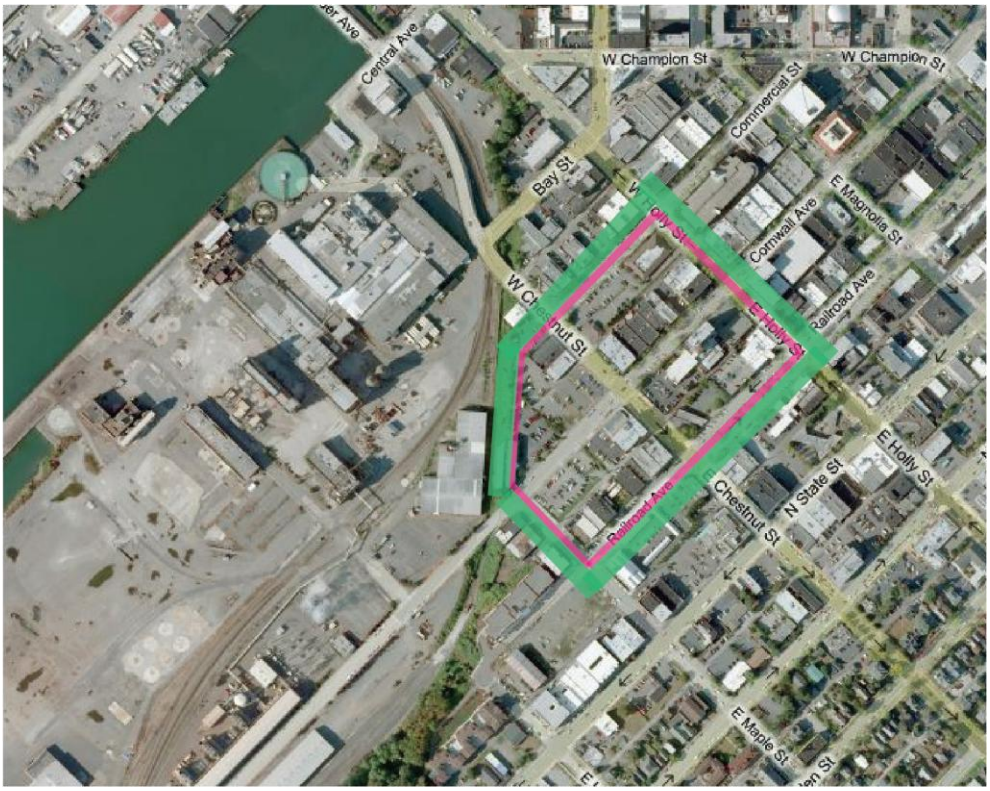
Map by: Karsten Lundquist
Source: CityIQ Online Map Viewer

Appendix B: Map 2.

Wetlands and Waterbodies Surrounding South Anchor Project

Project Boundary

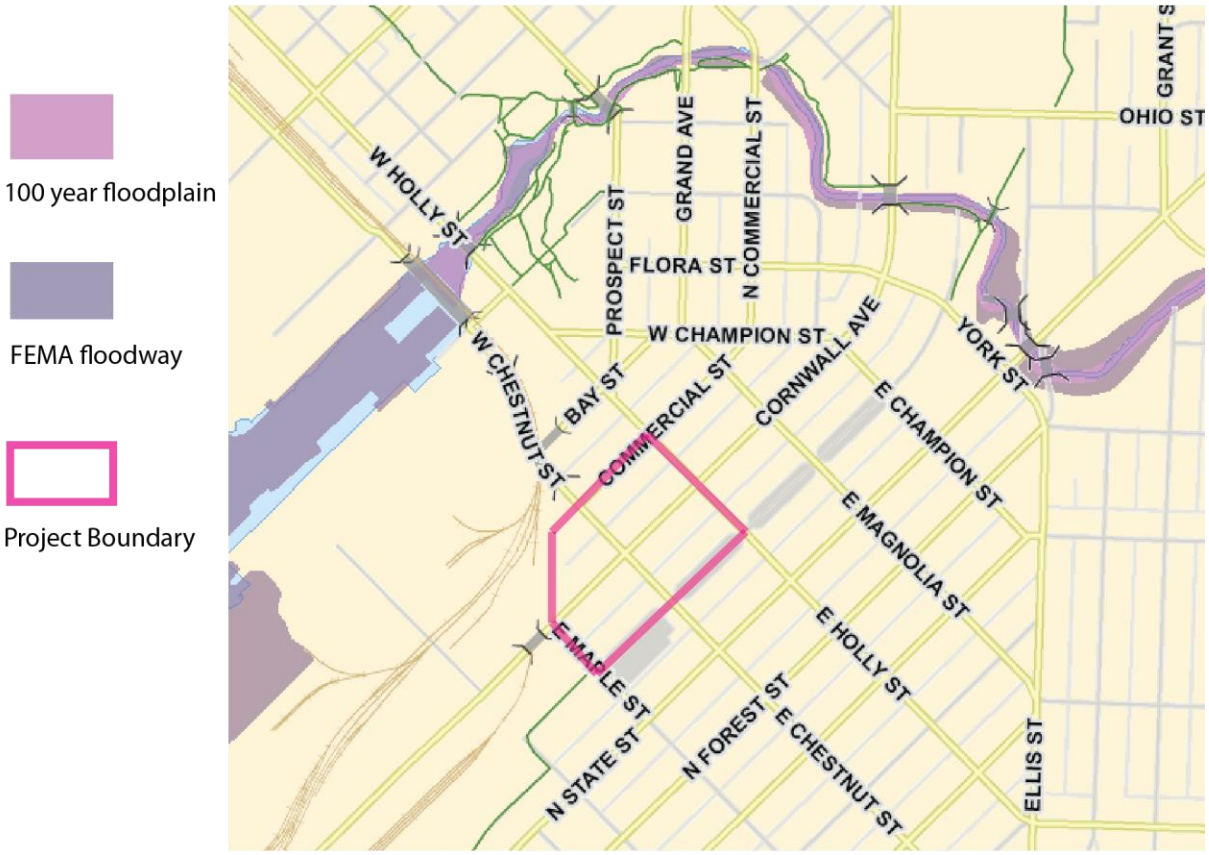
50 foot buffer



Map by: Karsten Lundquist
Source: Bing Maps

Appendix B: Map 3

Floodplain Avoidance

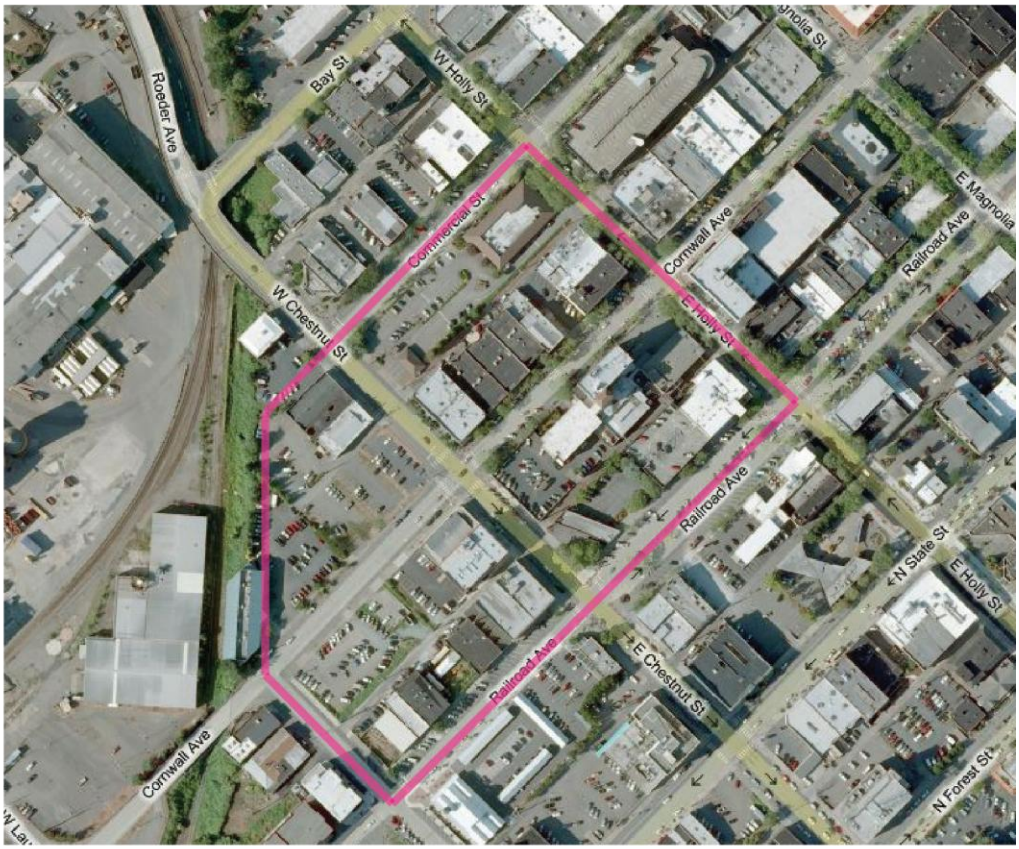


Map by: Karsten Lundquist
Source: CityIQ Online Map Viewer

Appendix B: Map 4

Location of the South Anchor project on an Infill Site

Project Boundary



Map by: Karsten Lundquist
Source: Bing Maps

Appendix B: Map 5

Proximity of South Anchor to Mass Transit

Project Boundary

Bellingham
Transit Station

Bus Stops

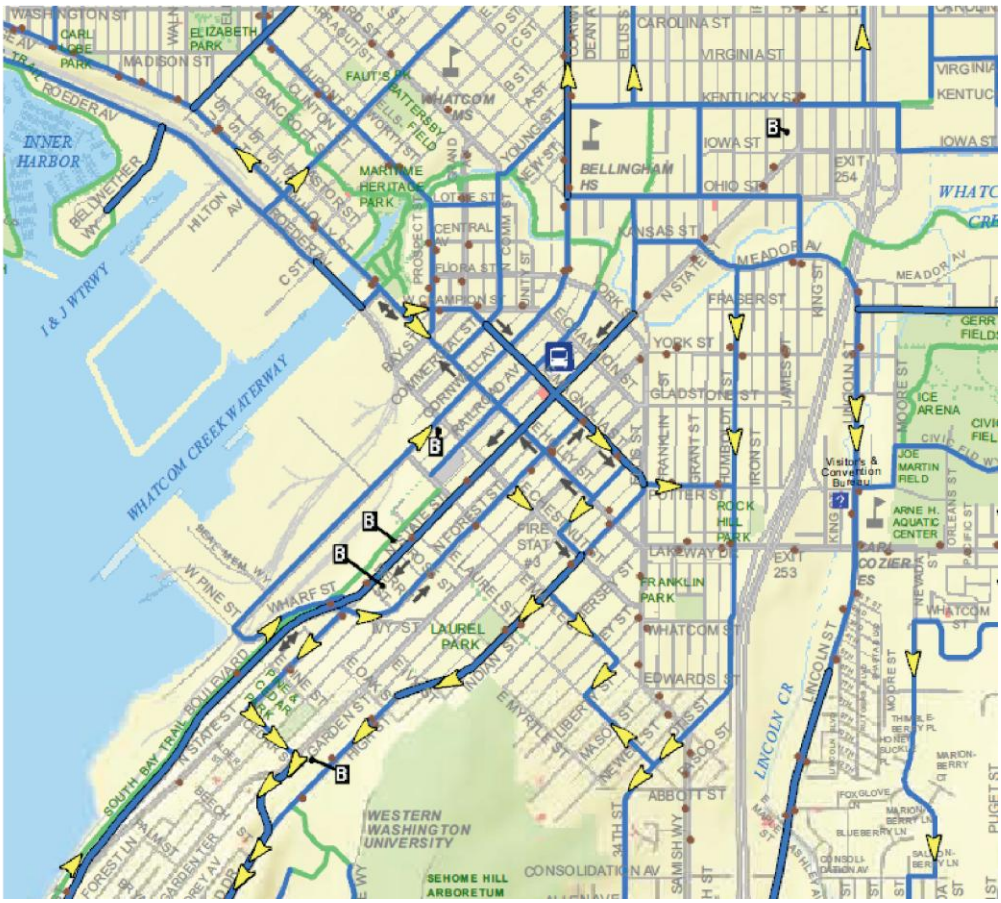
Map by: Karsten Lundquist
Source: Bing Maps and WTA

Appendix B: Map 6

Bicycle Network over 5 Continous Miles Surrounding South Anchor

Key:

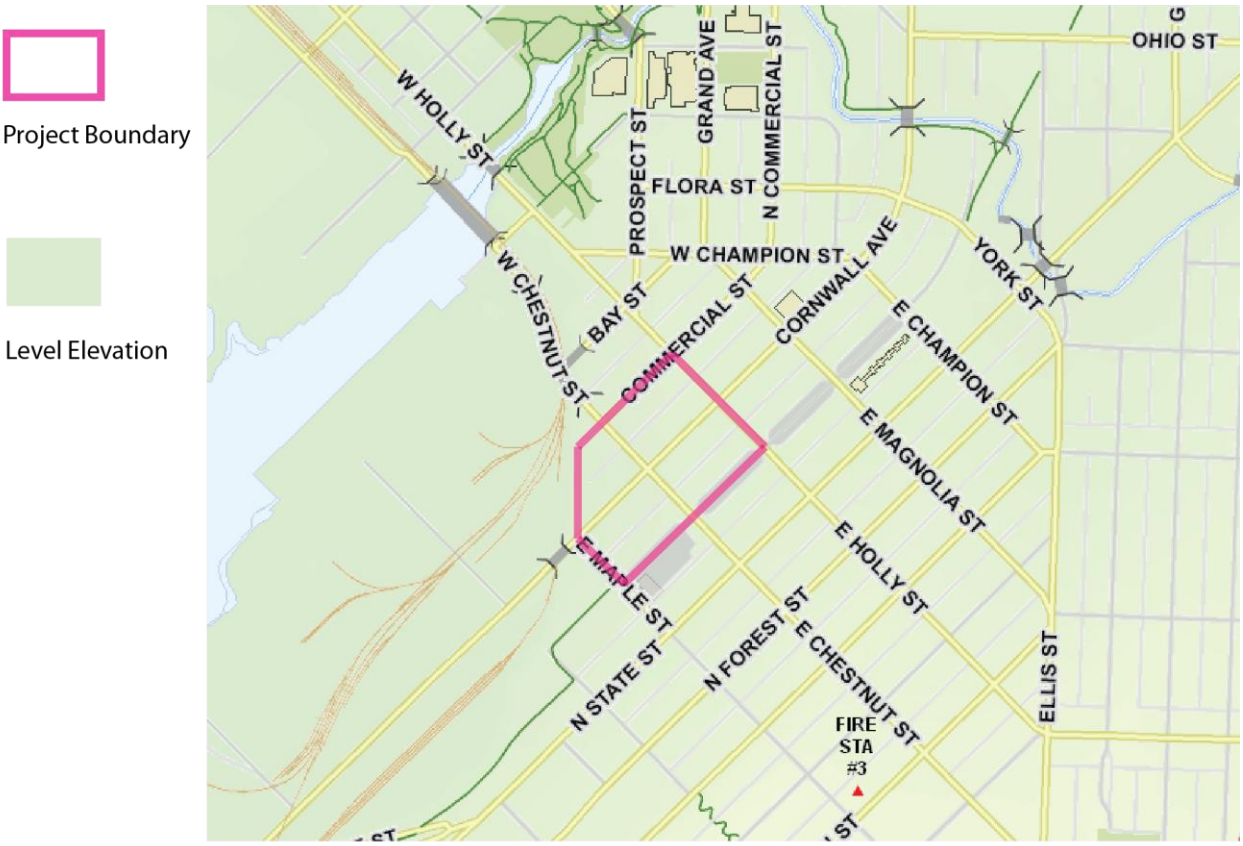
- Road-Marked Bike
- Road-Good Shoulder
- Road-No Shoulder, Low Traf.
- Selected Bike Trails or Unpaved Roads



Map by: Karsten Lundquist
Source: City of Bellingham

Appendix B: Map 7

Topography of South Anchor Site and Downtown Bellingham



Map by: Karsten Lundquist
Source: CityIQ Online Map Viewer

Appendix B: Map 8

Downtown Employment Area Profile

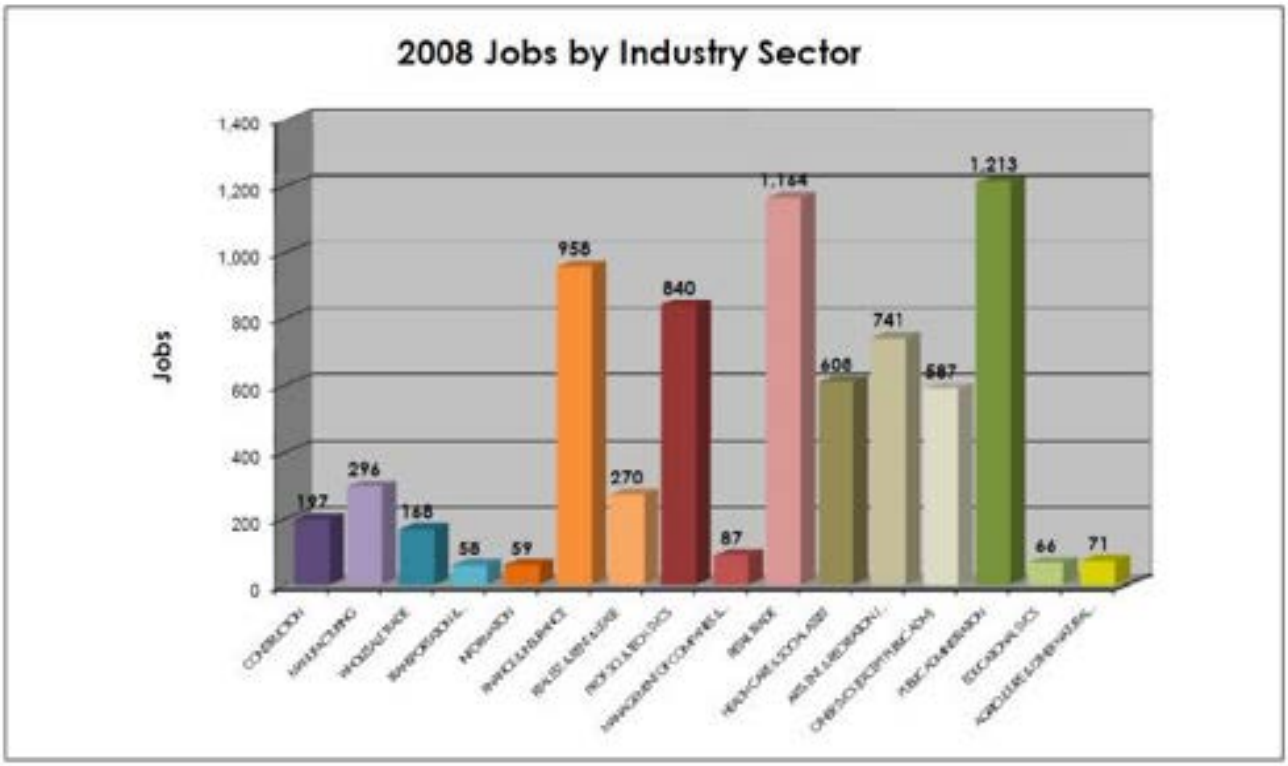
Primary Zoning Type	COMMERCIAL
Gross Acres	197
ROW Acres	77
CAO Acres	18
Vacant Acres	3
Net Developed Acres	103

Total Building Square Feet	3,796,763
Average Floor Area Ratio (FAR)	0.85

Acres of Auto Parking Lots	45
Pct of developed land for parking lots	44%

Est. 2008 Population living within 1/4 mile	8,228

Total Jobs	7,383
Total Employers	802
Average Building Square Feet Per Job	514
Total Annual Sales (entire profile area)	$2,396,933,000

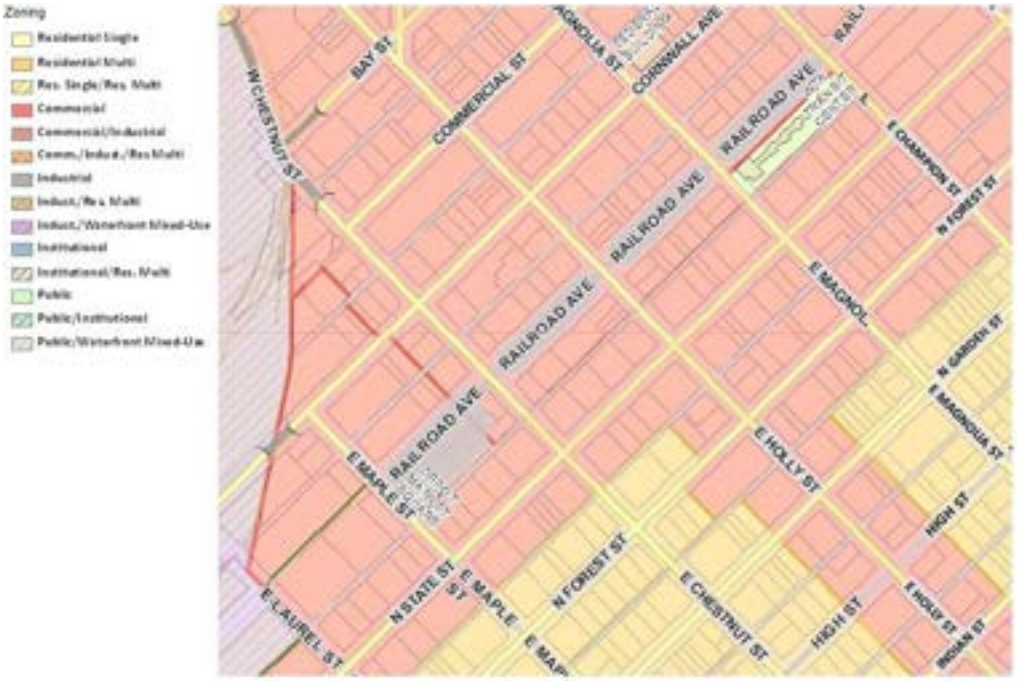


Appendix B: Map 9 Bike Share Locations

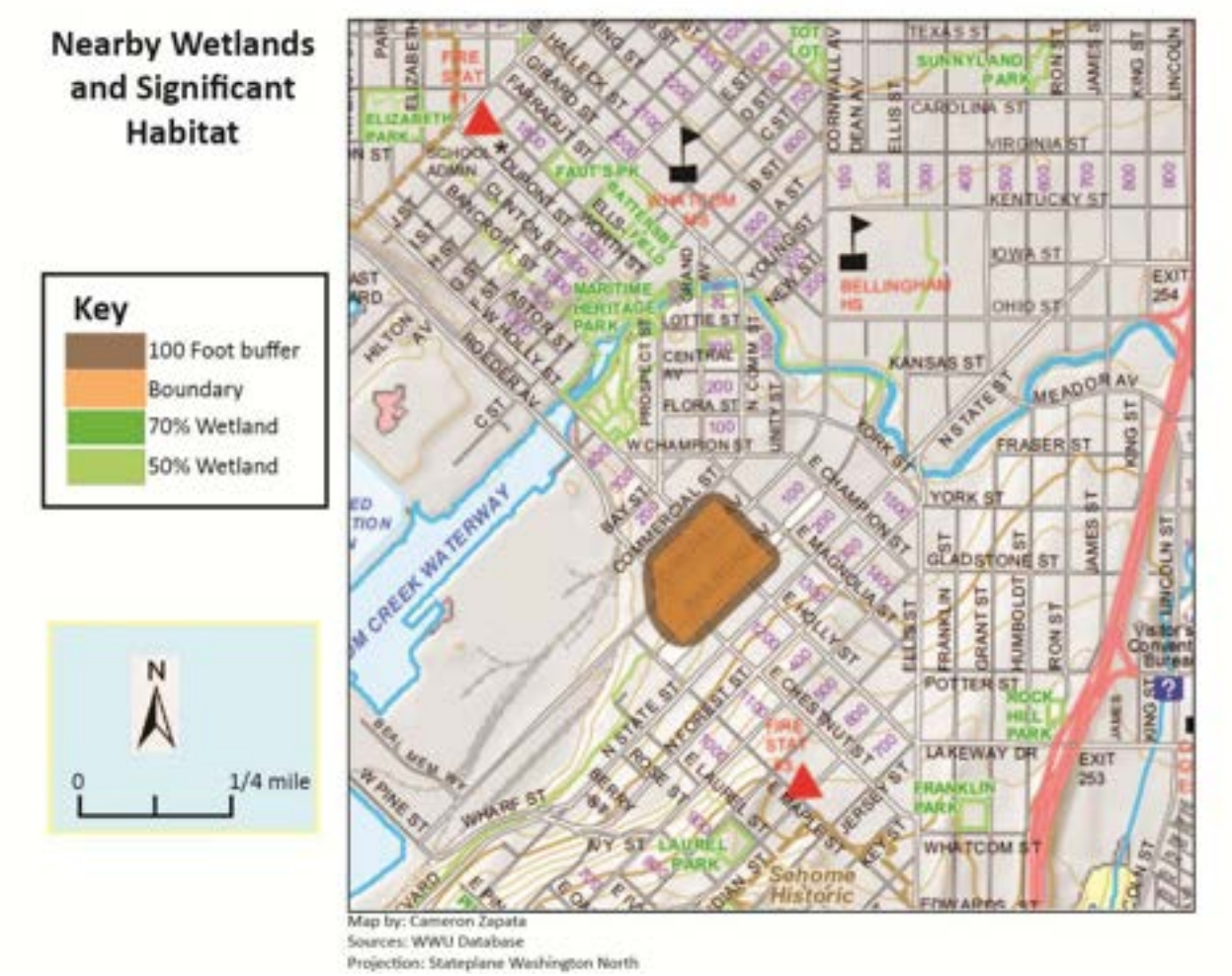
Appendix B: Map 10 Connectivity Map

Appendix B: Map 11

Appendix B: Map 12 Zoning Map



Appendix B: Map 13



Appendix B: Map 14 Connectivity Map

Appendix B: Map 15 Figure-ground

Figure-ground of cornwall project and sorrounding area.

Appendix C: List of Endangered Species in Whatcom County

Appendix C: Table 1

Group	Name	Population	Status
Birds	Aleutian Canada goose (Branta		Recovery
Birds	Brown pelican (Pelecanus	except U.S. Atlantic coast, FL,	Recovery
Birds	Arctic peregrine Falcon (Falco		Recovery
Birds	Greater sage-grouse	Columbia basin DPS	Candidate
Birds	Northern spotted owl (Strix		Threatened
Birds	Marbled murrelet	CA, OR, WA	Threatened
Fishes	Bull Trout (Salvelinus	U.S.A., conterminous, lower 48	Threatened
Fishes	Bull Trout (Salvelinus	U.S.A., conterminous, lower 48	Threatened
Fishes	Bull Trout (Salvelinus	U.S.A., conterminous, lower 48	Threatened
Fishes	Dolly Varden (Salvelinus		Proposed Similarity of
Flowering Plants	Umtanum Desert buckwheat		Candidate
Flowering Plants	White Bluffs bladderpod		Candidate
Mammals	Grizzly bear (Ursus arctos	lower 48 States, except where	Threatened
Mammals	Canada Lynx (Lynx canadensis)	(Contiguous U.S. DPS)	Threatened
Mammals	Louie's western pocket gopher		Candidate
Mammals	Tacoma western pocket gopher		Candidate

Appendix C: Table 2

Trees	Species	Comments
Vine maple	*Acer circinatum*	Brilliant fall color, mature height: 20', multi-stemmed
Serviceberry	*Amelanchier alnifolia*	Versatile, spring blooms, mature height: 20', can be slow to establish
Choke cherry	*Prunus virginiana*	Versatile, wildlife value, mature height: 20'
Cascara	*Rhamnus purshiana*	Versatile, fast grower, sensitive to air pollution, mature height: 30'
Shrubs		
Red-osier dogwood	*Cornus sericea*	Brilliant red stems, fall color, winter interest, requires a moist site
Beaked hazelnut	*Corylus cornuta*	Versatile, prefers well-drained soils, nuts loved by wildlife
Tall Oregon grape	*Mahonia aquifolium*	Evergreen, versatile, sharp foliage can deter foot traffic
Low Oregon grape	*Mahonia nervosa*	Evergreen, needs shade, stays low (2' tall), slower growing
Pacific wax-myrtle	*Myrica californica*	Evergreen, fast-growing, excellent hedge species
Mock orange	*Philadelphus lewisii*	Drought tolerant, white blooms have wonderful fragrance
Red-flowering currant	*Ribes sanguineum*	Drought tolerant, beautiful red blooms, do not over water
Bald-hip rose	*Rosa gymnocarpa*	Versatile, needs shade
Blue elderberry	*Sambucus cerulea*	Versatile, fast-growing, blue berries
Red elderberry	*Sambucus racemosa*	Versatile, fast-growing, red berries
Snowberry	*Symphoricarpos albus*	Versatile, winter interest (white berries), good hedge species, stays low (2'-6' tall), will spread
Herbaceous		
Goat's beard	*Aruncus diocius*	Tall (to 6'), white blooms, fast-growing
Wild ginger	*Asarum caudatum*	Gorgeous foliage, evergreen, mat-forming, slower growing
Lady fern	*Athyrium filix-femina*	Tall (to 6'), deciduous, requires a moist site
Slough sedge	*Carex obnupta*	Evergreen, usually 2'-3' tall, drooping seed heads
Coastal strawberry	*Fragaria chiloensis*	Somewhat evergreen, spreads rapidly, versatile, can outcompete weeds
Woodland strawberry	*Fragaria vesca*	Spreads rapidly, requires a moist site, can outcompete weeds
False lily-of-the-valley	*Maianthemum dilatatum*	Somewhat evergreen, spreads rapidly
Sword fern	*Polystichum munitum*	Versatile, evergreen, tall (to 5')
Fringecup	*Tellima grandiflora*	Versatile, lovely foliage, can outcompete weeds

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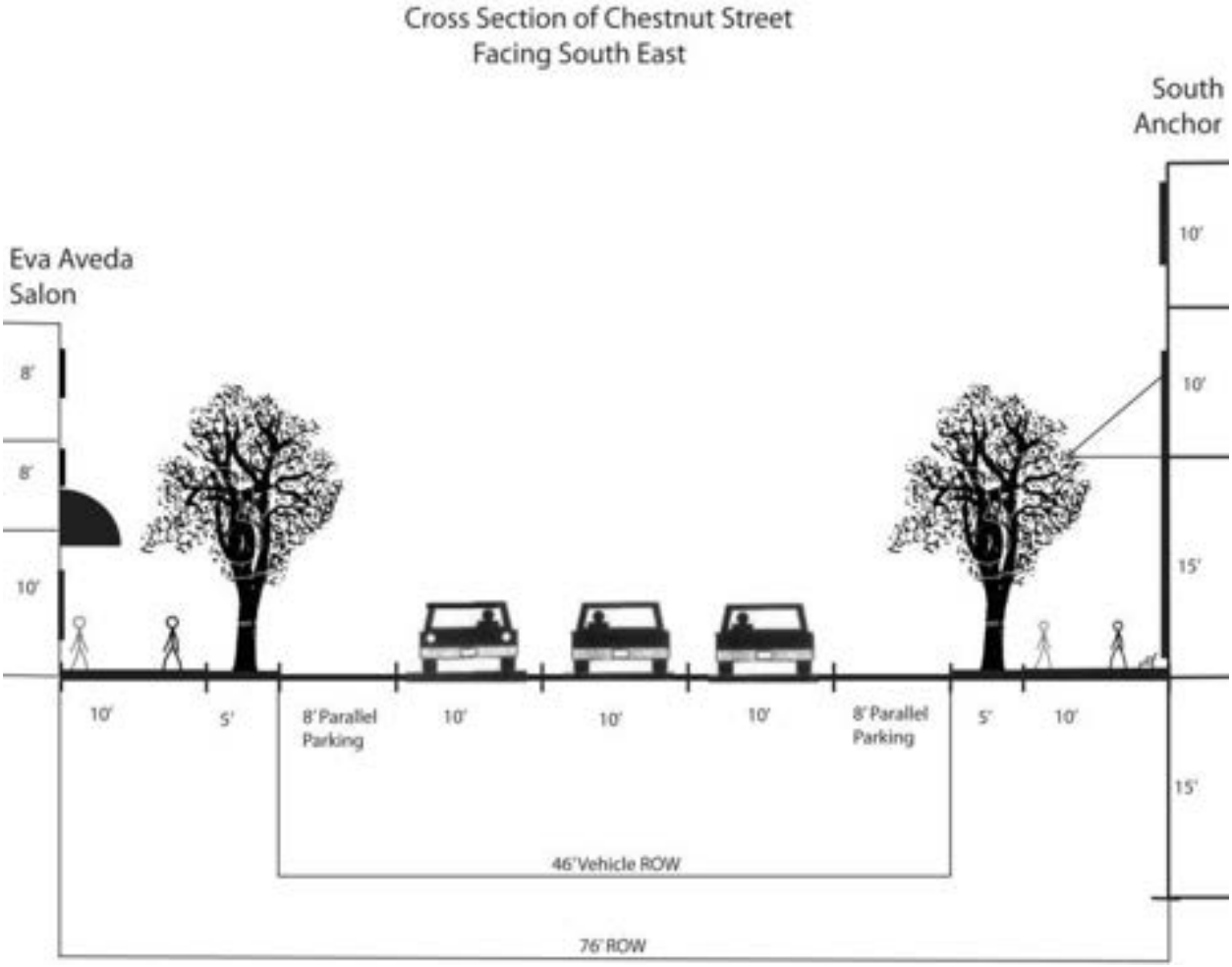
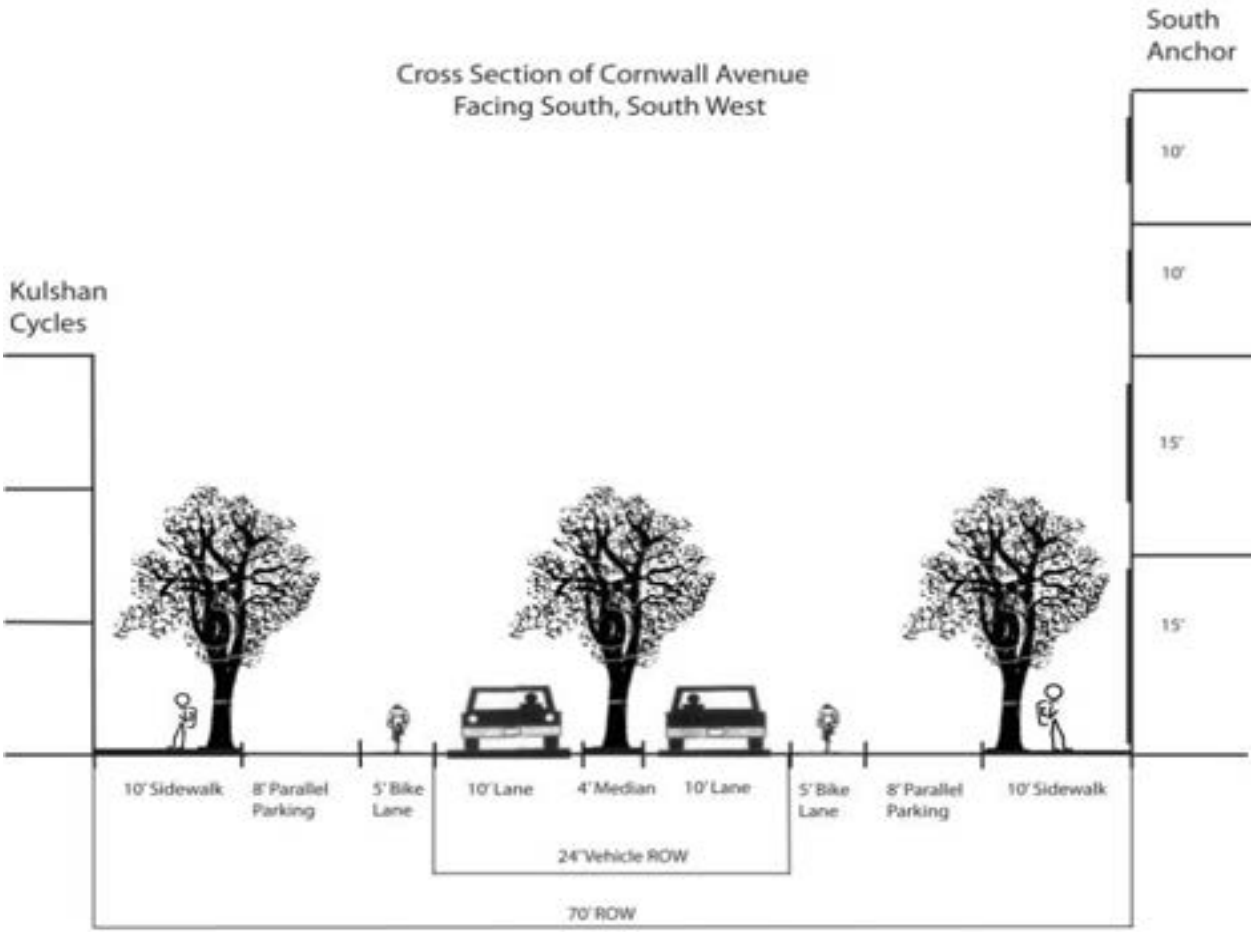
Appendix D: Cross Section

Appendix D: Figure 1



Appendix D: Figure 2



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WESTERN WASHINGTON UNIVERSITY

Huxley College of the Environment

Revitalizing the Alleyways of Downtown Bellingham, Washington

Environmental Impact Assessment

Brandon Gimper
Danny Huth
Cory Olson
Jacqueline Quarre
Stefanie Tetreault

Fall 2010

DR. TROY ABEL
ESTU 436: ENVIRONMENTAL IMPACT ASSESSMENT

Digital Release

Environmental Impact Assessment
Huxley College of the Environment

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(Dr. Troy Abel, Faculty Advisor)

Date 11/29/2010

Disclaimer

This report represents a class project that was carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector.

Fact Sheet

Title

Revitalizing the Alleyways of Downtown Bellingham, Washington

Project Description

The proposed project seeks to bring life and energy to underutilized sections of alleyways on either side of Cornwall Avenue in Bellingham's central business district. A major component of the revitalization project is proposing infill development to increase potential retail space, provide housing opportunities and create a more attractive pedestrian corridor. Other elements include capital improvements such as pervious alleyway pavement, consolidating dumpsters, improving lighting, installing archways, bike racks and benches, as well as burying power lines. The project also proposes restricting vehicle access with removable bollards and keeping deliveries to off hours.

Location of Project Site

There are six alleyway sections involved that are bordered by Chestnut Street, Railroad Avenue, Champion Street and Commercial Street streets in downtown Bellingham (Map 1).

Photographs of Project Site

Lead Agency

Bellingham Planning & Community Development Department
210 Lottie Street
Bellingham, WA 98225
Phone: (360) 778-8300

Responsible Official

Dr. Troy Abel, Assistant Professor, Department of Environmental Studies
ESTU 436: Environmental Impact Assessment
Western Washington University
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Date of Issue

November 29th, 2010

Public Presentation Date, Place and Time

December 1st, 2010.

City of Bellingham Chambers

5:30pm

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Troy Abel	Assistant Professor, Western Washington University
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Table of Contents

1. Executive Summary

The purpose of this Environmental Impact Assessment (EIA) is to evaluate the potential impacts on the natural and built environment that would result from the revitalization of downtown Bellingham's Cornwall Ave alleyway corridors. This EIA analyzes the potential impacts of three possible scenarios – the proposed action, the alternative action and the possibility of taking no action. The proposed action was prepared by the Western Washington University Urban Transitions Studio in 2010. The alternative action was prepared by our group and is intended to mitigate the negative environmental impacts of the proposed action. The elements of the environment investigated were selected from the elements listed by the State Environmental Policy Act (SEPA). Only the elements that are significantly impacted by the three possible actions are included in this report and the evaluation of some elements of the environment is combined in order to keep the narrative readable and focused, as suggested in the SEPA Rules (WAC 197-11-444). We evaluated the possible courses of action by analyzing the environmental impacts of each on these elements, represented numerically in our decision matrix and described in detail in the following document. Throughout the process our decisions were guided by our group mission to *set an example of proactive community planning that promotes a sustainable future.*

Our group constructed this mission statement from our broad academic and burgeoning professional backgrounds in environmental planning, policy, and science. Modern planning scholars have recognized the need for interdisciplinary collaboration to combat environmental crises such as climate change and pollution. Some suggest that "There will be no sustainable world without sustainable cities" (Girardet 2004, 17) (Tomalty 2009, 1). Agenda 21, created by the Division for Sustainable Development in the United Nations Department of Economic and

Social Affairs, supports this perspective as it provides guidelines for communities to improve their influence on the environment. It recognizes that “in industrialized countries, the consumption pattern of cities are severely stressing the global ecosystem” and that “sustainable land-use planning and management” is vital to reducing environmental harm and promoting concepts such as equal housing and quality of life (United Nations 2010, Agenda 21). In 2005 the City of Bellingham passed a resolution to participate in the five milestones of the Cities for Clime Protection (CCP) Program, a program sponsored by International Cities for Local Environmental Initiatives (ICLEI) to encourage actions promoted by Agenda 21 (City of Bellingham 2005, Resolution No. 2005-08). Inspired by this demonstration of local leadership, our group chose to focus our evaluation of the alleyway redevelopment around the planning practices that promote a sustainable future.

In following with our mission, in this report we chose to view the impacts of each action in context with the overarching development plans for Bellingham and Whatcom County. The Bellingham Comprehensive Plan seeks to implement infill strategies because estimates suggest that it could “double the residential grow capacity of the city” (Bellingham Comprehensive Plan 2010, LU-17). Infill promotes efficient land use, preventing the urban sprawl that Whatcom County already suffers from (Melious 2009). With a predicted population increase in Bellingham by 23,000 to 36,000 people by 2022 from the 2002 population of 69,260 people, the City will need to provide new commercial and residential spaces (LU-11). Based on these observations, in the case of no action we predict that the people and commerce that would be brought into the alleys by redevelopment would be forced elsewhere in Bellingham, likely onto undeveloped or minimally developed land such as the Lake Padden watershed (City of Bellingham 2010,

Bellingham Urban Growth Area Map). As a result, taking no action will have negative environmental impacts on some of the elements.

To summarize our analysis of the three actions, we chose to use a Goeller scorecard decision matrix. This method creates a decision matrix by listing the possible actions across the top of the matrix with criterion for those actions down the side (Patton, Sawicki 1993, 351). An ordinal scale (rank-ordering) is used to rank the qualitative variation of the impacts of each possible action (Patton, Sawicki 1993, 352). For our decision matrix the ordinal scale assigns 3 points for the best action, 2 for the intermediate action, and 1 for the worst action. The possible actions include the Proposed Action, Alternative Action, and No Action. The criteria are the environmental elements of the Natural and Built Environments impacted at the project site.

The Goeller scorecard method is "especially useful for displaying and comparing alternatives when more than a single decision maker will be involved in comparing and evaluating the alternatives, and when qualitative information is part of the analysis". The method "allows various decision makers to assign their own values and weights to the criteria" (Patton, Sawicki 1993, 355). Scorecards are useful across diverse disciplines in evaluating and demonstrating the differences between options. For example, James Jatkevicius uses a Goeller scorecard to analyze the three options for public library internet filtering based on the criterion of cost, political viability, legality and ethics, and technical feasibility (Jatekvicious 2003, Figure 2. Goeller Scorecard with Weighted Criterion). For our report, the use of a decision matrix streamlines our information into a single figure, enabling the reader "to understand the most significant and vital information concerning the proposed action, alternatives and impacts, without turning to other documents," as SEPA encourages (WAC 197-11-425). It is built off of

the detailed analysis described in the text, reflecting the overall trends for each element and action.

Our decision matrix is considered an aggregate model, where criterions are not assigned weights and therefore are considered equally. The other option would be to use a disaggregate model, which weights some criterion more heavily than others. This method was not chosen for our analysis because the Built Environment is inherently weighted higher because it contains three times the number of environmental elements compared to the Natural Environment. Thus weighting the criteria to represent the urban nature of the project site is unnecessary.

The aggregate method is criticized by some as too subjective for impartial decision making. Though valid, this criticism is not applicable to our project, for the purpose of this EIA report is to inform, not decide. Decision makers may take the perspective portrayed in our decision matrix as informed advice, not a final decision, mitigating the concern about subjectivity. The aggregate method is useful "as initial screening devices and in helping individuals or small groups with similar preferences select among options," serving the purpose of our report as an initial analysis of the information surrounding the proposed redevelopment of the downtown alleyways (Patton, Sawicki 1993, 350). With this purpose in mind we strove to provide objective, factually based analyses for each element of the decision matrix.

Decision Matrix

Element of the Environment	Action		
	Proposed Action	**Alternative Action**	**No Action**
Natural Environment			
Earth	1	2	3
Air	1	2	3
Water	2	3	1
Energy and Natural Resources	2	3	1
Built Environment			
Environmental Health	1	3	2
Noise	2	2	2
Land Use	2	3	1
Housing	2	3	1
Historical and Cultural Preservation	2	3	1
Light and Glare	2	3	1
Aesthetics	2	3	1
Transportation	2	3	1
Public Services	2	3	2
Public Utilities	2	2	1
Population Change	2	3	1
Community and Institutional Structures	2	3	1
TOTALS	**29**	**46**	**23**

KEY

Best	3
Intermediate	2
Worst	1

This result likely came about because of the way we chose to formulate our alternative action. We started our evaluation by completing a SEPA environmental checklist for the proposed action. Through this we concluded that the proposed action constituted a Mitigated Determination of Non-Significance, because the proposal would create come negative impacts on the environment which could be mitigated (WAC 197-11-350). Accordingly, we prepared our alternative action to mitigate the significant impacts of the proposed action and to further

improve upon the positive impacts that the proposal provided. As demonstrated in the decision matrix the alternative action consistently scored higher or equal to each element, in which case and equal score meant that the impacts for either action were neutral. Overall, the alternative action scored 17 points higher than the proposed action. For these reasons, we accepted the alternative action as a Determination of Non-Significance as it creates the least negative impacts on the environment.

Current Conditions

The location of the proposed revitalization is the alleyway sections along either side of Cornwall Ave running from Champion Street to Chestnut Street. It is located in the central business district of downtown Bellingham, Washington. This area is surrounded by urban development zoned by the city for commercial use and includes a wide range of business types and industrial companies. Less than a half mile directly west lays the shoreline of Bellingham Bay and even closer to the north is Whatcom Creek. This area of the city's central business district is currently underutilized and dilapidated. There is great potential for development which would provide numerous benefits to the city.

The alleyways are generally avoided by pedestrians and through traffic and are primarily used only used for dumpster storage and some commercial deliveries to those businesses with alley access. Revitalizing this space would provide an attraction to pedestrian traffic resulting in more consumers and increased economic activity that businesses located in the store frontage of the alleyway area could benefit from.

In addition to the economic potential, the project proposes the inclusion of residential units as part of the revitalization. Space for an estimated 153 to 612 people depending on the height of the residential infill could be provided to support the cities ever-growing population (Calculation 0.4 and 0.5). This is all in line with the City of Bellingham's adopted Comprehensive Plan, the City Center Master Plan, the Whatcom County Comprehensive Plan and the overarching Washington State Growth Management Act. The ultimate goal of this project is to revive the alleyway corridors in the central business district of downtown Bellingham (Urban Transitions Studio 2010). This would improve local commerce, create housing and provide a unique cultural element to the City of Bellingham.


Alleyway 5 Between Cornwall Ave and Commercial St Looking Southwest

As is, the alleyway area on either side of Cornwall Avenue spanning from Champion to Chestnut Street is rundown. From the ground up, the pavement is sunken, cracked and dated; the buildings are draped with

hanging utility wires and pipes while their surfaces are beginning to crumble with age. Some businesses fronted on Cornwall Avenue have rear access to the alley though few are used as public entrances. When walking from one end to the other, the most prominent feature is the continuous row of garbage dumpsters and recycling containers. Though not commonly used for throughways, the alleys are often utilized for deliveries from venders to those businesses. The area holds, at full build out, an estimated potential 176,160 square feet for stores, cafes or residential buildings (Urban Transitions Planning Studio 2010).

Proposed Actions

The project was proposed by the Western Washington University Urban Transitions Studio 2010. It proposes a complete renewal of six sections of the alleyway corridor in downtown Bellingham's central business district. Overall, this course of action promotes better use of the alleys and will benefit the environment, justifying the overall score of 29 on the decision matrix. While the proposed action takes steps that will benefit the environment overall, it falters in some areas and is especially weak in the specificity of its plans. This contributes to its overall ranking as a Mitigated Determination of Non-Significance and its lower score on the decision matrix when compared to the alternative action.

Natural Environment

This EIA assesses three components of the natural environment; soil, air and water. Under existing conditions, the soil immediately underlying the mostly impervious surface of the selected alleyway sections is considered unnatural infill, anthropogenic in source and would be subject to soil erosion throughout the construction period (Natural Resources Conservation Service 2010) (Map 7). The first proposal element suggests the use of Best Management Practices (BMP) with the installation of Low Impact Development (LID) pervious surface designed to comfortably accommodate pedestrian and bicycle traffic while providing for better drainage in the alleyways.

Impacts on local air quality of the first proposal are minimal. There will be an estimated increase of 400 vehicle trips per day during peak travel times which will likely be only from short distances (The Transpo Group 2007). It is therefore likely that because increased fuel consumption and vehicle trips traveled will not increase significantly, air pollution from increased fuel consumption should not increase significantly. During the construction period emissions will be elevated with the use of heavy diesel powered machinery, further lessening local air quality.

There is no surface or ground water located within the boundaries of the proposed project. The area does not lie within the projected 100 year flood plain but does fall within the Whatcom Creek and Bellingham Bay watersheds (“Bay, Lakes & Streams” map, City of Bellingham, GIS data). Whatcom Creek is currently on Washington State’s 303(d) listing, indicating water quality impairment (Urban Streams Monitoring Program Report 2009). The first proposed action does not suggest dredging or filling any part of these water bodies. Since much of the storm

water runoff generated in the alleyway flows untreated into Whatcom Creek, the use of LID pervious surfaces will be beneficial to limit further pollution of the creek.

Energy and natural resource use will increase during the construction period with diesel fuel and electricity as the primary sources of energy (Matthews, Roth, Sharrard, 2007). After the alley infill is complete, there will an increase draw on electricity, gas, water, sewage, and potentially solar energy, although the current infrastructure of downtown Bellingham is adequate to handle these minimal increases.

Built Environment

Environmental impacts are not limited to the natural environment of the affected area. This is especially true in downtown Bellingham since there is already a well-established community infrastructure. This EIA goes on to analyze the potential impacts on the built environment in and around the alley corridors.

Short term noise pollution of the proposed action would be non-significant. Noises associated with construction and demolition must not unreasonably disturb the peace (City of Bellingham's Municipal Code § 10.24.120). Also, the simple physics of alleyway structure serve

to muffle noises in the corridor. The expected increase in vehicle and pedestrian traffic is not likely to cause significant increase in decibel level.

The downtown alleyway area is currently zoned for commercial use. The area holds a potential 176,160 square feet of commercial space (Urban Transitions Studio 2010). The proposed revitalization is consistent with City goals to accommodate projected population growth and the subsequent rise in demand for employment while reducing sprawl (Bellingham Comprehensive Plan). It designates infill buildings as "mixed use," which would incorporate housing on top of commercial space (Urban Transitions Studio 2010). However, it does not specify in detail what the housing will look like or how much of it will should be built.

In addition to commercial and residential concerns, the City emphasizes the importance of preserving local culture (Bellingham Comprehensive Plan LU-19). Within the proposal area, there are five buildings currently listed on the Local Historic Register, Washington Heritage Register, and the National Historic Register (Department of Archaeology and Historic Preservation 2009). The first proposal suggests designing themed alleys to incorporate local traditions such as Ski-to-Sea, Mt. Baker, logging, and other themes (Urban Transitions Studio 2010). With additional traffic and increased density, glare and light pollution would consequently increase as well. The proposal suggests the use of themed lighting in each alley in order to provide a unique look and feel during night-time operation.

The proposal also suggests that the aesthetic quality of the alleyway will be improved by creating a continuous row of store fronts which would be more interesting to pedestrians. It provides ways to further improve the aesthetic quality by restricting height limits and by infilling currently vacant lots with visually appealing storefronts, cafes or residential units. Additionally,

the proposal suggests burying utility lines, consolidating garbage dumpsters, utilizing decorative pavement and designing themed murals to provide an aesthetic appeal.

Vehicle traffic is currently not high in the downtown alleys. They are mainly accessed for commercial deliveries and utility maintenance (Urban Transitions Studio 2010). The proposal further discourages vehicle access and suggests phasing out public vehicle accessibility all together with the use of removable bollards. In addition, restrictions on vehicle use and the elimination of parking opportunities accessed through alleys would effectively provide priority to pedestrians and bicyclists. In order to organize and accommodate public parking to downtown employees and visitors, the proposal suggests eliminating surface parking entirely. By significantly reducing parking availability and redirecting drivers to the proposed mixed-use parking garage holding an estimated 260 spots on the south edge of city center, a forced reduction in vehicle trips would be seen. This is aimed at effectively mitigating emissions in order to maintain air quality. Transit service, pedestrian and bicycle amenities are additional proposed strategies proposed to reduce parking demand.

The City of Bellingham has implemented plans to provide sufficient emergency support proportional to the projected population growth. The fire and police departments currently hirer personnel based upon annual demand rates (Capital Facilities Element 2005, CF-26) (Capital Facilities Element 2002, CF-34). The estimated population increase projected as a result of the proposed revitalization is not expected to significantly impact emergency response efficiency. Additionally, if developers design residential units similar to the existing condos and apartments downtown, it is unlikely that the school system will be impacted as it is less likely for families to live in the housing units. The proposal also calls for regular maintenance of the revitalized

alleyway. Without regular upkeep, the area is likely to return to its current dilapidated state. This could increase the demand on services such as street sweeping.

The proposal does not analyze the capacity of the sewer or storm water system. It does not suggest mitigation efforts to compensate an inevitable increase in loading as a result of increased population and infill. However, it does suggest the use of LID pervious pavement which would complement the existing storm water system in runoff infiltration and drainage.

Using 2000 U.S. Census Block data for downtown Bellingham and housing estimates for a single story of residential above the proposed commercial infill, it is estimated that the proposal would bring in about 153 people as residents of the alleys (Calculation 0.4). Based upon the same data set, there are currently 87 people residing in the area, most of which live in the Leopold Retirement Center and are not subject to displacement. For those living in the alleys and future residents and visitors of the alleys, the redevelopment offers appeal to a diverse population. By promoting a range of commercial uses along with residential opportunity, a variety of individuals is expected to be drawn to the area.

The proposal as a whole offers a promising redevelopment plan, though it fails to specifically address the impacts of many of the actions that it proposes. The lack of specificity in many areas contributes to the lower scores of the proposed action elements on the decision matrix.

Alternative Actions

Natural Environment

The alternative action proposals are intended to mitigate the negative impacts of the proposed action and to provide options and variety in the decision making process when considering the significance of environmental impacts caused by the proposed project. While

project reviewers may pick and choose for each environmental element whether they will implement the proposed action or the alternative action, we have prepared our alternatives in a way that when used together, they create cohesive, comprehensive alternative development plan. The effective mitigation and enhancement of the impacts of the proposed action justifies the highest score of 46 earned by the alternative actions.

The proposed alternative to mitigate impact regarding soil erosion is to utilize a portion of the available infill area for the installation of pocket parks throughout the alleyways. Pocket parks will initially cause disruption and potential erosion but will later serve to increase storm water drainage in addition to providing an aesthetic appeal to the area (Figure 0.2, Figure 0.3)..

Alternative actions to mitigate air pollution include three strategies; limiting idle time of machinery to reduce burning unnecessary fuel, burn cleaner fuels such as low sulfur diesel (LSD) and biofuels, and install pollution control equipment on heavy machinery (U.S. EPA, Reducing Emissions from Construction Equipment, 2007)..

The increased risk of further impairing the quality of water in Whatcom Creek and Bellingham Bay will be mitigated by the alternate action proposal to install LID pervious surfaces, pocket parks and rain gardens throughout the area (Rimer et al. 1978) (Mitsch & Gosselink 2007). With increased traffic volume, the concentration of contaminants is likely to grow. These mitigation measures will provide increased drainage, aid in reducing flow to allow sedimentation in addition to providing time the necessary environmental for nutrient absorption which will lessen the risk of overwhelming Whatcom Creek and Bellingham Bay.

To decrease the amount fuel consumed by construction the alternative action would use fewer, more fuel efficient machines. This would mainly be accomplished through the use of large machinery equipped with generators that could power smaller machinery and decrease the

overall number of generators used. This would in turn decrease the amount of air pollution (Matthews, Roth, Sharrard, 2007).

Built Environment

In an attempt to mitigate adverse environmental health-related impacts, the alternative proposal emphasizes the importance of emergency personnel awareness and suggests the use of coarse gravel LID pervious substrate to line the area of clustered garbage dumpsters (Dawson 1997). This would reduce the impact of a possible spill containing concentrated pollutants that would otherwise flow directly into the creek. Concerns for asbestos contamination would be mitigated by the removal of any existing asbestos through the AHERA removal procedure, lessoning the environmental health risks (AHERA 1987).

Through surveying community members in the immediate vicinity, a time-of-day restriction of construction hours is suggested by the alternate proposal. This plan could be implemented to mitigate excess noise disturbances by limiting construction to off peak business hours.

To improve upon both Land Use and Housing the alternative suggests using the Old Town Development Plan as a model of effective mixed use development (Figure 0.4).. This plan emphasizes the importance of setting height restrictions to mitigate impacts of potential loss of historical buildings and vistas (Figure 0.5). Additionally, the Old Town Development plan provides a way to strategically incorporate affordable housing while utilizing various incentives to promote sustainable design (Bellingham Municipal Code § 20.35.070). Due to the close proximity and similarities in community structure, this will be a useful model for the revitalization of the downtown alleys.

The alternate proposal to mitigate impacts on local history and culture is to stress the importance of preserving the existing atmosphere of downtown Bellingham. While the creation of culturally appropriate themes in each alley does coincide with the personality of Bellingham, caution should be taken when choosing such themes. The proposal suggests the possibility of a "Chinatown" alley, which is arguably not consistent with the existing downtown atmosphere. Similar precautions should be taken when considering themed lighting in the alley. Excessive "themeing" could easily detract from the existing atmosphere and from historical structures and vistas that the City has committed to preserving.

The suggested use of LED lighting in the alternative proposal would lessen cost to the city and reduce light pollution by emitting fewer lumens. Also, by installing a motion activated light system, public safety would be improved and glare would be reduced during lower usage times.

Consistent with the previously described alternate proposals of mitigations to reduce adverse impact on the natural and built environment of downtown Bellingham, the alternately proposed mitigation suggested to provide more aesthetic appeal throughout the revitalization is to install interspersed pocket parks. In addition to added benefits to the natural environment, pocket parks would create islands of reprieve within the gray texture of the surrounding urban atmosphere. Also, structural considerations could again be borrowed from the Old Town Development Plan to be sure that no opportunity to preserve aesthetic quality is overlooked.

Due to foreseen complications in completely blockading vehicle access to the alleys, the alternate proposal is to restrict access with signage instead of bollards. This way, public traffic will be heavily discouraged while utility maintenance and emergency access will not be blocked.

Signage would give entitlement to pedestrians making the alleyway an undesirable throughway for public vehicle traffic (Figure 0.9).

The alternative parking strategy goes more in depth to address parking needs so as not to create more congestion or hamper economic vitality downtown. Several strategies are proposed as an alternative to dramatically reducing available parking. For example, maximizing mixed-use parking opportunities wherever possible and encouraging workers and business owners to park on the periphery of the city so as to avoid stagnant unnecessary congestion throughout the day. Emphasis on encouraging transit service and bicycle/pedestrian amenities is stressed as well.

The alternative proposal to compensate for increased emergency call volume likely to occur with the population increase is to require a “fire impact fee” and a “police mitigation fee”. The fee would be paid by developers and calculated based upon the design plans (single/multi-family, office, retail, and/or restaurant). This system is modeled after the city of Issaquah, WA and their similar urban development plans (City of Issaquah Impact Fees 2010, 2-3). Additionally, the mixed use nature of the development might in itself contribute to lower crime rates and therefore a decrease need of police and fire services (Municipal Research and Services Center of Washington 1997). The City of Bellingham already has school impact fees to cover any increased education needs (Bellingham School District 2010, 8). To account for the increased maintenance needs of the alleys, the downtown street sweeping route for the main roads would be expanding to regularly cover the alleys as well (City of Bellingham 2010)..

With regards to sewage and storm water utilities, the alternative proposal emphasizes the value of pervious surfaces and installation of pocket parks, small bioswales and potentially green roofing to complement municipal storm drainage and mitigate pollution of Whatcom Creek and Bellingham Bay. Storm water catch basins and drainage lines will need to be installed in alley

sections two and four in order to reduce flooding risks. Upon analysis of each system and consideration of the estimated population growth, it was found that the increase in sewage expected to be generated by the revitalization will not significantly impact the existing system (Jim Bergner, personal communication, November 2010).

The increase in population caused by proposed alleyway development meets the Bellingham and Whatcom County's goals of promoting infill and providing housing to accommodate increased population. To improve upon the proposed action of meeting the standards by provide a single story of housing, the alternative action proposed four full stories of housing as seen in downtown Fairhaven (Figure 1.2). This would provide housing for 612 new residents and further increase the density of the downtown.

The alternative proposal further emphasizes the value of diverse commercial uses in addition to providing a more detailed plan for providing diverse housing opportunities. It suggests the use of incentives for developers to provide affordable housing through utilizing sustainable designs. Providing housing for mixed income brackets would further encourage diversity and improve equity in the redeveloped alleyway.

The higher scores of the alternative action elements on the decision matrix are likely due to the effort of each to mitigate the negative impacts of the proposed action or to further improve upon the positive impacts.

No Action

Finally, there exists the possibility of taking no action in the selected alleyways. This EIA includes an analysis of the potential impacts of this third scenario to add perspective to the changes suggested by the proposed action and the alternative action. As previously mentioned, we chose to consider the effects of taking no action on the City of Bellingham and Whatcom

County at large. Forgoing development downtown will likely force it into an urban growth area, expanding the sprawl of the City instead of efficiently using existing developed space. When compared to the other two actions, this alternative scored the lowest with an overall all score of 23 most due to the negative impacts that the development would have elsewhere in Bellingham.

Natural Environment

With no action taken on the natural environment, there will continue to be impervious surfaces throughout the alleyway area and risk of soil erosion will remain low. Storm water runoff will continue to stream down the alleyways with little to no infiltration and flow untreated directly into Whatcom Creek or Bellingham Bay. Vehicle traffic will not change from current conditions and the use of heavy construction machinery will not be necessary and will therefore yield no additional impact on air quality.

Built Environment

Impacts on the built environment will be similar in magnitude. Without action there will be no increased environmental health risks and no excess noise will be generated by construction machinery or higher vehicle traffic. An estimated 176,160 square feet of potential commercial space will remain underutilized. This square footage might be built at another site in the future as demand for commercial space increases, possibly posing significant environmental threats to other sites.

Outside of the Leopold Retirement Center, there is virtually no housing in the proposal area. Without the necessary zoning changes, housing conditions will remain the same. However, the increasing demand for housing in Bellingham might result in housing being built in other areas of the City, encouraging sprawl instead of infill. The alley will maintain its backstreet atmosphere with arguably no aesthetic quality. Traffic demand and vehicle usage will remain in

the realm of commercial delivery, utility maintenance and an uncomfortably narrow, poorly-lit throughway. With a no-action plan, improved parking would remain an importance to the city of Bellingham and supply would likely continue to be enhanced, consistent with the City Center Master Plan. There would also be no increased need for public utilities or maintenance of the alleyways. The space would go underutilized no increase in population would occur there, though it is bound to spread and increase elsewhere.

The lack of positive impacts of the no action and the presence of many negative environmental impacts caused elsewhere by forgoing redevelopment in the alleys contributes to the highly negative overall score on the decision matrix.

2. Natural Environment

2.1 Earth

Current Conditions

The Alleyway Corridors are located in-between Railroad Street and up to Commercial Street and are consistent with impervious asphalt, impervious concrete, and loose gravel. The alleyways are consistently flat with a gradual decreasing slope of ten feet over the entire site area. The alleyways consist of a mixture of commercial space buildings and delivery driveways for freight.

According to the web soil survey the site area is consistent with soil type 171 Urban land and 172 Urban land-Whatcom-Labounty complex (Natural Resources Conservation Service 2010) (Map 7). Slopes are generally between 0-3 percent. These soils are considered unnatural fill and a highly anthropogenic disturbed soil type by the development of downtown Bellingham. Identification of the soil series is not feasible. Soil type is moderately well drained because of a mixture of glaciomarine deposits. Permeability is moderate in the upper part of the Whatcom soil

and slow in the lower part. Available water capacity is high. Runoff is slow, and the hazard of water erosion is slight (Natural Resources Conservation Service 2010).

Proposed Action

The proposed action for this site is the incorporation of pervious concrete into the redesign of the alleyway. This resurfacing will require the digging up of all imperious surfaces and all soil will be vulnerable to soil erosion and possible storm water discharge into city streets during construction phase. The project calls for the possible burying of power lines that currently hang above the alleyways. The alleyway between Railroad Avenue and Cornwall Avenue are currently having the lines buried under the alleyway and replaced with asphalt pavement. Therefore when the revitalization project occurs, the Cornwall Avenue and Commercial Street alleyway will need their power lines buried if applicable to City's needs. Treatment for possible erosion has been controlled by the use of Best Management Practices (BMPs) to prevent any potential releases of sediment. All resurfacing would be with (LID) low impact development pervious surfaces designed for bike and pedestrian travel. Alleyway trenching would install a better storm water drainage system into alleyway to appeal to pedestrian foot travel.

The project calls for the infill of several open area spaces that currently contain some form of gravel or paved parking lots. The potential of an additional 65,920 square feet of additional surfaces will be added to the alleyways in the form of buildings (Figure 0.1). The existing 110,240 square feet of presently existing buildings are would most likely be left in their current conditions as impervious surfaces at this time. Though the installation of impervious roadways would mitigate some of the effects of increased building coverage, it may not entirely offset it. The need for mitigation justifies the score of 2 on the decision matrix because the

proposed action will create negative environmental impacts that taking no action would not and that the alternative action would begin to mitigate.

Alternative Action

If some of the infill locations selected in can be converted into pocket parks, this will increase the amount of infiltration of storm water into soil surfaces helping to alleviate impervious surfaces. These pocket parks would be modeled after the park located in downtown Fairhaven (Figure 0.2, Figure 0.3). The additional aesthetic beauty of the parks might increase foot traffic into the alleyway and promote additional economic value.

Figure 0.2 Shows the “Village Green,” a pocket park in Fairhaven, Washington
http://bellinghamster.com/f.htm

Figure 0.3 The “Village Green” during a community event
http://foodconnections.blogspot.com/2010/08/bellingham-and-coupeville-small-farmers.html

The installation of LID pervious pavement in the alleyways would greatly improve the water quality of storm water runoff. By allowing runoff to slowly trickle through the pervious substrate, sediments settle and contaminants are given the time and necessary environment to naturally decrease in concentration. This would lessen the adverse impact of runoff on Whatcom Creek and Bellingham Bay. Besides the inclusion of pervious concrete into the alleyways, the inclusion of green grass strips with protective mats already utilized by the Boundary Bay Brewery’s beer garden would increase drainage and aesthetic look inside a very urban place (Island County Planning & Community Development, 2). Finally, to offset the additional imperious roofs of the new infill buildings, green roofs could be constructed on top of the new buildings. These activities could increase the amount of construction needed at each site to dispose of additional asphalt pavement and may require additional soil disturbance and erosion sources. Due to disturbing nature of construction, soil would still be consider altered and

therefore would carry a low negative impact. This action is slightly better for the soil compared to the proposed action, but still not as good as leaving the soil undisturbed, resulting in a ranking of 2 on the decision matrix.

No Action

If no action is taken the soils and impervious surfaces in the alleyways and the building space will stay the same. There will be no green roofing or improvements to the current alleyway drainage system in the Commercial Street and Cornwall Avenue area. The risk of erosion will continue to be low, with little to no infiltration into the covered soil. No surface pervious concrete (LID) surfaces would be installed at the site.

Again, if no action were taken, it is likely that another site for construction would likely be chosen. This site may be located inside the urban growth area and just as likely to be majorly disturbed just like the site downtown. As a result the impact score for no action in the decision matrix is a neutral score impact of 0. The downtown alleyways are not being disrupted and no construction is occurring, thus a neutral outcome for soils. Though the threat of threat of potential and eventual development of another area with the same purpose would be a negative outcome for soil site, it is likely that this negative impact would be similar to that in the alleyways and therefore is negligible. Because both the proposed action and the alternative action would still have some negative impacts on the environment, no action is the best course of action for this category because it leaves the soil as it is, resulting in a score of 3 on the decision matrix.

2.2 Air

Current Conditions

Bellingham is located on the Puget Sound in a region that experiences mild temperatures and weather patterns. Downtown Bellingham is surrounded mostly by residential neighborhoods

and is near some light and heavy industrial areas. Sea-breezes and mountain-induced flows create for a low pollutant level air shed.

Existing activities influencing air quality within downtown Bellingham are at a non-significant level. As of November 17th, 2010, air quality for Bellingham is at 11 on the Air Quality Index Chart calculated by the Environmental Protection Agency (Northwest clean air agency, 2005).

Quality Index Chart (AQI)			
AQI Values	**Level of Health Concern**	**Meaning**	**Colors**
When the AQI is:	*...air quality is:*	*...which means you may be affected in this way:*	*...look for this color:*
0 to **50**	**Good**	Air quality is considered satisfactory, and air pollution poses little or no risk.	**Green**
51 to **100**	**Moderate**	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.	**Yellow**
101 to **150**	**Unhealthy for Sensitive Groups**	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	**Orange**
151 to **200**	**Unhealthy**	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.	**Red**
201 to **300**	**Very Unhealthy**	Health alert: everyone may experience more serious health effects.	**Purple**
301 to **500**	**Hazardous**	Health warnings of emergency conditions. The entire population is more likely to be affected.	**Maroon**
Above table taken from http://www.pscleanair.org/airq/basics/aqi.aspx			

Current pollutants consist of nitrogen oxides (NOx) and volatile organic compounds (VOC's) from the burning of fossil fuels. Particulate matter (PM) is also a pollutant that comes from industrial activities, vehicle and gas machinery emissions, as well as wood burning (Northwest clean air agency, 2005). Certain alleyways are unpaved which can add to PM increases from dust. None of these are directly related to activities within alleyways that would have any significant impact on the environment. Odor is at a not at a significant level, but potentially could be worse in the vicinity of dumpsters.

Proposed Action

Construction activities would contribute to short-term high concentrations during demolition and excavations. Emission levels from machinery would also lower local air quality during construction time (Matthews, Roth, Sharrard, 2007). Asbestos may be introduced during demolition and remodeling of most buildings due to existing building materials, many of which contain asbestos (U.S. EPA, Asbestos hazard emergency response act (AHERA), 1987). Some

construction activities may cause odors, but any of these would be short-term and most likely not effecting air quality.

Types of construction activities that will occur will be removal of old building materials with heavy machinery, construction of new buildings, possible construction of alley archways, and removal of power lines. Also, all alley ground surfaces will be repaved with low impact development (LID) pervious surfaces, and some areas excavated for burial of power lines (Theresa Loop personal communication, October 2010). All this will most likely be done with industrial diesel and gasoline machinery. Every building remodeled or demolished should be inspected by and AHERA building inspector (U.S. EPA 1987 Asbestos hazard emergency response act (AHERA)). The positive aspect of demolition and remodel of old buildings would be the removal of harmful asbestos within current structures which could potentially be dangerous if asbestos becomes suspended in the air during removal, but in the long run extremely beneficial.

As economic activity within downtown Bellingham increases, the number of consumers will increase as well. It's estimated that there will be an increase of 400 vehicles trips per day at peak travel hours if all proposed businesses open in the alleyways. An estimated 3250 vehicle trips is the current and 400 added would be a 12% increase (The Transpo Group 2007, 31). According to the central place theory, the distance and frequency of consumers' increases as the frequency of a good or service is purchased decreases (Johnson, Rimmer 1967). Proposed alleyway businesses consist of high frequency services such as coffee shops, restaurants, bookstores, design stores, and art galleries. If the theory holds true, 400 estimated new vehicle trips added should not be from great distances. It is likely that increased fuel consumption and

vehicle trips traveled will not increase significantly, therefore air pollution from increased fuel consumption should not increase significantly.

Weighing out positive and negative impacts on air quality, the proposed action would have a slightly positive impact on air quality. Increased pollution from construction would be minimal and potential exposed asbestos from remodels would be short-term, but the benefits of asbestos removal would be a much greater long-term benefit. Overall, this proposed action would have a low positive impact on the environment. When compared to the alternative action and no action, it scores a 2 on the decision matrix because it is better for the air than doing nothing at all but not as good as the actions proposed by the alternative action.

Alternative Action

An alternative for lowering air pollutants from the short-term construction would be to use more fuel and energy efficient machinery. This would mean "hybrid" engines, where large machines, such as excavators, would be equipped with larger engines and the ability to generate electricity in place of a small generator. This is because small generators (25 hp or less) commonly used for construction generate more NO*x per* hp than other larger engines (Matthews, Roth, Sharrard, 2007). This alternative would decrease the amount of nitrogen oxides and other pollutants emitted from small engines.

To reduce pollution during construction there are three steps that construction companies can do to reduce the amount of pollutants are let into the air. These include: reducing engine idle during construction, burning cleaner fuels like low sulfur diesel (LSD), clean diesel fuels, or biodiesel, and having pollution control equipment installed on all heavy machinery (U.S. EPA, Reducing Emissions from Construction Equipment, 2007).

With the City of Bellingham's proposed Transportation Mode Shift Incentive program in place, it is estimated that PM peak hour vehicle trips would only add up to 312 new vehicle trips, which would be a 9.6% increase (The Transpo Group, 2007, 31). The decrease in vehicle trips as well as decreases of fuel during construction would add to the proposed action in mitigating some pollutant sources. Adding to the already positive impacts of the proposed action justifies the higher ranking of this action at a 3 on the decision matrix.

No Action

Over time, current conditions within Bellingham would persist and would not have any significant impacts on air quality. The benefit of no action would be that asbestos exposure would not happen if there is no remodel. The negative impact this would also have would be that the asbestos would not be removed and would possibly be a problem in the future. Overall there would be no impact to air if no action is taken. Because the other two possible actions both have some degree of positive impacts on the environment, no action scores the lowest at a 1 on the decision matrix because it does not contribute any positive environmental impacts.

2.3 Surface and Ground Water

Current Conditions

There is no surface water on or in the *immediate* vicinity of the proposed site. The closest bodies of surface water lie just over 2,000 feet off the south end of Cornwall Avenue to the shoreline of Bellingham Bay and approximately 1,800 feet to the north is the shoreline of Whatcom Creek (just before it empties into Bellingham Bay) ("Bay, Lakes & Streams" map, City of Bellingham, GIS data).

The discharge of alleyway storm water runoff is diverted into either Whatcom Creek or Bellingham Bay via the City of Bellingham's existing municipal storm drainage system (William Reilly, personal communication, November 2010).

According to the City of Bellingham's 2009 Urban Streams Monitoring Program Report, Whatcom Creek is currently on Washington State's 303(d) listing, indicating evidence of water quality impairment. Whatcom Creek is specifically listed per standards of the Clean Water Act with regards to:

- Excess fecal coliform counts
- Decreased dissolved oxygen content and
- Elevated water temperature

The presence of fecal coliform indicates contamination from fecal sources. In 2009, Whatcom Creek did not meet the Class B (Secondary Contact Recreational) criteria of 200 colony forming units (CFU) per 100 milliliters of water with the caveat that not more than 10% of samples to exceed 400CFU / 100mL (Urban Streams Monitoring Program Report 2009). This data was collected at the site where Dupont Street intersects Whatcom Creek. It is interesting to note that samples taken from upstream sites, outside of downtown Bellingham, show lower concentrations of fecal-coliform (Urban Streams Monitoring Program Report 2009).

Though initial consideration may direct speculation towards upstream non-point fecal coliform sources such as recreational parks and residential lawn areas, the elevated fecal coliform concentrations below Dupont Street (closer to the discharge into Bellingham Bay) are potential results of substantial storm water runoff from contaminated impervious surfaces like parking lots and sidewalks, or possibly due to point-source pollution such as a leaking sewage line or discharge from combined sewer system overflows during major rain events (Gregory & Frick, USGS 1994). As discussed later in this document, the City of Bellingham has one remaining Combined Sewer-Storm Water Overflow point at the C Street overflow structure that discharges several hundred feet downstream into Bellingham Bay (Comprehensive Sewer Plan, 2009).

Current storm water runoff in the alleys.

Fish and other aquatic organisms depend heavily on the presence of adequate oxygen in their habitat (Koenig 2010). Oxygen in water is measured in its dissolved form. Organic matter existing in aquatic systems (from animal feces, failing septic systems, leaf litter, and urban

runoff – among other sources) supports microbial life. With increased organic matter, an increase in microbial activity will be observed and more oxygen will be consumed from the waters. In order to meet the Core Summer Salmonid Habitat Aquatic Life Use criterion, dissolved oxygen must remain above 9.5 mg/L (Class AA standards) (Urban Streams Monitoring Program Report 2009). In 2009, Whatcom Creek at Dupont Street reached average dissolved oxygen content of 10.6 mg/L though 30-40% of samples fell below the ALU standards equating to a Class B, secondary contact recreational use, ranking (Urban Streams Monitoring Program Report 2009).

Additionally, dissolved oxygen is inversely proportionate to temperature; as temperature rises; dissolved oxygen decreases (Riley 2009). Water temperature is critical to the aquatic life found in this system, especially salmon. In 2009, Whatcom Creek at Dupont Street met the WAC 173-201A-030 standard of *not* exceeding 18ºC with an average temperature of 11.9 ºC (Urban Streams Monitoring Program Report 2009).

Proposed action

Though there is no existing surface water within the immediate vicinity of the proposal, the north end of the proposed project falls within the boundary of Whatcom Creek watershed while the south end falls within the watershed of Bellingham

Bay ("Watersheds & Sub-basins" map, City of Bellingham, GIS data). The project does not propose to interfere with the natural structure of these systems and no part of the proposal suggests filling or dredging either of the water bodies. Also, no part of the proposed project lies within the 100 year flood plain of Bellingham Bay. This considerably reduces the risk of major flood to the area (Map 5).

The greatest impact on the local surface water bodies will be a direct result of increased storm water runoff. With the proposed infill of currently vacant spaces along the alleyway, runoff will be concentrated to a smaller area with less permeability. A number of studies have shown that the proposed use of pervious pavement would mitigate this impact. "The application of pervious asphalt leads to lower concentrations of pollutants in runoff," (Berbee et al. 1999). In addition to a significant reduction of suspended solids, overall runoff loads of heavy metals chromium, copper, lead, nickel, cadmium and zinc (common metals found in polluted urban runoff) were reduced by a factor of five from pervious asphalt compared with impervious (Berbee et al 1999).

The proposal does suggest mitigation efforts to reduce adverse impact on the natural environment though stronger despite the fact that more effective methods exist to further lessen adverse impact on local water quality exist. Compared to the alternative action, these mitigations are not as strong. However, when compared the no action the proposed action is more favorable because it keeps the inevitable surface and ground water increases within an urban area rather than in a potentially undeveloped, sensitive ecosystem. These comparisons support the ranking of 2 on the decision matrix.

Alternative Action

As highlighted in the discussion of impacts on Earth, the installation of LID pervious pavement in the alleyways would improve the quality of storm water runoff. Additional maintenance practices, such as increased frequency of street-sweeping, would further improve runoff quality before drainage into the already-contaminated Whatcom Creek (Rimer et al. 1978, Berbee et al. 1999). During the construction period excess sediment erosion carrying higher concentrations of contaminants is likely to occur. For this reason, summer construction would be preferred since the risk of a heavy rain event is less than if construction took place during other seasons.

Additionally, in the 1978 study conducted by Rimer et al., various land-use types were compared during storm events in order to assess the quality and quantity of runoff emanating from the different land cover types ranging from "low-activity rural (2.7% impervious area) to Urban-central business district (80% impervious area)". Their results concluded that "the level of nonpoint source pollution generally increases with increasing impervious area". The major exception to their conclusion was in the central business district where a higher frequency of preventative maintenance, such as street sweeping, in the urban land type resulted in reduced levels of suspended solids (SS) and solids-related pollutants, such as phosphorus and lead, in storm water runoff of the central business district area (Rimer et al. 1978). This justifies added emphasis to the mitigation effort of installation of pervious pavement to the alleyway surfaces in Downtown Bellingham.

To take further advantage of sustainable water quality improvement practices, the installation of rain gardens and bioswales would add to the efforts of reducing significant impacts on local surface waters. Similar to the way that pervious surfaces allow runoff to slowly

trickle through, rain gardens and bioswales are an aesthetically pleasing way to provide for water quality improvement and increased drainage. The larger the area allotted for biofiltration, the greater the efficiency of chemical and suspended solid retention will be. This is an obvious challenge in the compact, urbanized, downtown area, though the creative use of medians, traffic islands and rooftops can be designed to maximize permeable surface area (Mitsch & Gosselink 2007).

The use of appropriate, native, wetland vegetation, such as Red Osier dogwood (*Cornus stononifera*) and creeping buttercup (*Ranunculus repens*), in the gardens is an added strategy to slow runoff and reduce chemical concentrations downstream (Cooke 1997). Storm water biofiltration can reduce concentrations of suspended solids by 75%, nitrogen and phosphorus by 25 and 45% respectively, also lead and zinc metals by 75 and 50% (respectively) (Mitsch & Gosselink 2007). Plants and soil will provide an opportunity for evaporation and increased infiltration of excess runoff in addition to supporting the removal/adsorption of nutrients from the water before it is allowed to overwhelm the creek or the bay.

These strategies are intended to complement the existing storm water runoff utilities currently installed within the project area. The added mitigation efforts of the alternative proposal provide additional efforts to mitigate impact and improve environmental quality more so than the proposed alternative. Therefore, while the alternative still adds to the water runoff at the site, the mitigation efforts justify is higher score than the proposed action and therefore no action as well, at a score of 3 on the decision matrix.

No action

If the revitalization is not conducted in the downtown Bellingham designated Urban Growth Area, the projected local population increase will be forced to develop into more rural,

environmentally-pure, areas of Whatcom County. This scenario, carrying the highest degree of adverse environmental impacts, would be the worst-case alternative. For this reason, the no action alternative scored 1 on the decision matrix.

2.4 Energy and Natural Resources

Current Conditions

Utility infrastructure currently can support businesses connected to alleyways. Utilities consist of electricity, natural gas, water, and sewage. Current construction is underway to bury utility lines underneath alleys which will include water, sewage, electricity, and optic cables (Theresa Loop, personal communication, October 2010).

Proposed Action

Short-term standard energy uses for construction purposes should be expected. Most energy use during construction will be diesel fuel and electricity. If generators for electricity are used for construction, diesel fuel use will be the biggest energy use. If electricity from the grid is used then diesel consumption from generators will decrease. Once the project is complete, utility

use and energy consumption overall will increase with additions of new businesses and services within alleyways. This consists of increased electrical, natural gas, water, sewage, and potential use solar energy (Matthews, Roth, Sharrard, 2007).

Even though energy and natural resource use will increase, the increase in businesses in downtown where utility infrastructure already exists would have much less of an environmental impact then if this project was moved somewhere else within Bellingham's urban growth area. This would conserve on potential natural resources such as wetlands, forests, or undeveloped land elsewhere that would be modified or impacted if these businesses were put elsewhere. Therefore in comparison to moving the project elsewhere, the proposal is somewhat positive. However the alternative action improves upon the proposed action even further, supporting an intermediate score of 2 on the decision matrix.

Alternative Action

To decrease the amount of fuel used for machinery in construction and electricity use, the use of more fuel efficient and less individual machines could be implemented. The main target for decrease in fuel consumption would be a decrease in the amount of small generators used (25 hp or less). This can be accomplished by using large machinery (e.g. excavators) with a slightly larger engine that could run at normal power with a built in generator that could power small on-site equipment as well. This would decrease the number of small generators used, decreasing fuel consumption and also decrease the amount of air pollution (Matthews, Roth, Sharrard, 2007). This alternative mitigates the concern for additional energy use during construction, making it better for environment. Accordingly, the alternative action scores the highest on the decision matrix with a 3.

No Action

As described in the proposed action scoring, forgoing any redevelopment of the alleys would likely force the development to another site in Bellingham's urban growth area. This could result in the use of much more delicate natural resources than the alleys. While the energy use of the alleys would not change and therefore score a 0 alone, it can be assume that this energy use would simply be transferred to development elsewhere. Therefore, the combination of developing previously untouched land and still use the energy another site earns supports the lowest ranking for this action at a 1 on the decision matrix.

3. Built Environment

3.1 Environmental Health

Current Conditions

Currently, the alleyway area poses no obvious threat to environmental health. Due to the old-age and condition of the alleyway buildings, higher environmental risks may potentially come about as the project is carried out.

Proposed Action

Aside from ordinary hazards related to demolition and construction the proposal does not involve any additional environmental-health hazards. The potential for organic and chemical contamination and generation of toxic waste material (i.e. asbestos) may exist as construction proceeds and the renovation of older structures is investigated. Asbestos problems will be mitigated as needed per the Asbestos Hazard Emergency Response Act (AHERA 1987).

Within the proposal, the risk of fire, explosion or hazardous waste spill is also within normal range of routine construction risks and uncertainties (Dawson 1997). In response to this

potential, the Fire Department and trained personnel should be aware of the construction activity and associated risks then ready for the possibility of fire or spill. Also, for the purpose of safely organizing vehicle and pedestrian traffic, if at any point project construction should interrupt normal flow, there will be a need for police services. These precautions are an effort to mitigate environmental health hazards associated with the alleyway development.

The proposal suggests concentrating garbage dumpsters and recycle containers into one main area of each alley section (Urban Transitions Studio 2010, 37). Environmental health risks associated with this action include the concentration of any spill or leakage of the containers in addition to the concentration of fumes potentially given off by the waste. Depending on the type of waste generated by local activities, the possibility exists for hydrocarbon pollution of local surface water through accidental spills and deliberate dumping or continuous inputs through leaks. This could potentially yield significant adverse environmental impact (Hunter et al. 1979). This may or may not be an environmental health hazard, again depending upon the type of waste being generated by the local businesses which is unknown. The primary risk comes from the unmitigated risk of pollution by the clustered dumpsters. Based on these added risks the proposed action scored lower than the alternative action, which mitigates the risks, and equal to no action, which does not pose any added risk at the site but could pose significantly worse impacts if development was pushed into an environmentally sensitive area. Therefore it scored an intermediate ranking of 2 on the decision matrix, equally to that of no action.

Alternative Action

In an effort to mitigate any potential spillage or leakage of toxic waste material generated during or after construction, the proper transport and receptacles must be provided and easily accessible. As previously stated, emergency personnel will be aware of any potential fire,

explosion or spill hazards that come up during construction and demolition. With appropriate use of risk assessment and management, specific risks will be identified and minimized (Dawson 1997).

To mitigate the potential for concentrated waste leakage from the clustering of garbage dumpsters and recycle containers, they should be arranged on a coarse gravel/rock substrate in order to provide increased filtration of runoff. Without this preventative measure, storm water runoff would wash any potentially high-concentrated waste leakage directly into the drainage system and off into Whatcom Creek or Bellingham Bay. Additionally, with the remodel of buildings in the alleyway, any existing asbestos must be removed per AHERA procedure - further lessening the environmental health risks of the proposal (AHERA 1987).

The alternative action successfully mitigates the risk for environmental pollution through the clustering of the dumpsters. Instead of pollution increasing and entering the watershed, it will filter through a permeable surface and enter the established drainage system instead of adding to the runoff. Additionally, in the long term asbestos removal would count as a positive impact on the environment because it is no longer at the site, posing no risk. These factors led to the scoring of the alternative action as a 3 on the decision matrix.

No Action

If construction and demolition does not occur in the alleyway area, there will be no added environmental health risk. The public will continue to minimally utilize the alleys of downtown Bellingham and businesses will go about utilizing the length of the alley for their garbage dumpsters. The environmental risk of taking this project elsewhere in Bellingham would be about the same, although the risks of pollution to an undisturbed environment would be very high. This suggests that it should receive the same score as the proposed action, which would

increase risk downtown but also keep risk out of sensitive areas. Both actions scored an intermediate rank of 2 on the decision matrix.

3.2 Noise

Current Conditions

Bellingham's Central Business District is a dense commercial area surround by light-industrial and dense residential areas. Noise within alleyways is minimal with light vehicle and pedestrian traffic being the main noise source. Noise levels currently must fit within Bellingham Municipal Code 10.24.120 – Public Disturbance Noise.

Proposed Action

Short-term noise pollution would be non-significant. Construction noise pollution would consist of diesel engine running, some demolition and reconstruction of buildings, removal of concrete and digging with heavy machinery. Construction hours may not 'unreasonably disturb or interfere with the peace, comfort and repose of others' (Bellingham Municipal Code 10.24.120). Developers are likely accustomed to noise restrictions such as this; therefore it does not pose any significant obstacle for this project proposal.

Long-Term noise pollution would not substantially change. Alleyways can muffle loud noises. Location of businesses in alleys would most likely not draw in large enough crowds to cause high decibel levels. The most noticed change may be an increase in traffic and delivery trucks between the hours of 3 am and 9 am when all deliveries to businesses will be made (Urban Transitions Studio 2010). The lack of impact of both short and long term noise on the environment earns this proposed action a neutral intermediate score of 2 on the decision matrix, equal across all possible actions for this category.

Alternative action

In order to abide by Bellingham's Municipal Code, limited hours of construction operation based on the local community's preferences could be implemented. The acceptable hours of construction would be decided upon base on input from the community members within vicinity of the project location. This alternative would improved upon the proposed action by mitigating short-term construction noise possibly, but overall there would still be no impact on the built environment, earning it an neutral intermediate score of 2 on the decision matrix.

No Action

Current conditions would continue and noise pollution would be non-significant and have no impacts. Unutilized space would not be a likely attraction to any activity that produces high-volume noises. Therefore no action earned a neutral intermediate score of 2 on the decision matrix.

3.3 Land Use

Current Conditions

The site designated by the proposal is currently zoned for commercial use and is located in the Central Business District of Bellingham (City of Bellingham "Zoning Map" 2010). Commercial use does not have restrictions on use as mixed housing and residential (Bellingham Municipal Code 20.00.0303 2010). According to the Bellingham Comprehensive Plan, "the Greater Bellingham Area will need housing to accommodate the projected population growth of 31,600 during the planning period…the total demand is estimated to be housing for 27,920 people needed by the planning period 2022" (Bellingham Comprehensive Plan, LU-15). Additionally, forecasts indicate that "the amount of total employment that will be located in the Greater Bellingham Area will increase during the planning period to almost 70%" with broad

implications for the city, including "the provisions of housing," affordable housing, and "commuting patter and impacts on the city's transportation network" (Bellingham Comprehensive Plan LU-20). To accommodate these changes, the Comprehensive Plan stresses the strategy of improving "infill while protecting the character of existing neighborhoods" by "making more efficient use of the remaining developable land in the City" and "encouraging and facilitating urban center development" (Bellingham Comprehensive Plan LU-19).

In addition to the Comprehensive Plan, the City of Bellingham has a City Center Master Plan that describes planning goals for the city centers. According to this plan, "It is the City's overall goal to preserve and protect the unique character and qualities of the existing neighborhoods. All policies, proposed development code and zoning changes should be reviewed with this goal in mind" (City Center Master Plan LU-26). Additionally, this plan focuses on promoting "an economically health city center that is unique, attractive and offers a variety of retail, office, service, residential, cultural, civic, and recreational opportunities" (City Center Master Plan LU-26). Finally, in city centers it is important that "affordable, attractive, stable and diverse residential neighborhoods…be encouraged while providing a variety of housing opportunities" (City Center Master Plan LU-26).

Finally, the overarching Washington State Growth Management Act lays out a foundation of goals that it strives to achieve. Eight of the fourteen goals that closely relate to this proposal are listed below.

- Focus urban growth in urban areas.
- Reduce sprawl.
- Provide efficient transportation.
- Encourage affordable housing
- Encourage sustainable economic development.
- Protect the environment.
- Ensure adequate public facilities and services.
- Preserve historic resources

(Washington State Department of Community, Trade, and Economic Development)

In addition to the Whatcom County Comprehensive Plan, these three plans lay out guidelines by which to assess the impacts of the three potential course of action for the alleyways.

Proposed Action

The proposal to revitalize the downtown alleys meets many of the goals outlined by the City of Bellingham's Comprehensive Plan and City Center Master Plan. First, the proposal would bring increased employment opportunities and commercial space to the downtown, promoting an economically healthy and diverse city center that could accommodate some of the forecasted employment growth in the City. According to the proposal, the project would put into use 110,240 square feet of existing commercial space and add another 65,920 square feet of commercial space through infill and additions, totaling 176,160 square feet of potential commercial space in the alleys (Figure 0.1). This space could be filled with uses such as retail stores, restaurants, art galleries, and coffee shops/cafes, promoting economic activity and revitalizing energy in the downtown area (Urban Transitions Studio 2010, 37).

In terms of housing the current proposal presents the idea of incorporating it into the development, but does not detail how. The proposed action would have positive impacts on the environment, comparatively better than no action, which would force development into urban growth areas. However it is not as positive as the alternative action, which proposes a more detailed development plan. For this reason it scored 2 on the decision matrix.

Alternative Action

The alternative action for land use would be to create a more detailed plan for housing in the alleys. This plan is outlined in the Housing section of the report. In the Housing section, the alternative action ranked the highest at 3 because it detailed a plan for the mixed use housing development. This development plan enhances the land use alternative action as well, justifying

the score of 3 on the decision matrix for land use when compared to the less positive and negative options of the proposed action and no action.

No Action

If the proposal is not carried out, the alleyways will remain in their current state, predominantly used for back access to buildings and utility corridors. It would not provide any additional commercial space for Bellingham's predicted employment growth, just as it would not contribute to housing opportunities for the growing local population. The alleys will remain unwelcoming to pedestrians and possibly detract from the aesthetics of other redevelopment projects downtown. If the City decides to leave the alleys as is, the will forgo a significant opportunity to bring energy, economic opportunity, and housing to the downtown area. Additionally, with the population of Bellingham growing, it can be expected the commercial and residential space will be of demand in the near future. If the alley space is not utilized for these purposes, it will force developers to expand into urban growth areas, contributing to urban sprawl. Straying from the goals of the comprehensive plans suggests that taking no action would have highly negative impacts on the environment and therefore scores the lowest at a 1 on the decision matrix.

3.4 Housing

Current Conditions

Under the Whatcom County Comprehensive Plan the City of Bellingham is encouraged to "establish new residential developments at densities averaging six to twenty four units per net residential acre" (Whatcom County Comprehensive Plan 2010, 2-18). The proposal lists 65,920 square feet of infill and addition commercial space that will be added to the alleyways (Figure 0.1). The average household size in the City of Bellingham is 2.31 people (U.S. Census Bureau

2009). It may be assumed that each housing unit in this proposal will be approximately 1,000 square feet, the size of an apartment or condo (Alex Cleanthous, personal communication, November 2010). One acre contains 43,560 square feet; therefore the total alleyway proposal encompasses 1.52 acres of potential housing space (Calculation 0.1). If the proposal aims for the higher average density mark of 24 units per net residential acre, then it will need to provide for 36.48 housing units (Calculation 0.2). To investigate this, we added a hypothetical second story onto the 65,920 square feet of ground level commercial space for housing. Divided by the average housing unit size of 1,000 square feet, we found that the alleyways could provide 65.92 housing units (Calculation 0.3). This is well above the necessary 36.48 housing units to meet the Whatcom County recommendations. This density could be increased by building smaller apartments or adding additional stories, but presently two story developments of infill and additions would provide enough housing.

Proposed Action

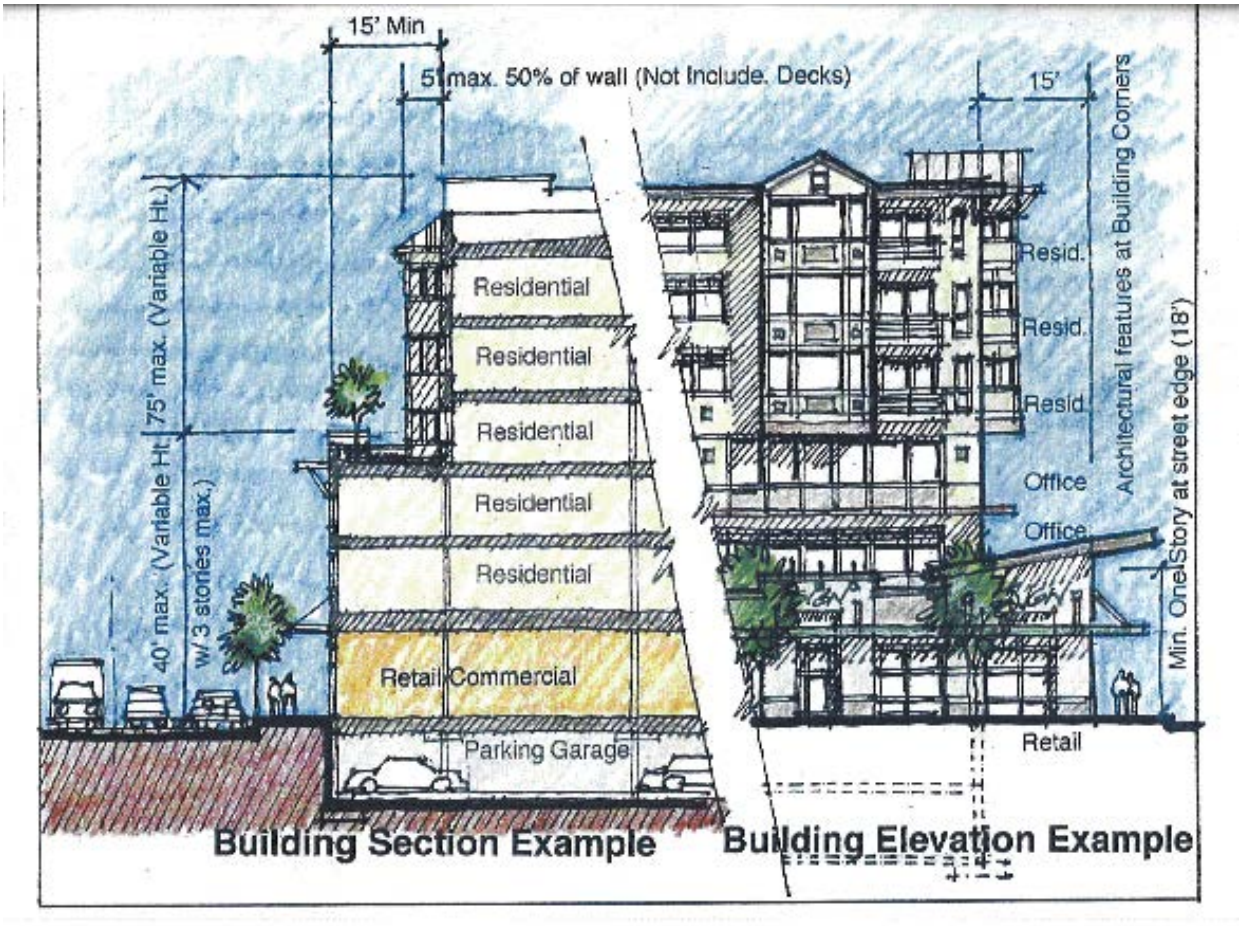
The proposal suggests that new commercial space be developed in the alleys and that "housing could be introduced" (Urban Transitions Studio 2010, 36). Beyond this, the proposal does not suggest how to address housing in the alleys. While the proposal takes the initiative to suggest housing, it is not ideal because it does not lay out plans for it. The alternative action is more specific than this action while no action could have very negative impacts on the environment, suggesting that this section be scored at 2 on the decision matrix for being the intermediate choice.

Alternative Action

The proposal briefly mentions the intention to include housing into the development, but does not describe how this should be carried out (Urban Transitions Studio 2010, 36). Both of

the City's plans highlight housing as a major planning issue, and it would be in keeping with plan to promote infill housing at this site. In order to examine the housing potential in the alleyways for this proposal, we have turned to the Old Town Development plans as a comparison. The Old Town Development is similar to this proposal in that it employs infill strategies to create mixed use buildings with commercial space on the bottom and residential space on the top (Figure 0.4).

Figure 0.4 Old Town Development Mixed Use Building Plan
(Bellingham Municipal Code §20.35.070)



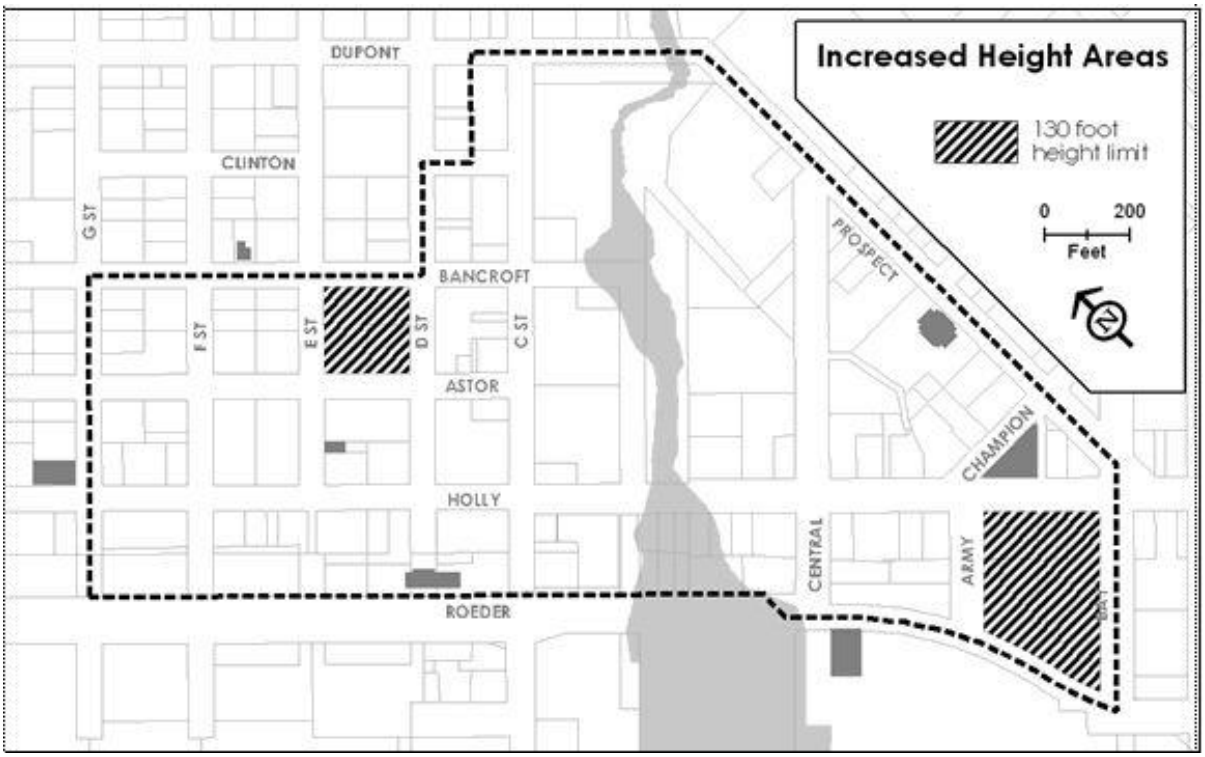
Additionally, the Old Town Development is planned for a similar environment to the alleys, with historic buildings and a historic character to maintain. As an alternative to the vague

suggestion for housing mentioned by the proposal, we propose that the alleys use the Old Town Development as guidelines for mixed use development.

The first change that would need to occur to make this possible is the rezoning of the alley corridors as mixed use or “urban village” instead of solely commercial. This would allow developers to confidently purchase property with the understanding that they could build residential units on it, promoting development interest. This kind of building has already been built in the Bellingham downtown, along Railroad Avenue between East Chestnut Street and East Holly Street. This block has a combination of night clubs, restaurants, retail shops, and offices with apartments or condos on top. If the alleys were rezoned they could accommodate development similar to this and the Old Town Development Proposal.

The first benefit of the Old Town Development is that it sets height limits for the infill. Most sites are set at 75 feet with the exception of a few areas limited to 130 feet and some limited at lower heights (Figure 0.5). Establishing buildings heights helps to plan the skyline of the city and ensure that views and cultural vistas are no obstructed by unregulated building.

Figure 0.5 Old Town Development 130 foot height limits
(Bellingham Municipal Code § 20.35.070)



The Old Town Development is also a good model for its incorporation of affordable housing and environmental sustainability. Affordable housing especially is highlighted by the City plans as extremely important. New residential structures in Old Town are incentivized to provide affordable housing in the new residential spaces. “Housing for low and middle income residents receives bonus floor area,” earning “four square feet of bonus floor area” for “each square foot of floor area certified by the Planning Director as affordable housing,” earning a maximum of 0.5 FAR, or floor-area ratio (Bellingham Municipal Code § 20.35.070). The spaces must remain permanently affordable by taking only purchasers or tenants whose “annual income, at the time of the household’s initial occupancy of the single-family residence, is 80% of less of the median income” (Bellingham Municipal Code § 20.35.070). Living costs for residents must also remain below “38% of the gross household income at the time of purchase and the amount

of rent or mortgage repayment shall not exceed 30% of the gross household income" (Bellingham Municipal Code § 20.35.070). These requirements provide a system for maintaining affordable housing in the area. This could diversify the population in the area, as the housing would provide for residents from an array of socioeconomic divisions. We propose that the alley development install a similar set of incentives so as to promote the "diverse residential neighborhoods" that the City Center Master Plan desires (City Center Master Plan 2002).

A similar system of incentives is used to promote environmental sustainability in the Old Town Development. The Old Town proposal would distribute a maximum 0.5 FAR bonus for projects that are certified "as a minimum LEED Silver certification (or equivalent)" (Bellingham Municipal Code § 20.35.070). Projects can also gain up to 0.50 FAR for contributing to the Lake Whatcom Watershed Property Acquisition Program (Bellingham Municipal Code § 20.35.070). These incentives promote environmental sustainability by promoting sustainable design and land use in the downtown area. As one of the objectives of the proposal is to promote the ideas of a "green" community, extending environmental sustainability into the residential component of the project would be fitting with the overall objectives (Urban Transitions Studio 2010, 36).

The plan for the Old Town development would allow for the increased housing that Bellingham needs at densities that Whatcom County desires. Additionally, the specific standards for heights restrictions, affordable housing, and environmental sustainability make it much more in depth in comparison to the proposed action. Based on the improved specificity of the alternative action for housing and its success in meeting the standards outlined by the Whatcom Country Comprehensive Plan, the alternative action would have higher positive impacts on the environment, earning it a ranking of 3 on the decision matrix.

No Action

If no action is taken then the housing will remain the same. Currently there is virtually no housing outside of the Leopold retirement center. This would forgo the opportunity to take advantage of the underutilized space downtown for increased housing density in the city. Under the Whatcom County Comprehensive Plan the City of Bellingham is encouraged to "establish new residential developments at densities averaging six to twenty four units per net residential acre" (Whatcom County Comprehensive Plan 2010, 2-18). Taking no action would not make any progress towards achieving this goal. Arguably, developers might actually expand into urban growth areas a result of taking no action, actually decreasing the density of Bellingham and violating that goal of the comprehensive plans. This is the least desirable option when compared to the proposed action and the alternative action, scoring a 1 on the decision matrix.

3.5 Historical and Cultural Preservation

Proposed Action

In addition to commercial and residential concerns, the site includes five historic sites within its boundaries (Map 6). All five are listed on the Local Historic Register, Washington Heritage Register, and the National Historic Register (Department of Archaeology and Historic Preservation 2009). These buildings include:

1. B.P.O.E. Building 1412-1414 Cornwall Avenue
2. Leopold Hotel 1224 Cornwall Avenue
3. Montague & McHugh Building (Crown Plaza) 114 W. Magnolia Street
4. U.S. Post Office and Court House (Federal Building) 104 W. Magnolia Street
5. Bellingham National Bank Building 101-111 East Holly Street

According to the proposal, none of these sites are slated for infill or building splits, so no direct impacts on the buildings will have to be mitigated (Figure 0.6). However, building around the sites might indirectly affect the historic buildings, as lighting and views might be changed. These impacts are addressed in our alternatives section.

The proposal includes plans to create themed alleys, incorporating cultural themes such as Ski-to-Sea, Mt. Baker, Native American roots, logging roots, and themes that may not be typically associated with Bellingham (Urban Transitions Studio 2010, 36). This meets the City Center Master Plan's goal of incorporating culture into the downtown area. The proposal also suggests incorporating a "colored light theme for the evening" into the alleys to add practical lighting and a positive atmosphere (Urban Transitions Studio 2010, 37).

The effort to preserve historic structures and add to the cultural heritage of the downtown fits with the goals of the Bellingham Comprehensive Plan in that it works towards preserving the

culture of the area. However, it lacks additional measures to ensure that the true culture of the area is preserved past saving the buildings. Bringing life to the downtown through the proposed action would be more beneficial than taking no action, but the alternative action provides a stronger plan for cultural and historic preservation. Therefore the proposed action scored an intermediate ranking of 2 on the decision matrix.

Alternative Action

First, while the cultural themes downtown are a sound idea, the themes should reflect local culture. Currently the proposal suggests the possible incorporation of themes, such as Chinatown, that are "not typically associated to Bellingham" (Urban Transitions Studio 2010, 37). Using themes outside of the local culture may detract from the unique character of existing neighborhoods that the City Center Master Plans wants to maintain. Second, the proposal for a "colored light theme for the evening" could have a similar effect of detracting from the existing character (Urban Transitions Studio 2010, 37). While arguably the alleys have very little character to begin with, they are part of the overall downtown area, which has many historic buildings. Adding colored light might be suitable, but only if it is in keeping with overall downtown atmosphere.

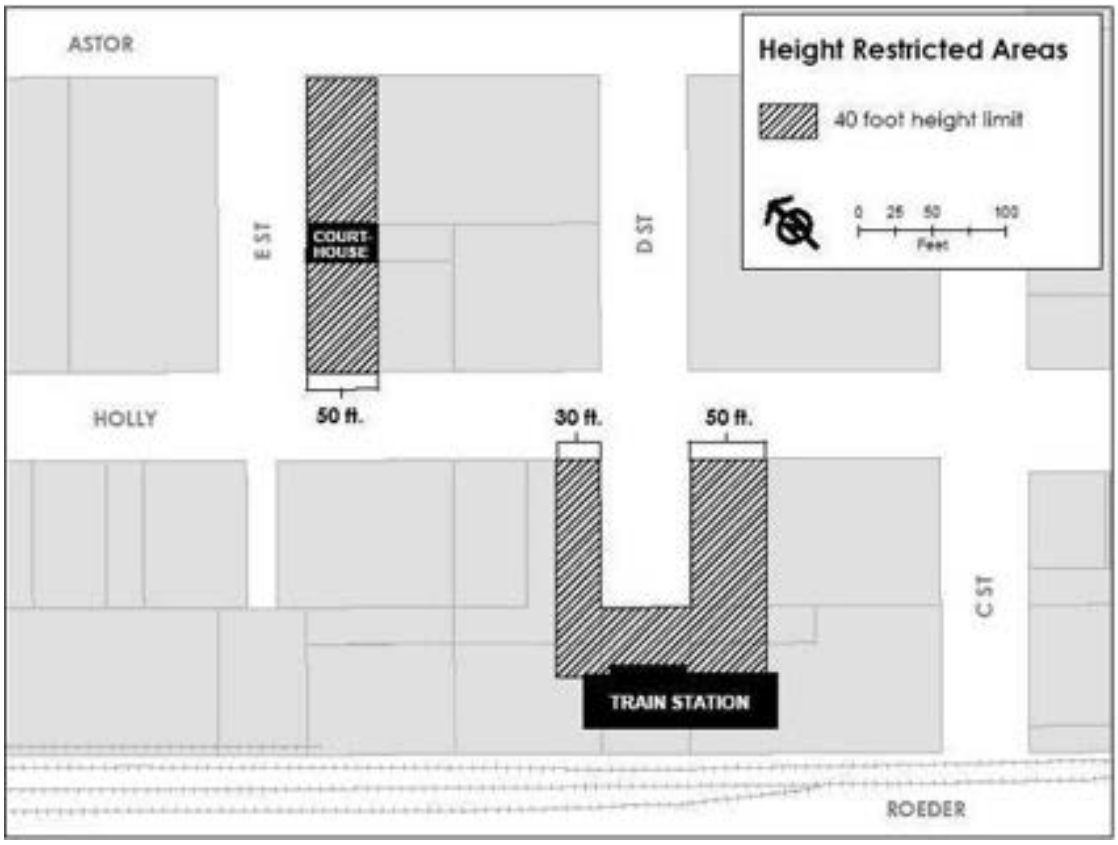
Third, height limits should be imposed on properties adjacent to historical buildings in order to maintain their historic qualities. The importance of these height limits are perhaps best demonstrate by the case of Grand Central Station in New York City, New York. Arguably one of the most beautiful buildings in the United States, Grand Central Station towered over surrounding buildings when it was first constructed. But now, in the era of the skyscraper, the Station is overshadowed by immense office builds, detracting from its majesty (Figure 0.7).

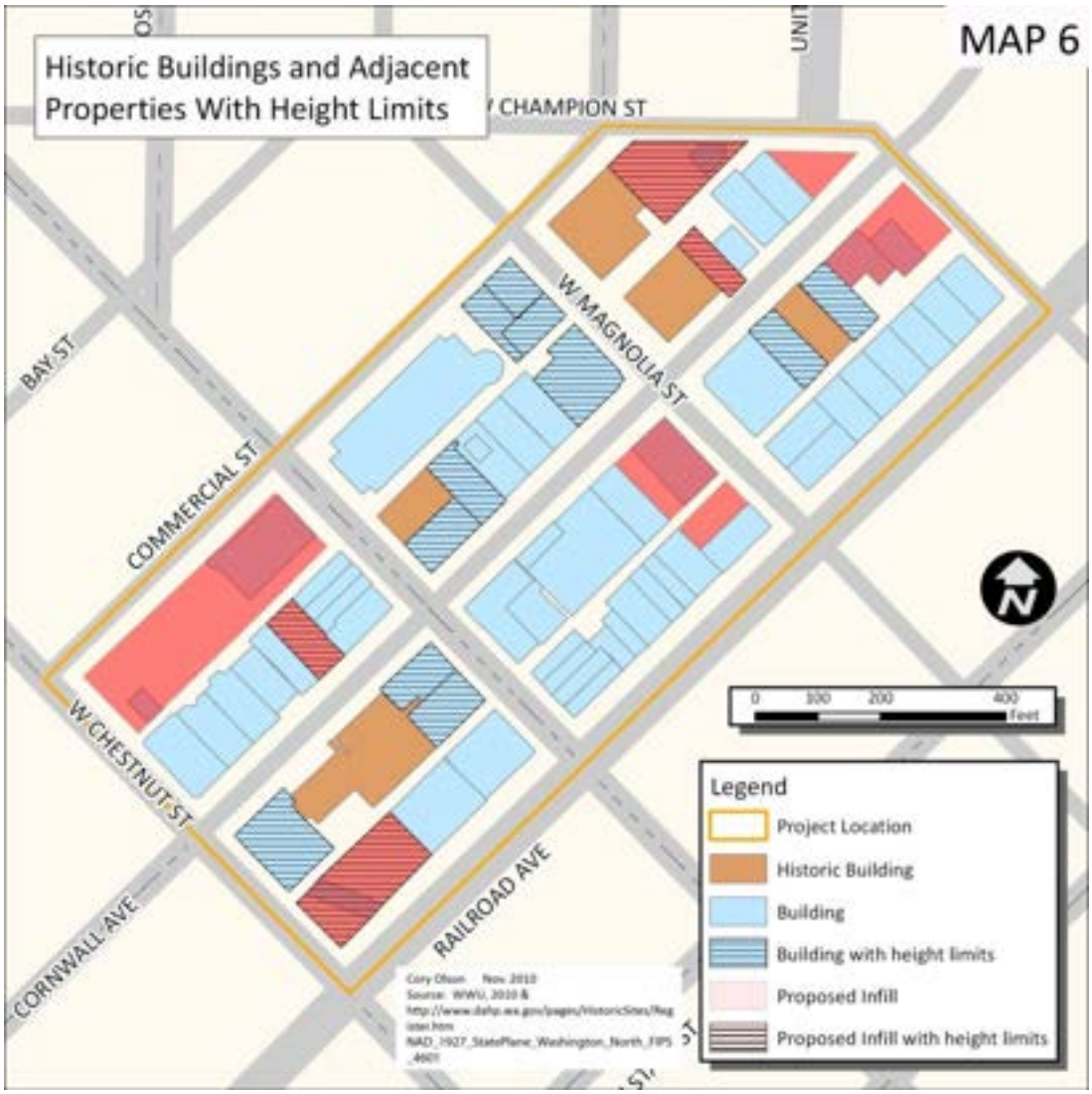
Though the alleys of Bellingham are certainly different from the streets of New York, the same potential exists for historic buildings to become overshadowed by new, tall residential and office buildings.

Figure 0.7 Grand Central Station surrounded by skyscrapers
(www.googlemaps.com)

To propose height limits for these buildings we again turn to the Old Town Development overlay plans. The height is limited “adjacent to historic buildings” and is “limited with views to cultural and geographic features of significance” at levels between 30 and 50 feet (Figure 0.8). This mitigates the impact of building around historic sites and vistas while still make the most out of each building site. We propose that the plan incorporate similar building height restrictions around historical buildings, which we have specified in (Map 6). This will work to maintain the historic character of the downtown and connect more seamlessly with other development proposals downtown.

Figure 0.8 Old Town Development 30-50 foot height limits for historic and cultural vistas
(Bellingham Municipal Code § 20.35.070)





The effort of the alternative action to keep motifs and lighting loyal to the historic and cultural heritage of Bellingham adds to the already positive impacts of the proposed action. Outlining the buildings that need height limits to preserve the views of the historic buildings takes an additional step to ensure historic preservation. Taking these extra steps justifies the higher score of 3 in the decision matrix for the alternative action.

No Action

If no action is taken, the historical sites will remain as they are. This is positive in the sense that the buildings remained unaltered, but negative in that the lack of activity and culture

surrounding the buildings detracts from the public appreciation of their beauty and historical significance. Taking no action would not physically harm the buildings, but it certainly would not attract positive attention or value to them either. Therefore taking no action ranks the lowest at a 1 on the decision matrix when compared to the other possible actions.

3.6 Light and Glare

Current Conditions

Current alleyway lighting is provided by standard day/night street lights. Some sections of alleyways are unlit or lighting is provided by a commercial store during hours of operation.

Proposed Action

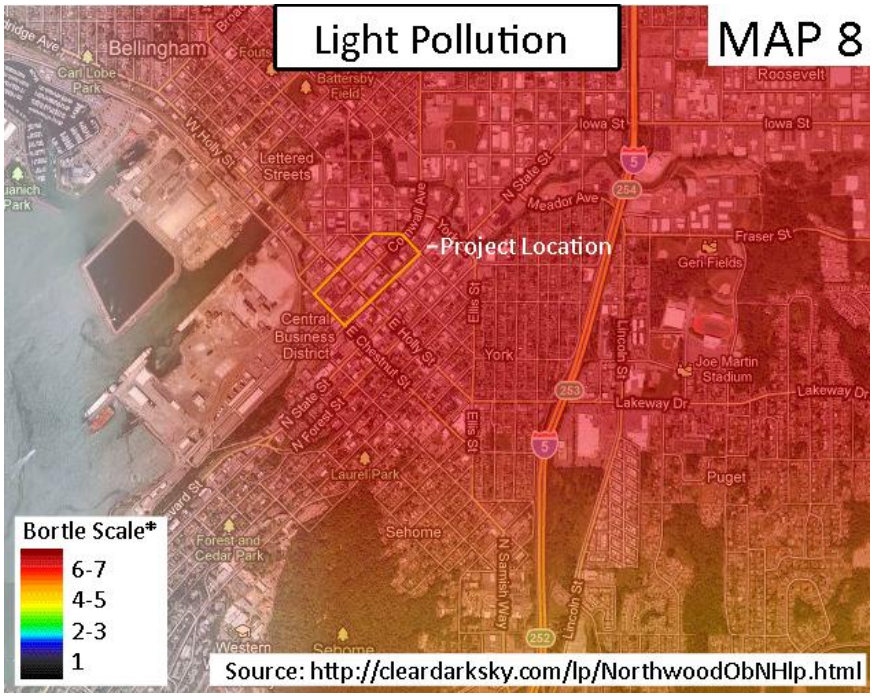
Additional development of the alleyway will add supplementary lighting into the alleyway along with the added traffic flow into the area. The project calls for the interjection of new themed lighting into the alleyways. The themed lighting will be dictated by cultural themes of Bellingham, such as a Ski to Sea theme and others (Urban Transitions Studio 2010). The use of theme lighting in the alleyway will potentially add to the aesthetic beauty of area during night time operations. Glare and light pollution would increase with the higher density structures and added businesses in the area. Additional light pollution in the area will negatively impact the environment while also benefiting the public safety; providing both positive and negative impacts at the same time. The alternative action takes steps to reduce light pollution while the no action assumes that the light pollution would relocate in a less light polluted area and cause more harm, suggesting that the proposed action should be ranked in the middle at a 2 on the decision matrix.

Alternative Action

The usage of light emitting diodes (LED) could save the city on the cost of lighting and the amount of lumens, light intensity, wasted into the environment in the form of light pollution. The line between public safety and proper lighting can be addressed with the usage of motion sensor lighting for low usage when no one is present and higher usage when people are present. These measures should cut down on glare impacts. If these measures are taken to reduce light pollution, theme lighting in the alleyway would not be feasible due to inefficiency of color bulb lighting or cost to produce specialized lighting systems. Energy efficiency and directed lighting to reduce the impact of glare earns the alternative action a higher ranking than the proposed action and no action on the decision matrix of 3.

No Action

If no action is taken the alleyways lighting system will remain unsafe for pedestrian business activity. Business lighting will remain the number one source of lighting for the alleyway system during hours of operation. City lighting will remain unchanged, but will not be suitable for adequate after hours pedestrian activity beyond normal business hours. No high efficiency lighting will be in place and light pollution will remain high in the area (Light Pollution Map 7).



Although taking no action in the alleyways would reduce the amount of light pollution by not adding any supplementary lights into the area, this positive impact would be negated by another area possibly being developed in a lower density area with fewer lights. This negative impact justifies the lowest ranking of this course of action at a 1 on the decision matrix.

3.7 Aesthetics

Current Conditions

The alleyways are used mostly for utility purposes. Businesses use the alleyway to store their dumpsters and make deliveries. There are many layers of power lines and other utility lines. The tallest building is about 11 stories high but most buildings are between 2 and 5 stories. Blank building faces and

parking lines most of the alleyway frontage. Most aesthetically displeasing activities are focused here so that the downtown's other streets can stay clean and clear of utility and delivery trucks.

Proposed Action

The project proposes infill buildings to create a continuous corridor that is more interesting to pedestrians. None of the new buildings would be any taller than existing buildings. The tallest building proposed is about 6 stories (Urban Transitions Studio 2010, 20). No views along the alleyway corridors would be blocked by new buildings. Lateral views would be blocked if new buildings occupy lots that were previously open spaces such as surface parking lots. Other improvements to aesthetics include burying utilities, consolidating dumpsters, improving lighting, and using decorative paving, and murals. These aesthetic improvements create a positive impact on the environment, improving the alleyways far beyond leaving them in their presently unattractive state. Accordingly, the proposed action ranks higher than no action in this section, but lower than the alternative action which would add more aesthetic elements such as pocket parks to the alleyways. This resulted in an intermediate score of 2 on the decision matrix.

Alternative Action

The infill development proposed will decrease the amount of open space downtown which adversely impacts the built environment. The alternative of interspersing pocket parks would help mitigate this problem by creating aesthetically pleasing islands of reprieve within the gray texture of the urban environment. A park would be especially attractive and beneficial if it created views of the waterfront district that will eventually be developed to the south.

To manage the aesthetic character of the alley, several building height considerations should be borrowed from the Old Town Sub-Area Plan (City of Bellingham 2008, 17). Building heights should be established so that:

1. Priority public views to the water are identified and maintained.
2. New construction does not overpower landmark buildings.
3. The scale of buildings creates a comfortable pedestrian environment.
4. Enough light is allowed to enter the alleys.

These measures in combination with the aesthetic improvements of the proposed action create the highest positive impact on the built environment so the alternative action receives a 3 on the decision matrix.

Figure 0.2 Shows the "Village Green," a pocket park in Fairhaven, Washington
http://bellinghamster.com/f.htm

Figure 0.3 The “Village Green” during a community event

http://foodconnections.blogspot.com/2010/08/bellingham-and-coupeville-small-farmers.html

No Action

The alleys would remain backstreets where poor aesthetics impact the quality of the pedestrian and bicycle network. Without aesthetic features that the proposal suggests, like decorative pavement and human scale design and lighting, the alley would remain undistinguished from the rest of the network and unattractive to street users. Improving the network’s visual identity is an important part of encouraging alternate mode choices (City Center Master Plan 2002, 7-2). The poor aesthetic qualities of the alleys: the gravel, power lines, dumpsters, pipes, and blank walls all heavily detract from the environment. Compared to the aesthetic improvements proposed by both the proposed action and the alternative action, no action is clearly the worst option, scoring a 1 on the decision matrix.

3.8 Transportation

Circulation

Current Conditions

Vehicles enter the alleyways primarily for accessing parking or to make deliveries to businesses. Vehicles also use the alley to access all of the utilities that are located in the alleys. The narrow width of the alleys and poor visibility discourages most through traffic.

Proposed Action

Vehicle traffic would be further discouraged and eventually phased out. The elimination of parking lots due to infill buildings will decrease the need for vehicles to access the alley. A restriction on the hours of vehicle use, with removable bollards, would also effectively cede all circulation priority in the alleys to pedestrians and cyclists. This action positively impacts the pedestrian network but could negatively impact vehicle circulation by creating delivery and utility access problems. The alternative action mitigates these issues while taking no action would simply force them into a less developed and potentially worse affected area. Therefore the proposed action for this section received an intermediate score of 2 on the decision matrix.

Alternative Action

Restricting vehicle access discourages vehicle use and thus reduces vehicle emissions that impact air quality. However this restriction could create significant impacts on the built environment. Important utilities operations being restricted to certain hours will create maintenance problems, and utility companies will likely be unwilling to dispatch their drivers late at night. Restricting deliveries is also a burden to business owners who may or may not see the worth of creating pedestrian only areas. The alternative is restricting vehicle access with signage instead of bollards. Utility vehicles would not be restricted, it would be up to the

business owners to control delivery times, and all other vehicles would be restricted as displayed by the signage. Assuming full build out of retail, residential and park spaces, there would be high pedestrian traffic at most hours of the day. Signage would give entitlement to pedestrians in the alley spaces, making it very difficult and uncomfortable for vehicle to enter the alleys and very slow for them to move through the alleys (Figure 0.9). This alternative keeps the positive impacts of a pedestrian only corridor, but mitigates the negative impacts to delivery and vehicle access. Therefore it earned the highest score of 3 on the decision matrix for being the best course of action out of the three in this category.

Figure 0.9 Automobiles attempting to navigate a "Yield to Pedestrians" zone at Pike Place Market in Seattle, Washington
http://catherine-dennis.com/bonustwo.html

No Action

No action would preserve the back street nature of the alleys that keeps undesirable vehicular uses off of the main street. Allowing the alleys to remain underutilized in this way would prevent potential improvements to the pedestrian network downtown. A friendly pedestrian environment is an important aspect of a successful downtown area and helps encourage alternative mode choices that reduce environmental impacts (City Center Master Plan 2002, 5-5). Without these improvements to the pedestrian network, the no action plan would create the highest negative impact on circulation. This is the worst option out of the three, justifying the score of 1 on the decision matrix.

Trips Generated

Current Conditions

Streets adjacent to the alleys experience PM peak hour vehicle trip volumes anywhere from 40 vehicles (on Commercial Avenue) to 1095 vehicles (on Holly Street). Cornwall Avenue gets about 200 vehicle trips during peak hours (The Port of Bellingham 2008, 3.12-12). The alleyway corridor does not currently attract a significant amount of trips because there are very few business and residences that front into the alley.

Proposed Action

The proposed square footage of infill retail and residential development has the potential to create about 400 net new PM peak hour vehicle trips (Bellingham Municipal Code, 2010). This number is based on an Institute of Transportation Engineers (ITE) trip rate for specialty retail and assumes a country wide average mode split and transportation concurrency level. There are several aspects of the proposal that would influence these factors and reduce the amount of vehicle trips generated:

1. The entire project area is within a quarter mile of a WTA GO Line.

2. The project is located within the City Center Urban Village district and contributes to the mixed use, pedestrian friendly district.

These two aspects are proven, by ITE research on mixed land use trip generation rates, to reduce vehicle trips (City of Bellingham, 2010, 3). In addition, the project employs many urban design features that contribute to alternative mode choices. These include human scale lighting, decorated pavement, street art and murals, and restricted vehicle access. All these factors contribute to fewer vehicle trips and create a low positive impact on the environment. While there are no negative impacts to mitigate, the alternative action still ranks higher than the proposed action because it adds additional suggestions for programs to reduce vehicle trips. Taking no action is less favorable than the proposed action because it would contribute to trips in lower density areas that would require perhaps more extensive mitigation. Accordingly, the proposed action scored a 2 on the decision matrix for being the middle choice.

Alternative Action

The alternative uses strategies to further reduce vehicle trips, thereby mitigating impacts from vehicle emissions and infrastructure construction. The City of Bellingham has proposed a Transportation Mode Shift Incentive program. This would be done through Transportation Impact Fee (TIF) reductions for developments that incorporate performance measures proven to reduce vehicle trip generation.

Transportation Impact Fees are used to balance the infrastructure costs of new development between developers and the city. The Transportation Mode Shift Incentive program uses TIF reductions to encourage “the appropriate type of development (infill) in the appropriate types of places (urban villages) that the Bellingham community has stated support for” (City of

Bellingham, 2010, 3). Vehicle trip reduction credits would be awarded that could reduce transportation impacts fees up to 50%. These credits are based on industry approved performance measures that are proven to reduce vehicle trips. Since they are proven methodologies, the vehicle trip reduction credits can be equated to actual percentage reductions in vehicle trips generated by the project (Figure 1.0).

All credits described by the table are voluntary and additive up to 50%. Vehicle trips generated by the project would be reduced by a minimum 22% reduction for being located in the City Center urban village and being within a quarter mile of a WTA Go Line. The three other voluntary programs would also reduce vehicle trips based on how many employees and residences participate. The project's trip generation rate after all these elements are factored in could be anywhere between 200 and 312 PM peak hour vehicle trips. Using these incentives to mitigate even more vehicle trips than the proposed action contributes to a higher positive impact on the environment. The increase detail in the transportation plans earns this action the highest score of 3 on the decision matrix.

No action

Leaving the alley spaces undeveloped would generate no new trips to downtown. This reduces the need to upgrade city center transportation infrastructure but also increases the chances that brand new transportation infrastructure would have to be built to accommodate the development that could be deferred to periphery areas in Whatcom County. Building new transportation infrastructure in low density periphery areas is the least environmentally friendly way to deal with population growth. Assuming the probable reality that development will happen in this county one way or another, the no action plan will therefore have a high impact on the

environment. Out of the three possible actions for this section, this is the worse, reflected by its score of 1 on the decision matrix.

3.9 Public Services & Utilities

Fire, Police, Schools, and Maintenance

Proposed Action

The expected population increase from the proposal may result in a need for expanded public services to accommodate and increased demand. Specifically, this site might require increased fire, police, schools, maintenance, and communications.

Bellingham Fire Department states that "The need for additional fire stations depends on the location and characteristics of future expansion of city boundaries and continued in-filling. Expanding city boundaries and the creation of dense "urban village" neighborhoods on the edge of city limits may limit the Department's ability to effectively respond to quickly suppress structure fire incidents within these areas"(Capital Facilities Element 2005, CF-26). The increased population size and density may increase the need for more fire support; however the central location of the alley development reduces the likelihood that another fire station or additional firefighters would be needed. In 2009 the Bellingham Fire Department had 7,412 fire unit responses and 3,939 aid unit responses (City of Bellingham 2010 Adopted Budget, 142). This present capacity suggests that the expected 153 to 612 additional residents to the downtown are unlikely to increase the call volume for Bellingham Fire Department above a manageable level. Additionally, the "replacement/relocation of the" Northwest Avenue Fire Station "will depend on the characteristics and pace of in-filling growth, especially along the waterfront, and growth in the northern part of the city" (Capital Facilities Element 2005, CF-27). The fire department already acknowledges the potential need for increased fire support, and if the

combined need of the City does exceed their current capacity, then they have a plan to address it through this new station.

The Bellingham Police also have a plan to accommodate the predicted population growth in Bellingham. They currently hire one patrol office per 750 calls for service per year and one investigate officer per 5 patrol officers (Capital Facilities Element 2002, CF-34). The revitalization of the alleys will likely bring more people into the alley area, perhaps requiring more police coverage; however it seems unlikely that with less than 612 expected residents and an atmosphere that is more conducive to safe activities, that 750 service calls per year will be generated from this site alone.

Wise city planning can actually serve as a crime prevention technique. Mixed use development, as proposed in this project "provides a higher level of activity around the clock that in turn provides more 'eyes' to keep watch and to discourage potential crimes" (Municipal Research and Services Center of Washington 1997). In addition, "increased pedestrian-level lighting" as proposed in this project can contribute to a reduction in crime rates (MSRC Washington 1997).

Though some residences may be added through this proposal, the demographics of the Bellingham downtown suggest that new residents will mostly be college students, young professionals, and retirees with few families with children. Therefore, the effects of this proposal on the schools should be minimal. However, if the developers chose to build single-family or multi-family dwelling units, they will be charged an impact fee of $1,854.000 or $1154.00, accordingly. These school impact fees "will be used to offset that portion of cost to construct a new elementary school that is related to new growth" (Bellingham School District 2010, 8).

Additionally, the maintenance of the alleys may change, for aesthetically pleasing storefronts and pedestrian the alleys will need upkeep to avoid returning to a dilapidated state. However, as the space is designated for commercial uses in which the building tenant or owner will likely be responsible for upkeep, the only foreseeable maintenance might include street sweeping and litter removal to maintain the LID surfaces.

The only negative impact foreseen for the proposed action is the increased need for maintenance of alley ways. The school service is covered by impact fees. While the police and fire departments seem to have already planned for population increases and infill, the proposal might be improved if it provided new sources of revenue to assist these services in expanding. Therefore the proposed action scores lower than the alternative action, which suggests methods for providing new sources of revenue for fire and police services. However the proposed action scores higher than no action because no action might force growth in periphery areas of the City, increasing the cost of extending fire, police, and school services to low density areas. These comparisons justify the score of 2 on the decision matrix for the proposed action.

Alternative Action

To mitigate the costs to the fire department and police for adding to their call volume, perhaps the proposal should include public service impact fee. For example, the City of Issaquah, WA has a fire impact fee that charges developers a fee according to the following standards:

- Single Family, Duplex, Single Family Attached (2+ units)……..$ 655.28/d.u.
- Multifamily……$ 898.72/d.u.
- Office……$ 210.62/1,000 s.f.
- Retail……. $ 673.97/1,000 s.f.
- Restaurant/Lounge……$ 6,363.13/1,000 s.f.

The city of Issaquah additionally requires a police mitigation fee, determined by the following standards:

- Single Family……$ 161.61/d.u.
- Multifamily……$ 134.05/d.u.
- Office……$ 0.11/s.f.
- Retail……. $ 0.42/s.f.
- Restaurant/Lounge……$ 2.64/s.f.

(City of Issaquah Impact Fees 2010, 2-3)

If the City of Bellingham implemented similar impact fees for this development, it would be able to charge developers based on their projects for the impacts that they create. Therefore even though this project will have a minimal impact on the fire and police services overall, the public services would still receive funding for an amount proportional to the increased need that the proposal instigated.

Additionally, the project proposal fails to address the increased maintenance that the project will cause. Currently, street sweepers clean the North/South downtown alleys every first Tuesday of the month between 2am 6am (City of Bellingham 2010). In comparison, the North/South streets of the Downtown/Central Business District are swept every Tuesday, as they are more visible and receive more traffic (City of Bellingham 2010). Street sweeping service could increase in the alleys by adding these two alley corridors to the main street cleaning schedule. The alleys will likely experience heavy foot travel and therefore would benefit from being serviced on a streamlined schedule with the main streets downtown. This would keep the new LID surfaces from becoming clogged by debris.

The mitigation efforts of service impact fees and increased street sweeping make the alternative action better for the environment that the proposed action. The impact fees especially not only address the issue of funding for police and fire services but go beyond to detail a plan of how to charge based on type and size of development. Accordingly, the alternative action scores the highest ranking of 3 on the decision matrix.

No Action

The fire, police departments, and school district of the City of Bellingham are prepared to deal with expanded population growth. However, forgoing infill in the alleys might encourage sprawl beyond simply commercial and residential spaces because new fire, police, and education facilities might need to be built to accommodate population growth on the fringes of their present range. In comparison to the proposed action, in which services can already handle the growth, and the alternative action which simply improves upon it, no action is clearly the worst option and therefore scored a 1 on the decision matrix.

3.10 Public Utilities

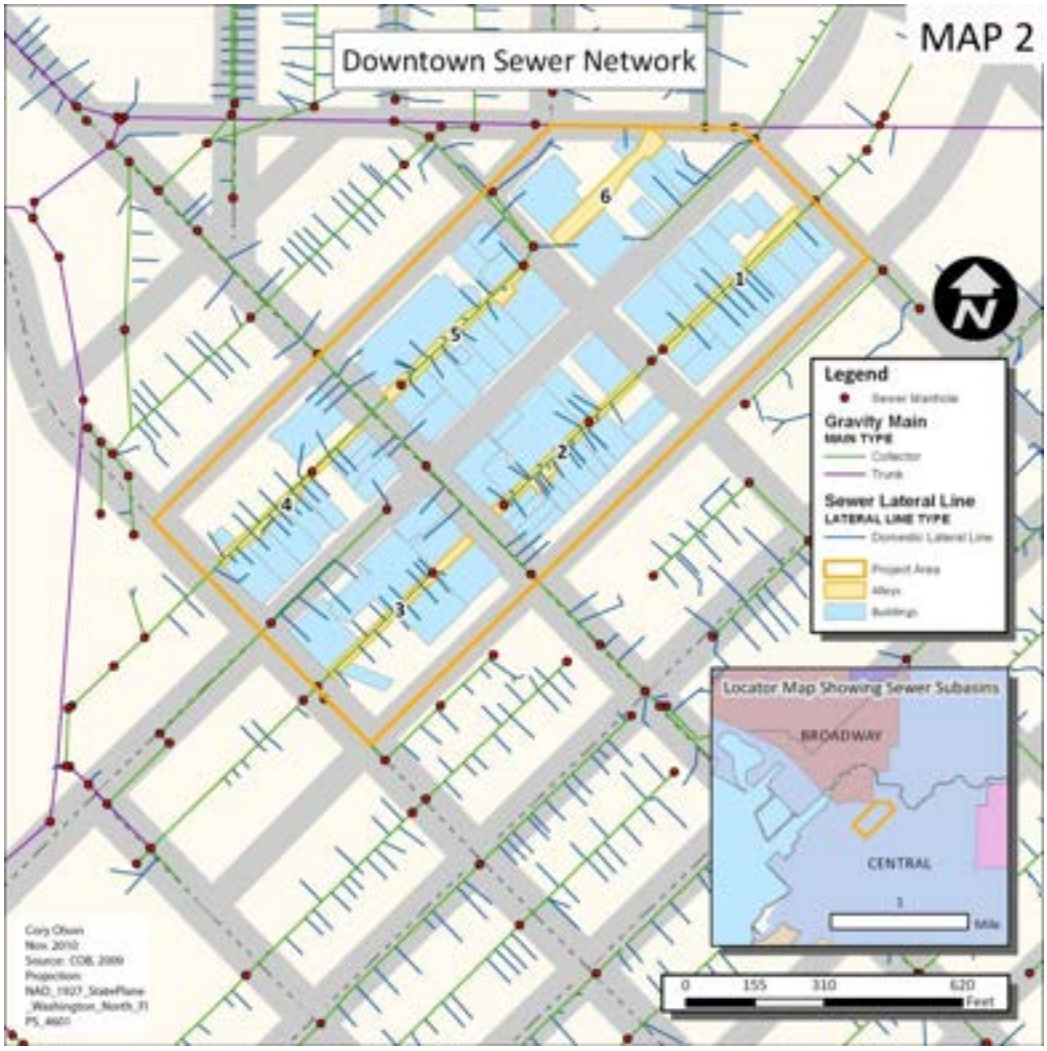
Sewage

Current Conditions

The area of the proposed project is currently equipped with a below-ground gravity fed sewage drainage system, illustrated in Map 2). Upon initial construction, the system was designed to be combined with storm water drainage. Though through the 1980's and much of the 90's, the city eliminated most of the storm connections in attempt to increase sewage treatment capacity at the Wastewater Treatment Plant (WWTP) (William Reilly, Jim Bergner, personal communication, November 2010). Today, very few combined sewer-storm collections exist. Those that do are mainly on older buildings of which roof storm drains are tied directly to the

sewage lines through the building's interior and would be very costly to disconnect. There is one remaining Combined Sewer-Storm Water Overflow point at the C Street overflow structure that discharges several hundred feet downstream into Bellingham Bay (Comprehensive Sewer Plan, 2009).

The sewage system of the alleyway area is tied to two trunk mains (>15" in diameter) with interconnecting 8" mains (Jim Bergner, personal communication, November 2010). Sewage is transported to the downstream treatment plant where it is treated to the secondary level before release it into Bellingham Bay (Comprehensive Sewage Plan, 2009).



Proposed Action

The proposal to revitalize the alleyways by providing over 170,000 square feet of commercial and/or residential development and to create an attractive pedestrian corridor in order to improve the economy and atmosphere of downtown Bellingham does not recognize the importance of assessing potential impact on the sewer system. Through infill and increased population drawn in, there will inevitably be an increase in sewage generated across the area. Assessment of the current equipment is necessary to determine whether or not the projected population increase will impact efficiency of the existing system or if modifications would necessary.

According to the City of Bellingham's 2009 Comprehensive Sewer Plan, the estimated per capita flow rate is 102 gallons of sewage per person per day (gpcd). With an approximate increase of 423 people, there will be a conservatively estimated increase of 43,146 gallons of sewage per day generated as a result of this proposal (equivalent to ~30gpm). This value does not reflect the daily fluctuations caused by workers, consumers and visitors alike contributing to the sewage generation of the revitalized area.

When inputting the estimated sewage volume increase into the city's sewage system model, returned impact on the system is minimal (Jim Bergner, personal communication, November 2010). The increased population brought in by this proposal, even during peak flow times, will yield a very small impact on the capacity and efficiency of the existing sewage system. With little to be mitigated and not much to be improved upon, both the proposed action and alternative action scored a 2 on the decision matrix for being intermediate choices, being a fairly neutral course of action.

Alternative Action

The basic connections would be required in order to link new businesses and residential units to the existing system for the required treatment of municipal and domestic sewage by the downstream WWTP. This would likely be done by tying 6” or 8” mains to the local 15” trunk mains. An 8” pipe can flow 350gpm (gallons per minute) at a minimum slope of 0.40% (nearly flat) and be at 80% capacity. The city of Bellingham considers 80% to be “full pipe” to allow for unseen variables (Jim Bergner, personal communication, November 2010).

With such minimal estimated impact on the existing system, other than establishing appropriate connections, little modification to the sewer system is required. As stated before, the lack of impact from both the proposed action and the alternative action earns both a neutral intermediate score of 2 on the decision matrix.

No Action

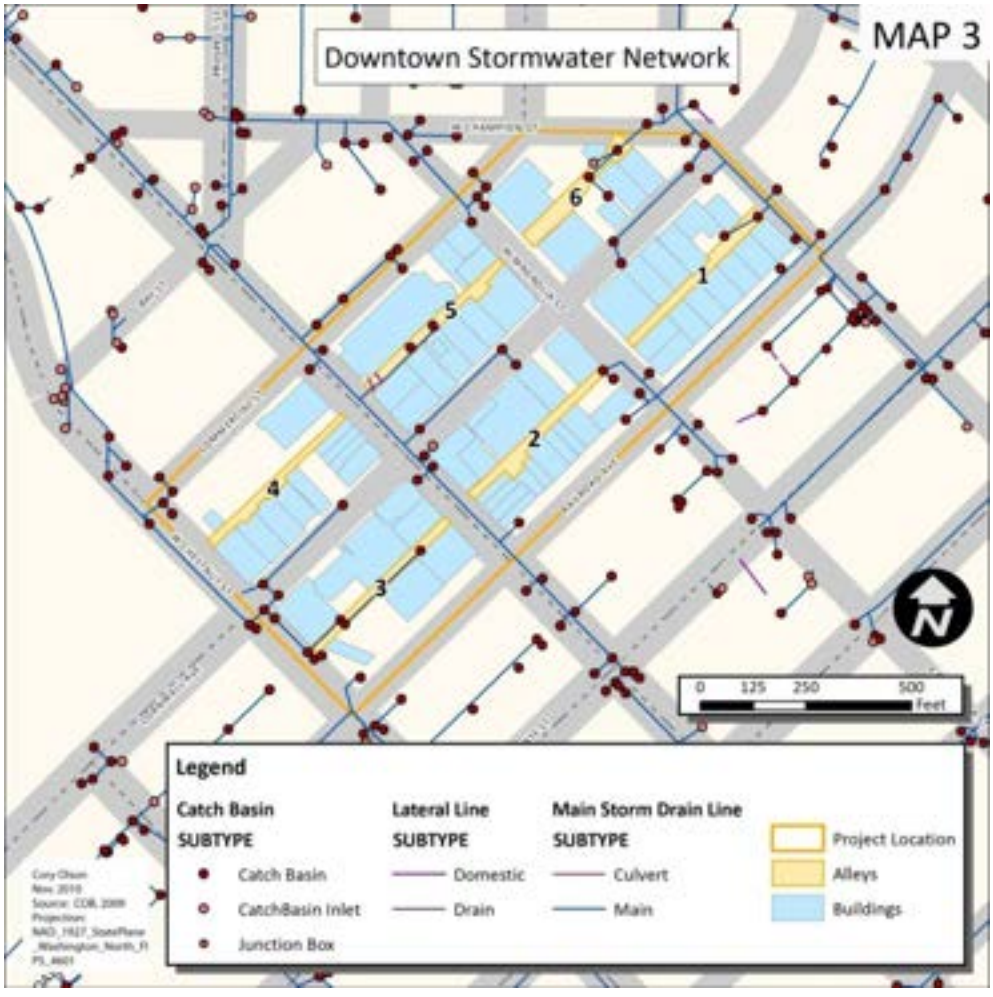
Without revitalization and the introduction of new business fronts and residences downtown, the projected population increase will be forced to develop outside of the City’s urban growth area and would therefore likely yield adverse environmental impacts. For instance the expansion of development into new areas could require increased sewage and storm water treatment facilities and lines as opposed to the modification or full use of existing lines. The cost and environmental destructiveness of having to lay new lines and build new facilities contributes to high negative impacts on the environment. Compared to the actions of the proposed and alternative actions, which add to the system within its capacity, this is the worst course of action, earning a lower score of 1 on the decision matrix.

Storm water

Current Conditions

There are catch basins and drainage lines now in place in most of the alleyways, though alley sections two and four are currently unequipped with any method of storm water runoff collection or transport, at all (Map 3). In these areas, storm water mainly runs down the alleys and into catch basins at the main streets of downtown.

Storm water from this area is currently discharged at three locations. In the southernmost portion of the proposal, runoff is collected and discharged through a 30” pipe at the Whatcom Waterway at the end of Laurel St. This storm water is not treated prior to discharge into Bellingham Bay (William Reilly, personal communication, November 2010).



From the area around Holly and Magnolia Street, storm water runoff is discharged via a 36" pipe into Whatcom Creek, just south of Dupont Street. This water is treated to the primary level with a sedimentation vault before discharge to the creek (William Reilly, personal communication, November 2010).

The third, northernmost Champion Street region of the proposal drains untreated storm water runoff into a couple locations along Whatcom Creek (William Reilly, personal communication, November 2010).

Proposed Action

The proposal does not suggest any need to assess storm water drainage and existing system capacity. It does propose to utilize pervious pavement which would increase infiltration of storm water and decrease nutrient and contaminant loading into the municipal catch basins and drainage lines – as explained in the above in section 2.3 "Surface Water". The neutral affect of the proposed action on storm water contributes to the neutral intermediate score of 2 on the decision matrix for public utilities.

Alternative Action

The drainage system currently in place in the area of the proposal will most likely not be sufficient at meeting the projected demand. It will pose a problem during major precipitation events, resulting in local flooding due to lack of drainage with excess water. By installing and connecting the two lacking alleyway sections to the storm water drainage system, runoff will be better controlled in the event of a major storm.

During construction of the revitalization, pulses of high concentrations of eroded sediment and pollutants will potentially enter local surface waters via the storm water runoff drainage system (Soranno et al. 1996). Such materials may include increased sediment and

nutrient loading (Phosphorus etc.), increased organic contaminant concentrations (bacteria, pet wastes, etc.) and increased chemical contaminant concentration (from heavy machinery operation and increased vehicle traffic downtown) (Soranno et al. 1996).

By installing LID pervious surfaces throughout the revitalized alleyways, storm water runoff will be allowed to percolate through the ground which will reduce sediment and contaminant loading into local water bodies (Berbee et al. 1999). Additionally, the use of pocket parks, small bioswales and potentially green roofing will further improve runoff water quality and reduce contamination of the bay and Whatcom Creek (Berbee et al. 1999). These methods of water quality mitigation are intended to complement the existing drainage system. The additional measures do not significantly add or detract from the need for public utilities, therefore scoring a neutral intermediate score of 2 on the decision matrix.

No Action

With no action taken alley sections two and four will go on without catch basins or mainline drainage. Storm water will continue to flow untreated into Bellingham Bay or Whatcom Creek. In a worst-case scenario, development will occur in outside of the designated urban growth area and vast expanses of impervious surfaces will be required to accommodate the population increase. Rather than utilizing existing impervious buildings, Bellingham would add to its impervious surfaces. This would result in extremely adverse impacts caused by significant increase in storm water runoff into local watersheds. Again, compared to the other two course of action this is the worst, supporting the score of 1 on the decision matrix.

3.11 Population Change

Population size and Density

Proposed Action

The proposal has the potential to both displace and bring in new people to the alleys. To determine the number of people that would be displaced by this project, we relied on 2000 Census Block data. According to this source, 87 people reside within the area of the proposal (Figure 0.6). Therefore, potentially 87 people might be displaced by this project. However, the overwhelming majority of those people are concentrated in the Leopold Hotel, currently used as a retirement home. As no changes are proposed for the Leopold, it is likely that the proposal will displace only a handful of people if any at all.

One method of determining potential residents of the alleyway proposal is by using the housing unit average of 65.92 housing units and the average household size in the City of Bellingham of 2.31 people to determine how many residents mixed use development could attract (U.S. Census Bureau 2009). By multiplying these together, we find that approximately 153 people could live in the new proposal site (Calculation 0.4).

However, this number only accounts for one additional story of housing units above the proposed commercial space. While this meets the expectations of the Whatcom County Comprehensive Plan, it also bypasses the opportunity to concentrate even higher volumes of housing in the alleyways. Assuming that the proposed action simply would meet the expectations of the Whatcom County Comprehensive Plan it would be better than taking no action, which would force development elsewhere. However it would score lower than the alternative action because the alternative action outlines the housing plan that would bring in higher numbers and

densities of people to the alleyways. From this comparison the proposed action for this section would score a 2 on the decision matrix.

Alternative Action

In order to determine a higher potential increase in population for the alleyways, we turned to examples of multistory housing on top of commercial spaces. For example, in the Old Town Development Plan the mixed use buildings have five stories of residential space (Figure 0.4). This is very similar to the mixed use developments in the Fairhaven city center (Figure 1.2).

Figure 1.2 Mixed Use Development Building in Fairhaven, Washington

http://www.google.com/images

Accordingly, to find an alternative number of how many people the proposal might bring in, we chose the 2000 Census Block data for the downtown of Fairhaven to as a comparison. Like the project proposal, Fairhaven has mixed use development with commercial space on the

bottom of buildings and residential space on top. Fairhaven even incorporates alleys as pedestrian corridors as this proposal would (Figure 1.3).

Figure 1.3 Business in a pedestrian alleyway in downtown Fairhaven, Washington
http://www.recumbentblog.com/2009/05/28/last-day/

The data from downtown Fairhaven stated that 423 people reside in its relatively small downtown (Figure 1.4). Thus one might infer that the development proposal for the downtown alleyways of Bellingham could bring in roughly the same number of residents is mixed use development is used. To be more accurate, we multiplied the 153 that could occupy a single story of housing by four to match the number of stories in a typical Fairhaven mixed use residential building (Figure 1.2). This would project an increase in population of 623 people (Calculation 0.5). Using this estimate is better than attempting to estimate from the Old Town

Development model because in that model higher than three stories requires further setbacks that decrease the overall square footage per story. From the Fairhaven model it can also be inferred that the density of the alleys will increase significantly from this project. Currently the density is low, with only 17.683 people/acre density in the area with the highest population (Figure 1.3). In Fairhaven, the area with the highest population has a density of 53.7801 people/acre (Figure 1.4). Therefore, one might conclude that in areas of the alleys where population increases, the density will also increase, especially in this type of mixed use, high housing density development.

The alternative action supports an even higher population and density of people, exceeding the expectations outlined by the Whatcom County Comprehensive Plan. As it simply improved upon the proposed action, the alternative action scores the highest score of 3 on the decision matrix.

No Action

If the proposal is not implemented, the population will likely remain the same. It would take some revitalization effort to make the buildings along the alleys suitable for residential use, suggesting that without redevelopment not many more additional people will come to the area. Additionally, as is, the alleys are unwelcoming to pedestrians and lack the energy that attracts potential residents. This further decreases the likelihood of people moving into the buildings along the alleyways. The population change will likely occur elsewhere in Bellingham, possibly contributing to environmental destruction at another site. In keeping with the Land Use and Housing sections that directly deal with population increases, taking no action is the worst course of action, earning the lowest score of 1 on the decision matrix.

3.12 Community & Institutional Structures

Employment/income characteristics/housing, Employment/income/housing equity, Industrial/commercial diversity, and Planning/zoning activities

Proposed Action

The proposal would open up both housing and employment opportunities in the alleys. Additionally, it would diversify the commercial activity at the site. The proposal suggests commercial uses such as "art galleries, coffee shops/cafes, design stores, bookstores, restaurants," a movie theater and residential use for housing (Urban Transitions Studio 2010, 36). These different interests would draw an equally diverse set of people into the alleyways, creating a lively atmosphere in previously dismal spaces. Various levels of business, from coffee shops to offices, could provide an array of employment opportunities for individuals with different sets of skills. Increased business would better fit the commercial zoning of the alleyways because the space would be utilized for commercial activity rather than sit vacant.

The proposed action scores a positive 2 on the decision matrix for high positive impacts because it puts of the idea of diverse employment and housing but does not detail how to accomplish this outside of providing different job opportunities. There is no plan for ensuring housing equity, though the diverse nature of the downtown as a whole suggests that this might be assumed. Therefore while the increase in diversity and opportunity downtown ranks the proposed action higher than no action, it is ranked lower than the alternative action which addresses the issue of housing equity. This justifies the score of 2 on the decision matrix for the proposed action in this section.

Alternative Action

While the proposal already supports diverse commercial activity and employment opportunities, it does not outline its plans for providing diverse housing. As previously mentioned in the Housing section, the Old Town Development serves as an effective model for housing development in the alleyways. Developers of the alleys should be incentivized to provide affordable housing. They could be offered bonus square footage in their development for providing affordable housing, as demonstrated by the Old Town Development plans. Facilitating residential spaces that house mixed income brackets would contribute to the diversity of the downtown and improve housing equity in the alleyway redevelopment.

The alternative action improves upon the proposed action by simply adding to the already positive impacts of the proposed action. By adding specificity to the outline for affordable housing, it provides some guarantee that the residents of the redevelopments will be socioeconomically diverse. This improvement upon the proposed action supports the score of 2 on the decision matrix that the alternative action received.

No Action

If no action is taken to redeveloped the downtown alleys, industrial/commercial diversity will remain minimal and housing and employment will likely stay the same, as new commercial space will not be opened up for use. Without housing and employment opportunities, the effect of income characteristics for the area and housing equity would be negligible. Compared to the other two options, which increase the diversity and equity, this is the worst option, scoring a 1 on the decision matrix.

4. Summary of Findings and Recommendations

As described in the executive summary, this evaluation of the impacts of proposed action, alternative action, and no action on the Natural and Built Environments suggests that the alternative action is the most beneficial course of action for the redevelopment of the downtown alleyways. The decision matrix quantitatively rates to what degree each action affects each of the environmental elements (page 14). By summing the ratings of each of the elements, we found that taking the alternative action course would most positively affect the alleyways. This course of action scored a 46, compared to the lower scores of 29 for the proposed action and 23 for taking no action. This outcome likely arose due to the nature of each of the proposals. The alleyways currently are somewhat of a blank slate and the underuse of the available space contradicts city and county development plans, resulting in a negative score for leaving the alleyways as is. Additionally, forgoing development downtown might force the development to urban growth areas, adding to urban sprawl and the unsustainable use of land. The proposed action improves the alleyways, posing valid suggestions but overlooking many of the details of a redevelopment plan that significantly impact the environment. Thus, it received a slightly positive score but remained lower than the alternative action. The alternative action rates so highly because it addresses the negative impacts of the proposed action and improves upon its vague suggestions to suggest a more directed course of action that better protects the environment.

In summary, our alternative action would most positively affect the natural and built environment of the site because of the following measures. First, the alternative action keeps the suggestion of using LID surfaces to repave the alleyways mentioned by the proposed action. This alleviates some of the concerns over water and drainage in the alleyways. Additionally, course

gravel or rock would be incorporated under the clustered dumpsters to filter water and spills from the dumpsters. Pockets parks, green roofs, and bioswales would be incorporated into the alleyways to improve the aesthetics of the area and promote proper water drainage. Developing a specific plan for mixed use development and incorporating designs similar to that of the Old Town Development Plan would support city and county goals for housing infill, affordable housing, equitable housing, diversity, and sustainability. Similarly, setting height limits like those in the Old Town Development Plan for redevelopment would preserve the historic and cultural elements of the alleyways. Adhering to local themes for the alleys and forgoing the use of colorful theme lights for efficient sensor LED lights would also preserve the historic and cultural character of the alleys and add to energy efficiency. In order to reduce transportation impacts, the alternative action would create agreements with employers for commute trip reductions, discounted or free bus passes, and voluntary car share programs. The alleys would encourage pedestrian use by deterring vehicle traffic with signs. Finally, through the processes of construction, the alternative action suggestions summer construction to reduce polluted runoff, community determined construction hours to mitigate noise concerns, and hybrid construction equipment that generates power as it runs.

Through these methods, the alternative action improves upon the proposed action to create a minimally environmentally impacting redevelopment proposal. We highly recommend the alternative action, in part or whole, as the appropriate course of action for the downtown alleyway revitalization based on our analysis. Taking this environmentally responsible action would comply with the requirements of SEPA while dually enhancing the economic, social and cultural atmosphere of Bellingham’s downtown.

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Paul Stangl, October 2010.

Theresa Loop, October 2010.

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Appendices

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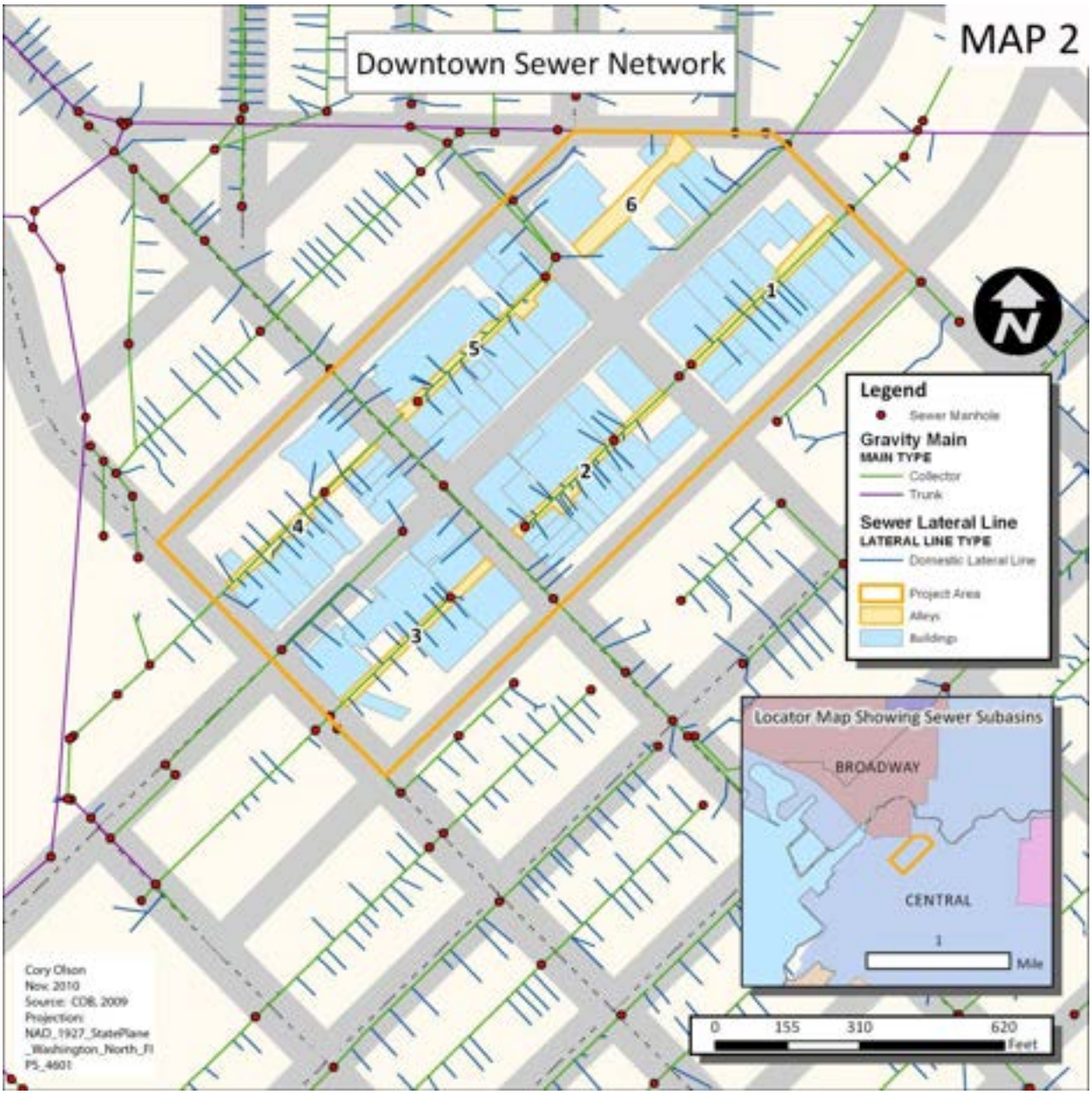
MAP 2
Downtown Sewer Network
1
2
3
4
5
6
N
Legend
Sewer Manhole
Gravity Main
MAIN TYPE
Collector
Trunk
Sewer Lateral Line
LATERAL LINE TYPE
Domestic Lateral Line
Project Area
Alleys
Buildings
Locator Map Showing Sewer Subasins
BROADWAY
CENTRAL
1
Mile
0
155
310
620
Feet
Cory Olson
Nov. 2010
Source: COB, 2009
Projection:
NAD_1927_StatePlane
_Washington_North_FI
PS_4601


MAP 3
Downtown Stormwater Network
W CHAMPION ST
W MAGNOLIA ST
COMMERCIAL ST
RAILROAD AVE
BAY ST
W CHESTNUT ST
1
2
3
4
5
6
N
0 125 250 500
Feet
Legend
Catch Basin
SUBTYPE
Catch Basin
CatchBasin Inlet
Junction Box
Lateral Line
SUBTYPE
Domestic
Drain
Main Storm Drain Line
SUBTYPE
Culvert
Main
Project Location
Alleys
Buildings
Cory Olson
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Source: COB, 2009
Projection:
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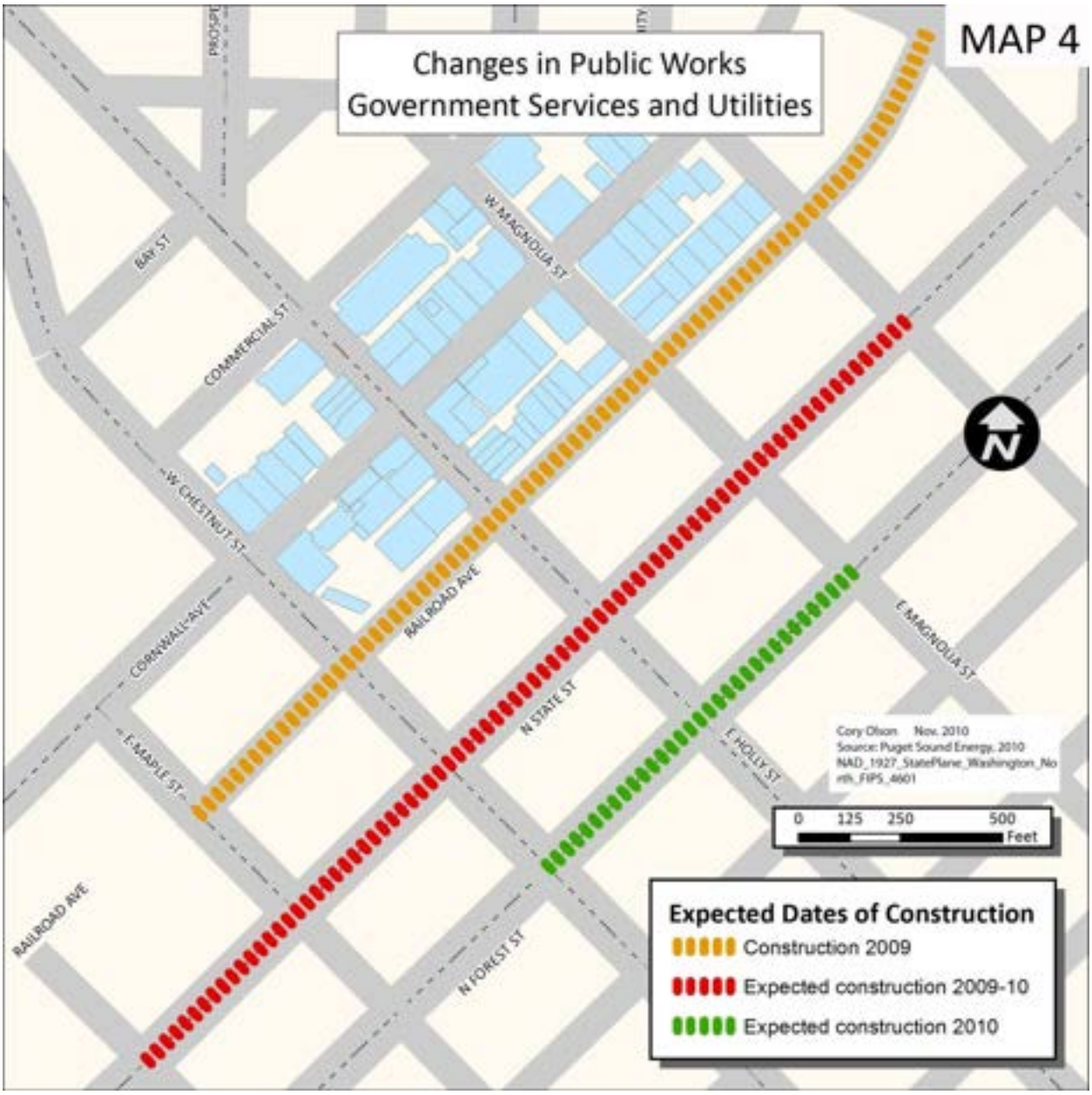
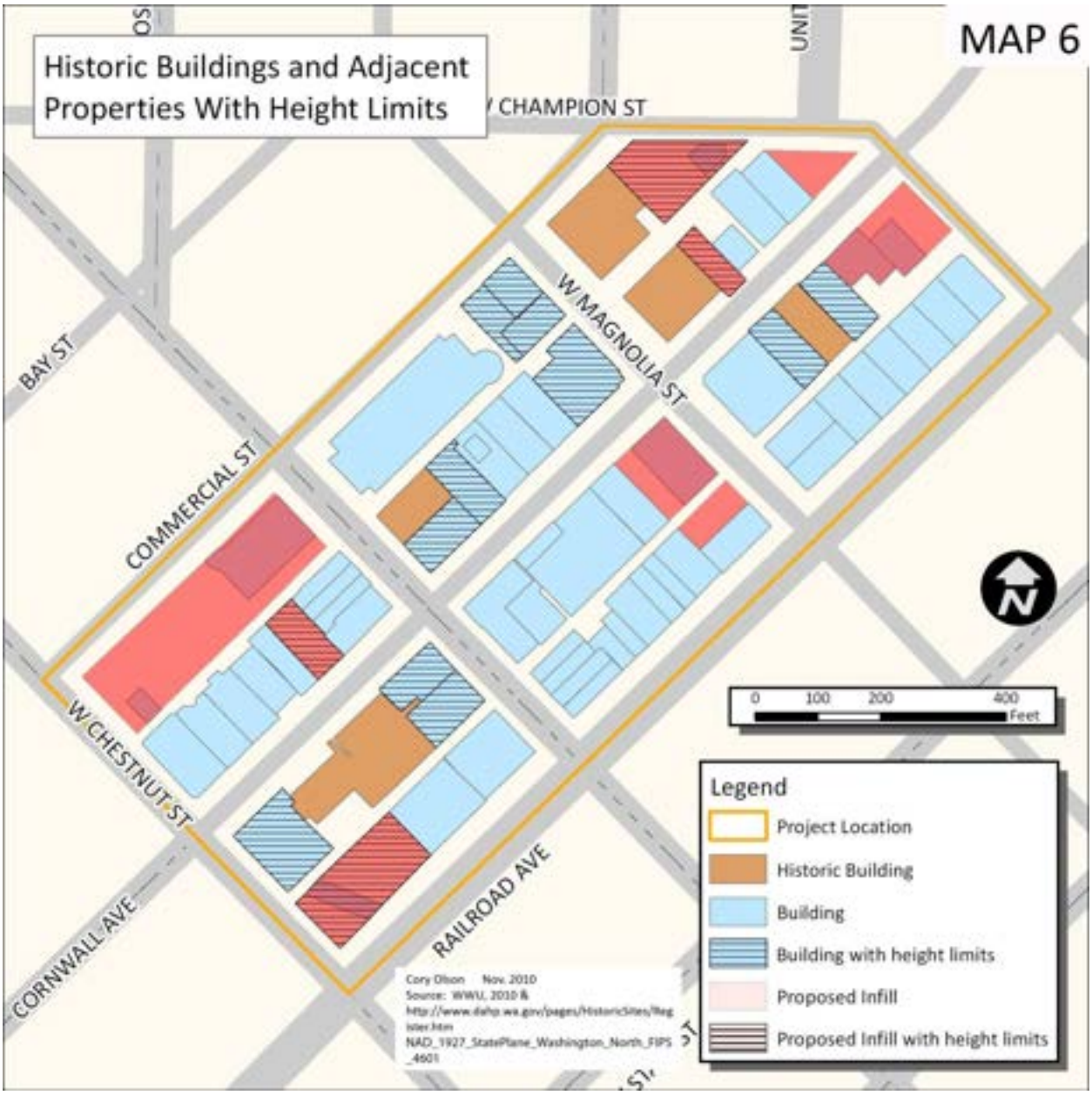
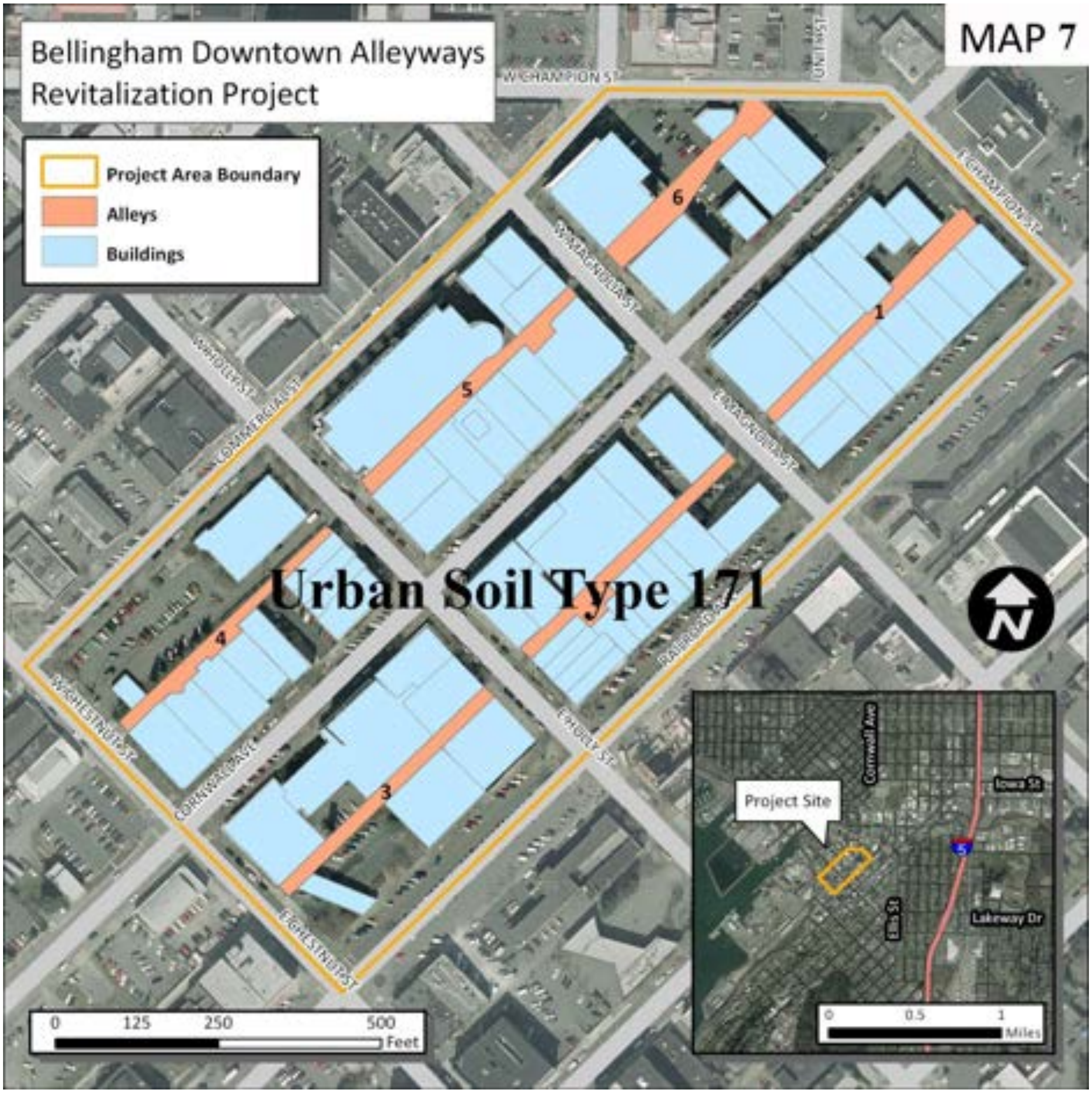
_Washington_North_FI
PS_4601


MAP 4
Changes in Public Works
Government Services and Utilities
BAY ST
COMMERCIAL ST
W MAGNOLIA ST
W CHESTNUT ST
CORNWALL AVE
E MAPLE ST
RAILROAD AVE
N STATE ST
E MAGNOLIA ST
E HOLLY ST
N FOREST ST
RAILROAD AVE
N
Cory Olson Nov. 2010
Source: Puget Sound Energy, 2010
NAD_1927_StatePlane_Washington_North_FIPS_4601
0 125 250 500
Feet
Expected Dates of Construction
Construction 2009
Expected construction 2009-10
Expected construction 2010


MAP 5
Bellingham Bay's 100-Year Flood Plain
N
Project Location
SFHA Zones Within
100-Year Flood Plain
A
AE
AO
Cory Olson Nov. 2010
Source: WWU, 2010
NAD_1927_StatePlane_Washington_
North_FIPS_4601
0
0.125
0.25
0.5
Miles


MAP 6
Historic Buildings and Adjacent Properties With Height Limits
CHAMPION ST
W MAGNOLIA ST
BAY ST
COMMERCIAL ST
W CHESTNUT ST
CORNWALL AVE
RAILROAD AVE
0 100 200 400 Feet
Legend
Project Location
Historic Building
Building
Building with height limits
Proposed Infill
Proposed Infill with height limits
Cory Olson Nov. 2010
Source: WWU, 2010 &
NAD_1927_StatePlane_Washington_North_FIPS_4601


Bellingham Downtown Alleyways Revitalization Project
MAP 7
Project Area Boundary
Alleys
Buildings
Urban Soil Type 171
1
3
4
5
6
Project Site
Cornwall Ave
Iowa St
Lakeway Dr
0 125 250 500 Feet
0 0.5 1 Miles

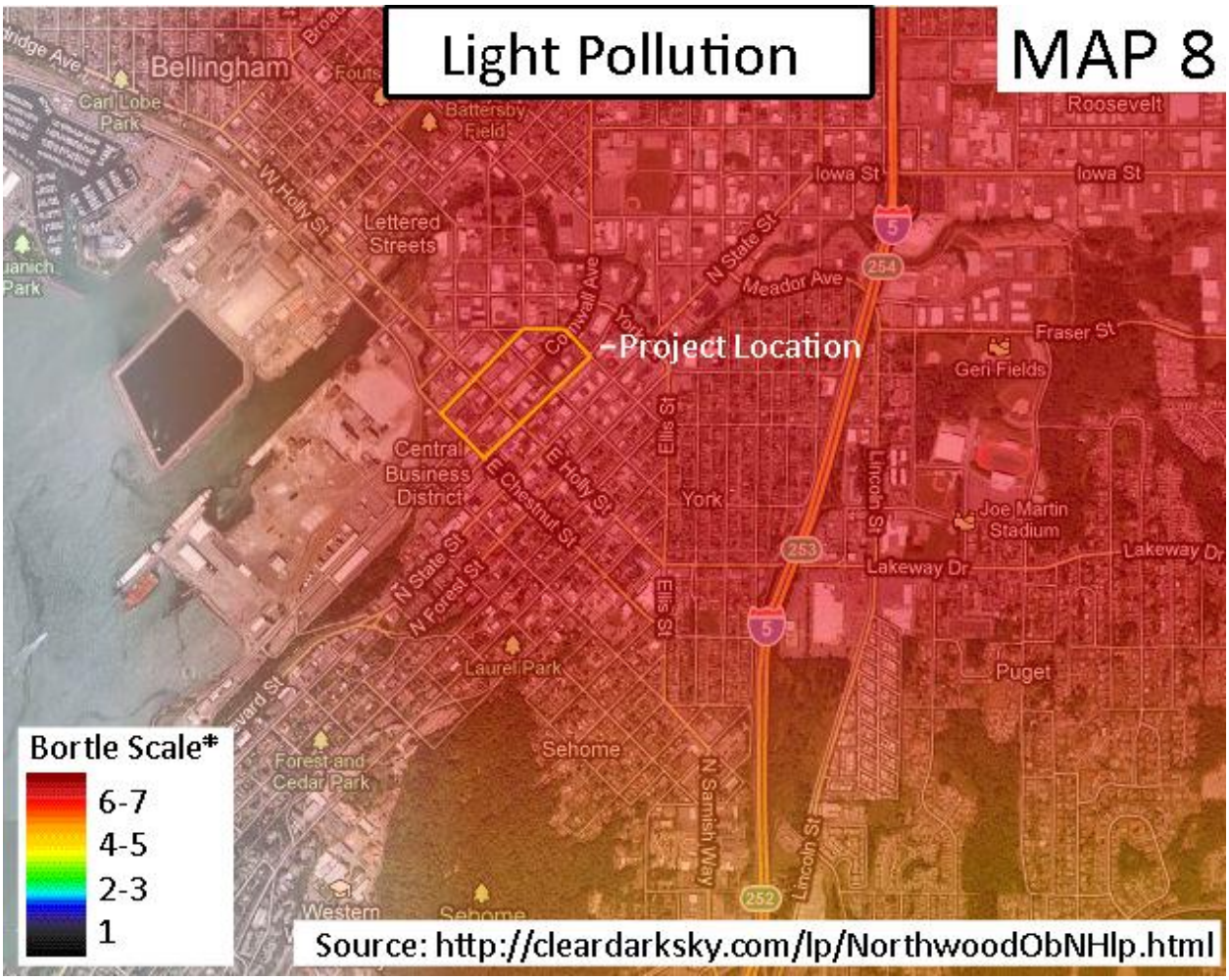

Light Pollution
MAP 8
Bellingham
Carl Lobe Park
Battersby Field
Lettered Streets
W Holly St
Iowa St
N State St
Meador Ave
Roosevelt
Fraser St
Geri Fields
Project Location
Central Business Distrct
E Chestnut St
E Holly St
Ellis St
York
Lincoln St
Joe Martin Stadium
Lakeway Dr
N Forest St
Laurel Park
Puget
Sehome
Forest and Cedar Park
N Samish Way
Western
Bortle Scale*
6-7
4-5
2-3
1
Source: http://cleardarksky.com/lp/NorthwoodObNHlp.html

Figure Index

Figure 0.1 Shows Potential amount of retail square footage in alleys

(Urban Transitions Studio, 35)

	Alley 1	Alley 2	Alley 3	Alley 4	Alley 5	Alley 6	**TOTALS**
Potential Alleyway Store Square footage **(current buildings)**	24, 280 ft^2	25,590 ft^2	14,360 ft^2	15,400 ft^2	17,520 ft^2	13,090 ft^2	**110,240 ft^2**
Potential Alleyway Store Square Footage **(infill buildings and additions)**	16,240 ft^2	8,680 ft^2	8,200 ft^2	19,880 ft^2	4,400 ft^2	8,520 ft^2	**65,920 ft^2**
Total Potential Alleyway Square Footage	40,520 ft^2	34,270 ft^2	22,560 ft^2	35,280 ft^2	21,920 ft^2	21,610 ft^2	**176,160 ft^2**

Figure 0.2 Shows the “Village Green,” a pocket park in Fairhaven, Washington
http://bellinghamster.com/f.htm

Figure 0.3 The “Village Green” during a community event
http://foodconnections.blogspot.com/2010/08/bellingham-and-coupeville-small-farmers.html

Figure 0.4 Old Town Development Mixed Use Building Plan
(Bellingham Municipal Code §20.35.070)

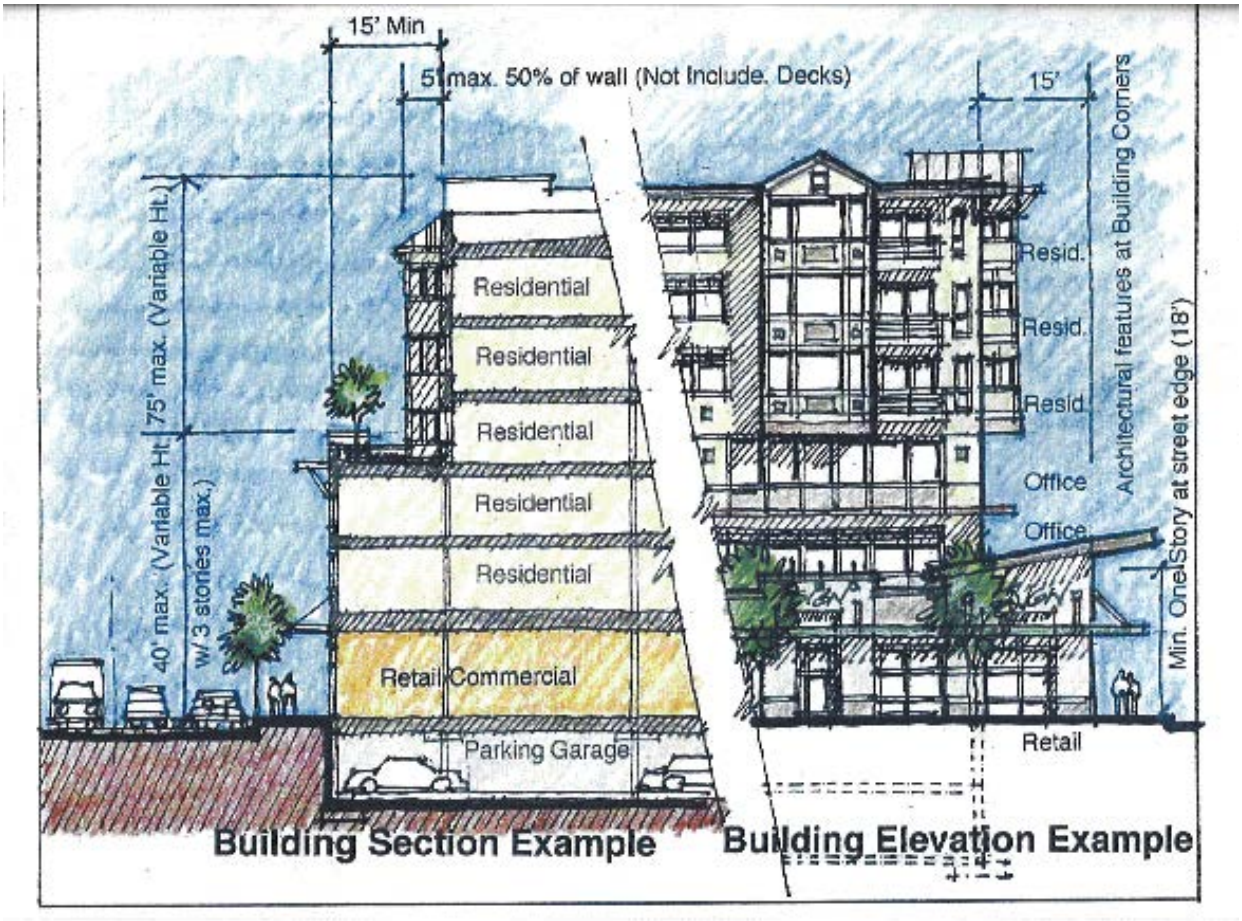


Figure 0.5 Old Town Development 130 foot height limits
(Bellingham Municipal Code § 20.35.070)

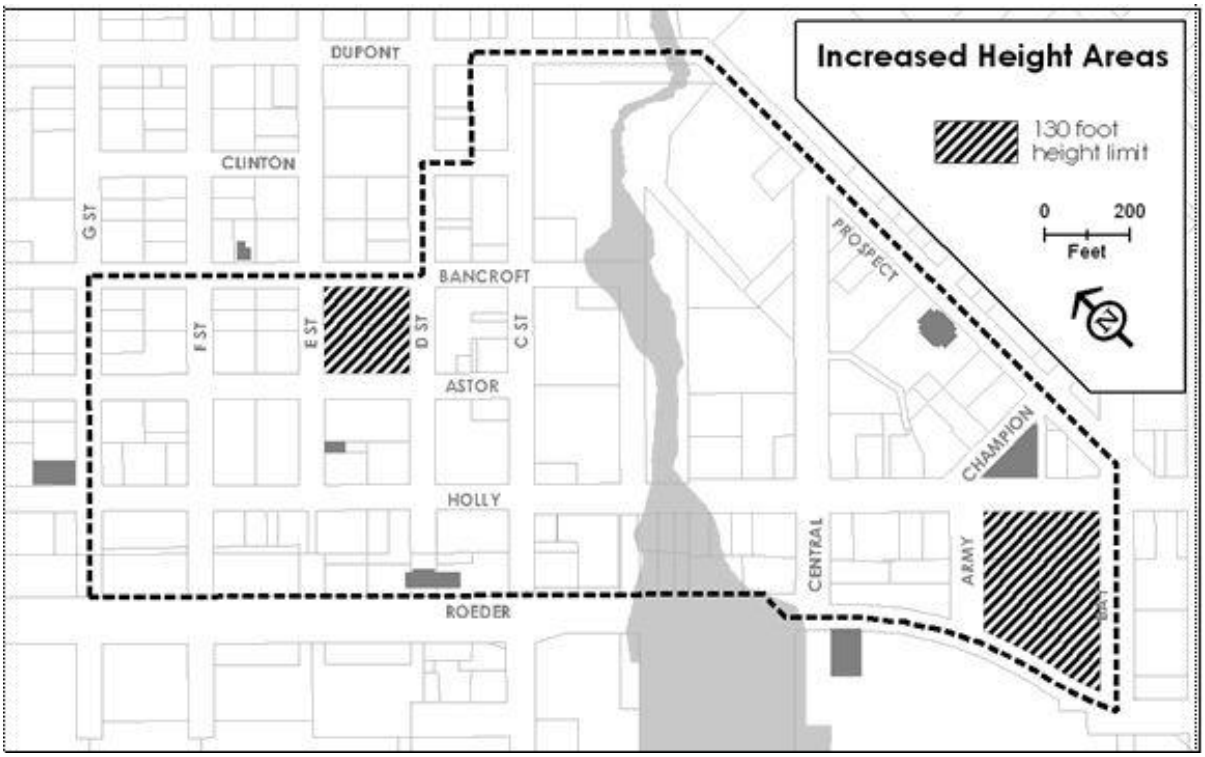


Figure 0.6 Proposed infill and building splits
(Urban Transitions Studio 2010, 36)

Figure 0.7 Grand Central Station surrounded by skyscrapers
(www.googlemaps.com)

Figure 0.8 Old Town Development 30-50 foot height limits for historic and cultural vistas (Bellingham Municipal Code § 20.35.070)

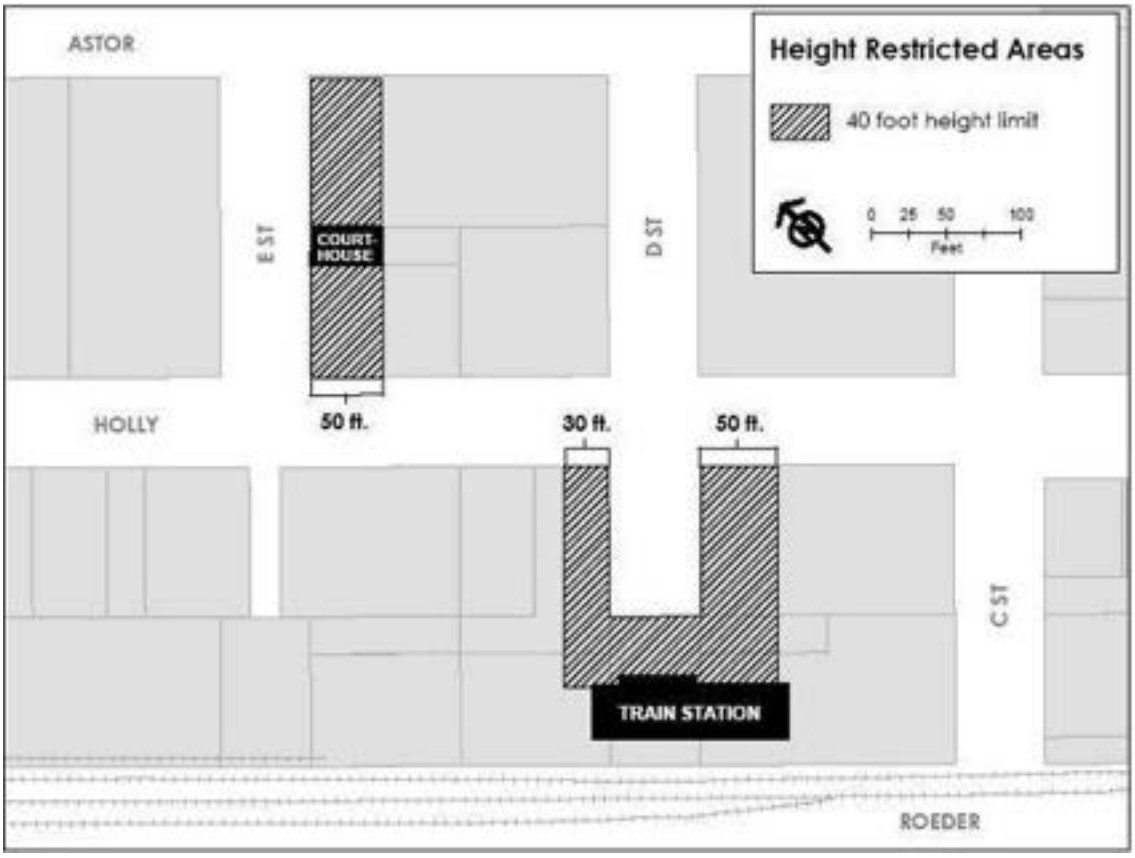


Figure 0.9 Automobiles attempting to navigate a “Yield to Pedestrians” zone at Pike Place Market in Seattle, Washington
http://catherine-dennis.com/bonustwo.html

Figure 1.0 Urban Village Vehicle Trip Reduction Credits Table

URBAN VILLAGE VEHICLE TRIP REDUCTION CREDITS

Menu of Location Factors and Performance Measures to Reduce Vehicle Trips

Note: Reductions below are additive and may not exceed a total of 50%

1.) MIXED USE URBAN VILLAGE LOCATION 15%

(Based on ITE Internal Trip Capture - Mixed Use Urban Environment)

2.) WTA TRANSIT PROXIMITY (Only one transit proximity reduction below may be used)

Development fronts on a high-frequency WTA GO Line **10%**

Development within 1/4-mile of WTA GO Line **7%**

Development fronts on standard WTA Route (< 60 min) **5%**

Development within 1/4-mile5 of standard WTA Route (< 60 min) **2%**

3.) EMPLOYER MANDATORY COMMITMENT TO COMMUTE TRIP REDUCTION (CTR)

CTR/TDM commitment combining economic incentives with transportation services **10%**

4.) VOLUNTARY ANNUAL WTA TRANSIT PASS PROVISION (Non-CTR)

2-year transit pass provided for residential units = 1% per unit pass **1%**

2-year transit pass provided for employees = 1% per employee pass **1%**

5.) VOLUNTARY CAR SHARE PARTICIPATION OR PROVISION (Non-CTR)

Car Share Vehicle(s) Parked On Residential or Employment Site = 2% per vehicle **2%**

Car Share membership fee provided for residential units = 2% per unit **2%**

Car Share membership fee provided for employees = 2% per employee **2%**

Figure 1.1 Bellingham Alleyway Population and Density
(U.S. Census 2000)

AreaAcre	Pop2k	HU2k	Pop_Acre	HU_Acre
3.2143	0	0	0	0
4.2394	2	1	0.4718	0.2359
4.1188	0	0	0	0
4.1473	11	10	2.6523	2.4112
4.1831	0	0	0	0
4.1848	74	97	17.683	23.1791

Figure 1.2 Mixed Use Development Building in Fairhaven, Washington
http://www.google.com/images

1.3 Business in a pedestrian alleyway in downtown Fairhaven, Washington
http://www.recumbentblog.com/2009/05/28/last-day/

Figure 1.4 Downtown Fairhaven Population and Density
(U.S. Census 2000)

AreaAcre	Pop2k	HU2k	Pop_Acre	HU_Acre
1.7978	0	0	0	0
7.7299	0	0	0	0
6.2468	0	0	0	0
7.1053	4	2	0.563	0.2815
1.8594	0	0	0	0
1.8764	0	0	0	0
1.8604	0	0	0	0
1.8635	0	0	0	0
1.9338	104	101	53.7801	52.2288
4.0831	47	23	11.5109	5.633
3.1366	16	6	5.1011	1.9129
3.969	38	20	9.5742	5.0391
4.0505	7	3	1.7282	0.7406
3.6834	9	5	2.4434	1.3574
3.9957	22	7	5.5059	1.7519
3.9236	44	18	11.2142	4.5876
3.8753	30	15	7.7413	3.8707
4.9875	21	7	4.2105	1.4035
4.0096	28	13	6.9832	3.2422
3.9266	33	15	8.4042	3.8201
3.8925	20	11	5.1381	2.8259

Calculation Index

Variables:

65, 920 square feet = square feet of proposed infill and additions in the alleyways

1,000 square feet = estimated housing unit size for this proposal

2.31 people = average household size in the City of Bellingham

1 acre = 43,560 square feet

24 units of housing = number of units per residential acre needed to fulfill the Whatcom County Comprehensive Plan suggestions to the City of Bellingham

Calculations:

Calculation 0.1

65,920 square feet/ 43,560 square feet/ 1 acre = 1.52 acres

Calculation 0.2

24 housing units x 1.52 acres = 36.48 housing units

Calculation 0.3

65,920 square feet/ 1,000 square feet = 65.92 housing units

Calculation 0.4

65.92 housing units x 2.31 people = 152.2752 people, rounded to approximately 153 people

Calculation 0.5

153 people/story x 4 stories = 612 people

Western Washington University

Huxley College of the Environment

LEED Neighborhood and Development Assessment:

The Alleyways

Dr. Troy Abel - Fall 2010

ESTU 436 – Environmental Impact Assessment

LEED Neighborhood and Design Assessment:

The Bellingham Downtown Alleyway Revitalization

Prepared for Environmental Studies 436
under the supervision of instructor Troy Abel, Ph.D

Western Washington University

Huxley College of the Environment

Fall 2010

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This report represents a class project that was carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector.

Environmental Impact Assessment
Huxley College of the Environment

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Date 12-3-2010

Contents

Fact Sheet

Title

LEED Neighborhood Development: Downtown Alleyways

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Introduction

Bellingham is a vibrant city nestled amid the Northwestern Cascades in close proximity to Canada, surrounded by vast agricultural flood plains, rolling foothills and striking snowcapped peaks. A crown jewel of the Pacific Northwest, Bellingham attracts people from across the country for a spectacular quality of life, higher education and a unique sense of community available only there. Needless to say, the population in Bellingham is projected to grow in the coming decades. By 2022, Bellingham is expected to grow over 50%, by almost 30,000 people, adding to the current population of 76,100 (COB, 2009), creating a significant impact on the municipality and metropolitan areas. (Population Growth Forecasts) Faced with a greater demand for land and services, municipalities of the future must seek innovative ways of meeting this growth without falling into the present urban paradigm of greater city sprawl. Space is becoming limited, farmland is being pressed by development and warnings of global climate change call for a radical shift in infrastructure. City planners, community leaders, developers, politicians and citizens are facing the difficult reality of finding ways to develop urban areas in revolutionary new ways. Boiled down into its most basic tenants, this new horizon is best described as sustainable urbanism, "walk-able and transit served urbanism integrated with high performance buildings and high performance infrastructure". (Farr, 2008) Drawing from building movements like new urbanism, smart growth and green building, sustainable urbanism is a synthesis of the classic environmentally friendly growth with other pressing social concerns like economic disparity, vehicle dependent communities, un-equitable neighborhood patterns and pedestrian safety. Urban renewal projects are an opportunity to gain experience reaching the needs of a community both environmentally and socially.

Downtown Bellingham is going to be the site of a major urban development in the near future that will add a great deal of community appeal for Bellingham residents and commercial real estate. This project is a major retrofit of the Cornwall corridor, the heart of Bellingham's central business district. Large retail outlet is going to be placed on either ends of the project boundaries and the alleyways that run parallel to the main streets will be renovated. The goal of this project is to increase capacity and attractiveness of the central business district, using the principles of smart growth, new urbanism and sustainable building technology as they are synthesized in the current 2009 LEED Neighborhood Design rating system. Designed by the U.S. Green Building Council as an industry standard system to measure and rate Green building projects, LEED rating systems have evolved to provide a voluntary and objective measure of a project's sustainability. Instead of designing and building the urban environment with a variety of Euclidean land uses that require extensive automobile connection to function properly, LEED standards help build mixed use communities that are designed and built to function self-sufficiently. Sustainable urbanism takes a more holistic approach to design, leading to the construction of healthy communities that encourage non-motorized transportation, mass transit and close proximity of everyday amenities. Bellis Fair Mall in Bellingham is an example of a Euclidean use, automobile-dependent development, which resulted in the loss of economic

activity downtown. Renovating the Downtown through LEED standards will effectively shift much of this retail activity from Bellis Fair Mall to a new urban village downtown, reducing automobile dependence and enhancing the livability of the downtown corridor.

Our job as a sustainable growth consulting firm is to evaluate Bellingham's potential for urban renewal based on the LEED-ND 2009 Rating System. This analysis begins with evaluating the current Cornwall revitalization proposal previously presented, through the LEED checklist. This project will focus on the alleyways that run parallel to Cornwall, the surrounding infill and building renovation. By doing this, we will be able to establish the potential for LEED certification of the existing plan and identify areas that can be improved upon to achieve a higher rating. Our alternative action will take the initial proposal a step further by evaluating potential solutions that can be utilized to meet more of the LEED requirements.

As an academic consultation team, our mission is to bridge the gap between builders, government planners and the concerned public by evaluating the LEED-ND as a sustainable growth tool. We are confident that prejudice concerning environmentally sustainable growth can be met with practical methods for reducing environmental harm, efficiency thresholds and habitat restoration, providing the public with intelligently designed community space that will benefit us all.

Letter to Citizen

Huxley College of the Environment
Western Washington University
516 High Street, Bellingham WA 98225

December 1, 2010

Dear Concerned Citizen,

This document was compiled by the Fall 2010 Environmental Impact Assessment ESTU 436 class as an academic endeavor to evaluate the current plans for downtown revitalization through the United States Green Building Council (USGBC) LEED for Neighborhood Design criteria.

Development plans for the commercial district in downtown Bellingham are a candidate for LEED-ND certification due to the compact nature of the current downtown infrastructure. Through a public process, it has been determined that a re-development plan of the waterfront and Cornwall corridor is desired by the public to return community vitality and economic development to the commercial district while preserving the historic characteristics of downtown Bellingham.

Contents of this document include credits that are achievable by the current Alleyways revitalization proposal in addition to alternative actions that could increase the achievable points possible through the framework of LEED-ND 2009, with a commitment by the community and city.

We believe that the long term goals for a re-vitalization of downtown Bellingham can be adequately met since the ideals articulated through current proposals and community input coincide with the mission put forth by the LEED coalition. Through a partnership between the USGBC, the Congress for the New Urbanism (CNU), and the Natural Resource Defense Council (NRDC), the rating systems titled Leadership in Energy and Environment Design (LEED) have been developed as a third party verification system for various different development projects based on specific criteria. This system is designed to create strategies for development that are based on the principles of smart growth, new urbanism, energy efficiency, green infrastructure and environmental stewardship.

Beyond being environmentally conscious, these principles serve to benefit the community and individuals by creating a healthy, vibrant and prosperous urban environment. LEED-ND provides a voluntary leadership standard that, if adopted by local government as a standard for the development community through a public-private partnership, could change the character of downtown Bellingham to greatly enhance the quality of life for all citizens.

We look forward to working with you,

Abel Environmental Consulting

Purpose of LEED-ND

The U.S. Green Building Council (USGBC), the Congress for the New Urbanism (CNU), and the Natural Resources Defense Council (NRDC)—organizations that represent leading design professionals, progressive builders and developers, and the environmental community—have come together to develop a rating system for neighborhood planning and development based on the combined principles of smart growth, New Urbanism, and green infrastructure and building. The goal of this partnership is to establish a national leadership standard for assessing and rewarding environmentally superior green neighborhood development practices within the framework of the LEED® Green Building Rating System™.

The five areas of emphasis in the LEED-ND rating system consist of:

Smart Location and Linkage (SLL)
Neighborhood Pattern and Design (NPD)
Green Infrastructure and Buildings (GIB)
Innovation and Design Process (IDP)
Regional Priority Credit (RPC)

LEED-ND serves as a voluntarily adopted system for a new approach to urban planning in areas of site location, design and construction. A main focus of the system is to reward the use of infill locations that have already been developed, including contaminated brown field sites. By doing this, urban areas are revitalized, urban sprawl is reduced, pedestrian activity is encouraged reducing automobile dependence, pollution is mitigated through stormwater and landscape improvements, energy efficiency goals are achieved, and historic characteristics are preserved. As a result, urban communities perform better from an environmental standpoint while still providing a sense of place that is so vital to the character of a city.

Executive Summary

The alleyway project incorporates six alleyways that run parallel to Cornwall, beginning on the north side at East and West Champion Street and ending the south side by East and West Chestnut Street. The west side of the project begins on Commercial Street and the east side of the project end at Railroad Avenue. In addition, this project involves the connection lot next to the Cornwall Bridge that provides a location for an extension of the interurban trail that runs down Boulevard Park.

Specifically, the alleyways provide the potential for increased storefront space and retail space available for businesses that can be easily accessed by pedestrians by opening up these key connections with new pavement, lighting and aesthetic features. Increasing connectivity through revitalizing alleys will result in the potential for greater pedestrian flow through the entire downtown commercial district while reducing the need for an automobile as the primary source of transportation through this area.

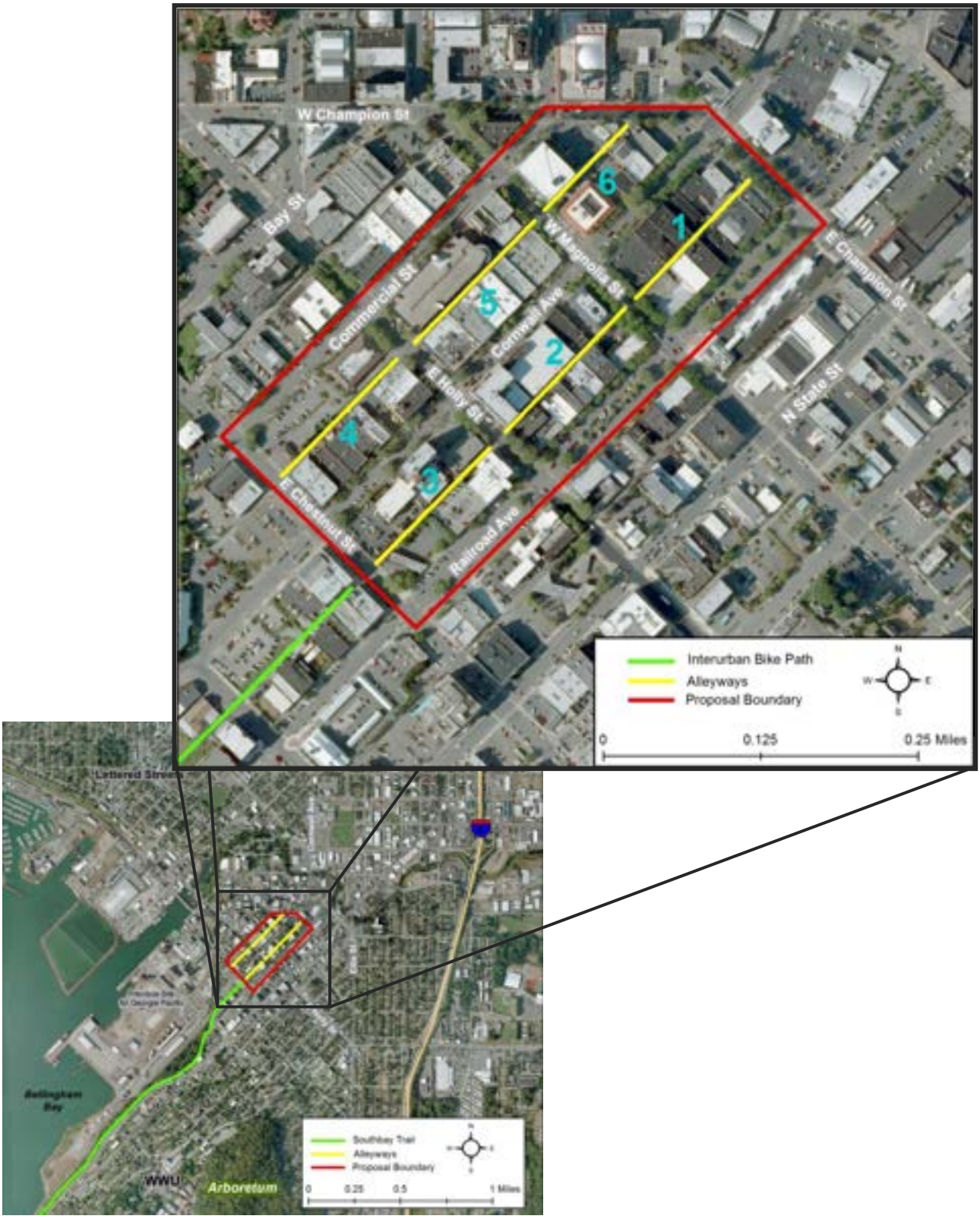
Our team has utilized the existing Downtown/Cornwall revitalization proposal by evaluating it through LEED-ND standards. Through this process, we have determined a number of possible methods for improving the score of the alleyway section. Based on the alternative actions that we suggest, we have developed a LEED certification score that will help to guide city planning officials towards the potential of this project as an urban green development.

Downtown Bellingham and especially the alleyways are a smart location for the application of LEED-ND on renovation and urban infill since it has been previously developed, is surrounded by a high density of public transportation services, and offers a high population density from both residents and employees. Through LEED-ND, many of the environmental concerns related to urban development are addressed, such as public transportation access, water use efficiency, runoff mitigation, energy generation and efficiency. Becoming LEED certified at any level requires proactive solutions to these concerns. By developing an integrated design plan with sustainability goals at the core of the project, the Alleyways can become a vital part of the entire downtown renovation project, including the dockside development, effectively creating a healthy, vibrant community for generations to come.

With the proposed design, the Alleyway section of the Downtown/Cornwall revitalization project, can achieve a Gold rating.

Site Maps

Figure 1. Downtown Bellingham Alleyway Revitalization Site



Decision Matrix

	Proposed Action	Alternative Action
	Percent of Points Earned	
Smart Location & Linkage: 27 total possible points	**74%**	**89%**
Built Environment	83%	89%
Natural Environment	33%	83%
Social/Economic Impacts	100%	100%
Neighboorhood Pattern & Design: 44 total possible points	**68%**	**93%**
Built Environment	68%	91%
Natural Environment	100%	100%
Social/Economic Impacts	65%	95%
Green Infrastructure & Buildings: 29 total possible points	**59%**	**83%**
Built Environment	61%	78%
Natural Environment	50%	100%
Social/Economic Impacts	-	-
Innovation & Design Process: 6 total possible points	**67%**	**67%**
Built Environment	100%	100%
Natural Environment	-	-
Social/Economic Impacts	100%	100%
Regional Priority Credits: 4 total possible points	**75%**	**100%**
Built Environment	-	-
Natural Environment	0%	100%
Social/Economic Impacts	100%	100%
Total Percentage	**67%**	**88%**

Certification Levels
Certified: 40-49 points (36-45 %)
Silver: 50-59 points (46-54 %)
Gold: 60-79 points (55-72 %)
Platinum: 80-110 points (>73%)

Proposed Action
· **74** credits awarded (meets Gold LEED certification) with no changes to the proposed development action.
Alternative Action
·Potential to meet **97** credits (Platinum LEED certification). Through more sustainable development practices.

Smart Location and Linkage (SLL)- 27 Possible Points

Proposed Action: (20/27)
Alternative Action: (24-25/27)

"The core of every center must be linked to all other cores by roads and transit" (Nelesson, 1994, pg.114)

"By emphasizing and enabling such elements as increased physical activity, healthier environments, and more interactive communities, Smart Growth has enormous potential to enhance the health of populations." (Gellar, 2003).

SLL Prerequisite 1: Smart Location

Required Prerequisite: Met

Purpose:
To encourage smart growth in the community, in order to provide revitalization for a community, the development should be within said community, being within walking distance or at least along a bus route.

Requirements:
To fulfill this credit the site must be within an infill site, next to an infill site with connectivity, or in a location with adequate transit service.

Proposed Action:
The development is to be built into only infill sites and into existing buildings. This is ideal for connectivity. Being close to residential areas, and western, the project area will be easily accessible by both students and Bellingham citizens.

Alternative Action:
No alternative action is needed to complete this prerequisite. The location placement for this type of revitalization is in the ideal location.

SLL Prerequisite 2: Imperiled and Ecological Communities

Required Prerequisite: Met

Purpose:
To protect the imperiled and ecological communities.

Requirements:
In order to fulfill this prerequisite, the proposed area must not be in an area where no such species or communities have been found or have a high likelihood of occurring, comply with a approved habitat conservation plan, or work with a qualified biologist to create and implement a conservation plan

Proposed Action:
There are no imperiled or ecological communities in the proposed development area. We are building in an area that is already developed, and thus is not in an area which would native plants to grow.

Alternative Action:
While alternative action is needed to complete this prerequisite, our group has suggested that the proposal include native plant conservation areas, offsite, in order to better promote and protect these very sensitive areas.

SLL Prerequisite 3: Wetland and Water Body Conservation

Required Prerequisite: Met

Purpose:
To maintain high water quality, the natural water cycle and habitat for biodiversity preservation.

Requirements:
In order to fulfill this prerequisite, the proposal should either not take place on or within 50ft of any wetland, or 100ft of any water bodies.

Proposed Action:
The proposed development is neither on nor within 50 feet of a wetland or 100 feet of a water body. Though the proposed area is in an infill site and so is not on either of these areas, the site is within a mile radius of Bellingham Bay. This means taking measure to reduce runoff and implement erosion control is still necessary (see GIB prerequisite 4).

Alternative Action:
No alternative action is needed.

SLL Prerequisite 4: Agriculture Land Conservation

Required Prerequisite: Met

Purpose:
To protect agricultural resources by preserving farm and forest lands.

Requirements:
In order to fulfill this prerequisite, the proposed area must not disturb prime soils, unique soils, or soils of state significance as identified in a state of Natural Resources Conservation Service soil survey, it must be in a location compliant with SLL prerequisite 1, option 1 or 3, it must be in a location that is a designated receiving area for developed rights under a publicly administered farmland protection program that provides for the transfer of developed rights from lands designated for conservation to lands designated for development, or if it does disturb these soils, mitigate the loss through the purchase of easements.

Proposed Action:
The area in which the proposal is located on an infill site, and is in the middle of downtown Bellingham, thus not located on any potential agricultural land or soil.

Alternative Action:
No alternative action is necessary.

SLL Prerequisite 5: Floodplain Avoidance

Required Prerequisite: Met

Purpose:
To protect not only the structure but the lives of those who work and live in the development. It will also encourage open space and conserve habitats, and maintain and create better water quality by protecting the natural water cycle.

Requirements:
To fulfill this prerequisite, the proposal location must be located on a site that does not contain any land within a 100-year-high-or moderate-risk floodplain, on an infill site or in a non-conveyance area of river or coastal floodplain without storm surge potential, or if the site is in any part within the floodplain, only develop on portions outside of the floodplain or that have been previously developed or that are in a non-conveyance area of river or coastal floodplain without storm surge potential.

Proposed Action:
The proposed development is located on an infill site and is not within any known floodplain.

Alternative Action:
No alternative action is needed.

SLL Credit 1: Preferred Location

Evaluation: Proposed action: (8/10 points), Alternative action: (8-9/10 points)

Purpose:

To encourage development within existing cities, suburbs, and towns to reduce adverse environmental and public health effects associated with sprawl. As well as to reduce development pressure beyond the limits of existing development and to conserve natural and financial resources required for construction and maintenance of infrastructure.

Requirements:

To evaluate this credit and to earn the most points possible the project can fulfill any combination of the three following options:

Option 1: Location Type

- Locate the project in one of the following locations:
  - A previously developed site that is not an adjacent site or infill site (1 point).
  - An adjacent site that is also a previously developed site (2 points).
  - An infill site that is not a previously developed site (3 points).
  - An infill site that is also a previously developed site (5 points).

AND/OR

Option 2: Connectivity

Locate the project in an area that as existing connectivity within ½ mile of the project boundary as listed in Table 1.

SLL Table 1. Points for connectivity within ½ mile of project (USGBC, 2009)

Intersections per square mile	Points
≥ 200 and < 250	1
≥ 250 and < 300	2
≥ 300 and < 350	3
≥ 350 and < 400	4
≥ 400	5

AND/OR

Option 3: Designate High-Priority Locations

- Achieve the following (3 points possible):
  - Earn at least 2 points under NPD Credit 4, Mixed-Income Diverse Communities, Option2, Affordable Housing.
  - In addition, locate the project in one of following high-priority redevelopment areas: EPA National Priorities List, Federal Empowerment Zone, Federal Enterprise Community, Federal Renewal Community, Department of Justice Weed and Seed Strategy Community, Department of the Treasury Community Development Financial Institutions Fund Qualified Low-Income Community (a subset of the New Markets Tax Credit Program), or the U.S. Department of Housing and Urban Development's Qualified Census Tract (QCT) or Difficult Development Area (DDA).

Proposed Action:

The proposed project is located on an infill site that is also a previously developed site, earning 5 out of 5 points from the first option. The current connectivity within ½ mile of the project and its boundary has a total of 115 intersections per square mile earning zero out of 5 possible points. Intersections per square mile is the number of intersections within ½ miles of the project boundaries divided by the area (square miles) of the project's extended ½-mile boundary.

$$214 \text{ intersections}/1.861 \text{mi}^2 = 114.99 \text{ intersections per square mile}$$

The connectivity around this project has a large impact from the former Georgia-Pacific (GP) site located in the Central Waterfront District along Bellingham Bay, southeast of the project (WA State Department of Ecology, November 2010). This site has limited publically accessible roads, and is a large section of the ½ mile area beyond the project boundary.

SLL Figure 1. Connectivity within ¼ and ½ mile distance from project area (Appendix A)

The 3 extra points out of the 10 possible points are earned in the third option. We meet the requirement of meeting at least 2 points under NPD Credit 4, Option 2 (See NPD Credit 4, Proposed Action), as well as can locate the project in a high-priority redevelopment area. The U.S. Department of Housing and Urban Development (2010) defines the census tract of the project location as a Qualified Census Tract (QCT). Pursuant to the International Revenue Code §42(d)(5)(C)(ii)(I) of 1986, a QCT is defined as, "Any census tract which is designated by the Secretary of Housing and Urban Development and, for the most recent year for which census data are available on household income in such tract, either in which 50% or more of the households have an income which is less than 60% of the area median gross income (AMGI) for such year or which has a poverty rate of at least 25%."

Alternative Action:

The connectivity of the project site is where an alternative action could earn more points. The Central Waterfront District currently includes minimal intersections, but if it were to be developed at least 1 additional point could possibly be earned (see Appendix B). Although more intersections could increase connectivity to the area at least 158 additional intersections would need to be developed to increase the ratio of intersections per square mile up to 200; the minimum amount of intersections per square mile to earn 1 point.

214 + **158.2** = **372.2** / 1.861mi^2 = **200** intersection per square mile

SLL Credit 2: Brownfield Redevelopment

Evaluation: Proposed action: (0/2 points), Alternative action: (2/2 points)

Purpose:

"Brownfield sites are abandoned or underused properties where there may be environmental contamination. Redevelopment efforts are often hindered by the liability for the cleanup or the uncertainty of cleanup costs. Brownfield sites that aren't cleaned up represent lost opportunities for economic development and for other community improvements." (WA State Department of Ecology, 2010)

The purposed the requirements for this credit encourage the reuse of land by developing sites that are complicated by environmental contamination, thereby reducing pressure on undeveloped land.

Requirements:

To earn the 2 possible points under this credit the project must feet the following requirement options:

Option 1: Brownfield Sites (1 point)

- The project must be located on a site where either part or all of the site is documented as contaminated, or on a site defined as a brownfield by a local, state, or federal government agency; and remediate the site contamination in ways that the controlling public authority

approves the protective measures and/or cleanup as effective, safe, and appropriate for the future use of the site.

OR

Option 2: High Priority Redevelopment Areas (2 points)

- Gain the points from option 1, AND
- The project must be located in one of the following redevelopment areas: EPA National Priorities List ,Federal Empowerment Zone, Federal Enterprise Community, Federal Renewal Community, Department of Justice Weed and Seed Strategy Community, Department of the Treasury Community Development Financial Institutions Fund Qualified Low-Income Community, or the U.S. Department of Housing and Urban Development's Qualified Census Tract or Difficult Development Area.

Proposed Action:

"With certain legal exclusions and additions, the term "brownfield site" means 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." (EPA, 2009)

The proposed Alleyway project is not located on a contaminated site, as well as a brownfield site according to the Washington State Department of Ecology's Toxic Cleanup Program. Due to not meeting the requirements of option 1, option 2 cannot be met, earning the proposed project zero points. Although option 1 is not met, the second requirement of option 2 is met by locating the project in one of the listed redevelopment areas. As determined in SLL Credit 1, Preferred Location, Proposed Action, the project site qualifies under the U.S. Department of Housing and Urban Development's Qualified Census Tract.

Alternative Action:

If the Cornwall revitalization project were extended onto the GP of the Central Waterfront District the project site could be considered contaminated. The alternative action, where the existing GP site would be included in the Cornwall project area would add an additional 2 points because it would meet the requirements of option one and the site already meets the existing requirement of option 2. Although the project site is not completely located on a contaminated site, the purpose of the credit is to encourage development of environmental contaminated areas rather than encourage development on undeveloped land. This project site is a previously developed area, thus no undeveloped or natural environments are disturbed on the currently proposed development area.

SLL Credit 3: Locations with Reduced Automobile Dependence

Evaluation: Proposed action: (7/7 points), Alternative action: (7/7 points)

Purpose:

To encourage development in locations shown to have multimodal transportation choices or otherwise reduced motor vehicle use, thereby reducing greenhouse gas emissions, air pollution, and other adverse environmental and public health effects associated with motor vehicle use.

Requirements:

In order to qualify for this credit, the project must accomplish these requirements:

- The project must be located on a site with existing transit service such that at least 50% of dwelling units and nonresidential building entrances (inclusive of existing buildings) are within a ¼-mile walk distance of bus or streetcar stops, or within a ½-mile walk distance of bus rapid transit stops, light or heavy rail stations, or ferry terminals, and the transit service at those stops in aggregate meets the minimums listed in Table 1.Both weekday and weekend trip minimums must be met to earn points at a particular threshold.
- Weekend daily trips must include service on both Saturday and Sunday. Commuter rail must serve more than one metropolitan statistical area (MSA) and/or the area surrounding the core of an MSA.

SLL Table 2. Minimum daily transit service for projects with multiple transit types (bus, streetcar, rail, or ferry). (USGBC, 2009)

Weekday Minimum Daily Trips	Weekend Minimum Daily Trips	Points
60	40	1
76	50	2
100	65	3
132	85	4
180	130	5
246	150	6
320	200	7

Proposed Action:

The proposed project receives 7 out of the possible 7 points because it is located on a site with existing transit services provided by the Whatcom Transportation Authority (WTA). At least 50% of dwelling units and nonresidential building entrances (inclusive of existing buildings) are within a ¼-mile walk distance of bus stops or within ½-mile walk distance of bus rapid transit stops. The WTA transit service at those stops in aggregate provides frequent weekend and weekday trips. There are 24 Downtown routes stopping at the Bellingham Station, providing 419 daily weekday trips, and 243 daily weekend trips (WTA, 2010).

SLL Table 3. Bus routes leaving Bellingham Station, 205 E Magnolia St, corner of Railroad and Champion or Magnolia Streets (WTA, 2010)

Route	Weekday	Weekend
3 Maplewood	12	9
4 Hospital	12	9
14 Fairhaven/Downtown	30	24
15 Cordata/WCC/Downtown	28	22
25X Lynden/Bellingham	1	0
43/44 Yew St.	13	9
49 Bakerview/Downtown	9	4
50 Gooseberry Pt./Downtown	8	6
70X Blaine/Bellingham	5	0
71X Everson/Nooksack/Sumas	2	0
72X Kendall/Bellingham	10	4
80X Bellingham/Mt. Vernon	16	4
105 Fairhaven/Downtown	17	15
107 WWU	22	9
108 Samish Way	12	9
190 Lincoln Creek/Downtown	25	9
196 WWU-Lincoln/Downtown	4	5
197 Lincoln-WWU/Downtown	3	4
232 Downtown/Cordata	50	23
331 Cordata/WCC/Downtown	50	23
401 Fairhaven/Downtown	50	23
512 Sudden Valley/Downtown	13	10
525 Barkley/Downtown	15	13
540 Silver Beach/Downtown	12	9
Total	**419**	**243**

** The project meets the maximum of 7 points due to the Bellingham Station located within ¼ mile of the required dwelling entrances, although the location of this project is compliant with reducing automobile dependence to an even larger extent. This analysis only includes major public bus trips per day, but does not include the trips made at other smaller bus stops located within the preferred project location.

Alternative Action:

No alternative action is needed.

SLL Credit 4: Bicycle Network and Storage

Evaluation: Proposed action: (0/1 point), Alternative action: (1/1 point)

Purpose:

"A protected bicycle path is a symbol that a citizen on a $30 bicycle is equally important to one in a $30,000 car," declared the former mayor of Bogota, Enrique Peñalosa Jr. (2007).

To promote bicycling and transportation efficiency, including reduced vehicle miles traveled (VMT). To support public health by encouraging utilitarian and recreational physical activity.

Requirements:

BICYCLE NETWORK

Design and/or locate the project to meet at least one of the three requirements below:

a. An existing bicycle network of at least 5 continuous miles in length is within 1/4-mile bicycling distance of the project boundary.
b. An existing bicycle network within 1/4-mile bicycling distance of the project boundary connects to at least ten diverse uses within 3 miles' bicycling distance from the project boundary.

AND

BICYCLE STORAGE

Provide bicycle parking and storage capacity to new buildings as follows:

a. **Multiunit residential.** Provide at least one secure, enclosed bicycle storage space per occupant for 30% of the planned occupancy but no fewer than one per unit. Provide secure visitor bicycle racks on-site, with at least one bicycle space per ten dwelling units but no fewer than four spaces per project site.
b. **Retail.** Provide at least one secure, enclosed bicycle storage space per new retail worker for 10% of retail worker planned occupancy. Provide visitor or customer bicycle racks on-site, with at least one bicycle space per 5,000 square feet of retail space, but no fewer than one bicycle space per business or four bicycle spaces per project site, whichever is greater. Provide at least one on-site shower with changing facility for any development with 100 or more new workers and at least one additional on-site shower with changing facility for every 150 new workers thereafter.
c. **Nonresidential other than retail.** Provide at least one secure, enclosed bicycle storage space per new occupant for 10% of planned occupancy. Provide visitor bicycle racks on-site with at least one bicycle space per 10,000 square feet of new commercial nonretail space but not fewer than four bicycle spaces per building. Provide at least one on-site shower with changing facility for any development with 100 or more new workers and at least one additional on-site shower with changing facility for every 150 new workers thereafter.

- Secure, enclosed bicycle storage areas must be locked and easily accessible to residents and/or workers. Provide informational signage on using the storage facilities.

- Visitors' and customers' bicycle racks must be clearly visible from a main entry, located within 100 feet of the door, served with night lighting, and protected from damage from nearby vehicles. If the building has multiple main entries, bicycle racks must be proportionally dispersed within 100 feet of each.
- Shower and changing facility requirements may be met by providing the equivalent of free access to on-site health club shower facilities, if the health club can be accessed without going outside. Provide informational signage on using the shower facilities.

Proposed Action:

Pursuant to the current proposal, the requirements for bicycle storage are not fully met and thus there are zero points earned for this credit. The project meets the requirements for the bicycle network sections in that it has an existing bicycle network, the Southbay trail connecting to the Whatcom Creek trail, of at least 5 miles in length within ¼-mile bicycling distance of the project boundary, which connects to multiple diverse use locations (see Figure 2 below).

SLL Figure 3. Downtown Bellingham Bike Network Map (Appendix C)

Alternative Action:
Full points can be achieved by supplying enclosed bicycle storage with changing facilities meeting the requirements above.

SLL Credit 5: Housing and Jobs Proximity

Evaluation: Proposed action: (3/3 points), Alternative action: (3/3 points)

Purpose:
To encourage balanced communities with a diversity of uses and employment opportunities.

Requirements:
This credit's evaluation is broken up into three options: Project with Affordable Residential Component (3 points), Project with Residential Component (2 points), or Infill Project with Nonresidential Component (1 point). Under the first option the project must meet all of the following requirements.

- Include a residential component equaling at least 30% of the project's total building square footage (exclusive of parking structures)
- Locate and/or design the project such that the geographic center (or boundary if the project exceeds 500 acres) is within ½ mile walk distance of existing full-time-equivalent jobs whose number is equal to or greater than the number of dwelling units in the project
- Satisfy the requirements necessary to earn at least one point under NPD Credit 4, Mixed-Income Diverse Communities, Option 2, Affordable Housing

Proposed Action:
Under careful analysis of the project's residential and non-residential building area, calculations were produced of the proposed and current square footage. The proposed action was found to meet the requirements for the first option earning a total of 3 points. According to the City of Bellingham Employment Lands Report (2008) the Downtown Employment Area averages 514ft^2 per employee. This provides roughly 7,383 jobs within ½-mile of the projects geographic center (COB, 2008, pp. 27). The proposed project also satisfies the requirements necessary to earn at least one point under the NPD Credit 4, Mixed-Income Diverse Communities, Option 2, Affordable Housing (See NPD Credit 4, Proposed Action).

The last point out of the three possible points is earned by including a residential component equaling at least 30% of the projects total building square footage (exclusive of parking structures). We find this requirement to be met at 27.2% of the project's total building square footage. Although the percentage is not greater than 30% the total building square footage had to be recalculated from the original proposal, and thus due to unclear building dimensions the minimal possible residential and total building square footage had to be used. New calculations find the total residential area to be 353,751.62ft^2 and the total building area (exclusive of parking structures) equal to 1,301,117ft^2.

Alternative Action:
Further action to improve the clarity of this credit could be included in an alternative action write up which includes accurate calculations such as total building square footage. Alternative actions following multiple LEED-ND credits include the implementation of higher buildings which could thus be used to resolve any disputes over the project's square footage.

SLL Credit 6: Steep Slope Protection

Evaluation: Proposed action: (1/1 point), Alternative action: (1/1 point)

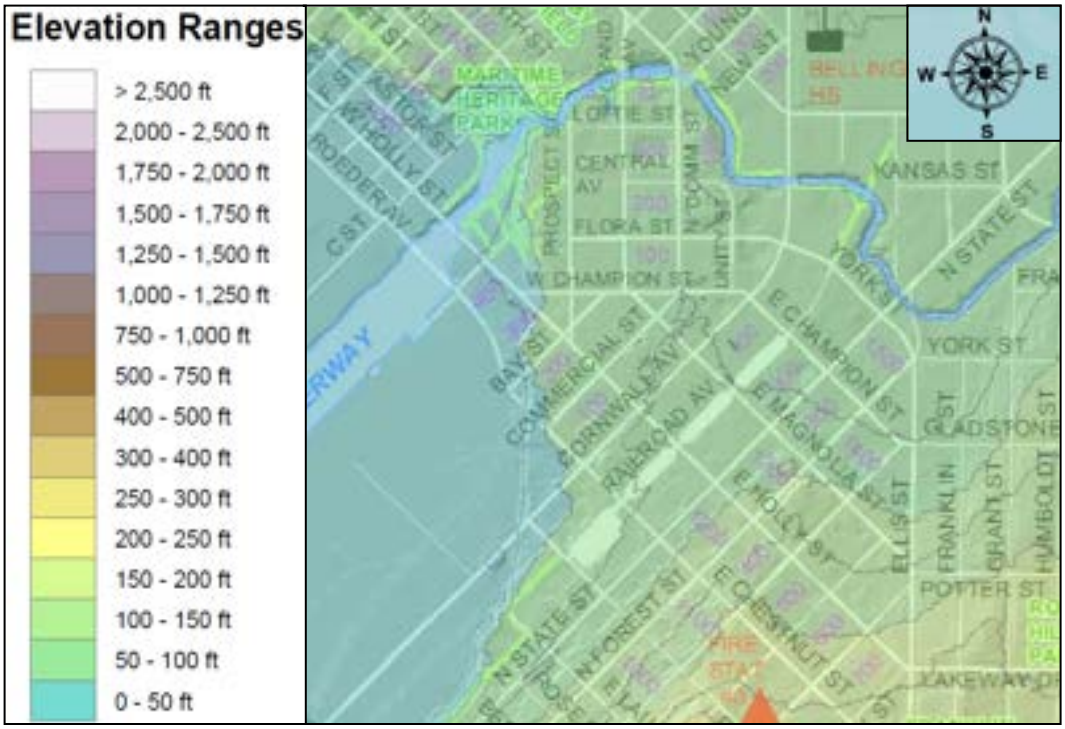
Purpose:
To minimize erosion to protect habitat and reduce stress on natural water systems by preserving steep slopes in a natural, vegetated state.

Requirements:
Locate on a site that has no existing slopes greater than 15%, or avoid disturbing portions of the site that have existing slopes greater than 15%.

For ALL projects:
All options apply to existing natural or constructed slopes. Portions of project sites with slopes up to 20 feet in elevation, measured from toe to top, that are more than 30 feet in any direction from another slope greater than 15% are exempt from the requirements, although more restrictive local regulations may apply.

Proposed Action:
Based on the city's contour maps there are no existing slopes greater than 15% in the project area (See SLL Figure 3 below).

SLL Figure 3. Topographic map of the Bellingham downtown area. (Appendix D)



*Each counter interval is equal to 25 feet.

Alternative Action:

No alternative action is needed, because there are no steep slopes within the project area.

SLL Credit 7: Site Design for Habitat or Wetland and Water Body Conservation

Evaluation: Proposed action: (1/1 point), Alternative action: (1/1 point)

Purpose:

To conserve native plants, wildlife habitat, wetlands, and water bodies.

Requirements:

For sites without significant habitat or wetlands and water bodies:

- The project must be located on a site that does not have significant habitat. Significant habitat is defined as:
  - Habitat for species that are listed or are candidates for listing under state or federal endangered species acts, habitat for species of special concern in the state, and/or habitat for those species and/or ecological communities classified as G1, G2, G3, and/or S1 and S2 species by NatureServe.
  - Locally or regionally significant habitat of any size, or patches of predominantly native vegetation at least150 acres.

    - Habitat flagged for conservation under a regional or state conservation or green infrastructure plan.
- Project must also be located on land that is not within 100 feet of significant habitat.
- Proposal must fulfill the requirements of Options 1 or 2 (a) under SLL Prerequisite 3, Wetland and Water Body Conservation.

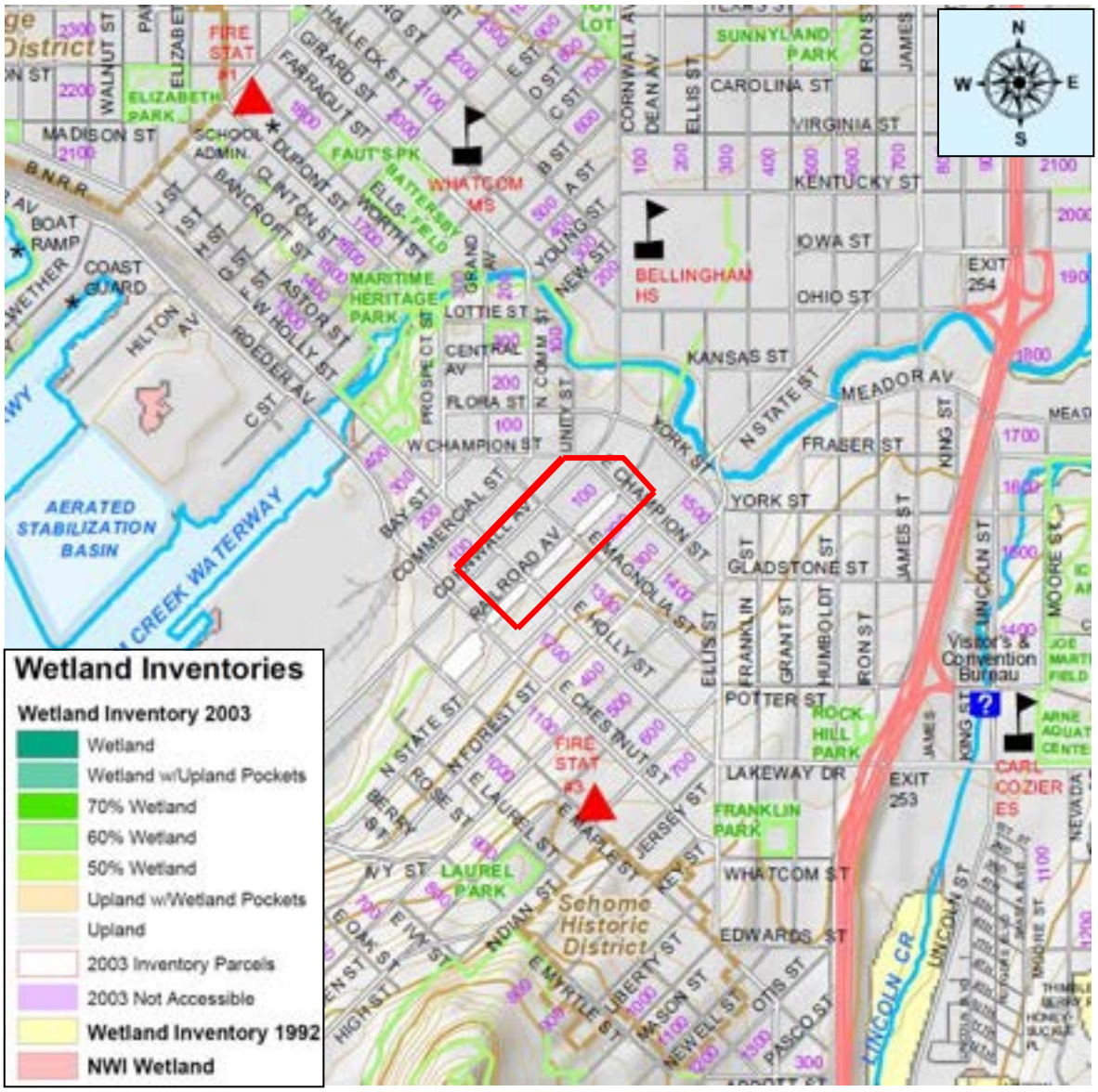
For all projects the following features are not considered wetlands, water bodies, or buffer land that must be protected; previously developed land and man-made water bodies and wetlands.

Proposed Action:

Under the requirements of option 1 the project is located on a site without significant habitat as defined above or land within 100 feet of such habitat. The requirements are met for option 1 of SLL Prerequisite 3, Wetland and Water Body Conservation locating the project on a site that includes no wetlands, no water bodies, no land within 50 feet of wetlands, and no land within 100 feet of water bodies (See SLL Figure 4 below).

The proposed project is in an area that is zoned commercially and is on a previously developed sight. If the site did have significant habitat, prior to any project development working alongside the Washington state's Natural Heritage Program and the state's fish and wildlife agency to outline identified significant habitat on the site.

SLL Figure 4. Wetlands inventory of downtown Bellingham area (Appendix E)



Alternative Action:
No alternative action is needed at this time.

SLL Credit 8: Restoration of Habitat or Wetlands and Water Bodies

Evaluation: Proposed action: (0/1 point), Alternative action: (0/1 point)

Purpose:
To restore *native plants*, wildlife habitat, *wetlands*, and *water bodies* that have been harmed by previous human activities.

Requirements:

To fulfill the requirements for this credit,

- An area equal to or greater than 10% of the project site's development footprint must use only native plants in order to restore predevelopment native ecological communities, water bodies, or wetlands.
- Work with a qualified biologist to ensure predevelopment conditions are properly met.
- Protect the restored areas from development.
- Identify and commit to ongoing management activities, in order to maintain restored areas for a minimum of three years after the project is built which may be met by earning SLL Credit 9, Long-Term Conservation Management of Wetlands and Water Bodies.

The requirements are not met if the project has negative effects on habitat for species identified in Option 2(a) of SLL Credit 7, Site Design for Habitat or Wetland and Water Body Conservation.

Proposed Action:

Currently, the requirements for this credit cannot be fully met without tearing down 10% of the buildings. This downtown dense, urban are is proposed to be developed to increase economic activity, thus decreasing the dwelling units and economic use would alter the entire project and is not feasible at this stage of analysis.

Alternative Action:

The use of native plants over 10% of the development footprint may not be currently proposed, but the use of native plants throughout the development such as trees, shrubs, rooftop gardens, etc., can increase the use of native plants to the downtown Bellingham area. The area where the bike path connection of the Southbay trail and the Whatcom Creek trail is made could have an alternative use as a native habitat instead of the underused parking lot it resides as now. The City of Bellingham has a diverse number of nurseries that provide native plants as well as a detailed list of native plant species of which the project developers could use to restore native plant species in the area and refrain from the use of foreign invasive species (COB Parks and Recreation, COB Public Works Department, 2010). The city of Bellingham strives to include restoration of native habitats throughout the area as the City develops. Our downtown Alleyway Restoration area is within 2/3-mile from 2 critical water body areas, such as the mouth of Whatcom Creek and Bellingham Bay (see Appendix F for map of local restoration). Whatcom Creek houses riparian and fish passage restoration projects, of which the way the city develops and implements native habitats and LEED certified buildings, can affect these important entities to the Bellingham area and its residents.

SLL Credit 9: Long-Term Conservation Management of Habitat or Wetlands and Water Bodies

Evaluation: Proposed action: (0/1), Alternative action: (1/1)

Purpose:

To conserve native plants, wildlife habitat, wetlands, and water bodies.

Requirements:

The main requirement is to produce and carry out the implementation of a management plan of at least ten-years for new or existing on-site native habitats, water bodies, and/or wetlands and their buffers, as well as the creation of a secure funding source for management.

- Involve a qualified biologist or a professional from a natural resources agency or natural resources consulting firm in writing the management plan and conducting or evaluating the ongoing management.
- The plan must include biological objectives consistent with habitat and/or water resource conservation, and it must identify
    1) procedures, including personnel to carry them out, for maintaining the conservation areas;
    2) estimated implementation costs and funding sources; and
    3) threats that the project poses for habitat and/or water resources within conservation areas (e.g., introduction of exotic species, intrusion of residents in habitat areas) and measures to substantially reduce those threats.
- The project does not meet the requirements if it has negative effects on habitat for species identified in Option 2(a) of SLL Credit 7, Site Design for Habitat or Wetland and Water Body Conservation.

Proposed Action:

Currently the proposed action does not meet the requirements for this credit, because the proposal does not include the creation or implementation of a long term management plan for new or existing on-site native habitats, water bodies, and/or wetlands and their buffers.

Alternative Action:

It is possible to implement a management plan for the Southbay Trail connection; however the current condition of the connection cannot be identified as a native habitat, water body, wetland or buffer zone, and thus could be restored back to a native habitat area. The implementation plan would need to involve a restoration process as specified in SLL Credit 8. To conserve the native plants, wildlife habitat, wetlands, and water bodies as the purpose states, the comprehensive project can include an implementation on developers to financially and politically support the long term restoration and conservation of not only the possible Southbay Trail bike path connection lot but also the neighboring significant environmental areas of which could be impacted by large developments to the area. Conditions would include the use of LEED certified buildings to keep the impacts on the neighboring Bellingham Bay, and Whatcom Creek to a minimum. Also there could be long term efforts to support the protection and restoration of the salmon runs on Whatcom Creek.

Neighborhood Pattern and Design (NPD)- 44 Possible Points

Proposed Action: (30/44)
Alternative Action: (38-41/44)

"The key to active street life is creating a twenty-four hour city, with neighborhoods so diverse in their use that they are inhabited around the clock. Eating, shopping, working, socializing – no one activity can flourish in the absence of any other, since they are all mutually reinforced" (Duany et. al. 2000. p.156)

NPD Prerequisite 1: Walkable Streets

Required Prerequisite: Met

Purpose:
To promote walking, good health and a lower Vehicle Miles Traveled (VMT).

Requirements:
The requirements to fulfill this prerequisite is

a. 90% of the new building frontage faces a public space
b. At least 15% of existing and new street frontage within and bordering the project has a minimum building-height-to-street-width ratio of 1:3
c. Continuous sidewalks or equivalent all-weather provisions for walking are provided along both sides of 90% of streets or frontage within the project
d. No more than 20% of the street frontages within the project are faced directly by garage and service bay openings.

Proposed Action:
Because the project calls for the revitalization of the alleyways into public gathering spaces, for pedestrian and bicycle use only, the buildings will all front either a street with a sidewalk, or paseo. The height-to-width ratio will be met with ease, as all the new buildings will have two or more stories, since they will be for multiple usages (both for business and residential purposes) and because at least half of the buildings will front the alleyways. There are sidewalks on all both sides of each street, and the alleyway's revitalization will provide an area for pedestrians and bicyclists to ride and walk. There will also, not be more than 20% of the street frontages within the project facing garage or service bay openings.

Alternative Action:
No alternative action is needed.

NPD Prerequisite 2: Compact Development

Required Prerequisite: Met

Purpose:

This is to promote the conservation of land and transportation efficiency. If there are dwelling units or if the area is within a reasonable walking distance, then there will be a reduction in the amount of VMT. This will also create less congestion and traffic on the roads, and promote good health due to exercise.

Requirements:

In order to fulfill the prerequisite the proposal must include at least a density of 7 dwelling units and at least a density of at least .50 FAR.

Proposed Action:

The project proposal calls for the construction of buildings with the density 1.51 FAR of buildable land available for nonresidential uses, and for the density of 22 dwelling units per acre of buildable land available for residential uses.

Alternative Action:

No alternative action is needed.

NPD Prerequisite 3: Connected and Open Community

Required Prerequisite: *Met*

Purpose:

To provide an area that is well connected and easily accessible to the public from multiple locations. This will create transportation efficiency and promote the multitude of modes of transportation.

Requirements:

In order to fulfill the prerequisite the proposal must include at least 140 intersections per square mile and the proposal must include at least one through-street and/or nonmotorized right-of-way, or locate the project such that the existing streets within ¼ mile of the project boundary is has least 90 intersections per square mile.

Proposed Action:

There are 123.74 intersections per square mile within a quarter mile of the project boundary. (See Appendix C).

Alternative Action:

No alternative action is needed.

NPD Credit 1: Walkable Streets

Evaluation: Proposed action: (11/12 points), Alternative action: (12/12 points)

"For policy-makers, designers and managers of public spaces, the recommendation of this study [Walkable Main streets] *is to consider simultaneously the physical, land-use and social aspects of the built environment to support walking."* (Mehta, 2008, p. 243)

Purpose:

To promote transportation efficiency, including reduced vehicle miles traveled (VMT). To promote walking by providing safe, appealing, and comfortable street environments that support public health by reducing pedestrian injuries and encouraging daily physical activity.

Requirements:

a. At least 80% of the total linear feet of street-facing building facades in the project are no more than 25 feet from the property line.
b. At least 50% of the total linear feet of street-facing building facades in the project are no more than 18 feet from the property line.
c. At least 50% of the total linear feet of mixed-use and nonresidential street facing building facades in the project within 1 foot of a sidewalk or equivalent provision of walking.
d. Functional entries to the building occur at an average of 75 feet or less along nonresidential or mixed-use buildings or blocks.
e. Functional entries to the building occur at an average of 30 feet or less along nonresidential or mixed-use buildings or blocks.
f. All ground-level retail, service, and trade uses that face a public space have clear glass on at least 60% of their façades between 3 and 8 feet above grade.
g. If a façade extends along a sidewalk, no more than 40% of its length or 50 feet, whichever is less, is blank (without doors or windows).
h. Any ground-level retail, service, or trade windows must be kept visible (unshuttered) at night; this must be stipulated in covenants, conditions, and restrictions or other binding documents.
i. On-street parking is provided on a minimum of 70% of both sides of all new and *existing* streets, including the project side of bordering streets. The percentage of on-street parking is calculated by dividing the length of street designated for parking by the total length of the curb along each street, including curb cuts, driveways, and intersection radii. Space within the parking lane that is occupied by corner bulb-outs (within 24 feet of an intersection), transit stops, and motorcycle or bicycle parking may be counted as designated for parking in this calculation. Woonerfs are not considered streets for this subsection.
j. Continuous sidewalks or equivalent provisions for walking are available along both sides of all streets within the project, including the project side of streets bordering the project. New sidewalks, whether adjacent to streets or not, must be at least 10 feet wide on retail or mixed-use blocks and at least 5 feet wide on all other blocks. Equivalent provisions for walking include woonerfs and all-weather-surface footpaths at least 5 feet wide. Note that these requirements specify wider sidewalks than required by NPD Prerequisite 1, Walkable Streets.

k. If the project has ground-floor dwelling units, the principal floor of at least 50% of those units must have an elevated finished floor no less than 24 inches above the sidewalk grade. Below-grade basement spaces and/or accessory dwelling units are exempt from this requirement.
l. In nonresidential or mixed-use projects, 50% or more of the total number of office buildings include ground floor retail along 60% of the length of the street-level façade; 100% of mixed-use buildings include ground floor retail, live-work spaces, and/or ground-floor dwelling units along at least 60% of the street-level façade; and all businesses and/or other community services on the ground floor are accessible directly from sidewalks along a public space, such as a street, square, paseo, or plaza, but not a parking lot.
m. At least 40% of all street frontages within the project have a minimum building-height-to-street-width ratio of 1:3 (i.e., a minimum of 1 foot of building height for every 3 feet of street width).
n. 75% of new residential-only streets within the project are designed for a target speed of no more than 20 mph.
o. 70% of new nonresidential and/or mixed-use streets within the project are designed for a target speed of no more than 25 mph. A multiway boulevard, with travel lanes separated from access lanes by medians, may apply this requirement to its outer access lanes only (through-lanes are exempt), provided pedestrian crosswalks are installed across the boulevard at intervals no greater than 800 feet.
p. At-grade crossings with driveways account for no more than 10% of the length of sidewalks within the project.

Proposed Action:

a. All the building facades facing the street, of which are mostly mixed use buildings, are all within 25" of the property line. Many of which have a zero lot line and are adjacent to sidewalks so will meet this requirement.
b. This requirement is meet as most building facades are within 18' of the property boundary.
c. Most buildings have sidewalks on the street and alley ways as to provide ease of access for pedestrians. This requirement is meet
d. The estimated distance between functional entries averages below 75 feet.
e. This requirement is not meet as functional entries to mixed-use buildings average well above 30 feet.
f. All ground level retail incorporates 60% glass windows into their façades. As well the windows grade is above 3 feet and below 8, averaging to 7 feet.
g. Currently there is no situation where a building's façade is blank for 50 feet in the downtown area. With the current conditions of the proposal there should not be a building with these large blank facades. This requirement is meet
h. There are no details containing restrictions on visible windows within a binding document. Therefore this requirement is not meet.
i. The proposed parking situation places on-street parking along every street within the project. This creates a score well above 70%.
j. The proposed sidewalks are to be 15 feet wide and cover all streets within the project boundary. This meets the requirements.
k. There are no ground floor dwelling units. This point is omitted.

l. All building if mixed use have retail on the ground floor that have direct access to the side walk or alleyway plaza. This requirement is met.
m. There lowest street-width ratio is 1:35 with most buildings being well over this ratio, especially with the new proposal additions. There for this requirement is met.
n. There are no residential only streets within the project.
o. The current speed limit is 25mph and that is expected to remain as it already is proven to improve safety.
p. There are few driveways within the project. Generally the driveways are for drive thru banks and parking. These driveways are to be removed or remain as such driveways account for less than 10% of the projects sidewalks.

Alternative Action:

Only one of these requirements needs to be met to gain full points, however both can be implemented easily.

a. This requirement can be met by placing entrances into buildings less than 30 feet apart. This would average to about 4 entrances per building. This is possible as there are a large variety of building sizes so many may have one entrances while others will have multiple.
h. By requiring that any ground level window of a retail, service or trade use must be kept visible at night. This can be achieved by stipulating this requirement in covenants, conditions, and restrictions (CC&R) or in another binding document.

NPD Credit 2: Compact Development

Evaluation: Proposed action: (3/6 points), Alternative action: (3-6/6 points)

Purpose:

To encourage development in existing areas to conserve land and protect farmland and wildlife

Intent

To encourage development in *existing* areas to conserve land and protect farmland and wildlife habitat. To livability, walkability, and transportation efficiency, including reduced *vehicle miles traveled* (VMT). To im public health encouraging daily physical activity associated with alternative modes of transportation and development.

Requirements

Design and build the *project* such that residential and nonresidential components achieve the *densities* per *buildable land* listed in Table 1 (excluding those portions of parking structures devoted to parking).

Table 1. Points for density per acre of buildable land

Residential density (DU/acre)	Nonresidential density (FAR)	Points
> 10 and ≤ 13	> 0.75 and ≤ 1.0	1
> 13 and ≤ 18	> 1.0 and ≤ 1.25	2
> 18 and ≤ 25	> 1.25 and ≤ 1.75	3
> 25 and ≤ 38	> 1.75 and ≤ 2.25	4
> 38 and ≤ 63	> 2.25 and ≤ 3.0	5
> 63	> 3.0	6

DU = dwelling unit; FAR = floor-area ratio.

The specified densities must be achieved within five years of the date that the first building of any type is c

The scoring of a mixed-use project is calculated with a weighted average, according to the following steps.

1. Determine the total square footage of all residential and nonresidential uses.
2. Calculate the percentage residential and percentage nonresidential of the total square footage.

$$Residential\ Density = \frac{Number\ of\ Dwelling\ Units}{Buildable\ land\ in\ Acres}$$

$$Floor\ Area\ Ratio = \frac{Non\ residential\ Building\ Floor\ Area}{Buildable\ Land\ Area}$$

Proposed Action:

Based on the current situation and the estimated proposed number of units to be added to the Cornwall area the current calculations are derived so that this credit can be assed accurately.

$$\frac{471\ Units}{22\ Acres} = 22\ Dwelling\ Units\backslash Acre$$

$$\frac{1403500\ Ft^2}{927100\ Ft^2} = 1.51\ FAR$$

With the current proposal the non-residential floor-area ratio is scoring that of 1.51. The residential density per acre is that of about 22 Dwelling units per acre, as shown above. This causes a score of 3 points for the credit as per NPD Table 1.

Alternative Action:

The alternative action that could be implemented would provide the final points with this credit. There is an opportunity with this proposal to provide a greater abundance of residential units in the downtown core as well as a larger commercial square footage. This can be achieved by raising the height and in turn the number floors within each proposed infill building. This will result with most, if not all buildings are mixed use with commercial or retail on the ground floor, or even second floor as well, with residential units above. Additionally this would also provide a flux of population to the downtown Bellingham core to encourage economic growth.
This would work in conjunction with the City of Bellingham comprehensive plan, considering there is an estimated *'residential capacity of up to 2,000 new housing units in this area by 2022'* (COB & Behee 2009, p.5).

NPD Credit 3: Mixed-Use Neighborhood centers

Evaluation: Proposed action: (4/4 points), Alternative action: (4/4 points)

Purpose:

To cluster diverse land uses in accessible neighborhood and regional centers to encourage daily walking, biking, and transit use, reduced VMT and automobile dependence, and support car-free living.

Requirements:

This is assessed on the 50% of the residential units being ¼ mile away from multiple diverse uses; credits are allocated according to the table below. The list diverse use types are defined in Appendix G.

NPD Table 2. Points for diverse uses within 1/4-mile walk distance, by time of occupancy

Table 1. Points for diverse uses within 1/4-mile walk distance, by time of occupancy

Diverse uses	Percentage occupancy of total square footage	Points
4–6	20%	1
7–10	30%	2
11–18	40%	3
≥ 19	50%	4

Proposed Action:

The Cornwall Revitalization project provides qualifies for 4 points as 19 diverse uses are within ¼ mile walking distance of over 50% residential units. There also multiple additional usages not included within this analysis as the credit was already fulfilled.

NPD Table 3. Disctance of Diverse Uses from the Alleyways project Area

Type of Diverse Use	Distance from Project Border
Food Co-Op	0.15 Miles
Bellingham Farmers Market	0.06 Miles
Shell	0.2 Miles
Rite Aid	Within Project Boundary
Bank of America	Within Project Boundary
Tony & Guy Hairdressing Academy	On Project Border
Boundary Bay Brewery & Bistro	0.07 Miles
Bobs Burgers	0.03 Miles
Leopold Retirement Center	Within Project Boundary
American Museum of Radio & Electricity	0.1 Miles
Preschool of the Arts	0.18 Miles
Mt. Baker Theater	0.04 Miles
Movie Theater	Proposed within Project Boundary
Whatcom County Courthouse	0.2 Miles
Whatcom Sheriffs Office	0.23 Miles
US Post Office	Within Project
Public Library	0.18 Miles
Maritime Heritage Park	0.2 Miles
Whatcom County YMCA	0.1 Miles

Alternative Action:
There is no need for an alternative action as the central business district of Bellingham already holds many diverse uses. This could however be accentuated by the inclusion of a policy that encourages an even placement establishments, so several establishment of one type are not located alongside each other. However this is not necessary to gain extra points.

NPD Credit 4: Mixed-Income Diverse Communities

Evaluation: Proposed action: (6/7 points), Alternative action: (7/7 points)

Purpose:
To promote socially equitable and engaging communities by enabling residents from a wide range of economic levels, household sizes, and age groups to live in a community. This credit is assessed under two points, diversity of housing and affordable housing.

Requirements:
Diversity of housing is calculated with the use of the Simpson Diversity Index, which asses the probability that any randomly chosen dwellings are of a different type as defined below. The Simpson diversity index is calculated by the following equation and needs to score above 0.5.

$$Score = 1 - \sum \left(\frac{n}{N}\right)^2$$

Where n = the total number of dwellings in a single category, and N = the total number of dwellings in all categories. (USGBC, 2010, p.57)

Table 2. Housing categories

Type	Square feet
Detached residential, large	> 1,250
Detached residential, small	≤ 1,250
Duplex or townhouse, large	> 1,250
Duplex or townhouse, small	≤ 1,250
Dwelling unit in multiunit building with no elevator, large	> 1,250
Dwelling unit in multiunit building with no elevator, medium	> 750 to ≤ 1,250
Dwelling unit in multiunit building with no elevator, small	≤ 750
Dwelling unit in multiunit building with elevator, 4 stories or fewer, large	> 1,250
Dwelling unit in multiunit building with elevator, 4 stories or fewer, medium	> 750 to ≤ 1,250
Dwelling unit in multiunit building with elevator, 4 stories or fewer, small	≤ 750
Dwelling unit in multiunit building with elevator, 5 to 8 stories, large	> 1,250
Dwelling unit in multiunit building with elevator, 5 to 8 stories, medium	> 750 to ≤ 1,250
Dwelling unit in multiunit building with elevator, 5 to 8 stories, small	≤ 750
Dwelling unit in multiunit building with elevator, 9 stories or more, large	> 1,250
Dwelling unit in multiunit building with elevator, 9 stories or more, medium	> 750 to ≤ 1,250
Dwelling unit in multiunit building with elevator, 9 stories or more, small	≤ 750
Live-work space, large	> 1,250
Live-work space, small	≤ 1,250
Accessory dwelling unit, large	> 1,250
Accessory dwelling unit, small	≤ 1,250

Additionally affordable housing assesses new and/or for-sale dwellings prices for households earning below Area Median Income (AMI). Points are allocated as per the table below.

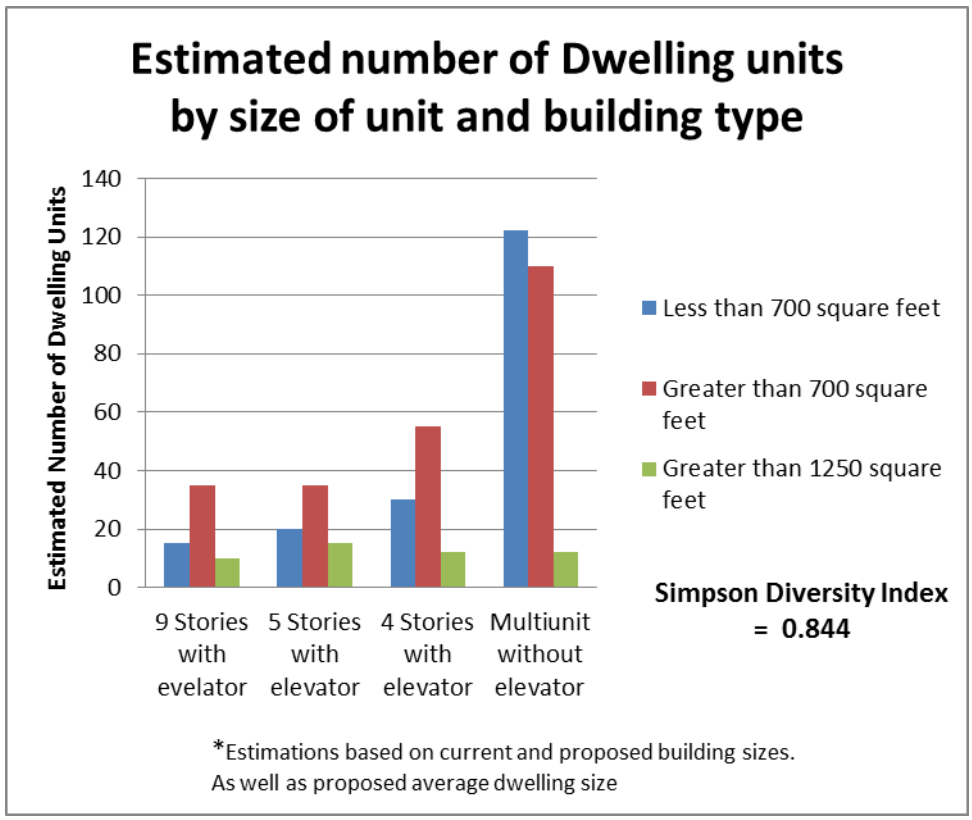
Table 3. Points for affordable housing

Rental dwelling units				For-sale dwelling units			
Priced up to 60% AMI		Priced up to 80% AMI		Priced up to 100% AMI		Priced up to 120% AMI	
Percentage of total rental units	Points	Percentage of total rental units	Points	Percentage of total for-sale units	Points	Percentage of total for-sale units	Points
5	1	10	1	5	1	8	1
10	2	15	2	10	2	12	2
15	3	25	3	15	3	--	--
AMI = area median income.							

Proposed Action:

Extrapolating from the current residential dwelling unit buildings and sizes it is expected that this project is to get 6 points for this credit. There are eight different housing categories, with a variety of small to large sized dwellings within buildings up to 9 stories with and without elevators as seen in NPD Table 6. The Simpson diversity index scored 0.84. This provides full points for this section of the credit.

NPD Figure 1. Simpson Diversity Index calculated by the number of dwelling units by size of building and unit.



The second section based on affordable housing also receives full points. The extrapolation of current housing prices, even in the worst circumstances, provides 3 points. The current situation of housing prices would have too double before a point can be lost. The current percentage of rental dwelling units priced below 80% of Area Median Income (AMI) is above 70% (USCB 2010) (WS OFM 2010), when extrapolated this figure does go down slightly. This is assisted by the fact that there are multiple affordable housing projects adjacent to the project boundary.

Alternative Action:

The final point within this credit can only be achieved by at least 10% of for sale dwelling units to be priced at 100% of AMI. This cannot be guaranteed until the proposal goes ahead as there are no current plans on having specific prices on for sale dwellings. This is supported by the fact

that most dwelling units are only for rent within the downtown area. There is however a high probability that this point would achieved, especially if current sale conditions continue.

NPD Credit 5: Reduced Parking Footprint

Evaluation: Proposed action: (0/1 points), Alternative action: (1/1 points)

Purpose:

To design parking that increases the pedestrian orientation of projects and minimize the adverse environmental effects of parking facilities. To reduce public health risks by encouraging daily physical activity associated with walking and bicycling.

Requirements:

To be awarded this credit no more than 20% of the development footprint area can be allocated to off-street parking lots. There also needs to be carpool or vehicle share program equivalent to 10% of the total nonresidential and mixed-use buildings on site. Finally there needs to be bicycle storage for new buildings as specified in SLL credit 4: Bicycle Network and Storage.

Proposed Action:

This credit is not awarded because of facility issues that can easily be added into the proposal. The parking facilities are all on-street parking better Chestnut and Champion Streets. As such the off-street parking does not exceed 20% of the development footprint. This requirement is meet, however the bicycle relate requirement is not.

There are to be a minimum of one bicycle rack per block. This is to be at least about 50 spaces for retail and residential use. However for this size of a project there needs to be changing facilities with showers. This has not been specified within the Downtown proposal.

The current proposal for carpool parking is not within 200ft or equal to 10% of total automobile parking.

Alternative Action:

This credit can be achieved by providing multiple bicycle racks, about 3 per block each with at least 20 bicycle spaces. This number would be reduced slightly with the inclusion of a bike-share program to about a total of about 12 public bicycle racks and 6 within the bike-share program. This needs to be assisted by the inclusion of public showering and changing facilities to encourage people to ride to work.

An additional action is to provide multiple reserved parking spaces to a carpool program, each spaced evenly throughout the project. This would encourage groups of people to use retail facilities between both anchor stores as their car is located between them.

NPD Credit 6: Street Network

Evaluation: Proposed action: (0/1 points), Alternative action: (0/1 points)

Purpose:
To promote projects that have high levels of internal connectivity and are well connected to the community at large. To encourage development within existing communities, thereby conserving land and promoting multimodal transportation. To improve public health by encouraging daily physical activity and reducing the negative effects of motor vehicle emissions.

Requirements:
To obtain points under this section there need to be more than 300 intersections per square mile. Also all the distances between intersections need to be less than 400 feet apart

Proposed Action:
The current proposed action does not gain any points for street network as the longest current street interval is over 400 feet, largest being 500 feet, therefore disqualifying this credit. However this effect on internal connectivity is compensated by the fact that these blocks are long and thin; with many intersections about 280 feet apart.
However the additional criteria for this credit are intersections per square mile. Both points need to be fulfilled to receive points. Nonetheless there are 123 intersections within ¼ mile radius (see Appendix E). This is well under 300 intersections per square mile in the project area therefore there is no possibility with the current available criteria to gain any points under this credit.

Alternative Action:
There are little to no possible alternative actions as the blocks would have to be resized which would cause too many costs to be environmentally feasible.

NPD Credit 7: Transit Facilities

Evaluation: Proposed action: (1/1 points), Alternative action: (1/1 points)

"The location of a project in an urban area may reduce vehicle miles traveled if the residents use public transportation or walk to work."(Garde 2009, p.435)

Purpose:
To encourage transit use and reduce driving by providing safe, convenient, and comfortable transit waiting areas and safe and secure bicycle storage facilities for transit users.

Proposed Action:
Cornwall's revitalization project holds an extensive new transit service proposal that is aimed to enhance the current transit system by providing a trolleybus system. Each stop will display schedules, as well as multiple stops are to be constructed with a shelter. Currently there is a transit system; however with the expected increase in ridership the trolleybus shall be needed. In conjunction with this new transit system there is to be multiple bicycle racks provided not only at bus stops but throughout the project area, such as in alleys and near parking facilities.

Alternative Action:
This requirement is expected to be fulfilled through the proposed action, therefore there is no need for an alternative action.

NPD Credit 8: Transportation Demand Management

Evaluation: Proposed action: (0/2 points), Alternative action: (2/2 points)

"Mass transit incentive programs can provide significant savings by reducing and deferring the need to increase parking capacity, allowing for land use development that might be eliminated by parking, and by reducing vehicle operating costs."(Dorsey, 2004, p.237)

Purpose:
To reduce energy consumption, pollution from motor vehicles, and adverse public health effect by encouraging multimodal travel.

Requirements:
By achieving two of the options below one point is received.
OPTION 1. TDM Program

- Create and implement a comprehensive TDM program for the project that reduced weekday peak-period motor vehicle trips by at least 20% compared with a baseline case, and fund the program for a minimum of three years following build-out of the project. The TDM program must be prepared by a qualified transportation professional. Any trip reduction effects of Options 2-5 may not be included in calculating the 20% threshold.

OPTION 2. Transit Passes

- Provide transit passes valid for at least one year, subsidized to be half of regular price or cheaper, to each occupant locating within the project during the first three years of project occupancy (or longer). Publicize the availability of subsidized transit passes.

OPTION 3. Developer-Sponsored Transit

- Provide year-round, developer-sponsored private transit service from at least one central point in the project to other major transit facilities, and/or other destinations such as a retail or employment center, with service no less frequent than 45 daily weekday trips and 30 daily weekend trips. The service must begin by the time the project total square footage is 20% occupied and must be guaranteed for at least three years beyond project build-out. 20% occupancy is defined as residents living in 20% of the dwelling units and/or employees working in 20% of the total nonresidential square footage.
  Provide transit stop shelters and bicycle racks adequate to meet projected demand but no less than one shelter and one bicycle rack at each transit stop. Shelters must be covered, be at least partially enclosed to buffer wind and rain, and have seating and illumination. Bicycle racks must have a two-point support system for locking the frame and wheels and must be securely affixed to the ground or a building.

OPTION 4. Vehicle sharing

- Locate the project such that 50% of the dwelling units and nonresidential building entrances are within a ¼ mile walk distance of at least one vehicle in a vehicle-sharing program. For each vehicle, dedicate one parking space accessible to vehicle-sharing members. Through signage and other means, publicize the availability and benefits of the vehicle-sharing program. IF the project has more than 100 dwelling units and/or employees and has a minimum transit service of 60 daily weekday trips and 40 daily weekend trips, at least one additional vehicle and parking space for every 100 dwelling units and/or employees must be available. If the project has more than 100 dwelling units and/or employees but does not have transit service at the frequencies specified above, at least one additional vehicle and parking space for every 200 dwelling units and/or employees must be available. Where new vehicle locations are created, a vehicle sharing program must begin by the time the project total square footage is 20% occupied; commit to providing vehicles to the locations for at least two years.

OPTION 5. Unbundling of Parking

- For 90% of multiunit residential units and/or nonresidential square footage, the associated parking spaces are sold or rented separately from the dwelling units and/or nonresidential square footage.

Proposed Action:

Currently there are not any proposals to provide transit options that will reduce energy consumption and pollution, or comprehensive transportation demand management.

Alternative Action:

In addition to a Transportation management plan, as specified in Option 1 above , there would be a vehicle share program, developer sponsored transit that includes transit passes for residents within the project area. This needs to meet the requirements as specified above.

NPD Credit 9: Access to Civic and Public Space

Evaluation: Proposed action: (0/1 points), Alternative action: (0/1 points)

*"The least of the least that a democratic society should have is public pedestrian space of great quality. Sidewalks, pedestrian streets, plazas, sports facilities, parks, even public transport, public libraries could be considered as public space as well." (*Eckerson & Peñalosa 2007)

Purpose:

To improve physical and mental health and social capital by providing a variety of open spaces close to work and home to facilitate social networking, civic engagement, physical activity, and time spent outdoors.

Requirements:
Locate and design the project so that there is a civic or passive use space, such as a square park, plaza or paseo, within the project. This space needs to be at least 1/6 acre and lie within 1/4-mile of 90% of planned and existing building entrances.

Proposed Action:
There a four proposed parks within the project however they cannot be included because they are considered too small. They are all less than 1/6 acre, one only by 200 square feet, as seen in the image below. The proposed plazas and squares also are not over 1/6 therefore could not be included, there median is also not above ½ acre. There for the point could not be awarded.

NPD Figure 2 Size and location of Public spaces along Cornwall Avenue (Feasibility analysis)

Furthermore there are multiple parks slightly over a ¼ of a mile from the project boundary so could not be included. Specifically the bicycle trail connection and the Maritime Heritage Park (see Appendix H). This means the requirements for this credit were not meet.

Alternative Action:
The only alternative action available is to increase the size of one park within the proposed area however the consequence of this is the demolition of a building. The other possible option was to use a current open lot, however this infill space is better used for mixed use buildings as that will provide the highest LEED-ND points. This is not a viable action therefore there are no additional points available for an alternative action.

NPD Credit 10: Access to recreation Facilities

Evaluation: Proposed action: (1/1 points), Alternative action: (1/1 points)

Purpose:
To improve physical and mental health and social capital by providing a variety of recreational facilities close to work and home to facilitate physical activity and social networking.

Requirements:
Locate or design the project so that publicly accessible outdoor or indoor recreation facility lies within ½ mile walk of the project, each facility consisting of physical improvement options.

Proposed Action:
The Cornwall revitalization project is located within ½ mile of a Battersby park. This park contains sports fields, baseball, which covers 3.8 acres and located on F St and Girard St intersection.

This location is also in conjunction to multiple parks, such as those that do not hold specific recreational facilities, which all provide an opportunity to improve the mental and physical health of the local residents.

Alternative Action:
As there is to be a new public park located within the project area (See NPD Figure 2). There is an opportunity to provide additional recreational facilities to not only support the local residents but also the commuters using to retail stores. A possible addition would be 'tot lots', this may not provide additional points, it will however be beneficial for the community.

NPD Credit 11: Visitability and Universal Design

Evaluation: Proposed action: (0/1 points), Alternative action: (1/1 points)

Purpose:
To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities. This is assessed on the number and type of universal design features that provide universal function, access and usability.

Requirements:
To gain this credit at least 20% of dwelling units need to be furnished with universal design features specified by LEED-ND.

Proposed Action:
There are no current actions with the proposal to facilitate universal function, access and usability.

Alternative Action:
At least 20% of all dwelling units (over 95 units) need to be outfitted with the following universal design requirements to meet this credit and gain its points. These features include easy-to-grip door handles, cabinets, window locking mechanisms, faucet handles, hands-free switches and motion-detector lighting.

NPD Credit 12: Community Outreach and Involvement

Evaluation: Proposed action: (0/2 points), Alternative action: (2/2 points)

"The journey towards sustainability requires broadly based support. Empowering people mobilises local knowledge and resources and enlists the support and active participation of all who need to be involved in all stages, from long-term planning to implementation of sustainable solutions." (UNEP, 2002, p. 10)

Purpose:

To encourage responsiveness to community needs by involving the people who live or work in the community in project design and planning and in decisions about how it should be improved or how it should change over time.

Requirements:

Provide meetings with property owners, residents, business owners and workers; and planning and community development officials to provide input into the design, construction and post construction phases. Additionally conduct design charrette or interactive workshops with the public.

Proposed Action:

The current action does not have an established community involvement to the extent expected within a LEED-ND checklist.

Alternative Action:

To gain full points the alternative action needs to hold two different types of meetings. Firstly monthly meetings are to be held by the city of Bellingham or the designers of the project. These meetings are intended to increase public involvement in the Cornwall project by providing discussion and additional actions. Some suggested focal points are aesthetics, character and public spaces.

Secondly any developer who takes on this project will implement a charrette, interactive workshop, to discuss the community development. The workshop will be two days, open to the public, and include participation by nearby property owners, local community, designers and planners. These parts of the community outreach program should be held during the planning and design phase and through part of the construction.

NPD Credit 13: Local Food Production

Evaluation: Proposed action: (1/1 points), Alternative action: (1/1 points)

Purpose:

To promote community-based food production, improve nutrition through increased access to fresh produce, support preservation of small farms producing a wide variety of crops, reduce the negative environmental effects of large-scale industrialized agriculture, and support local

economic development that increases the economic value and production of farmlands and community gardens.

Requirements:
Establish deed restrictions that do not prohibit growing produce in project area. To earn points in credit either dedicated permanent growing space based on dwelling units; or purchase shares in community-supported agriculture; or place farmers' market within ½ mile walk of center of the project.

"The location and design of food markets is vitally important for urban farming. In the absence of government leadership, the placement of food retailing outlets in cities is often haphazard and inefficient." (Halweil & Nierenberg, 2007, p.60)

Proposed Action:
There are currently no restrictions or covenants, conditions, and restrictions that prohibit growing produce in the project area. There is currently a farmers' market within ½ a mile of the projects center. The Bellingham Farmers Market has operated at least once a week from April through October for over 15 years (Bellingham Farmers, 2009). As such should be in operation throughout and after the project's completion.

Alternative Action:
While full points are already gained for this credit there is an opportunity to extend this by providing permanent growing space or facilities within the project. This could be obtained by roof top gardens as proposed on the North Anchor.

NPD Credit 14: Tree-Lined and Shaded Streets

Evaluation: Proposed action: (2/2 points), Alternative action: (2/2 points)

"Some of the physical characteristics identified as contributing to walking behavior in public spaces such as Main Streets include generous sidewalk width, trees, shade and shelter, an obstacle-free path, and traffic-calming strategies." (Mehta, 2008, p.221)

Purpose:
To encourage walking, bicycling, and transit use and discourage excessive motoring speeds. To reduce urban heat island effects, improve air quality, increase evapotranspiration, and reduce cooling loads in buildings.

Requirements:
Design and build the project so that there are trees provided on both sides of the street, at least 60% of street lengths and averaging less than 40 feet between each tree. Additionally trees and other structures are to provide shade over at least 40% of the sidewalks. The trees need to provide shade within ten years of the landscape installation.

Proposed Action:
There are currently trees providing shade to the side walk, in conjunction with awning therefore will not require a registered architect. The trees and awnings provide about 70% shade coverage for the sidewalk, averaging about 35ft between each tree.

Alternative Action:
There is no need for alternate action.

NPD Credit 15: Neighborhood Schools

Evaluation: Proposed action: (1/1 points), Alternative action: (1/1 points)

Purpose:
To promote community interaction and engagement by integrating schools into neighborhood. To support students' health by encouraging walking and bicycling to school.

Requirements:
Place the project such that at least 30% of the building square footage and 50% of the dwelling units are within a ½ mile of a new or existing elementary school or middle school, or within 1 mile of a high school. This is to be accompanied by sidewalks, bicycle lanes, or traffic control and calming measures.

Proposed Action:
Bellingham High School is located about ½ mile continuing up Cornwall Ave from the center of the project area. This existing school is located close to the project area with a useable sidewalk too Bellingham High School. This will increase students' health as it encourages them to walk or bicycle to and from school.

Alternative Action:
There is no need for an alternative action.

Green Infrastructure and Building (GIB)- 29 Possible Points

Proposed Action: (17/29)
Alternative Action: (22-24/29)

"The Green building is a movement dedicated to the transformation of practice in the design, construction, and operation of built environments. The objective is to reduce the negative impacts of built environments while creating healthy, comfortable, and economically prosperous places for people to live, work, and play. The popular term "green building" encompasses the collection of processes, institutions, and individuals that serve to assess current practice, identify opportunities for improvement, develop and deploy tools, and provide independent review and recognition of results. The green building community has diversified from its origins in the architecture and engineering professions to encompass the full range of professionals involved in lifecycle of built environments." (USGBC, Green Building & Human Experience)

This section focuses primarily on the built environment but tailors its requirements towards an integrated approach that goes beyond developers, making the planning community, the public and government vital participants in the green building process. It deals with green building techniques that increase a buildings energy, water and sewer efficiency while specifying methods for reducing construction waste, runoff pollution and greenhouse gas emissions.

GIB Prerequisite 1: Certified Green Building

Required Prerequisite: *Met*

Purpose:
Encouragement of green building practices through the design of a newly built building.

Requirements:
To further encourage environmentally friendly practices, it is required that at least one whole building within the project boundaries must be LEED certified.

Proposed Action:
The proposal requires that all new buildings, infill sites and renovations including retail spit construction will achieve LEED certification. Although not explicitly stated in the building plans for alleyway infill, the North and South Anchor are both designed as LEED certified structures. Based on the current proposal, this document includes infill building designs that are explicitly LEED certified.

Alternative Action:
Current proposal action fulfills this prerequisite, no alternative action is needed.

GIB Prerequisite 2: Minimum Building Energy Efficiency

Required Prerequisite: ***Met***

Purpose:

To encourage the energy-efficient design of buildings which will inherently use less energy and reduce the negative environmental impacts associated with energy use and production.

Requirements:

In order to fulfill this prerequisite, the project must document, for new buildings, a. all building energy efficiency by producing a LEED compliant energy model following the methodology outlined in the LEED rating system, b. comply with the prescribed measures of the ASHRAE Advanced Energy Design Guide, and for buildings less than 100,000 square feet, and c. comply with the prescriptive measures identified in the Advanced Buildings Core Performance Guide developed by the New Buildings Institute, as appropriate to each building's scope. Also, for new single family residential buildings and new multiunit residential buildings three stories or fewer, at least 90% of these will meet ENERGY STAR or equivalent criteria.

Proposed Action:

The project will document, for new buildings, all building energy efficiency by producing a LEED compliant energy model following the methodology outlined in the LEED rating system, comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide, and for buildings less than 100,000 square feet, comply with the prescriptive measures identified in the Advanced Buildings Core Performance Guide developed by the New Buildings Institute, as appropriate to each building's scope. For new single family residential buildings and new multiunit residential buildings three stories or fewer, at least 90% of these will meet ENERGY STAR or equivalent criteria.

Alternative Action:

No alternative action is needed.

GIB Prerequisite 3: Minimum Building Water Efficiency

Required Prerequisite: ***Met***

Purpose:

To encourage the design of water-efficient buildings to be more environmentally friendly.

Requirements:

To fulfill the prerequisite, the proposal must have all new nonresidential buildings, mixed-use buildings, and multifamily residential buildings four stories or more to have an average of at least 20% less indoor water usage than in baseline buildings and for new single-family residential buildings and new multiunit residential buildings three stories or fewer, 90% of the buildings will use a combination of fixtures that would earn 3 points under LEED for Homes 2008 Credit 3, Indoor Water Use.

Proposed Action:
The new nonresidential buildings, mixed-use buildings, and multifamily residential buildings four stories or more will have an average of at least 20% less indoor water usage than in baseline buildings. For new single-family residential buildings and new multiunit residential buildings three stories or fewer, 90% of the buildings will use a combination of fixtures that would earn 3 points under LEED for Homes 2008 Credit 3, Indoor Water Use.

Alternative Action:
No alternative action is needed.

GIB Prerequisite 4: Construction Activity Pollution Prevention

Required Prerequisite: ***Met***

Purpose:
To reduce pollution from erosion and airborne dust during the construction process of new buildings.

Requirements:
To fulfill this prerequisite, the project must create and implement an erosion and sediment control plan for all new construction activities associated with the project. The plan must list the BMPs employed and describe how they accomplish the following objectives: a) Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including but not limited to stockpiling of topsoil for reuse, b) Prevent sedimentation of any effected stormwater conveyance systems or receiving streams, and c) Prevent polluting the air with dust and articulate matter. Also, the erosion and sedimentation control plan must describe how the project team will do the following: a) Preserve vegetation and mark clearing limits, b) Establish and delineate construction access, c) Control flow rates, d) Install sediment controls, e) Stabilize soils, f) Protect slopes, g) Protect drain inlets, h) Stabilize channels and outlets, i) Control pollutants, j) Control dewatering, k) Maintain the BMPs, and finally l) Manage the erosion and sedimentation control plan.

Proposed Action:
The project will include an erosion and pollution control plan for all new construction, including the renovation and creation of any and all buildings involved. This will include, but will not be limited to, the use of seed spray, mulching, leaving some established plants in place, and planting new native species in landscaped areas, especially in those with a slope. There will be cloth filters put just beneath the street and parking lot stormwater drains to catch any soil eroded during the construction process, and the implementation of a protective barrier (usually a multitude of tarps or cloths over construction sites in order to lessen the spread of dust particles.

Alternative Action:
No alternative action is needed.

GIB Credit 1: LEED Certified Green Buildings

Evaluation: Proposed action: (0/5 Points), Alternative action: (1/5 Points)

Purpose:

Encourage the design, construction, and retrofit of buildings that utilize green building practices.

Requirements:

Design, construct and retrofit up to 40% of the total project square footage to be certified under one of the LEED building programs: LEED for New Construction, LEED for Existing Buildings, LEED for Homes, LEED for Schools, LEED for Retail: New Construction, or LEED for Core & Shell.

GIB Table 1: Points for LEED Compliant Square Footage (USGBC, 2009)

Percentage of square footage certified	Points
≥ 10% and < 20%	1
≥ 20% and < 30%	2
≥ 30% and < 40%	3
≥ 40% and < 50%	4
≥ 50%	5

Proposed Action:

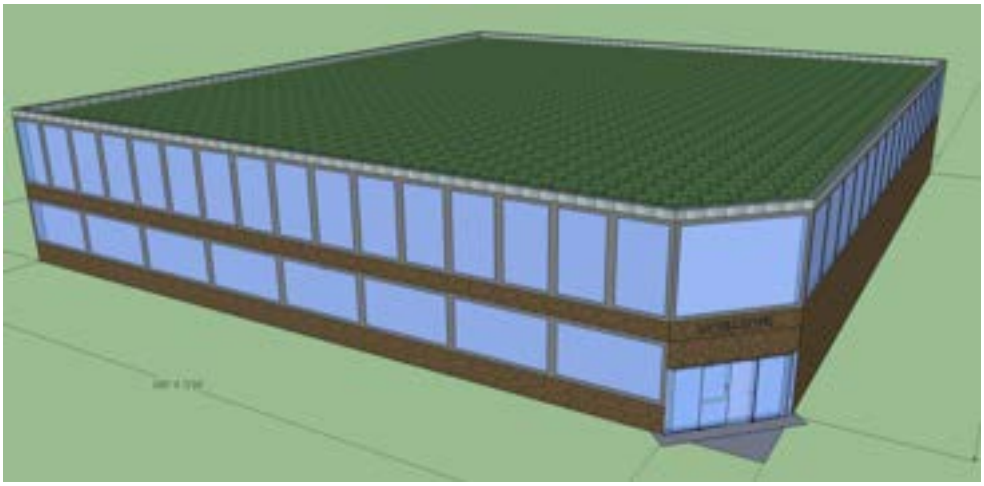
Currently, the total existing project square footage is 8,029,363 ft². The current proposal designates 161,191 ft² of added mixed use construction to the entire project as infill. This is about 2% of the total square footage of the project. If all of the new construction was LEED certified, it would not meet the minimum requirement for this credit. This calculation is not taking into account the North Anchor, South Anchor, movie theatre or parking structure. Combining these buildings with the mixed use infill will increase the amount of added square footage of new construction to 617,261 ft² only about 7% of the total square footage of the project. Provided that all of the new construction including the Anchors is LEED certified, as the proposal suggest, this still will not be enough total added square footage of LEED certified building to meet the minimum requirement for this credit.

GIB Figure 1. Proposed Building Additions (mixed use infill in green)

Mixed Use Infill and Renovations

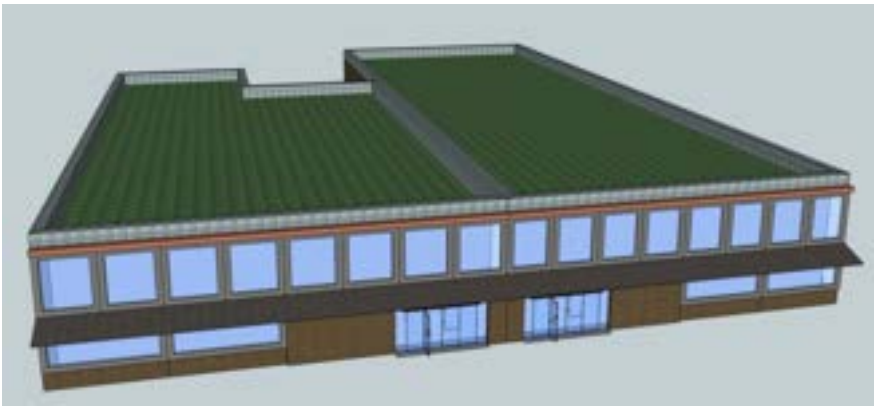
Alley #1:

GIB Figure 2. Bartell Drugstore Floor Addition



Square Footage: 27,180 ft²
Number of Floors: 2
Office Capacity: 17 800 ft² offices
Retail Footage: 13,590 ft²
FAR: 2

GIB Figure 3. Midblock Floor Addition



Square Footage: 41, 922 ft²
Number of floors: 2

Alley #2

GIB Figure 5: Chase Bank with Mixed-Use

GIB Figure 6: Chase Bank with Mixed-Use

Square footage: 38,400 ft²
Floors: 2

Alley # 3

Renovation of the Bank of America Building on the corner or Cornwall and Magnolia. Addition of three floors.

Square Footage: 26,840 ft²
Number of Floors: 4
Residential capacity: 20 1000 ft² units
FAR: 2.2

Floor addition of the building on the corner of Cornwall and E. Chestnut.

Square Footage: 24,800 ft²
Number of Floors: 2
Residential Capacity: 12 1000 ft² units
FAR: 1.2

Alley #4

One small building built on the parking lot on the middle of the lot.
Square footage: 27,500 ft²
Number of floors: 4
FAR: 3.9

Alley #5

GIB Figure 4. Peoples Bank Renovation

Square Footage: 51,409 ft²
Number of Floors: 4
FAR: 2.6

Alley #6

GIB Figure 5.Triangular Lot Model

Square Footage: 21,580 ft²
Number of Floors: 4

Alternative Action:

In order to meet the requirements of this credit, more new buildings would have to be proposed for infill sites within the project boundary. There are four parking lots that are potential sites for infill construction, not indicated on the main project proposal. Three are bank parking lots and

one is a parking lot owned by the Bellingham Tower containing a beauty shop. The total lot square footage of these areas combined in 94,205 ft². This calculation only refers to the lot size. With an FAR of three, for potential three story buildings, this would mean an addition of 282,615 ft² of floor space in new building construction. This increase in added infill square footage plus the existing added square footage including the Anchors for the entire project would increase the total added square footage to 899,876 ft². Provided that all of the new buildings containing this square footage are LEED certified, this would increase the percentage of LEED certified area to 11% of the total project, enough to qualify for one credit under this category. These numbers are all rough estimates of potential, meaning that the actual possible buildable area could be more or less than what is reported.

GIB Credit 2: Energy Efficiency in Buildings

Evaluation: Proposed Action: (2/2), Alternative action: (2/2)

Purpose:

Encourage the development of energy efficiency in the design and construction of buildings to limit the environmental impacts of energy production and consumption on air, water and land pollution.

Requirements:

Design at least 90% of all buildings in the project according to the appropriate energy efficiency categories of ASHRAE/IESNA 90.1-2007. New buildings must show an 18% (1point) or 26% (2points) increase in efficiency above the baseline established by the standard. Building renovations must show a 14% (1point) or 22% (2point) increase in efficiency above the standard.

Proposed Action:

Currently we have seven new buildings that we are proposing as infill to various lots along the alleyways. All of these buildings are to be designed and built according to LEED standards. Energy efficiency is a category that LEED certification is especially committed to excelling in. In order to do this, a detailed energy portfolio must be developed for each building plan, using the building performance rating method in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1–2007. For the buildings that are less than 100,000 ft², the Advanced Buildings™ Core Performance™ Guide Section 1 and 2, developed by the New Buildings Institute will provide the planning framework for energy efficiency solutions.

At this stage of the proposal there is no hard data or energy models to outline the exact energy efficiency solutions that these buildings will employ, however the ASHRAE Advanced Energy Design Guide for Small Retail Buildings 2006 provides useful criteria for understanding what some of these solutions might be. The recommendations in this guide have been designed to lead to 30% energy use reductions from the baseline standard outlined in the 90.1-2007. The proposal

outlines a holistic design utilizing an integrated design approach and construction process with the goal of meeting and enforcing energy standards at each stage of the project.

- Draft an Owner's Project Requirement (OPR) document, a brief description of the project energy goals. This document provides a basis for the integrated planning stage of the building.
- Climate Zone analysis that determines the lighting and heating needs with respect to the project's location. Orientation, certain design element, lighting systems, heating systems, passive solar and active solar systems all must be tailored to the specific climate zone of the project.
- Plans that outline interior lighting decisions with specifications for lighting power densities (LPD) as laid out in 90.1-2007 and a plan that distinguishes between general lighting and accent lighting.
- HVAC system that is designed with specific energy efficiency goals.
- A Design Phase that begins early in the project design phase, allowing the team to incorporate energy goals into the details of the building plan. Refer to table 2-1 for a guide for the "integrated" design process.
- A construction phase that outlines specifically the actions a construction team needs to take to ensure that the energy efficiency design meets the energy goals. During the construction phase, an independent team conducts site visits to verify that the outline is being adhered to. Refer to table 2-2.
- After construction, the same independent team evaluated the site to verify that the energy efficiency systems are operating as intended and that the energy goals have indeed been met. Refer to table 2-3 for appropriate timing of this process.

(Advanced Energy Design Guide for Small Retail Buildings, www.ashrae.org)

"A second engine driving green building practice is the concept of integrated design: working in interdisciplinary teams to optimize overall building performance without adding construction cost. Integrated design teams have succeeded by reallocating existing budget monies to achieve a higher-performance building, largely by stressing the performance of systems over components. The classic illustration of design integration is increasing the energy performance of a building's envelope, which in turn enables the installation of a smaller and more efficient mechanical system," (Farr, 2007).

Calculations:

Whatcom County is in Climate Zone 3, according to the EIA Commercial Building Energy Consumption Survey climate zone analysis. Climate zone 3 as defined in this context has less than 2,000 cooling degree days and 4,000-5,499 heating degree days over a 30 year period. Both heating and cooling degree days are the difference between the average temperature of a given day and a baseline of 65 degrees. An average below the baseline is a heating degree day and an average above the baseline is a cooling degree day.

Average commercial building energy intensity is 90.5 thousand Btu (per square foot). Office buildings have an average energy intensity of 97.2 thousand Btu per square foot. Office buildings of different sizes have different energy intensities.

GIB Table 2: Office Building Energy Intensities

Office buildings	Table 2	
Small	1,001 - 5,000 square ft.	87.2 thousand Btu / square ft.
Medium	5,000 – 50,000 square ft.	82.6 thousand Btu / square ft.
Large	>50,000 square ft.	109 thousand Btu / square ft.

Retail and service buildings have an average energy intensity of 76.4 thousand Btu per square foot. Food service buildings have an average energy intensity of 245.5 thousand Btu per square foot (see Appendix I). Based on the average commercial building energy intensity and the square footage of new mixed use construction infill for the total project site, the project would require about 1.46 x 10^10 Btu. A 26% reduction of this value would mean reducing the consumption by 3.8 x 10^9 Btu, meaning the total consumption of all the buildings would instead be 1.08 x 10^10 Btu. This is a rough calculation of energy consumption based on the national standards and is cited to provide a rough baseline for potential energy efficiency goals.

Alternative Action:
This requirement is possible to meet through the outline above. No alternative action is necessary provided that the building and design of new infill and renovations is conducted based on the initial energy modeling and integrated design approach.

GIB Credit 3: Building Water Efficiency

Evaluation: Proposed action: (0/1), Alternative action: (1/1)

Purpose:
Reduce effects on natural water resources and reduce burdens on community water supply and wastewater systems by reducing the water consumption in major renovations.

Requirements:
Indoor water usage in new buildings and renovations must be 40% less that of baseline buildings, established by the Energy Policy Act of 1992, Energy Policy Act of 2005 and the fixture performance standards outlined in the Uniform Plumbing Code of 2006.

Proposed Action:

There is little specification for water efficiency in the proposal, especially technology that will be able to meet the tightening restrictions of this credit. The LEED 2009 water efficiency standards have become more stringent, as well as the baseline water usage requirements. The prerequisite calls for a 20% reduction over baseline water usage values based on the best case water efficiency technology. Achievement of this credit involves a reduction of 40%. Due to the limits of current ultra-low flow water devices, the current evaluation would need plans that incorporate gray water systems or waterless fixture technology to meet this requirement.

An **estimated occupancy baseline usage** needs to be calculated which include only the following fixtures and fittings: water closets (toilets), urinals, lavatory faucets, showers, kitchen sink faucets, and pre-rinse spray valves. The **water efficiency threshold** is calculated as a weighted average of water usage for the buildings constructed as part of the project based on their conditioned square footage.

Alternative Action:

All new construction and renovations will need to be designed and build with LEED compliant fixtures that demonstrate the flow requirements established in this credit. This means using fixtures that represent the leading edge in low-flow technology. However, this credit requires a 40% increase in efficiency, suggesting that a majority of the plumbing devices will have to be replaced with zero water appliances and a non-potable water recycling system will need to be incorporated in the design plans of each building. Both of these actions are feasible.

Zero water appliances include composting toilets and waterless urinals. Composting toilets are becoming highly sophisticated, far from the backyard problem that they are often associated with. There are a number of manufacturers (Envirolet, Ecovita, Clivus Multrum, Sun-Mar, ect.) who make various models from tiny to high capacity, three stage models with electronic mixing. Waste coming from these devices is sterile and ready for use or easily disposable through a municipality. Waterless urinals are a basic urinal that is designed so that no flush is needed to remain sanitary. These urinals will save on energy costs associated with flushing apparatus, water costs, plumbing costs and insulation costs. Manufacturers include DesertCube, Ecotech Water LLC, Kohler, Zero Flush and more (Stumpf, 2006).

Employing a non-potable water recycling system has many positive benefits through LEED-ND. Not only will it help meet the requirements for this credit, but it will help with Credit 8, Stormwater Management by collecting runoff directed from buildings into cisterns installed during renovation or construction. This water is then treated, stored and incorporated into a selective plumbing system that routes the runoff into various non-potable uses that can offset the use of potable water from the city system.

GIB Credit 4: Water-Efficient Landscape

Evaluation: Proposed action: (0/1), Alternative action: (1/1)

Purpose:

To limit or eliminate the use of potable water and other natural surface or subsurface water resources on project sites for landscape irrigation.

Requirements:

Reduce the water consumption for outdoor irrigation 50% from midsummer baseline using a combination of the following strategies.

a. Plant species, plant density, and microclimate factor.
b. Irrigation efficiency.
c. Use of captured rainwater.
d. Use of recycled wastewater.
e. Use of water treated and conveyed by a public agency specifically for non-potable uses.
f. Use of other non-potable water sources, such as storm-water, air-conditioning condensate, and foundation drain water.

Proposed Action:

There are currently no proposed recycled water systems for landscape irrigation.

Alternative Action:

Since the alleyways are a constrained space, there is little room for landscaping options, especially since retail buildings are proposed for the infill lots. Space is limited and sunlight is limited, especially since increasing building height and installing photovoltaic solar panels provides important efficiency solutions as specified by LEED. However, plants do provide shade that can help mitigate the urban heat island effect, provide evapotranspiration of precipitation that would otherwise runoff into surface water and soften the urban landscape for the casual pedestrian or resident. We will be looking for any opportunity to landscape within our project boundary. Additionally, there is the connection lot on E. Maple and Cornwall that will allow for the connection of the interurban trail to the downtown corridor. We propose that this lot be landscaped in such a way as to restore it to a native lowland forest habitat as much as possible.

Project Phase 1: Through the overall design if the project and infill additions, determine the capacity for plants in the urban landscape. Design for the connection lot will include specific location of plants by species, trail location and boundaries. Based off of this initial design, a midsummer water demand baseline can be calculated based off of the average rainfall for the area, specific plant demand based on species used and groundwater availability. Incorporated in the design will be solutions for reducing that demand by the specified amount. Some of these options include:

- Use of native species whose water requirements and midsummer tolerances match the local climate, requiring less application of additional water beyond the seasonal precipitation.

- Use of a rainwater catchment system that collects the rainwater from the roofs of the alleyway buildings and directs it to large storage tanks which have a large enough capacity to hold water through the wet season.
- A drip irrigation system that is connected to the rainwater catchment system which will allow for the direct application of rainwater to plants to increase the efficiency of delivery while reducing the load on municipal water.

GIB Credit 5: Existing Building Reuse

Evaluation: Proposed action: (1/1), Alternative action: (1/1)

Purpose:

To extend the life cycle of existing building stock to conserve resources, reduce waste, and reduce adverse environmental effects of new buildings related to materials manufacturing and transport.

Requirements:

Use 50% of the existing building structure in a renovation, including the structural floor, roof decking, exterior skin and framing or 20% of the total existing building stock including the structure and exterior.

Proposed Action:

The current proposal suggests a plan to renovate many of the shops that face Railroad, Cornwall and Champion and in doing so, create additional shop frontage along the alleyways so that they can become shopping corridors. Many of the existing shops are constructed in a style which is consistent with the historic center of downtown Bellingham, meaning that any renovation efforts will require the re-use of existing structures to maintain the structural integrity and style of Bellingham's downtown.

Alternative Action:

Other LEED-ND GIB technology credits call for the use of contemporary energy efficient design and green building techniques. Renovating old buildings now, gives the developer an excellent opportunity to create buildings that exemplify the environmental values of coming generations while preserving the historic atmosphere of a particular place. Adherence to these principles requires reducing the amount of construction waste that a project creates by the re-use of existing infrastructure and materials.

GIB Figure 6: Proposed Alleyway Retail Split (Cornwall Revitalization, 2010)

Phase 1: (See Appendix J) The initial design and construction phase will focus on renovation projects primarily in order to develop realistic goals. Therefore, construction will begin by clearing the alleyways of power lines and garbage dumpsters, then renovating key locations along the alleyway corners, making possible retail frontage on both the main street and the alleyway. Corner lots are more accessible than mid-alley lots so there initial renovation should draw people in to the alleys as a pedestrian corridor, setting the stage for the renovation and split retail conversion of middle lots. It is through these initial renovation projects that this credit will be addressed.

Phase 2: (See Appendix J) After corner lots are renovated and alleyways are resurfaced with a storm-water system and new pavement, the renovation of mid-alley lots can commence. During this phase, meeting the requirements of this credit will become especially important due to the numerous complicated renovations that will take place.

GIB Credit 6: Historic Resource Preservation and Adaptive Reuse

Evaluation: Proposed action: (1/1), Alternative action: (1/1)

Purpose:

To encourage the preservation and adaptive use of historic buildings and cultural landscapes that represent significant embodied energy and cultural value, in a manner that preserves historic materials and character-defining features by not demolishing any historic buildings, or portions thereof, or alter any cultural landscapes as part of the project.

Requirements:

At least on historic building or preservation site must be present within the project boundary.

Proposed Action:

There are six historic buildings on the project site. The Leopold Hotel on 1224 Cornwall Ave, the Bellingham National Bank, the BPOE Elks Building on 1414 Cornwall Avenue, the Federal

Building at 104 West Magnolia and the Montague and McHugh building at 114 West Magnolia. The location of these historic buildings fulfills the requirements for this credit.

The requirements for this credit also specifies that if these buildings are to be renovated at all, approval must be granted by the local historic preservation review board and the historical integrity of the building must not be compromised.

Alternative Action:
Few of the historical buildings are set for renovation within the project boundary except for the Montague and McHugh building on 114 W. Magnolia. The renovation of this building will not occur unless approval is granted in a programmatic agreement with the State Historic Preservation Office.

GIB Credit 7: Minimize Site Disturbance in Design and Construction

Evaluation: Proposed action: (1/1), Alternative action: (1/1)

Purpose:
To preserve existing noninvasive trees, native plants, and pervious surfaces by locating 100% of the development footprint on areas that have been previously impacted by construction.

Requirements:
Locate 100% of the development on lands that have been previously developed (see Definitions) or 100% of the project impact zone on lands that have been previously developed.

Proposed Action:
The project takes place in the downtown sector which has been 100% developed.

Alternative Action:
The connection lot on E. Maple and Cornwall is the only undeveloped lot, based on the LEED-ND 2009 definition of previously developed. We have proposed a reconditioning of this site with the goal of restoring it to a natural habitat. Therefore, we are not proposing infrastructure development that will impact native vegetation, seal pervious surfaces or damage non-invasive trees.
Phase 1: For proof of compliance under this credit a survey will be conducted to determine:

- The condition of existing trees in the project boundary by a certified arborist.
- Location of heritage trees with historic significance.
- Trees larger than 6 inches DBH.
- Location of any invasive vegetation.

GIB Credit 8: Storm-water Management

Evaluation: Proposed action: (2/4), Alternative action: (2-4/4)

Purpose:

To reduce pollution and hydrologic instability from storm-water, reduce flooding, promote aquifer recharge, and improve water quality by emulating natural hydrologic conditions.

Implement a comprehensive storm-water management plan for the *project* that retains on-site, through infiltration, evapotranspiration, and/or reuse the rainfall volumes listed in Table 3.

GIB Table 3. Points for retaining storm water on-site (USGBC, 2009)

Percentile rainfall event (total volume to be retained)	Points
80%	1
85%	2
90%	3
95%	4

Proposed Action:

Currently, the storm-water system coming from the roves downtown is not connected to the municipal sewer for sewage capacity reasons, meaning that runoff goes down the alleyways to three storm-water collection locations within the project boundary.

1) A 30 inch pipe receiving water from the Chestnut Street portion of the project that discharges into the Whatcom Waterway at Laurel Street. This is an untreated flow prior to discharge into the Bay.
2) A 36 inch pipe collecting water from the Holly, Magnolia area of the project that discharges into the Whatcom Creek estuary at Marine Heritage Park after it goes through a treatment process located in Army Street ROW on the southerly side of Holly.
3) A system that drains the Champion Street area which discharges water at various points along Whatcom creek, none of which are treated (W. M. Reilly, personal email communication).

The proposal calls for the alleyways to me resurfaced with a Low Impact Development (LID) pervious surface that will allow rainwater to infiltrate the pavement. New development on the project currently proposes green roofs and roof gardens. Both measures will help to deliver surface runoff to the ground water system or directly to the atmosphere through evapotranspiration by the plants used in green roof additions.

Calculations:

According to the National Oceanographic and Aeronautic Association (NOAA) the largest rainfall event in the Bellingham Area was 5.02 inches in one day. (NOAA Climatic Data Center) Given that the total project area is 971,903 ft² or about 22 acres, the total amount of runoff from an event of this magnitude would be 3,029,559 gallons of water in one day.

GIB Table 4. Water Volumes

Percentile Storm Event	Square Feet	Rainfall, inches	Gallons Captured	Points Earned
100%	971,903 ft²	5.02	3,029,559	4
95%	971,903 ft²	4.77	2,879,863	4
90%	971,903 ft²	4.52	2,727,791	3
85%	971,903 ft²	4.27	2,575,719	2
80%	971,903 ft²	4.02	2,426,023	1

Alternative Action:

Our goal for developing a BMP (see Definitions) will be based on the Washington State Department of Ecology's Storm-water Management Manual for Western Washington, Volume V, Runoff Treatment (2005). We are trying to retain storm-water on site, through infiltration, evapotranspiration and reuse. The Department of Ecology is committed to help municipalities retrofit and build low impact storm-water systems through numerous incentives. Low impact development refers to a method of building infrastructure that imitates the natural hydrology or movement of water at the site. For the Pacific Northwest, originally a temperate forest ecosystem, the majority of precipitation is dispersed along the forest floor or returned to the atmosphere through evapotranspiration. Only about 1% of the falling precipitation will actually become surface runoff. Conventional high impact development prevents infiltration from occurring by sealing soils with impermeable surfaces like concrete, asphalt and buildings. Doing this increases the percentage of a precipitation event that goes to surface runoff, which alters the frequency and magnitude of flood cycles in streams. Here in Bellingham, altering the existing flood disturbance regime of streams has a negative impact on salmon. Our project is located in the Whatcom Creek watershed which is a salmon bearing stream. Being an urban stream, it is especially susceptible to alteration from urban runoff due to impermeable surfaces, making it necessary to employ low impact development practices in all new construction in the downtown corridor in hopes of moving towards the restoration of a disturbance regime that is within historic boundaries (PSP, Low Impact Development, 2010).

"Over the past two centuries, however, rapid climate change and major anthropogenic modifications to salmon ecosystems have dramatically altered disturbance regimes that salmon experience. To the extent that these disturbance regimes assume characteristics outside the range of the historical template the species evolved under, resilience of salmon populations might be compromised," (Waples, 2009).

It may be difficult to justify the cost of storm-water improvements in the project boundary when the impermeable surface contained here is only a small fraction of the impermeable surface in the rest of the Whatcom Creek watershed. The realized effect on flood regimes and pollution in Whatcom Creek might not be significant. Furthermore, the salmon populations in this watershed are already severely depressed. However, developing a working storm-water system in this

project will provide vital data that can translate to other low impact development storm-water projects across the city, making this project the necessary piece to a bigger puzzle.

Phase 1: A survey will be conducted to determine the project's development footprint, a baseline from which the rainfall retention value will be calculated with. It will include the potential pollution sources, either point or non-point, landscaping and percentage of non-pervious surfaces. Using the guidance of the Storm-water Management Manual, solutions that will help meet the requirements of water retention will be incorporated into the design phase of the project. During the initial construction phase, an underground storm-water system will built that will ensure the stability of surrounding soils. This means routing the underground water to areas that are stable enough for the water to flow into the ground water system. All of the underground engineering will be based on the BMP's outline in the necessary documents. The goal during this phase is to increase the area of pervious surface in the alleyways by repaving them with permeable brick. There are a number of permeable brick products utilizing recycled materials that will be feasible, including EZ-Bricks and ARTO products.

Another solution for reducing storm-water volumes is to employ green roof technology on a portion of site.

"Green roofs can also mitigate storm-water runoff from building surfaces by collecting and retaining precipitation, thereby reducing the volume of flow into storm-water infrastructure and urban waterways. Green roofs are ideal for urban storm-water management because they make use of the existing roof space and prevent runoff before it leaves the lot. They can reduce annual total building runoff by as much as 60% to 79% and estimates based on a 10% green roof coverage suggest that they can reduce overall regional runoff by about 3%." (Oberndorfer, 2007)

GIB Credit 9: Heat Island Reduction

Evaluation: Proposed action: (1/1), Alternative action (1/1)

Purpose:

Reduce heat islands to minimize effects on the microclimate and human and wildlife habitat.

Requirements:

Incorporate into 50% of the project's non roof hardscape any combination of the following strategies:

a. Provide shade from open structures, such as those supporting solar photovoltaic panels, canopied walkways, and vine pergolas, all with a solar reflectance index (SRI) of at least 29.
b. Use paving materials with an SRI of at least 29.
c. Install an open-grid pavement system that is at least 50% pervious.
d. Provide shade from tree canopy (within ten years of landscape installation).

Proposed Action:
The current proposal calls for a paving and pathway system in the alleyways made from a Low Impact Development (LID) pervious surface.

Alternative Action:
Many of the proposed solutions influence more than one of the LEED-ND credit requirements. For this credit, the installation of a pervious surface as a pavement will also reduce the heat island effect if the color chosen has a SRI above 29. Many of the paving products available do provide this option and advertise as LEED certified products.

Green roof technology will provide strength to the entire GIB section and especially this credit.

"In urban environments, vegetation has largely been replaced by dark and impervious surfaces. These conditions contribute to an urban heat island, wherein urban regions are significantly warmer than surrounding suburban and rural areas, especially at night. This effect can be reduced by increasing albedo (the reflection of incoming radiation away from the surface) or by increasing vegetation cover with sufficient soil moisture for evapotranspiration. A regional simulation model using 50% green roof coverage distributed evenly throughout Toronto showed temperature reductions as great as 2 degrees centigrade in some areas," (Oberndorfer, 2007).

Renovated and new buildings on the project site will also be designed with SRI compliant or green roof technology. Green roof's also have a storm-water mitigation component to them and are to be installed during both construction phases.

GIB Credit 10: Solar Orientation

Evaluation: Potential points: (0/1), Alternative action: (0/1)

Purpose:
To encourage energy efficiency by creating optimum conditions for the use of passive and active solar strategies.

Requirements:
Design and orient 75% or more of the project's total building square footage (excluding existing buildings) such that one axis of each qualifying building is at least 1.5 times longer than the other, and the longer axis is within 15 degrees of geographical east-west.

Proposed Action:
The alleyways currently run northeast to southwest. Some of the proposed infill, especially the triangle shaped lots along Alley #6, at the North End of the development that face west. Champion Street has potential to have Buildings oriented along an East-West axis. Both lots have a combined total of 17,380 square feet, making up about 26% of the total square footage added through infill development. Any renovations must comply with the Existing Building

Reuse credit, meaning that the current orientation of the buildings along both bocks must be maintained in order to conserve existing infrastructure.

Alternative Action:
Due to the orientation of the project and the constrained nature of the urban infill, there is little room to orient buildings along an East/West axis. There is a possibility of doing this on the movie theatre in Alley #1 and the triangle lots on Alley #6, were a tiered construction could be used to orient the longest building faces southward. However, these buildings are not a high enough proportion of the project to meet this requirement. It might be possible to meet this requirement with the Anchor buildings, especially the North Anchor.

GIB Credit 11: On-Site Renewable Energy Sources

Evaluation: Proposed action: (1/3), Alternative action: (3/3)

Purpose:
Promote on-site renewable energy to reduce energy consumption.

Requirements:
Incorporate on-site nonpolluting renewable energy generation, such as solar, wind, geothermal, small-scale or micro hydroelectric, and/or biomass, with production capacity of at least 5% of the *project's* annual electrical and thermal energy cost (exclusive of *existing* buildings).

Proposed Action:
The project does not address on-site renewable energy for the alleyways.

Alternative Action:
Create multiple renewable energy measures to collectively create enough energy to fulfill the LEED credit. Viable measures could include biomass, wind, photovoltaic cells, and solar water heating. The project needs to include at least 5% of the annual thermal and electrical costs as being produced by on-site renewable energy. Receiving one point for this credit seems to be the most feasible solution due to the amount of construction and space needed for larger scale renewable energy sources.
Another option to meet this requirement, provided that all possible onsite renewable energy sources are utilized, would be to purchase Renewable Energy Certificates (REC) that verify offsetting the energy consumption on the project with offsite renewable energy generation. A REC measures the delivery of 1Mwh or 1000kwh of renewable electricity to the intercontinental grid. When an electron is added to the grid, it is physically indistinguishable from an electron produced by a non-renewable source. A REC represents the right to claim the environmental benefits of that electricity source and account for electricity generation through renewable sources (REC, U.S. Environmental Protection Agency).

GIB Credit 12: District Heating and Cooling

Evaluation: Proposed action: (2/2), Alternative action: (2/2)

Purpose:

Reduce environmental pollution by employing a district heating system.

Requirements:

Incorporate a district heating and/or cooling system for space conditioning and/or water heating of new buildings (at least two buildings total) such that at least 80% of the *project's* annual heating and/or cooling consumption is provided by the district plant. *Single-family residential* buildings and *existing* buildings of any type may be excluded from the calculation.

Proposed Action:

The entire downtown project site could utilize the services of the nearby CoGen steam plant for district heating. This would be a relatively easy task to accomplish with the cooperation of the entire project site. 80% of the project's annual heating and/or cooling energy must come from the district plant. Each system component that is addressed by ANSI/ASHRAE/IESNA Standard 90.1–2007 must have an overall efficiency performance at least 10% better than that specified by the standard's prescriptive requirements. Additionally, annual district pumping energy consumption that exceeds 2.5% of the annual thermal energy output of the heating and cooling plant (with 1 kWh of electricity equal to 3,413 Btus) must be offset by increases in the component's efficiency beyond the specified 10% improvement.

Alternative Action:

No alternative action is needed.

GIB Credit 13: Infrastructure Energy Efficiency

Evaluation: Proposed action: (1/1) Alternative action: (1/1)

Purpose:

Reduce pollution of the environment from energy consumption.

Requirements:

Design, purchase, or work with the municipality to install all new infrastructure, including but not limited to traffic lights, *street* lights, and water and wastewater pumps, to achieve a 15% annual energy reduction below an estimated baseline energy use for this infrastructure. The baseline is calculated with the assumed use of lowest first-cost infrastructure items.

Proposed Action:

The project does not address the reduction of infrastructure energy consumption.

Alternative Action:
The use of LED traffic lights, energy-efficient street lights, wastewater treatment systems, and any other low-energy measures. Utilizing these efficient devices will be a very manageable task in the development of the project site serving a good purpose of lowering energy consumption and reducing utilities costs. The energy usage costs would have to be lowered by 15% annually in order to fulfill this credit.

GIB Credit 14: Wastewater Management

Evaluation: Proposed action: (2/2) Alternative action: (2/2)

Purpose:
Reduce pollution created from wastewater and promote reuse of wastewater.

Requirements:
Design and construct the *project* to retain on-site at least 25% of the average annual wastewater generated by the project (exclusive of *existing* buildings), and reuse that wastewater to replace *potable water*. An additional point may be awarded for retaining and reusing 50%. Provide on-site treatment to a quality required by state and local regulations for the proposed reuse. The percentage of wastewater diverted and reused is calculated by determining the total wastewater flow using the design case after the GIB Prerequisite 3 calculations, and determining how much of that volume is reused on-site.

Proposed Action:
Create a project design to reuse wastewater generated from the site of at least 50% of the total created. The use of on-site wastewater treatment will be the best way to achieve this credit as in treating wastewater generated in a building within the same building. Wastewater could also be directed to the Post Point Wastewater Treatment Plant located in the Fairhaven neighborhood.

Alternative Action:
No alternative action is needed.

GIB Credit 15: Recycled Content in Infrastructure

Evaluation: Proposed action: (1/1) Alternative action: (1/1)

Purpose:
Use recycled materials to reduce the need of manufacturing new materials from natural resources.

Requirements:
Use materials for new infrastructure such that the sum of *postconsumer* recycled content, in-place reclaimed materials, and one-half of the *preconsumer* recycled content constitutes at least 50% of the total mass of infrastructure materials. Count materials in all of the following infrastructure items as applicable to the *project*:
a. Roadways, parking lots, sidewalks, unit paving, and curbs.

b. Water retention tanks and vaults.
c. Base and subbase materials for the above.
d. Stormwater, sanitary sewer, steam energy distribution, and water piping.
Recycled content is defined in accordance with ISO/IEC 14021, Environmental labels and declaration, Self-declared
environmental claims (Type II environmental labeling).

Proposed Action:
Utilization of low-impact development in pavement surfacing. Surfacing the pavement in the alleyways with as much recycled material as possible will achieve the credit requirement. Having at least 50% of the materials used in the infrastructure be recycled material. This could be attained through creating sidewalks, parking lots, roadways, and all subbase materials with recycled products.

Alternative Action:
No alternative action is needed.

GIB Credit 16: Solid Waste Management Infrastructure

Evaluation: Proposed action: (1/1) Alternative action: (1/1)

Purpose:
Reduce the amount of waste created from construction and demolition debris from landfill and incinerator disposal.

Requirements:
Meet at least four of the following five requirements and publicize their availability and benefits:
a. Include as part of the *project* at least one recycling or reuse station, available to all project occupants, dedicated to the separation, collection, and storage of materials for recycling; or locate the project in a local government jurisdiction that provides recycling services. The recyclable materials must include, at a minimum, materials paper, corrugated cardboard, glass, plastics and metals.
b. Include as part of the project at least one drop-off point, available to all project occupants, for potentially hazardous office or household wastes; or locate the project in a local government jurisdiction that provides collection services. Examples of potentially hazardous wastes include paints, solvents, oil, and batteries. If a plan for post-collection disposal or use does not exist, establish one.
c. Include as part of the project at least one compost station or location, available to all project occupants, dedicated to the collection and composting of food and yard wastes; or locate the project in a local government jurisdiction that provides composting services. If a plan for post-collection use does not exist, establish one.
d. On every mixed-use or nonresidential *block* or at least every 800 feet, whichever is shorter, include recycling containers adjacent to other receptacles or recycling containers integrated into the design of the receptacle.

e. Recycle and/or salvage at least 50% of nonhazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and specifies whether the materials will be stored on-site or commingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume but must
be consistent throughout.

Proposed Action:
Create a waste management plan that implores the recycling and salvage of at least 50% of the construction debris. There are several recycling stations located in the downtown area. Hazardous waste drop-off points and compost stations are located within a few miles of the project site.

Alternative Action:
No alternative action is needed.

GIB Credit 17: Light Pollution Reduction

Evaluation: Proposed action: (1/1) Alternative action: (1/1)

Purpose:
To provide enough lighting for improving pedestrian safety and comfort. Improve nighttime visibility through reducing glare from the built environment.

Requirements:
"Shared areas" of a project are spaces and facilities dedicated to common use (publicly or privately owned).
In residential areas, at least 50% of the external luminaires must have fixture-integrated lighting controls that use motion sensors to reduce light levels by at least 50% when no activity has been detected for 15 minutes.
AND
In all shared areas, install automatic controls that turn off exterior lighting when sufficient daylight is available and when the lighting is not required during nighttime hours; these lights must meet the total exterior lighting power allowance requirements in Table 3.
AND
Document which lighting zone or zones (Table 1) describe the project, and for all shared areas, follow the requirements in Table 2. If two or more different zones border the project, use the most stringent uplight requirements, and use light trespass requirements for the adjacent zone. Roadway lighting that is part of the project must meet the requirements for the appropriate zone. For illuminance generated from a single luminaire placed at the intersection of a private vehicular driveway and public roadway accessing the site, project teams may use the centerline of the public roadway as the site boundary for a length of two times the driveway width centered at the centerline of the driveway when complying with the trespass requirements.
Compliance with the light trespass requirements may alternatively be met by using only luminaires that comply with Table 4 ratings for backlight and glare.

AND
Stipulate *covenants, conditions, and restrictions* (CC&R) or other binding documents to require continued adherence to the requirements.

Proposed Action:

The current plan is to maintain 80% lighting coverage on building facades within alleyways. This is intended to provide maximum comfort and visibility for patrons within alleyways. The best way to comply with the LEED credit would be to install motion sensors onto at least 50% of fixtures where light is dimmed by 50% when there has been no pedestrian activity for 15 minutes. Another task that the credit calls for is that on angling street lights in such a way to avoid unnecessary glare shinning into residences and obstructing nighttime views. These are very feasible measures to utilize in the project design, as the extensive one-time costs of the products can be alleviated by long-term lowered energy use.

Alternative Action:

No alternative action is needed.

Innovation and Design Process (IDP)- 6 Possible Points

Proposed Action: (3/6)
Alternative Action: (3/6)

"In this age of entrenched economic and political forces opposing sustainability, no single planning effort is going to set cities on a path towards a healthy long-term future. Rather, the need is for long-term strategy emphasizing consensus processes, public education, political organizing, policy tools such as indicators and performance standards, development of vision documents and "best practices" examples, and the creation of institutions that can more effectively address physical planning and equity issues. Together, such efforts can develop the knowledge, political will, and institutional capacity to bring about change." (Wheeler, pg. 507)

IDP Credit 1: Innovation and Exemplary Performance

IDP Proposed Credit 1.1: Non-Motorized Transportation Infrastructure

Evaluation: 1 Point

Purpose:

To increase and maintain non-motorized transportation travel. To improve bike lane, sidewalk, and trail connectivity and quality. Enhancing the non-motorized travel experience as to induce sustainable modal choices.

Compliance Requirements:

Option 1

Increase trail connectivity within and surrounding the project boundaries. Connect at least 2 existing trails together within a mile radius of the project. The new trail connection must meet local government guidelines and be at least a ¼ mile in length. A document must be created in association with the local government to agree upon which trails are most important to extend around project boundaries and if any specific amenities should be included within the trail extensions such as benches.

Option 2

Enlarge sidewalk space to at least 12 feet wide in 80% of the project area. Enlarge bike lanes to at least 3 feet wide with clear lane designation in 80% of the project area. A document must be created to identify areas where sidewalks should be built if no sidewalks exist in accordance with the local government.

IDP Proposed Credit 1.2: Pedestrian Safety

Evaluation: 1 Point

Purpose:

To provide pedestrians with a sense of safety while walking through the urban pedestrian realm. Create a walkable environment to maintain more foot traffic which in turn creates more customers for nearby businesses and added safety with more pedestrians providing eyes on the street.

Compliance Requirements:

Mitigate wherever potentially hazardous conditions exist for pedestrians. A consensus must be achieved with the local government to identify and agree upon areas where mitigation should be done. A document must be made in coordination with the local government identifying where pedestrian hazards are located and how they will be fixed.

1. Add lighted crosswalks to hazardous areas.
2. Add lighting 80% of store fronts.
3. Create mixed-use buildings with residential above commercial space in identified dead-zones.

IDP Proposed Credit 1.3: Aesthetics and Artisanship

Evaluation: 1 Point

Purpose:

To account and provide for social capital in the urban environment by providing an artistic experience. *"We need art , in the arrangements of cities as well as in the other realms of life, to help explain life to us, to show us meanings, to illuminate the relationship between the life that each of us embodies and the life outside us. We need art most, perhaps, to reassure us of our own humanity."* (Jacobs, 1992, pg. 372)

Compliance Requirements:

Provide public art in the amount of 1.5% of the total construction costs up to 1 million dollars dedicated to public art. Residents within a project area must not be more than a ½ mile radius away from a piece of public artwork. The requirement for implementing public art initiates when construction or renovation costs total over $100,000. The quality and content of the public art must be approved by the local government to assure suitable art is placed.

IPD Credit 2: LEED® Accredited Professional

Evaluation: 1 Point

Proposed Action:

This credit can be attained through the training of a City of Bellingham staff member of the Planning & Community Development Department. Most likely the staff member would be the Planning Director or a Planner III as the LEED Professional would be in a managerial position overseeing the progress of the revitalization of downtown Bellingham.

Regional Priority Credit (RPC)-4 Possible Points

Proposed Action: (3/4)
Alternative Action: (4/4)

Purpose:
LEED-ND provides for additional points when credits are fulfilled to a certain amount. The credits that apply to regional credits vary depending on geographical location which change in importance according to the zip code of the given project site location.

Requirements:
RPC are gained from previous LEED-ND credits that USBGC and regional councils have designated as specifically important to their local area. Under each ZIP code there is an opportunity to gain 4 credits of a total 6 credits available.

Relevant Credits:

RP Credit 1: (1 Point)
SLL Credi 5: Houseing and Jobs Proximity
Evaluation: Proposed action: (3/3)

RP Credit 2: (1Point)
NPD Credit 3: Mixed-Use Neighborhood Centers
Evaluation: Proposed action: (4/4)

RP Credit 3: (1 Point)
NPD Credit 4: Mixed-Income Diverse Communities
Evaluation: Proposed action: (6/6)

RP Credit 4: (1 Point)
GIB Credit 8: Stormwater Management
Evaluation: Proposed action: (2/4), Alternative action: (2-4/4)

Final Analysis

Based on our analysis of the current proposal for the Cornwall Revitalization, we concluded that the project would achieve a LEED-ND rating of Gold. This rating was assigned to the proposal as is. When information was not present in the proposal, we gathered that information when possible and included it in our analysis. Overall, our assessment was positive for the current condition of the proposal, due to the effort taken to find sustainable methods for growth in downtown. However, the current proposal lacks many of the benchmarks that specify the exact requirements that need to be met to achieve the sustainability goals put forth by the previous class. Evaluating the proposal through LEED helped establish those requirements through the credit system. Each credit has a set level of requirements that must be met in a specific way. Through our LEED-ND based assessment of the proposal, we were able to help frame a plan for the development designed to meet those requirements.

When the current proposal was not able to specify that it met the LEED requirements or was clearly not going to meet the requirements, we offered an alternative action. Under the alternative action, our analysis carried the proposal to a new level by defining the measures that need to be taken for this project to meet those high sustainability goals and meet the maximum LEED-ND rating. We concluded that the project would achieve a LEED-ND rating of Platinum under the alternative action. Based on the analysis of the current proposal and the alternative actions we proposed, we find that the Cornwall Revitalization Project in downtown Bellingham has plenty of potential to be a leader for sustainable urban growth in the future. In part, this is due to its central location in downtown Bellingham. Being a dense urban center, the downtown area offers a wide range of mixed use buildings, amenities and transportation infrastructure. It is also an area that has been almost completely developed, meaning that growth in this area will not stress un-developed land, habitat or waterways.

This project is an example of urban restoration, an attempt to mitigate environmental harm associated with urban development while bringing increased use, community development, economic growth and population density to an economically depressed area. However, the Cornwall project represents a small part of the future of urban growth in Bellingham. We found through our analysis many connections to the current waterfront project proposal, as well as the surrounding urban development. This project represents a small piece of a larger movement, the attempt of a modern city to build strength and vitality into its center. To build in accordance with the modern threats of climate change, habitat destruction and urban pollution so that we don't have to assume that development damages the environment, but represents a positive step for our health and communities.

LEED 2009 for Neighborhood Development Project Scorecard

Project Name: LEED-ND Assessment: The Alleyways of the Cornwall Proposal

Yes	?	No			
20	22	24	**Smart Location and Linkage**		27 Points Possible
Y			Prereq 1	**Smart Location**	Required
Y			Prereq 2	**Imperiled Species and Ecological Communities**	Required
Y			Prereq 3	**Wetland and Water Body Conservation**	Required
Y			Prereq 4	**Agricultural Land Conservation**	Required
Y			Prereq 5	**Floodplain Avoidance**	Required
8	8	8	Credit 1	**Preferred Locations**	10
	1	2	Credit 2	**Brownfield Redevelopment**	2
7	7	7	Credit 3	**Locations with Reduced Automobile Dependence**	7
	1	1	Credit 4	**Bicycle Network and Storage**	1
3	3	3	Credit 5	**Housing and Jobs Proximity**	3
1	1	1	Credit 6	**Steep Slope Protection**	1
1	1	1	Credit 7	**Site Design for Habitat or Wetland and Water Body Conservation**	1
			Credit 8	**Restoration of Habitat or Wetlands and Water Bodies**	1
		1	Credit 9	**Long-Term Conservation Management of Habitat or Wetlands and Water Bodi**	1
Yes	?	No			
30	38	41	**Neighborhood Pattern and Design**		44 Points Possible
Y			Prereq 1	**Walkable Streets**	Required
Y			Prereq 2	**Compact Development**	Required
Y			Prereq 3	**Connected and Open Community**	Required
11	12	12	Credit 1	**Walkable Streets**	12
3	3	6	Credit 2	**Compact Development**	6
4	4	4	Credit 3	**Mixed-Use Neighborhood Centers**	4
6	7	7	Credit 4	**Mixed-Income Diverse Communities**	7
	1	1	Credit 5	**Reduced Parking Footprint**	1
			Credit 6	**Street Network**	2
1	1	1	Credit 7	**Transit Facilities**	1
	2	2	Credit 8	**Transportation Demand Management**	2
			Credit 9	**Access to Civic and Public Spaces**	1
1	1	1	Credit 10	**Access to Recreation Facilities**	1
	1	1	Credit 11	**Visitability and Universal Design**	1
	2	2	Credit 12	**Community Outreach and Involvement**	2
1	1	1	Credit 13	**Local Food Production**	1
2	2	2	Credit 14	**Tree-Lined and Shaded Streets**	2
1	1	1	Credit 15	**Neighborhood Schools**	1

Yes	?	No			
17	22	24	**Green Infrastructure and Buildings**		29 Points Possible
Y			Prereq 1	**Certified Green Building**	Required
Y			Prereq 2	**Minimum Building Energy Efficiency**	Required
Y			Prereq 3	**Minimum Building Water Efficiency**	Required
Y			Prereq 4	**Construction Activity Pollution Prevention**	Required
	1	1	Credit 1	**Certified Green Buildings**	5
2	2	2	Credit 2	**Building Energy Efficiency**	2
	1	1	Credit 3	**Building Water Efficiency**	1
	1	1	Credit 4	**Water-Efficient Landscaping**	1
1	1	1	Credit 5	**Existing Building Use**	1
1	1	1	Credit 6	**Historic Resource Preservation and Adaptive Reuse**	1
1	1	1	Credit 7	**Minimized Site Disturbance in Design and Construction**	1
2	2	4	Credit 8	**Stormwater Management**	4
1	1	1	Credit 9	**Heat Island Reduction**	1
			Credit 10	**Solar Orientation**	1
1	3	3	Credit 11	**On-Site Renewable Energy Sources**	3
2	2	2	Credit 12	**District Heating and Cooling**	2
1	1	1	Credit 13	**Infrastructure Energy Efficiency**	1
2	2	2	Credit 14	**Wastewater Management**	2
1	1	1	Credit 15	**Recycled Content in Infrastructure**	1
1	1	1	Credit 16	**Solid Waste Management Infrastructure**	1
1	1	1	Credit 17	**Light Pollution Reduction**	1
Yes	?	No			
4	4	4	**Innovation and Design Process**		6 Points
1	1	1	Credit 1.1	**Innovation and Exemplary Performance**: Non-Motorized Transportation Infrastrux	1
1	1	1	Credit 1.2	**Innovation and Exemplary Performance**: Pedestrian Safety	1
1	1	1	Credit 1.3	**Innovation and Exemplary Performance**: Aesthetics and Artisanship	1
			Credit 1.4	**Innovation and Exemplary Performance**:	1
			Credit 1.5	**Innovation and Exemplary Performance**:	1
1	1	1	Credit 2	**LEED® Accredited Professional**	1
Yes	?	No			
3		4	**Regional Priority Credit**		4 Points
1		1	Credit 1.1	**Regional Priority Credit**: Bellingham, WA 98225: SLL Credit 5	1
1		1	Credit 1.2	**Regional Priority Credit**: Bellingham, WA 98225: NPD Credit 3	1
1		1	Credit 1.3	**Regional Priority Credit**: Bellingham, WA 98225: NPD Credit 4	1
		1	Credit 1.4	**Regional Priority Credit**: Bellingham, WA 98225: GIB Credit 8	1
Yes	?	No			
74	86	97	**Project Totals (Certification estimates)**		110 Points

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points

Conclusion

Evaluating the Cornwall Revitalization Project through LEED-ND proved to be a valuable process for many reasons. First of all, it established specific requirements that must be met to achieve a satisfactory level of sustainability for urban growth in Bellingham during the coming decades. By doing this, these requirements can be incorporated into a developers project design, becoming benchmarks of Smart Growth. Before a shovel has broken the soil or a nail has been driven, the sustainability goals for the project that we have as a community become realized. By defining the environmental potential of a project on paper during the design and planning phase, we are better able to incorporate sustainable design into our development methods while also creating a more holistic process of community design.

Furthermore, the complexity of urban development became apparent through the LEED analysis. The Cornwall project is just one piece of a whole urban movement toward sustainability. When connected with the Waterfront Redevelopment project, it becomes an important connection adding strength to a development that seeking to utilize a vacant brownfield along a prime waterfront location. It will increase the connectivity of this project to downtown, provide access for the waterfront development and add space for mixed use buildings bringing residential growth to the area. Adding inertia to the retail growth in the downtown corridor also affects the outer lying regions of Bellingham, specifically the Bellis-Fair Mall area. It gives the city an opportunity to explore different options for building a mixed use urban village on or near the Bellis Fair site, reducing the transportation pressure on Bellingham through less vehicle dependency.

By looking through the lens of LEED-ND, we were also able to evaluate LEED as a tool for sustainable growth. LEED remains an incentive approach, one that doesn't hinge on regulatory action. "In contrast, LEED-ND is a market-driven and voluntary approach that is intended to go beyond satisfying the regulatory requirements to advancing the sustainability of neighborhood developments," (Garde, 2009). How much incentive the market will provide and how much return for initial investment a LEED certified project will provide is still a question that remains unanswered. For now, we have found that LEED-ND provide primarily social capital for a developer in the form of advertising exciting new "green developments".

Clearly, LEED-ND goes beyond the State Environmental Policy Act as an information source for actions that can potentially harm the Environment. Nor is it strictly a regulatory process. Our best assessment of LEED-ND is that it is a specific way to measure the realization of sustainable growth, New Urbanism and Smart Growth principles. Regardless of whether LEED is voluntary or not, it provides a benchmark upon which to measure the growth of the sustainable growth movement. In itself, this is a valuable tool due to the varying definitions of "sustainable growth", "green building" and "urban renewal". This ambiguity illustrates how cutting edge this concept of sustainability is. Everyone from academics, city planners, politicians, developers and most

importantly the citizen are constantly helping to re-define this concept into a practical form that will leave an indelible mark on our towns and cities. With this in mind, LEED-ND allows us to measure sustainable growth in broad terms.

"The path to a sustainable lifestyle builds on the principles of smart growth, new urbanism and green buildings. If successful, it will not only vastly reduce environmental harm but also offer stunning enhancements to the current quality of life. The setting for this lifestyle is sustainable urbanism, the creation and support of communities that are so well designed for a high quality of life that people will eagerly opt to meet their daily needs on foot and transit. Compared to the American lifestyle as we know it, the quality of a life lives in sustainable urbanism is healthier, happier, more independent and not least of all longer," (Farr, 2008).

In light of the current urban condition resulting from a materialistic, fossil fuel dependent worldwide culture, sustainable urbanism principles offer relief from dire quality of life issues that go far beyond narrow environmental concerns. As environmental movement buzzwords like "green" and "sustainable" become commercialized, lose their intended meaning in the rush of modern life, apathy among the people most in need of relief can grow. A nihilistic culture is the enemy of change, divide people along superficial lines. Unless the sustainable growth movement is willing to move past pressing concerns of climate change and address problems like improving access essential services for oppressed urban communities, the nihilism towards the movement will only grow.

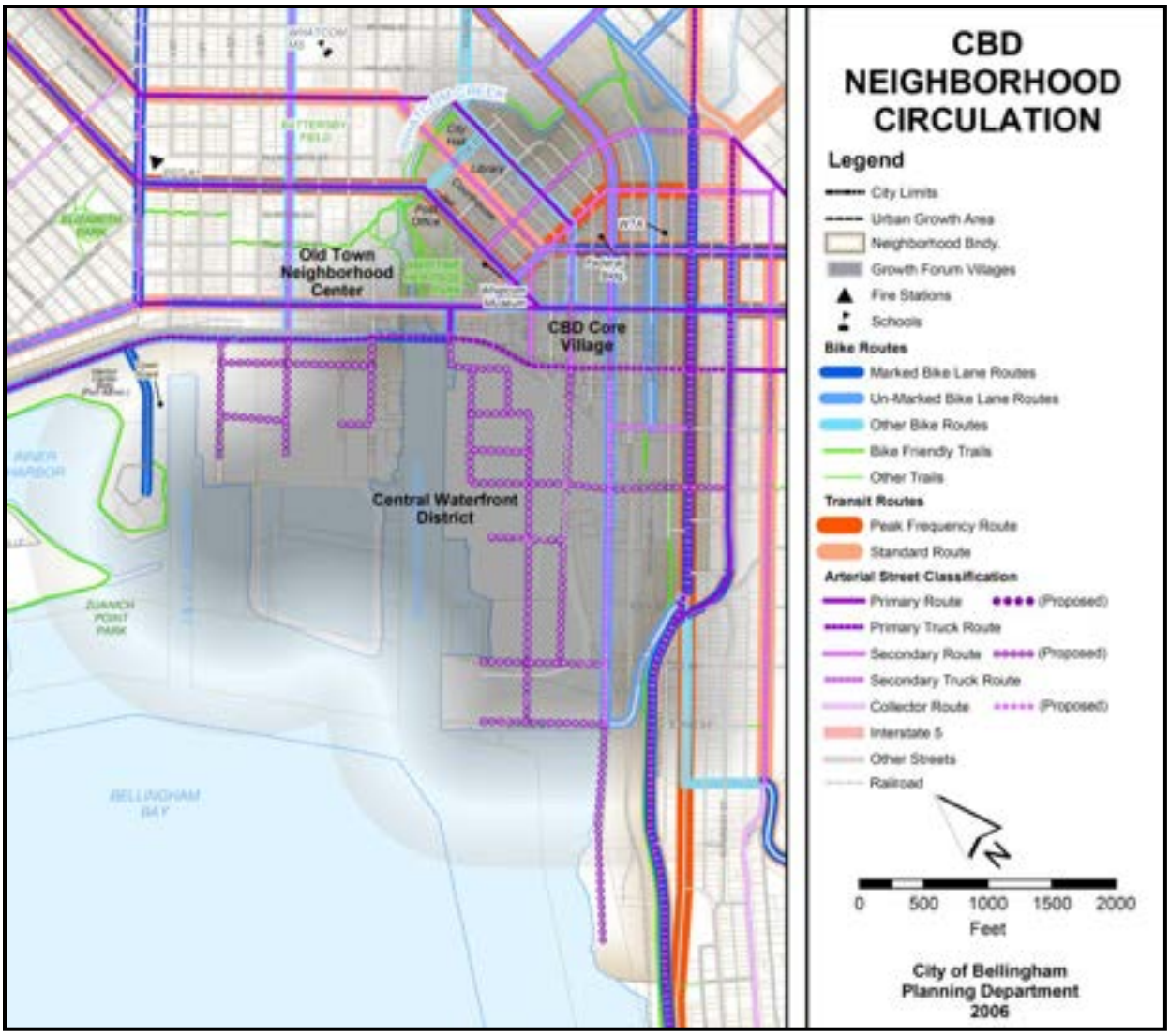
LEED-ND certainly offers practical solutions designed to increase the quality of life in urban communities, build healthier communities improve access to vital services for everyone. This is one of the major selling points for LEED programs and will probably determine their success or failure. It also provides a framework for the integrated design approach, a new and more inclusive method of designing and building communities. It provides a third party evaluation tool for sustainable principles and practices. It also provides a critical marketing tool. Yet LEED principles, new urbanism and smart growth are only stepping stones towards a new paradigm for urban life. It is no longer enough to optimize function of the various components of an automobile dependent, resource squandering pattern of development. The entire pattern needs to be re-written. Projects like the Cornwall Revitalization project in Bellingham, using LEED-ND, provide important opportunities to learn what next steps need to be taken towards resilient, prosperous, equitable and healthy human civilizations that can ultimately withstand the test of time.

Appendix A–Intersections around project

Intersections within 1/4 and 1/2 mile
Buffers around Project Boundary

Cartographer: Rebecca Avery with assistance from Frankie Fernyhough, 11-4-2010, 1984 Web Mercator

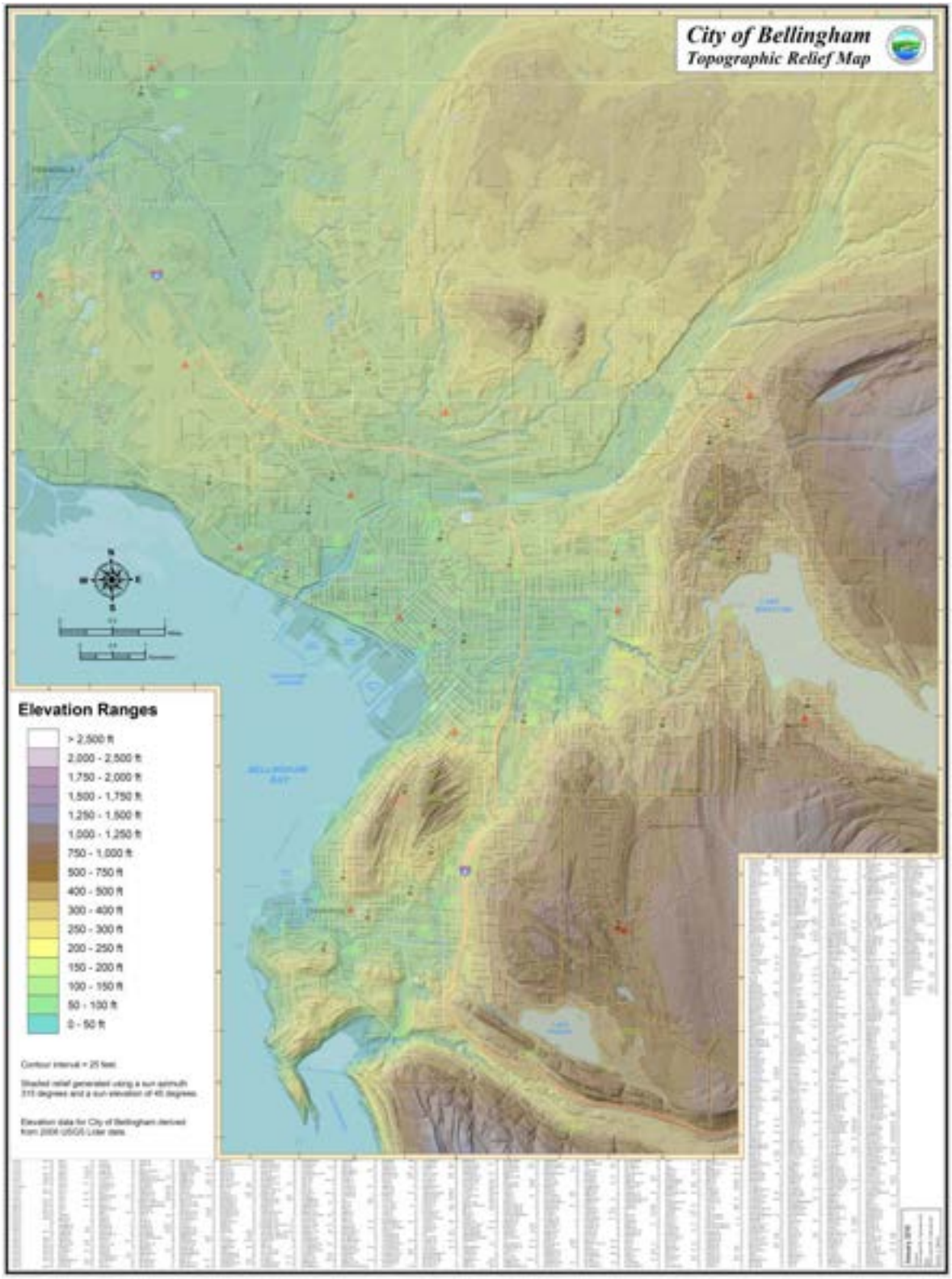
Appendix B - New Potential Intersections Map



Cropped from larger map, legend is accurate. (COB, 2006)

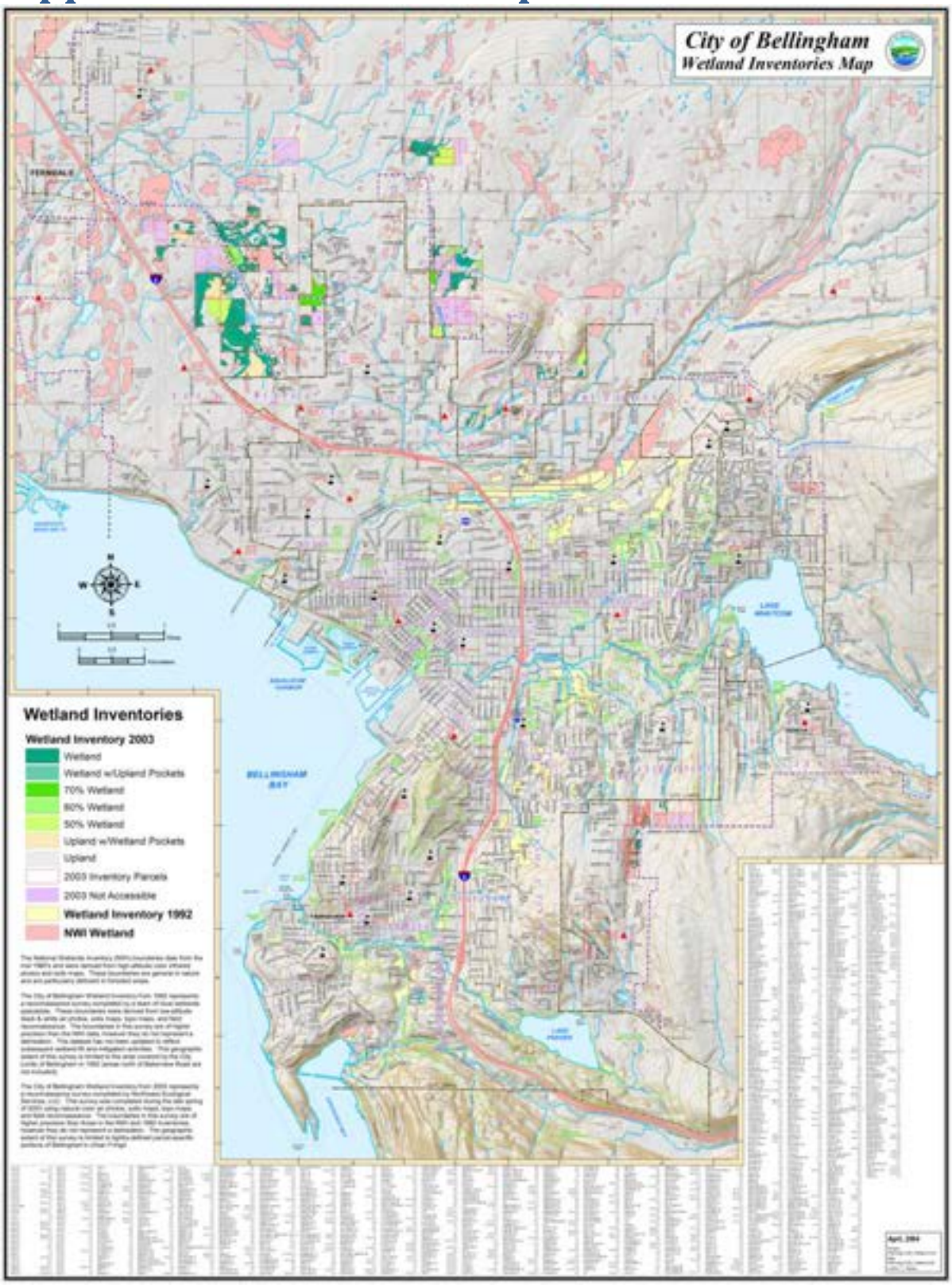
Appendix C- Bike Network Map

Appendix D - Topographic Map



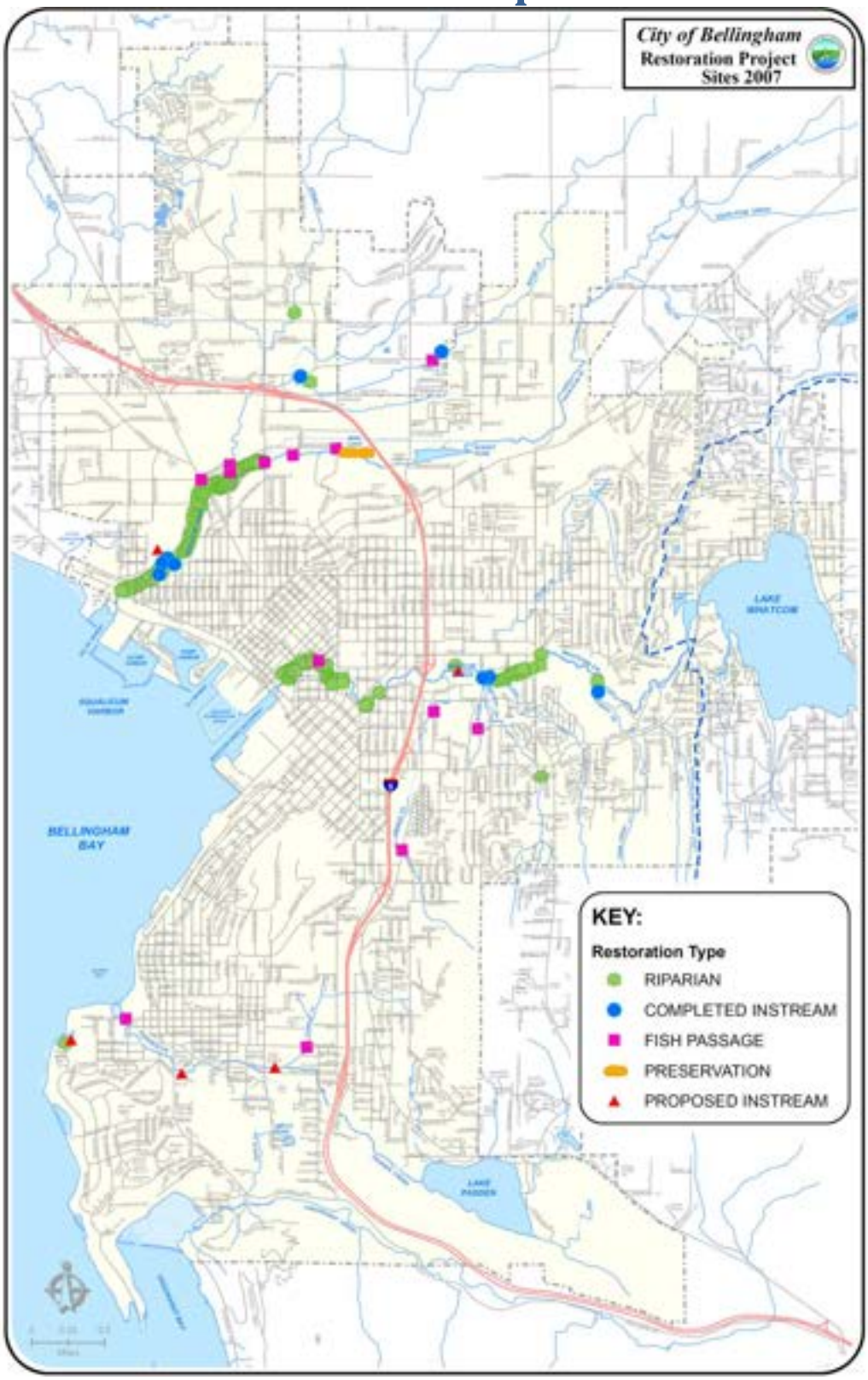
(COB, 2010)

Appendix E - Wetlands Map



(COB, 2004)

Appendix F - Restoration Map



(COB, 2006)

Appendix G - List of Diverse use types

Food Retail

- Supermarket
- Other food store with produce

Community-Serving Retail

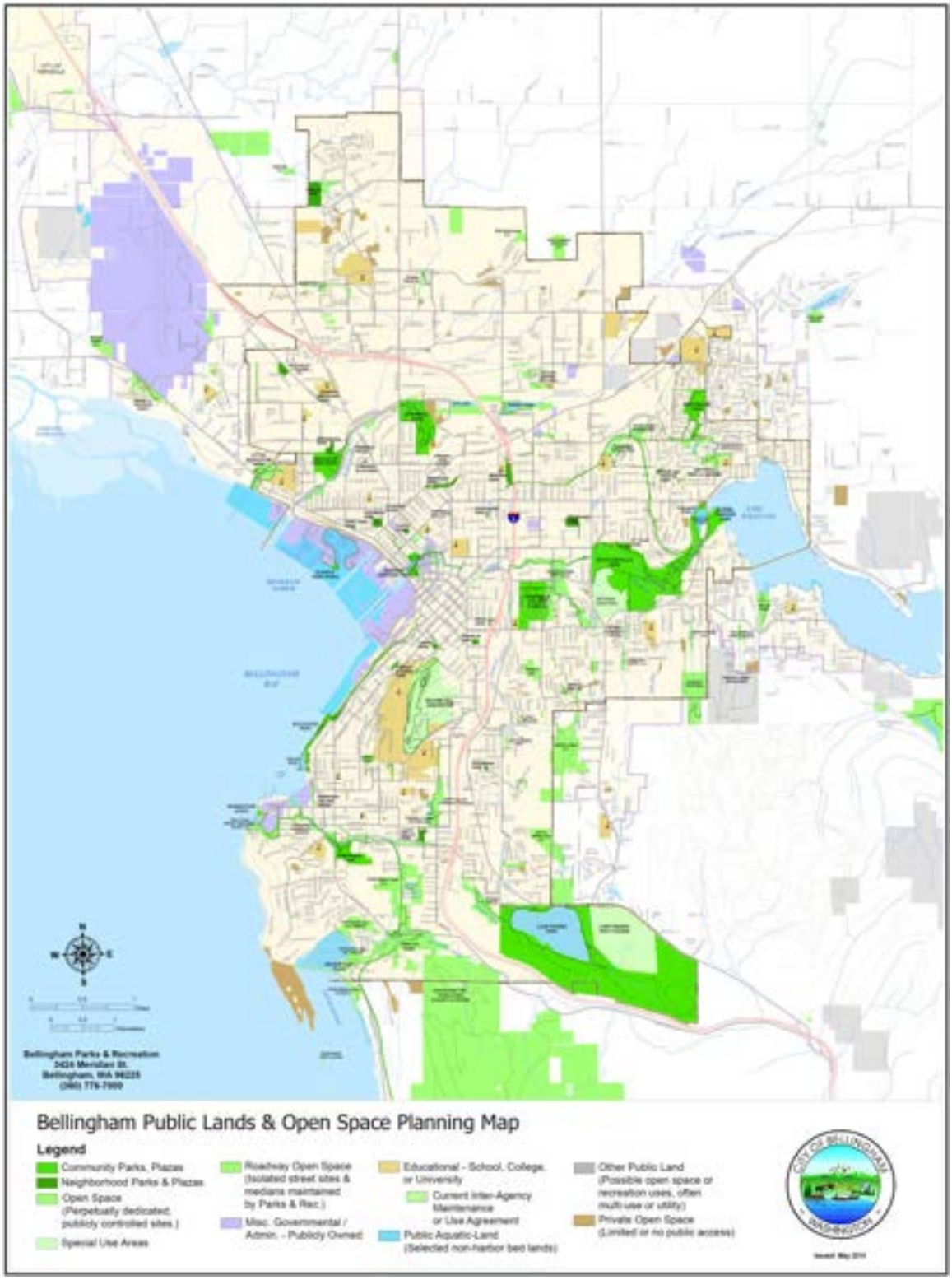
- Clothing store or department store selling clothes
- Convenience store
- Farmer's market
- Hardware store
- Pharmacy
- Other retail
- Services
- Bank
- Gym, health club, exercise studio
- Hair care
- Laundry, dry cleaner
- Restaurant, café, diner (excluding establishments with only drive-throughs)

Civic and Community Facilities

- Adult or senior care (licensed)
- Child care (licensed)
- Community or recreation center
- Cultural arts facility (museum, performing arts)
- Educational facility (including K–12 school, university, adult education center, vocational school, community
- college)
- Family entertainment venue (theater, sports)
- Government office that serves public on-site
- Place of worship
- Medical clinic or office that treats patients
- Police or fire station
- Post office
- Public library
- Public park
- Social services center

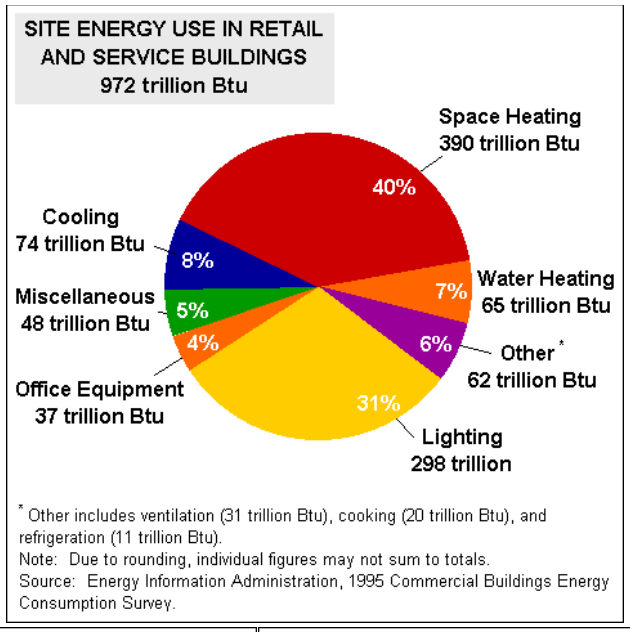
(USGBC, 2010)

Appendix H - Parks and Public lands Map

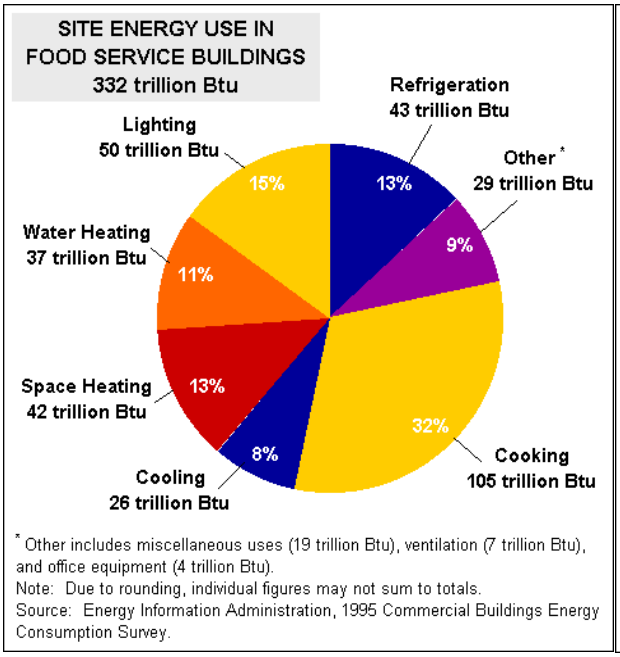


(COB, 2010)

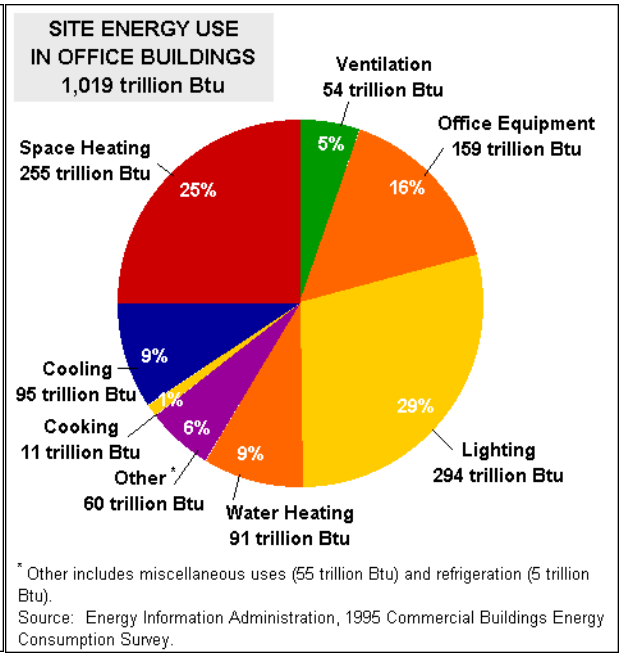
Appendix I – Site Energy Use by Building Type



* Other includes ventilation (31 trillion Btu), cooking (20 trillion Btu), and refrigeration (11 trillion Btu).
Note: Due to rounding, individual figures may not sum to totals.
Source: Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey.

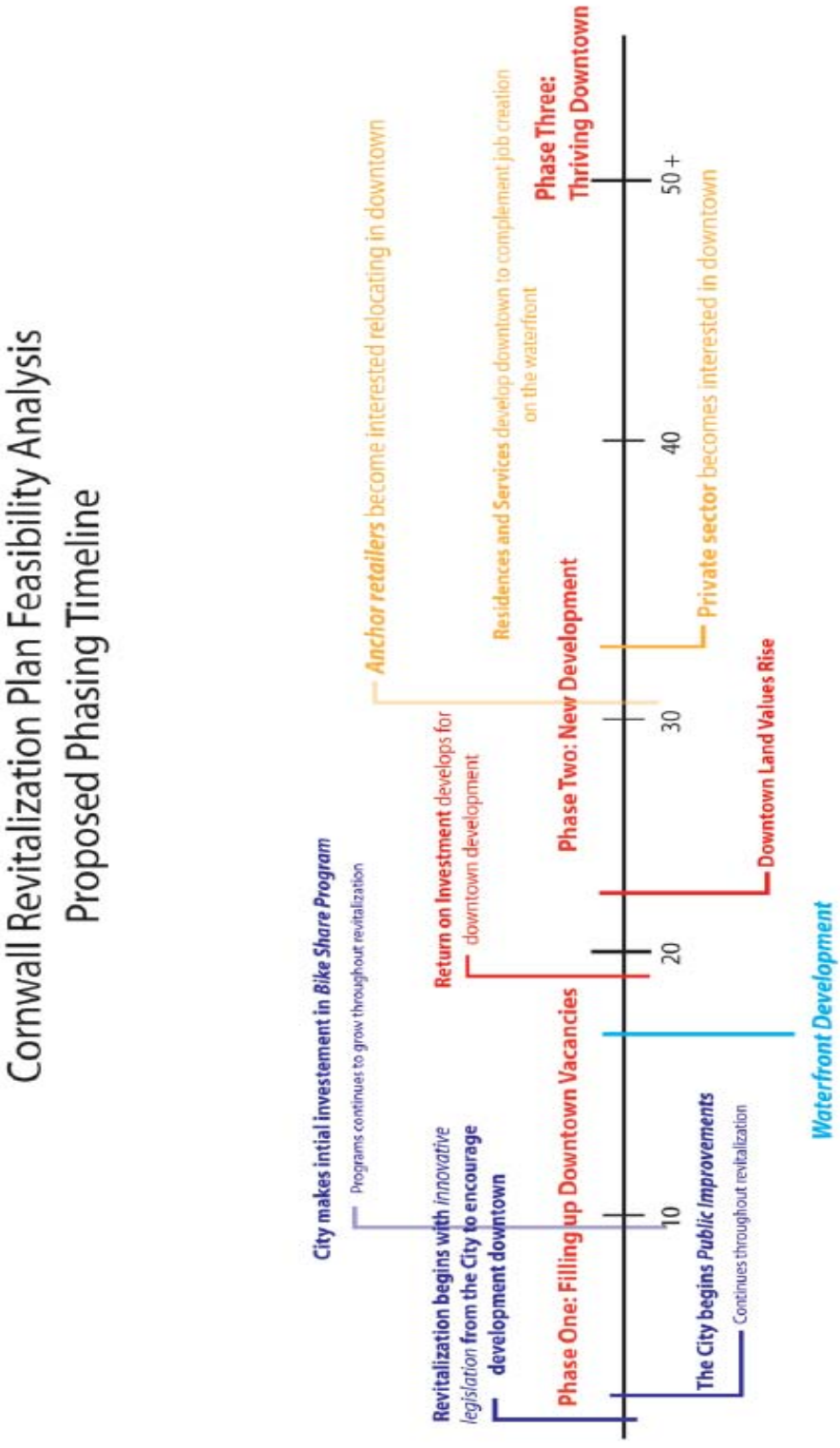


* Other includes miscellaneous uses (19 trillion Btu), ventilation (7 trillion Btu), and office equipment (4 trillion Btu).
Note: Due to rounding, individual figures may not sum to totals.
Source: Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey.



* Other includes miscellaneous uses (55 trillion Btu) and refrigeration (5 trillion Btu).
Source: Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey.

Appendix J – Project Phasing Timeline



(Squires, Lauren. Sect4. Plan Implementation, Project Feasibility)

Definitions

Adjacent site: A site having at least 25% of its boundary bordering parcels that are each at least 75% previously developed. A street or other right-of-way does not constitute previously developed land; instead, it is the status of the property on the other side of the street or right-of-way that matters. Any fraction of the boundary that borders waterfront other than a stream is excluded from the calculation. A site is still considered adjacent if the 25% adjacent portion of its boundary is separated from previously developed parcels by undeveloped, permanently protected land averaging no more than 400 feet in width and no more than 500 feet in any one place. The undeveloped land must be permanently preserved as natural area, riparian corridor, park, greenway, agricultural land, or designated cultural landscape. Permanent pedestrian paths connecting the project through the protected parcels to the bordering site may be counted to meet the requirement of SLL Prerequisite 1, Option 2 (that the project be connected to the adjacent parcel by a through-street or non-motorized right-of-way every 600 feet on average, provided the path or paths traverse the undeveloped land at no more than a 10% grade for walking by persons of all ages and physical abilities).
Adjacent project site based on minimum 25% of perimeter adjacent to previously developed parcels, including allowance for permanently protected land between project boundary and previously developed parcels

Area median income: The median income of a county as determined by the U.S. Department of Housing and Urban Development.

Bicycle network: A continuous network consisting of any combination of physically designated in-street bicycle lanes at least 5 feet wide, off-street bicycle paths or trails at least 8 feet wide for a two-way path and at least 5 feet wide for a one-way path, and/or streets designed for a target speed of 25 miles per hour or slower.

Best Management Practice (BMP): Physical, structural or managerial practices that, when used together or alone, prevent or reduce the pollution of water, stormwater flow and sedimentation load. A BMP must be approved by the Department of Ecology or the municipality.

1. **Source Control BMP:** A BMP that is intended to prevent pollution from entering stormwater.
2. **Treatment BMP:** A BMP that is intended to remove pollution from stormwater.
3. **Flow Control BMP:** A BMP that is intended to mitigate the impacts of increased surface and stormwater runoff rates generated by development.
4. **Low Impact Development BMP:** A set of BMPs containing treatment and flow control solutions that are contained in the LID Guidance Manual.
5. **Experimental BMP:** Any treatment or methodology proposed for treatment or management of stormwater that is not in the DOE Manual (current edition) and is

being studied by the City, Whatcom County and/or the Washington State Department of Ecology for adoption as a BMP. (COB Municipal Code. 15.42.020 Definitions)

BTU: A BTU (British Thermal Unit) is a unit of energy that allows different energy sources to be compared through a common unit. It is the amount of energy required to increase the temperature of 1 pound of water by 1 degree Fahrenheit at normal atmospheric pressure.

Brownfield: Real property, undergoing expansion, redevelopment, or reuse of which may be complicated by the presence or possible presence of a hazardous substance, pollutant, or contaminate. A site can also be classified as a brownfield by being abandoned, containing garbage, or in another determined by local government.

Connectivity: The number of publicly accessible street intersections per square mile, including intersections of streets with dedicated alleys and transit rights-of-way, and intersections of streets with non-motorized rights-of way (up to 20% of total intersections). If one must both enter and exit an area through the same intersection, such an intersection and any intersections beyond that point are not counted; intersections leading only to cul-de-sac are also not counted. The calculation of square mileage excludes water bodies, parks larger than 1/2 acre, public facility campuses, airports, rail yards, slopes over 15%, and areas non-buildable under codified law or the rating system. Street rights-of-way may not be excluded.

Floor-area ratio (FAR): The density of nonresidential land use, exclusive of parking, measured as the total nonresidential building floor area divided by the total buildable land area available for nonresidential structures. For example, on a site with 10,000 square feet of buildable land area, an FAR of 1.0 would be 10,000 square feet of building floor area. On the same site, an FAR of 1.5 would be 15,000 square feet of built floor area; an FAR of 2.0 would be 20,000 built square feet and an FAR of 0.5 would be 5,000 built square feet.

Infill site: A site that meets any of the following four conditions:

a. At least 75% of its boundary borders parcels that individually are at least 50% previously developed, and that in aggregate are at least 75% previously developed.
b. The site, in combination with bordering parcels, forms an aggregate parcel whose boundary is 75% bounded by parcels that individually are at least 50% previously developed, and that in aggregate are at least 75% previously developed.
c. At least 75% of the land area, exclusive of rights-of-way, within a 1/2 mile distance from the project boundary is previously developed.
d. The lands within a 1/2 mile distance from the project boundary have a preproject connectivity of at least 140 intersections per square mile.

A street or other right-of-way does not constitute previously developed land; it is the status of property on the other side or right-of-way of the street that matters. For conditions (a) and (b)

above, any fraction of the perimeter that borders waterfront other than a stream is excluded from the calculation.

a) Infill project site based on minimum 75% of perimeter adjacent to previously developed parcels
b) Infill project site based on minimum 75% adjacent to previously developed parcels using project boundary and selected bordering parcels

Multiunit residential: consisting of four or more residential units sharing a common entry.

Native (or indigenous) plant: a plant species that did or would have occurred on the site or within the subject county prior to the widespread land alterations that accompanied European settlement. Cultivars of native plants may be considered native plants.

Paseo: a publicly accessible pedestrian path, at least 4 feet wide and no more than 12 feet wide, which provides shortcuts between buildings and through the block, connecting street frontages to rear parking areas, midblock courtyards, alleys, or other streets. A paseo may be roofed for up to 50% of its length and may be privately owned or publicly dedicated.

Planned occupancy: the highest estimate of building occupants based on planned use(s) and industry standards for square foot requirements per employee. The minimum planned occupancy for multiunit residential buildings is 1 person for a studio unit, 1.5 persons for a one-bedroom unit, and 1.25 persons per bedroom for a two- bedroom or larger unit.

Predevelopment: before any development occurred on the site. Predevelopment conditions describe the natural conditions of the site prior to any human alteration, such as development of roads or buildings.

Previously developed site: a site that, preproject, consisted of at least 75% previously developed land.

Preproject: before the LEED-ND project was initiated, but not necessarily before any development or disturbance took place. Preproject conditions describe the state of the project site on the date the developer acquired rights to a majority of its buildable land through purchase or option to purchase.

Subbase: A layer of aggregate material which lies in the subgrade level of a paved surface. This acts as a cushion as it is the main load-bearing layer for vehicular traffic.

Walkable: Walkable or Walkability pertains to the extent that a given area is pleasurable and accessible for pedestrian use. Factors that are evaluated are ease of crossing streets, being able to be seen by automobiles, and roadside cleanliness.

Social Capital: The consideration made for social groups when planning communities which accounts for qualitative necessities for human interaction. Robert Putnam defines it as "The collective value of all social networks and the inclinations that arise from these networks to do things for each other.**"** (McLean, 2002).

Sprawl: Defined as five components with Housing subdivisions, exclusively residential areas. Shopping centers, lacking in multiple-stories, offices, housing, and easily walkable streets. They are surrounded by large swaths of flat parking lots. Office parks and business parks, located near workplaces usually in box shapes surrounded by highways. Civic institutions, scattered around the town in nowhere in particular. Roadways, an extreme amount of roadways are present to allow for people to use automobiles everywhere desired. (Duany, 2000, pg. 5)

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