

**REVISED FINAL HAZARDOUS MATERIALS  
TECHNICAL MEMORANDUM  
BURKE GILMAN TRAIL CORRIDOR  
11<sup>TH</sup> AVENUE NW TO THE BALLARD LOCKS  
SEATTLE, WASHINGTON**

**NOVEMBER 21, 2008**

**FOR  
CITY OF SEATTLE**

**Revised Final Hazardous Materials  
Technical Memorandum  
File No. 0129-128-00**

**November 21, 2008**

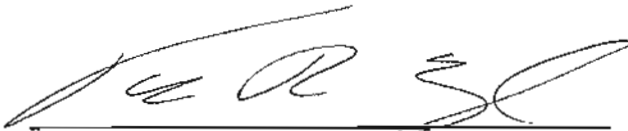
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## EXECUTIVE SUMMARY

This Executive Summary summarizes potential environmental concerns to the planned Burke Gilman Trail extension identified in the “Burke Gilman Trail Corridor, 11<sup>th</sup> Avenue NW to the Ballard Locks Hazardous Materials Technical Memorandum.” The potential environmental concerns are associated with the project alignment and adjacent or upgradient properties. Potential environmental concerns may impact the construction portion of the Burke Gilman Trail extension planned between the terminus of the existing trail at 11<sup>th</sup> Avenue NW and the existing trail at 32<sup>nd</sup> Avenue NW (near the Ballard Locks).

### PURPOSE

The purpose of the technical memorandum is to identify potential hazardous materials impacts that may affect the planned construction of the multi-use Burke Gilman Trail (Trail) extension located between 11<sup>th</sup> Avenue NW and the Ballard Locks in Seattle, Washington. Identifying these sites prior to construction decreases the possibility of exposing the public and the environment to unidentified substances and can minimize liability to the City of Seattle (City) Department of Transportation (SDOT) with respect to cleanup costs and environmental effects. Identifying and evaluating possible environmental impacts during project planning allows SDOT to identify potential mitigation (avoidance and minimization) measures and effects on the environment.

### STUDY AREA

The study area is located in the Ballard neighborhood of Seattle, Washington between 11<sup>th</sup> Avenue NW and the Ballard Locks at 32<sup>nd</sup> Avenue NW as shown on the Vicinity Map, Figure 1. Most of the project footprint is located within the publicly owned right-of-way (ROW) running east to west along NW 46<sup>th</sup> Street, 17<sup>th</sup> Avenue NW, Ballard Avenue NW, NW Vernon Place, Shilshole Avenue NW, 28<sup>th</sup> Avenue NW and NW 54<sup>th</sup> Street. The future final project footprint will also include NW 54<sup>th</sup> Street between Shilshole Avenue NW and 28<sup>th</sup> Avenue NW (including the NW 54<sup>th</sup> Street strip parcel). The portion of the future final trail alignment located on the NW 54<sup>th</sup> Street strip parcel is not within publicly owned ROW. The City is considering acquiring the NW 54<sup>th</sup> Street strip parcel to accommodate the final Trail alignment. The study area encompasses a 1-mile radius centered around the proposed footprint of the Trail.

The study area has historically been used for industrial and commercial purposes since at least the late 1800s and is currently heavily developed for commercial, retail and industrial use. The study area is located on the north shore of Salmon Bay and the site soil generally consists of fill overlaying interbedded clays, silts and sands that are overlying glacial till.

### STUDIES AND COORDINATION

The preparation of the Hazardous Materials Technical Memorandum included research pertaining to historical land use, regulatory agency database list and file reviews, and a site reconnaissance from City of Seattle street ROW (referred to as a windshield survey) of the properties that may be affected by the planned construction of the Trail. A site screening process was developed and implemented as part of this hazardous materials discipline study to identify properties with known or suspected hazardous material-related issues to focus the analysis on properties that could affect the Trail design or construction. The regulatory database review and the observations made during the windshield survey were used to identify potential sites of concern both within and adjacent to the planned Trail alignment, and upgradient, with respect to groundwater flow, of the project site. Historical research was completed to evaluate land use over the past 100 years in those areas of concern as identified by the regulatory database review and the windshield survey. The historical research of land use included review of aerial photographs, Polk City

Directories, Sanborn Fire insurance maps, historical topographic maps and historic archives. A Phase I Environmental Site Assessment (ESA) also was completed for the NW 54<sup>th</sup> Street strip parcel (GeoEngineers, 2007) property that the City is considering acquiring for the final Trail alignment.

## **POTENTIAL SITES OF CONCERN**

In total, 110 sites were included in the initial screening process. Of those 110 sites, 74 sites were eliminated from further consideration because they were either downgradient from the planned alignment with respect to groundwater flow, too far away from the planned alignment or did not appear to pose significant potential for hazardous material-related risks.

The City plans to acquire a portion of one parcel to accommodate the future final project alignment. The parcel is located on the north side of NW 54<sup>th</sup> Street between 26<sup>th</sup> Avenue NW and 28<sup>th</sup> Avenue NW (see Figure 2). The City plans on acquiring only the south 12 feet of the south half of the parcel, tax parcel #1125039104 (NW 54<sup>th</sup> Street strip parcel). No other property acquisition is planned for the project at this time so all other sites identified below are either adjacent to or upgradient from the project.

### ***Sites Identified for Detailed Analysis***

Thirty-six sites were identified for detailed analysis. Four of these sites; Aleutian Dragon Fishers/Emil Associates Property/Fentron Building Products Company (generally known as the Fentron site), Ballard Oil Bulk Plant/Mobil Oil Canal Bulk Plant, Ballard Auto Wrecking (former) and Ballard Recycling are considered to be substantially contaminated properties. The remaining 32 sites, including the NW 54<sup>th</sup> Street strip parcel that the City is considering for purchase, are considered to be reasonably predictable properties with respect to the potential presence of hazardous materials.

Substantially contaminated properties are typically large or have large volumes of contaminated materials, have a long history of industrial or commercial land use, and the contaminants are persistent or difficult and expensive to manage. Reasonably predictable sites are properties where recognized environmental conditions are known based on existing data; or can be predicted based on prior land use and/or site observations, previous experience in similar situations, or by using best professional judgment. The 32 reasonably predictable sites consist of gas stations, oil distribution facilities, businesses with underground storage tanks (USTs), automotive facilities, cleaners and other commercial and/or industrial operators. The four substantially contaminated sites are summarized in detail below:

### **Fentron Site**

The Fentron site, located on the southwest corner of NW Market Street and 28<sup>th</sup> Avenue NW (north adjacent property to project alignment at this location), is identified as substantially contaminated because perchloroethene-contaminated groundwater and potentially impacted soil are present at the property related to the property's historic use as an aluminum window manufacturer. There were also six USTs closed in place at the Fentron site and one leaking underground storage tank (LUST) removed from the northeast portion of the property. The majority of the site is part of a restrictive covenant which includes the Fentron property, the City ROW south of Fentron (including a portion of the planned Trail alignment) and Jacobsen Terminals farther south. Impacted soil (with contaminants of concern including perchloroethene and vinyl chloride) was removed from the site in 1991 when the remediation treatment system was installed and soil deemed "clean" was reused at the site to fill local topographic depressions located along the planned Trail alignment<sup>1</sup>.

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<sup>1</sup> Mr. Jeremy Porter of Aspect Consulting, interviewed July 31, 2007.

Groundwater contaminant plumes associated with the former Fentron site cross beneath the planned Trail alignment. Contaminants of concern (including vinyl chloride) were detected in groundwater samples collected from monitoring wells located in and near the planned Trail alignment as late as 2006 and perchloroethene, trichloroethylene, cis-1,2 dichloroethene and vinyl chloride were detected in groundwater samples collected downgradient from the planned Trail alignment. The remediation system treatment wall crosses beneath a portion of the planned Trail alignment. Groundwater at the site comes within approximately 8 feet of the ground surface and the remediation system wall extends to within 3 feet of the ground surface at the site.

#### **Ballard Oil Site**

Ballard Oil Bulk Plant/Mobil Oil Canal Bulk Plant, located at 1101 NW 45<sup>th</sup> Street (south adjacent property to the project alignment at this location), is identified as a substantially contaminated site due to the presence of free product (diesel) and benzene in groundwater at the site as late as 2002 (this is based on the most recent report in the Ecology site file at the time of our 2008 Ecology file review). The contamination is related to the property's historic use as a bulk oil plant. Petroleum hydrocarbons, polycyclic aromatic hydrocarbons and halogenated solvents were previously identified in the site soil and groundwater. A groundwater pump and treat system was installed at the site, and gasoline and diesel underground storage tanks (USTs) and above ground storage tanks (ASTs), including one leaking diesel UST (LUST), were removed from the site in 1991 and 1998 (LUST). Ex-situ bioremediation of soil and in-situ bioremediation of groundwater were implemented at the site in association with the USTs/ASTs removal in 1991. The site is listed as both an inactive and active cleanup site under the Toxics Program on Ecology's Facility Site Identification web site.

#### **Ballard Auto Wrecking Site**

The former Ballard Auto Wrecking facility, located at 1515 NW Leary Way (upgradient from the project alignment at this location), is identified as a substantially contaminated site due to the presence of diesel, benzene and lead in groundwater at the site at concentrations greater than the site specific cleanup levels for those constituents. Ecology files also indicated that lead and arsenic were detected at hazardous waste levels in site soil during an investigation in 1997. A LUST and associated impacted soil were removed from the site in 2002 and three gasoline USTs were removed from the site in 2004. The site is listed as inactive under the RCRA SQG and Toxics cleanup programs and active under the Water Quality program with a general stormwater discharge permit on Ecology's Facility Site Identification web site.

#### **Ballard Recycling Site**

The Ballard Recycling facility, located at 1509 NW 49<sup>th</sup> Street (upgradient from the project alignment at this location), is identified as a substantially contaminated site due to the presence of lead and cadmium in site soil. Ecology also listed the suspected presence of petroleum products and metals in groundwater and metals in surface water at the site related to the property's historic use as a recycling facility. Ecology listed the site as having a "moderate level of concern" during a site hazard assessment completed in 1997. The site is listed as an "active" cleanup site under the Toxics program on Ecology's Facility Site Identification web site.

### **POTENTIAL IMPACTS**

There is the potential to encounter impacted groundwater and/or soil along the majority of the planned Trail alignment due to the history of industrial activities in the area and/or existing site uses. This includes the portion of the Trail alignment on the NW 54<sup>th</sup> Street strip parcel to be acquired near the Fentron property. The Fentron property is located adjacent to the west limb of the trail between 28<sup>th</sup> Avenue NW and 30<sup>th</sup> Avenue NW.

The contaminants of concern that could potentially be encountered during Trail construction at or adjacent to the 36 sites of concern identified during this study may include soil and/or groundwater impacted by petroleum hydrocarbons, volatile organic compounds, non-halogenated solvents, halogenated organic compounds, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, cyanide and/or metals. Additionally, other contaminants, such as metals and semi-volatile organic compounds may also be associated with petroleum hydrocarbon impacted sites.

During construction, an uncontrolled hazardous substance could be encountered and potentially released to the environment by ground-disturbance or dewatering activities; for example: 1) in areas with known contamination, 2) in areas where recorded activities such as hazardous waste generation or fuel storage in USTs have the potential to affect soils or groundwater, or 3) in other areas not identified in the environmental database search. In such cases, the possible environmental effects could include the following:

- Potential release of contaminant air emissions (dust and volatile organic compounds), soil, sediment, surface water and groundwater during construction.
- Potential alteration of contaminated groundwater plume(s) and generation of contaminated water during dewatering activities.
- Potential alteration of contaminated migration pathways due to excavation and other construction activities.
- Human health and the environment could potentially be affected if contamination is not managed properly in accordance with existing regulations.

Another effect common to construction activities would be the accidental release (e.g. equipment fuel and oil spills) of a hazardous substance during construction. Cleaning up material and disposing of it could add more time and costs to construction operations and large spills of hazardous materials could also require emergency response agency intervention.

In addition to management of contaminated soil and groundwater encountered during construction, there also may be environmental legal liability issues related to property ownership after acquisition of the 54<sup>th</sup> Avenue Strip Parcel. SDOT will be responsible for remediating and monitoring any contamination found on properties acquired for this Project.

Construction activities have the potential to impede future cleanup by liable parties on adjacent or upgradient properties if the project elements are permanent or difficult to remove. SDOT could incur liability for the cleanup of these sites if project elements impeded a future cleanup. However, most of the project features are such that they would be able to be readily removed and replaced should there be a need to conduct a cleanup beneath the site associated with adjacent or upgradient properties.

The sheet metal and chain link fence observed within the footprint of the NW 54<sup>th</sup> Street strip parcel may need to be demolished or moved to accommodate the future Trail alignment. There may be other structures located within the NW 54<sup>th</sup> Street strip parcel that may need to be demolished that were not observed during the site reconnaissance due to restricted access. It is not anticipated that any other structures will need to be demolished within the planned Trail alignment for this Project.

Any structures needing demolition should be assessed for the presence of lead based paint, asbestos and/or other contaminants of concern prior to demolition to insure proper handling and disposal of associated wastes. Potential release of asbestos-containing materials or lead-based paint during the



removal of structures could have an effect on worker health and safety, human health and the environment.

Roadway stripping and repaving and any clearing associated with construction staging areas may temporarily increase pervious surfaces in the area and may also temporarily create areas sensitive to erosion. This could result impacts to stormwater at the site. Best Management Practices (BMPs) such as silt fences, hay bales, etc. should be employed to minimize the impacts of these activities on the surrounding properties and Salmon Bay to the south.

## **POTENTIAL MITIGATION MEASURES**

There always exists the potential for unavoidable negative effects to arise during construction activities. Specific mitigation measures for unavoidable negative effects at sites identified as substantially contaminated will include:

- Air monitoring for solvent vapors;
- Having proper personal protective equipment available on site should hazardous vapors be encountered (i.e. respirators); and
- Training workers in the proper procedures to identify, characterize, handle and dispose of hazardous materials encountered in accordance with applicable rules and regulations.

General mitigation measures that will be taken throughout the project site to control, mitigate, or eliminate any possible potential effects include the following. SDOT will handle all impacted material encountered during construction in accordance with all applicable rules and regulations and will utilize best management practices as described in the project specific construction plans and specifications. Environmental regulations require the following:

- Appropriate management techniques for contaminated media such as soil or groundwater.
- Strict control and management of hazardous wastes.
- Appropriate transportation of hazardous substances.

Additionally SDOT will implement the following practices:

- Impacted soil and groundwater that may be encountered at the site will be properly characterized, handled and disposed in accordance with all applicable rules, regulations and discharge approvals.
- Construction activities will be phased in concert with any needed cleanup activities to avoid contaminated areas and will be planned to minimize disturbance to the subsurface to prevent the transport of contaminants to uncontaminated areas.
- Best management practices will be implemented in order to protect against hazardous material spills from routine equipment operation during construction.
- SDOT will identify any utilities that need to be relocated or protected prior to start of construction.
- Workers will be trained in the proper identification, handling and disposal of contaminated media; the proper procedures should accidental spills of hazardous materials occur; and in

procedures to prevent hazardous material from migrating offsite and coming into contact with the general public (e.g., via erosion or dust control problems).

- SDOT will prepare a worker Health and Safety Plan that will minimize the effects of identified and unanticipated hazardous substance impacts from contaminated soil and groundwater on worker and public health and safety.
- SDOT will also prepare and implement a Spill Prevention Control and Countermeasure plan to minimize or avoid effects hazardous materials will have on soil, surface water and groundwater should a spill occur.

## POTENTIAL COSTS

This Executive Summary presents the range of costs for preliminary site investigations and excavation and disposal of impacted material. More detailed cost estimates are discussed in the technical memorandum. Further investigation (e.g. Phase I/II ESAs, asbestos and lead based material studies, and pre-construction sampling) could be necessary to provide more accurate cost estimates for any cleanup, worker safety and/or construction impacts.

Should SDOT decide to conduct further investigations of identified sites of concern adjacent to or upgradient from the Trail alignment, or for due diligence purposes prior to potential property acquisition, the following cost estimates may be used as a reference. These costs can vary dramatically based on the historic and current land use of a site, the size of the site and the type of land use on adjacent sites (e.g. industrial versus residential site uses).

- The average cost of a Phase I Environmental Site Assessment can range from approximately \$5,000 to \$10,000 per site.
- The cost of a Phase II Environmental Site Investigation can cost, on average, approximately \$25,000 per site but can be much higher depending on the magnitude of the study and contaminants of concern.

Should impacted material be encountered within the proposed Project alignment, the following general cost estimates can be used for planning purposes. However, a Project specific cost estimate will be required in order to accurately budget for excavation and/or disposal efforts that may be completed if SDOT encounters contaminated materials within the Project alignment.

The estimated cost for excavation and disposal of contaminated soil includes:

- excavation, temporary on-site storage and replacement of overburden soils that need to be removed to access the underlying contaminated soil (where applicable) - \$12 per cubic yard;
- excavation and handling of contaminated soil - \$6 per cubic yard;
- transportation and tipping fees for disposal of contaminated material at an appropriate upland facility - \$40 per ton (as stated previously, this cost estimate could be much higher [\$180 to over \$240/ton] if media is deemed dangerous waste);
- restoration of the contaminated zone by backfilling with imported granular soil - \$8 per cubic yard for material and \$6 per cubic yard for placement; and
- Disposal and treatment of dewatering water - \$2 per gallon (as stated previously, this cost estimate could be much higher if water is deemed dangerous waste).

- The cost of groundwater classified as dangerous waste ranges from \$0.80 to \$1.16 per gallon when the groundwater is delivered in bulk quantities or approximately \$179 per drum if delivered in drums. These estimated costs include transportation and disposal fees.

Excavation and disposal estimates of this nature generally have an accuracy of  $\pm 50$  percent. Costs associated with mobilization, site preparation, dewatering of the excavation and contaminated material, analysis of the dewatering water, utility and pavement replacement and other site restoration are NOT included in the estimates provided.

**REVISED FINAL HAZARDOUS MATERIALS  
TECHNICAL MEMORANDUM  
BURKE GILMAN TRAIL CORRIDOR  
11<sup>TH</sup> AVENUE NW TO THE BALLARD LOCKS**

**INTRODUCTION**

**SUMMARY**

The purpose of this Hazardous Materials Technical Memorandum is to identify potential hazardous materials sites in the area of the planned 11<sup>th</sup> Avenue NW to the Ballard Locks - Burke Gilman Trail Corridor Project (Project). Identifying these sites prior to construction is important for the purpose of decreasing the possibility of exposing the public and the environment to unidentified substances. This information can also help to minimize liability posed to the City of Seattle Department of Transportation (SDOT) with respect to cleanup costs and environmental effects, particularly where property acquisition may occur. This study is being completed for the City of Seattle under GeoEngineers' subcontract agreement with SvR Design Group, the City's trail engineering consultant and team leader.

Identifying and evaluating possible effects during Project planning allows SDOT to identify mitigation (avoidance and minimization) measures and effects on the environment. Possible measures include changes in alignment, identifying areas requiring additional investigation before right-of-way acquisition and measures that reduce environmental effects and associated costs. The methodology used to conduct this analysis is included as Appendix A. This report format is generally consistent with the Washington State Department of Transportation Environmental Procedures Manual dated March 2006.

This report has been revised in response to Washington State Department of Transportation (WSDOT) comments received on July 9, 2008. The WSDOT comment form is included with this report as Appendix E.

**PROJECT DESCRIPTION**

***What is the 11<sup>th</sup> Avenue NW to Ballard Locks – Burke Gilman Trail Corridor Project?***

The Seattle Department of Transportation currently has three projects that will extend the Burke Gilman Trail (Trail) pedestrian and bicycle corridor to Golden Gardens Park. The first two Burke-Gilman Extension projects consist of sections of the Burke-Gilman Trail in Ballard from the Ballard Locks to Golden Gardens Park. The first section, completed in 2005, starts at the Ballard Locks and continues to NW 60<sup>th</sup> Street. The second section, now under construction, starts at NW 60<sup>th</sup> Street and continues north to Golden Gardens Park. This Hazardous Materials Technical Memorandum discusses the portion of the project that will connect the existing terminus of the Trail at 11<sup>th</sup> Avenue NW and NW 45<sup>th</sup> Street to the Ballard Locks where the trail picks up again and ends at the intersection of 60<sup>th</sup> Avenue NW and Seaview Avenue NW. The planned Project alignment is described in the table below.

**Table 1. Recommended Route**

Section of Route	Pathway	Acquisition?
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south half of NW 45 <sup>th</sup> Street and the north half of NW 45 <sup>th</sup> street will be occupied by one-way vehicle traffic traveling east.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street on the south side of the train tracks running parallel to NW 45 <sup>th</sup> Street	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Trail will cross NW 45 <sup>th</sup> Street on the west side of 17 <sup>th</sup> Avenue NW to Ballard Avenue. The trail will then follow street routing along Ballard Avenue to Vernon Place.	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Trail will travel along the west side of Vernon Place south to Shilshole Avenue North where the trail will cross to the south side of Shilshole Avenue North. Trail will then travel between the existing railroad tracks and the south side of Shilshole Avenue North from Vernon Place to 24 <sup>th</sup> avenue NW	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Trail will travel along the east side of 24 <sup>th</sup> Avenue NW north to the south side of NW Market Street. The trail will then travel along the south side of NW Market Street from 24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW.	No
Shilshole Avenue NW to 28 <sup>th</sup> Avenue NW on NW 54 <sup>th</sup> Street (Likely Future Option)	This future section of the trail will travel west from Shilshole Avenue on the north side of NW 54 <sup>th</sup> Street to the railroad corridor connecting 28 <sup>th</sup> Avenue NW to the Locks.	Yes (the south 12 feet of parcel #1125039104, NW 54 <sup>th</sup> Street strip parcel)
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Trail will travel south from NW Market Street along 28 <sup>th</sup> Avenue NW to the railroad corridor connecting 28 <sup>th</sup> Avenue NW to the Locks. The trail will travel between the railroad corridor and existing buildings on NW Market Street from 28 <sup>th</sup> Avenue NW to the Ballard Locks at approximately 30 <sup>th</sup> Avenue NW where the existing trail starts again.	No

The purpose of the Project is to eventually extend the existing Trail so that there is a continuous commuter and recreation route from the City of Redmond on the east side of Lake Washington to Golden Gardens Park on the west side of Seattle, adjacent to Puget Sound. Specific benefits of the Project according to SDOT include improved safety due to dedicated bicycle and pedestrian routes, reduced traffic congestion (assuming an increased commuter use of the Trail) and increased travel speeds for cyclists during peak travel periods due to more direct Trail routing.

**What are the Proposed Project Improvements?**

The primary construction elements of the Project include:

- constructing a connector trail between the existing trail terminus at the intersection of 11<sup>th</sup> Avenue NW and NW 45<sup>th</sup> Street and the Trail segment beginning at the intersection of 30<sup>th</sup> Avenue NW and NW 54<sup>th</sup> Street;
- adding landscaping and/or a barrier walls between automobile traffic and the connector trail;
- installing associated utilities (e.g. stormwater conveyance, etc.); and
- using the existing SDOT ROW and purchasing the NW 54<sup>th</sup> Street strip parcel (located on the north side of the railroad corridor) to accommodate the likely future portion of the Trail that will extend from Shilshole Avenue NW west on NW 54<sup>th</sup> Street to 28<sup>th</sup> Avenue NW.

The construction elements of the Recommended Route and the alternative routes (detailed in Appendix B) are very similar and each alternative's route lies within the same alignment as the Recommended Alignment. Hazardous materials impacts will be the approximately same for all alternatives since construction activities and trail operations (when complete) will all occur within the same alignment.

## **BACKGROUND**

### ***Why Are We Considering Hazardous Materials as Part of This Study?***

Identifying hazardous material sites prior to construction is important because it decreases the possibility of exposing the public and the environment to unidentified substances. Identifying hazardous material sites prior to construction is also important to protect the health and safety of the workers at the site. Hazardous materials include any material that may pose a threat to human health or the environment because of its quantity, concentration, or physical or chemical characteristics. Further, this information can help minimize cleanup costs and potential liability to SDOT where the Project may require acquiring properties.

The handling of any potential hazardous materials will be governed in compliance with the following policies, guidance, and laws:

#### **Policies, Guidance and Laws**

- Clean Air Act (CAA), Chapter 70.94 RCW.
- Clean Air Act (CAA), 42 USC 7401 et seq.
- Clean Water Act (CWA), 33 USC 1251 et seq.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 et seq.
- Dangerous Waste Regulation, Chapter 173-303 WAC.
- Endangered Species Act (ESA), 7 USC 134, 16 USC 460 et seq.
- Federal Highway Administration, Technical Advisory T6640.8A (1987), Supplementary Hazardous Waste Guidance (1997), and Hazardous Wastes in Highway Rights-of-Way (1994).
- Hazardous Waste Management Act, Chapter 70.105 RCW.
- Model Toxics Control Act (MTCA), Chapter 70.105D RCW.
- Occupational Health Standards, WAC 296-62.
- Occupational Safety and Health Act (OSHA), 29 USC 651 et seq.
- Resource Conservation and Recovery Act (RCRA), 42 USC 321 et seq.
- Safe Drinking Water Act, 42 USC 300(f) et seq.
- Small Business Liability Relief and Brownfields Revitalization Act.
- Solid Waste Management Act, Chapter 70.95 RCW.
- Toxic Substances Control Act (TSCA), 15 USC 2601 et seq.
- Underground Storage Tanks (UST), Chapter 90.76 RCW.
- U.S. Department of Transportation, Chapter 49 CFR.

- Washington Industrial Safety and Health Act (WISHA).
- Water Pollution Control Act, Chapter 90.48 RCW.
- WSDOT Environmental Procedures Manual (EPM), Section 447.
- WSDOT Local Agency Guidelines (LAG) Manual.

We collected information for this technical memorandum by reviewing previous environmental reports completed in the Project area, reviewing publicly available environmental records and databases, identifying historical land uses, identifying the groundwater flow direction, conducting a windshield survey to identify sources of hazardous materials and completing a Phase I Environmental Site Assessment (ESA) for the NW 54<sup>th</sup> Street strip parcel (GeoEngineers, 2007). The methodology to conduct this analysis is detailed and included as Appendix A.

The Project area specifically evaluated for environmental effects included the area within ½ mile of the Project corridor. This technical memorandum identified hazardous material sites adjacent to the Project area. Further investigations, including Phase I and Phase II ESAs, are recommended for any parcels identified in this memorandum that are to be acquired for this Project.

## **BASELINE CONDITIONS**

### ***What is the Natural Environment of the Project Area?***

The Project area is located along the north shoreline of Salmon Bay, which connects to the Puget Sound via the Hiram M. Chittenden Locks. The Project area is relatively flat and the topography slopes downward toward Salmon Bay to the south-southwest. The Project alignment ranges in elevation between 5 feet and 15 feet above mean sea level.

The Project area is part of the Puget Sound Lowland formed by past glaciations. The geology of the Project area generally consists of fill overlaying interbedded clays, silts and sands that are overlying glacial till. Fill encountered in the area generally consists of gravel, sand, silt, wood debris, concrete fragments and glass fragments. The fill encountered in the area ranges in thickness from approximately 3 feet to 10 feet thick. The native soil encountered in the Project area consists of hard silts and sands interpreted to be glacial till.

Groundwater in the Project area has been encountered during previous studies at depths ranging from 3 feet to 12 feet beneath ground surface. The direction of groundwater flow in the Project area is interpreted to flow to the south-southwest towards Salmon Bay based on the topography of the area.

Surface water in the area also generally flows to the south southwest where it is not controlled by on-site stormwater systems and/or municipal drains. A groundwater seep was observed on the northwest corner of the 14<sup>th</sup> Avenue NW and NW 45<sup>th</sup> Street intersection during the windshield survey. The seep originates on City ROW and flows into a catchbasin on private property. The seep is not located within the Project alignment.

### ***What is the Land Use in the Project Area?***

The Ballard neighborhood of Seattle, including the proposed Trail alignment and the area around the proposed alignment, has been occupied by various industrial and commercial facilities for more than one hundred years. Ballard became a center of the timber industry in the late 1800's and the area was occupied by several mills and shingle manufacturers. Shipping became a major commercial enterprise in

the Ballard area in the years after World War I. Since then, facilities including bulk oil facilities, sand and gravel facilities, asphalt plants, boat yards, salvage yards, dry cleaners and automobile wrecking yards have occupied the properties around and upgradient from the Project area.

The Ballard neighborhood is now occupied by clothing boutiques, restaurants, bars, condominiums and town homes. Many industries (including sand and gravel facilities, boat yards, fuel transfer facilities, etc.) still remain along the shoreline of Salmon Bay and along the planned Project alignment.

### ***Are There Contaminated Sites of Concern in the Project Area?***

Various properties adjacent to and upgradient from the planned Burke Gilman Trail Corridor have been used for industrial and commercial purposes during the last one hundred years. The potential for encountering hazardous materials exists along most of the Project alignment, either due to the adjacent site's history or existing conditions.

The Project area contains hazardous materials and thirty-six sites of concern, including the contaminant sources within or adjacent to the NW 54<sup>th</sup> Street strip parcel that may be acquired. The sites of concern generally include historic dry cleaning facilities, known and suspected contaminated sites (current and historic), five Brownfields sites (including a bulk oil plant, fuel distribution facilities, auto wrecking yard and recycling facility), sites that have (current and historic) underground storage tanks (USTs) and/or leaking underground storage tanks (LUSTs).

The following sections provide more information about the analysis of the Project area and discuss the identified sites of concern. For each of the sites retained for in-depth analysis, the probable contamination was assessed to evaluate whether the site could be "reasonably predictable" or "substantially contaminated" with respect to the presence of hazardous materials.

### ***Where are the Properties That Are Likely to be Substantially Contaminated?***

Substantially contaminated sites are typically large or have large volumes of contaminated materials, have a long history of industrial or commercial land use, and the contaminants are persistent, difficult or expensive to manage. A considerable amount of environmental data may be available for substantially contaminated sites; however, the cost of clean-up associated with these sites can be prohibitive.

Four substantially contaminated sites were identified in the Project area as described in Table 2 and as shown on Figure 3.



**Table 2. Substantially Contaminated Properties**

Map ID Number	EDR ID Number	Site	Address	Rationale
1	12	Aleutian Dragon Fishers/ Emil Associates Property/ Fentron Building Products Co (this site is generally known as the Fentron site)	2801 NW Market Street	<p>Adjacent to alignment; Listed as RCRA SQG, LUST, FINDS, ICR with petroleum products and metals in soil and groundwater, solvents in groundwater, and 1 used oil UST, 3 USTs with unreported contents, 1 unleaded gas and 1 hazardous substance UST closed in place.</p> <p>Information obtained from Ecology files and in an interview with a person knowledgeable of the site (Jeremy Porter, Aspect Consulting, 2007) included the following:</p> <ul style="list-style-type: none"> <li>-The Fentron property formerly included a parcel adjacent to NW 28<sup>th</sup> Avenue on the east. This portion of the property had a LUST (bunker oil) removed in 1993. Groundwater monitoring was to continue for a year after removal. Current status of this portion of the site was not listed in the Ecology file.</li> <li>-A 1998 investigation identified the west portion of the Fentron site (west of 28<sup>th</sup> Avenue NW) as impacted by perchloroethene, (aka tetrachloroethene), cis 1,2 dichloroethene, benzene and vinyl chloride (in soil and groundwater).</li> <li>- Vinyl chloride at concentrations greater than the cleanup level was detected in groundwater from a monitoring well located within the planned Trail alignment during the April 2006 monitoring event. Perchloroethene, trichloroethene, cis 1,2 dichloroethene, and vinyl chloride were detected at concentrations greater than the associated cleanup levels in samples collected from groundwater monitoring wells located downgradient from the planned Trail alignment during the April 2006 monitoring event.</li> </ul> <p>Remediation activities included excavation and disposal of impacted soil, reuse of "clean" soil on site during regrading and installation of groundwater monitoring wells and treatment walls. This site is part of a restrictive covenant which includes the Fentron property, the City of Seattle ROW along the railroad tracks to the south of Fentron and Jacobsen Terminals to the south. Impacted groundwater remains on site and potentially impacted soil may remain on site.</p>
2	66	Ballard Oil Bulk Plant/ Mobil Oil Canal Bulk Plant	1101 NW 45 <sup>th</sup> Street	<p>Adjacent and downgradient from alignment; Listed as Brownfields, Interim Cleanup Report (ICR), FINDS, Voluntary Cleanup Program (VCP) and Confirmed or Suspected Contaminated Site List (CSCSL) with non halogenated solvents, polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) in soil and groundwater (as of 1992). Ecology file included the following information:</p> <ul style="list-style-type: none"> <li>-In 1988, a pump and treat system installed on site.</li> <li>-In 1991, USTs/ASTs (gasoline and diesel) were removed from the site.</li> <li>-In 1991 ex situ bioremediation of soil and in situ groundwater bioremediation implemented.</li> <li>-In 1998, an additional diesel LUST was encountered on site, removed and soil cleaned up.</li> <li>-The most recent groundwater report (2002) in the Ecology site file lists free product (diesel) and benzene on groundwater at the site.</li> </ul>

Map ID Number	EDR ID Number	Site	Address	Rationale
				The site is listed as both an inactive and active cleanup site under the Toxics Program on Ecology's Facility Site Identification web site.
3	47	(former) Ballard Auto Wrecking	1515 NW Leary Way	<p>Upgradient from alignment; Listed as Brownfields, UST, CSCSL, Resource Conservation Recovery Act – Large Quantity Generator (RCRA-LQG) and VCP with non halogenated solvents, halogenated organic compounds and polychlorinated biphenyls (PCBs) suspected in groundwater. Ecology files listed the following information:</p> <ul style="list-style-type: none"> <li>- In 1997, lead and arsenic were detected at hazardous waste levels in site soil and</li> <li>TPH-G, -D, benzene lead and arsenic were detected at concentrations greater than the site specific cleanup levels (CULs) in soil and groundwater at the site.</li> <li>-In 2002, a UST and associated impacted soil were removed and disposed under the Voluntary Cleanup Program</li> <li>-In 2004, 3 gasoline USTs were removed</li> <li>-In 2006, ongoing groundwater monitoring detected benzene, lead and TPH-D greater than the site CUL in groundwater at the site.</li> </ul> <p>The site is listed as inactive under the RCRA SQG and Toxics cleanup programs and active under the Water Quality program with a general stormwater discharge permit on Ecology's Facility Site Identification web site.</p>
4	47	Ballard Recycling	1509 NW 49 <sup>th</sup> Street	<p>Upgradient from alignment; Listed as CSCSL FINDS, Brownfields with petroleum products confirmed in soil, petroleum products and metals suspected in groundwater and metals suspected in surface water and sediment. Ecology files listed the following information:</p> <p>The site is listed as having cadmium and lead in soil and ranked as having a moderate level of concern during a site hazard assessment in 1997. The site is listed as an "active" cleanup site under the Toxics program on Ecology's Facility Site Identification web site.</p>

### Fentron Site

The groundwater contaminant plumes associated with the Fentron site extend from the Fentron site beneath the planned Trail alignment. Groundwater monitoring continues and as late as the April 2005 monitoring event, perchlorethylene (aka tetrachloroethylene) and vinyl chloride were detected in groundwater samples collected from within the planned alignment of the Project. The 2005 report that we reviewed identified three discrete solvent contaminated groundwater plumes that extended from about 30<sup>th</sup> Avenue NW to 28<sup>th</sup> Avenue NW.

The 2005 report shows that two treatment walls have been implemented to control and treat these plumes. The first (westernmost) wall is a funnel and gate system. This wall consists of a cement-bentonite wall to "funnel" groundwater toward two treatment portions ("gates") of the wall which consists of zero valent iron. The second (easternmost) wall consists of an iron and activated carbon treatment wall. The first wall runs parallel to and to the south of the railroad tracks within the Project alignment. This groundwater treatment wall crosses underneath the planned Project alignment approximately 480 feet east of the west side of the Stone Gardens gym currently located at the site. The second treatment wall is located south of the right of way and is located on the Jacobsen Terminals parcel. This wall does not appear to intersect the planned Trail alignment. There are groundwater monitoring wells located within

and adjacent to the planned Trail alignment in this area. Figure 4 shows the approximate locations of monitoring wells and the treatment wall.

Vinyl chloride was detected at concentrations greater than the cleanup level in a groundwater sample collected from a monitoring well located within the planned Trail alignment and perchloroethene, trichloroethene, cis 1,2 dichloroethene and vinyl chloride were detected in groundwater samples collected from monitoring wells located downgradient from the planned Trail alignment as late as April 2006 (Aspect Consulting, 2006).

#### **Ballard Oil Bulk Plant/Mobil Oil Canal Bulk Plant**

A pump and treat system was installed at the Ballard Oil/Mobil Oil Canal Bulk Plant in 1988. Gasoline and diesel USTs/ASTs were removed from the site in 1991. Impacted site soil associated with the LUST/AST removal was excavated and treated using bioremediation (1991). Impacted groundwater in the vicinity of the LUST/AST removal was also treated using in-situ bioremediation. An additional LUST (diesel) was removed in 1998.

Free product (diesel) and benzene were detected in groundwater at the site as recently as 2002 (Kleinfelder, 2002). Groundwater flow direction was reported to be to the southwest in the 2002 report. Additional contaminants of concern identified in the site soil and groundwater associated with the site's use as a bulk oil plant include petroleum hydrocarbons, polycyclic aromatic hydrocarbons and halogenated solvents. The site is listed as both an inactive and active cleanup site under the Toxics Program on Ecology's Facility Site Identification web site.

#### **Ballard Auto Wrecking (former)**

Lead and arsenic were detected in site soil at hazardous waste levels in 1997. Gasoline, diesel, benzene, lead and arsenic were detected in the soil and groundwater at the site at concentrations greater than the site specific cleanup levels in the same year. Four USTs (gasoline and diesel) and associated impacted soil were removed from the site in 2002 (one) and 2004 (three).

Benzene, lead and diesel-range petroleum hydrocarbons were detected in the site groundwater at concentrations greater than the site specific cleanup levels as late as 2006 (most recent groundwater data in the Ecology site file during the file review). The narrative associated with the 2006 groundwater data in the Ecology site file indicates that groundwater monitoring was ongoing in 2006. The site is listed as inactive under the RCRA SQG and Toxics cleanup programs and active under the Water Quality program with a general stormwater discharge permit on Ecology's Facility Site Identification web site.

#### **Ballard Recycling Facility (former)**

Petroleum hydrocarbons, lead and cadmium were encountered in site soil during an Ecology site hazard assessment conducted in 1997. Ecology ranked the site as having a moderate level of concern based on these findings. Ecology also listed the suspected presence of petroleum products and metals in groundwater and metals in surface water at the site related to the facility's historic use as a recycling facility. The site is listed as an "active" cleanup site under the Toxics program on Ecology's Facility Site Identification web site.

#### ***Which Properties are Likely to be Reasonably Predictable?***

Reasonably predictable sites are sites where recognized environmental conditions are known based on existing data or can be predicted based on site observations, previous experience in similar situations, or by using best professional judgment. These sites are typically small, the contaminants are localized and

are relatively non-toxic, and abatement/remediation activities are routine (e.g., asbestos abatement or petroleum hydrocarbon-contaminated soil remediation).

The locations of the reasonably predictable sites are shown on Figure 3. Thirty-two reasonably predictable sites were identified adjacent to or upgradient from the Project alignment.

**Table 3. Reasonably Predictable Properties**

Map ID Number	EDR ID Number	Site	Address	Rationale
5	29	Wyman Property	5330 Ballard Avenue NW	Upgradient to alignment; listed as Brownfields, CSCSL, FINDS with petroleum products and halogenated compounds confirmed in soil and suspected in groundwater, surface water and air; halogenated solvents, metals and cyanide suspected in groundwater, surface water and air.  Ecology files for the site indicated the following:  -2 USTs and impacted soil were observed on site in 1990.  -Notes from a 2000 Ecology visit indicate soil staining and TPH-heavy oil, lead, cadmium, and tetrachloroethylene in surface soil samples collected at the site.  -2001 Seattle King County Public Health Department letter stated that the site was listed as a moderately low hazard during the site hazard assessment. The site is listed as an "active" cleanup site under the Toxics program on Ecology's Facility Site Identification web site.
6	8	Jacobsen Terminals Inc.	5350 30 <sup>th</sup> Avenue NW	Adjacent to the alignment; Listed as an independent remedial action (IRA) with restrictive covenant and institutional controls. Ecology Files indicate and independent remediation action at the site completed 2001. Ecology granted a conditional NFA with continued operation of the in-place groundwater remediation system and continued groundwater monitoring – 2001.
7	74	Mobil Canal Bulk Plant/ Norvac Services	4401 11 <sup>th</sup> Avenue NW	Adjacent to alignment; listed as ICR, RCRA SQG, FINDS with metals and petroleum hydrocarbons in groundwater. No Ecology site file was available at the time of the review. The site is listed as an active RCRA SQG on Ecology's Facility Site Identification web site.
8	66	Nor Quest Seafoods Inc/ Trident Seafoods	1111 NW 45 <sup>th</sup> Street	Upgradient from alignment; Listed as RCRA SQG, FINDS, SPILLS with petroleum hydrocarbon spills to surface water and historic use as a bulk oil facility. No Ecology site file was available at the time of the review. The site is listed as an active RCRA SQG on Ecology's Facility Site Identification web site.

Map ID Number	EDR ID Number	Site	Address	Rationale
9	63	BNSF Manhole NW 45 <sup>th</sup> St	NW 45 <sup>th</sup> Street and 9 <sup>th</sup> Avenue NW	Upgradient from alignment; listed as CSCSL with petroleum hydrocarbons, metals, cyanide suspected to be present in groundwater and soil.  Ecology site file indicates discovery of "oil filled manhole" in 2002.  The site is listed as inactive under the Toxics program on Ecology's Facility Site Identification web site.
10	47	Leary Way Station	1555 NW Leary Way	Adjacent to alignment; Listed on UST list with 3 unleaded gasoline, 2 leaded gasoline and 5 contents unknown USTs removed and historic use as auto wrecking yard. An Ecology site file was not available at the time of the review.
11	50	Former Time Oil Property/ Bill's Tires	4910 NW Leary Way	Upgradient from alignment; Listed as LUST/UST site with cleanup of petroleum hydrocarbon impacted groundwater and soil started; 1 leaded gasoline and 1 used oil UST removed. An Ecology site file was not available at the time of the review.
12	NA	Seattle Cedar Lumber Manufacturing	4735 Shilshole	Adjacent to alignment; Historic use as a timber mill and lumber manufacturing facility. An Ecology site file was not available at the time of the review.
13	46	Dearmand Property	5107 Ballard Avenue NW	Adjacent to alignment; Listed as CSCSL, FINDS, VCP with groundwater and soil impacted by petroleum hydrocarbons. An Ecology site file was not available at the time of the review. The site is listed as inactive under the VCP program on Ecology's Facility Site Identification web site.
14	28	Olympic Athletic Club	5301 Leary Avenue NW	Adjacent to alignment; Listed as ICR with petroleum in soil and groundwater. An Ecology site file was not available at the time of the review.
15	33	Salmon Bay Center	5301 – 5309 Shilshole Avenue	Adjacent to alignment and downgradient; listed as CSCSL with petroleum products, non-halogenated solvents, metals and cyanide treated, removed or contained in surface water. PAH and petroleum hydrocarbons confirmed in soil. Metals and cyanide confirmed (petroleum hydrocarbons and PAHs suspected) in sediment.  Ecology files indicate the following information: TPH-D and TPH-oil were noted in site soil in a 1999 Ecology letter and the site is listed under a Restrictive Covenant.  A 2006 Ecology letter states that further action is required at the site in order to obtain NFA status.

Map ID Number	EDR ID Number	Site	Address	Rationale
16	33	CD Stimson Co, Salmon Bay Tech Center/Tri Graphics Inc.	5305 Shilshole Avenue	Adjacent to alignment; listed as ICR, FINDS, RCRA-LQG with petroleum hydrocarbon contaminated soil; ICR submitted in 1997. An Ecology site file was not available at the time of the review. The site is listed as inactive under the UST program on the Facility Site Identification web site.
17	35	Cowman Campbell Paint Co	5221 Ballard Avenue NW	Adjacent to alignment; listed as RCRA SQG, FINDS, ICR with petroleum hydrocarbon contaminated soil and groundwater and interim cleanup report dated 2001. An Ecology site file was not available at the time of the review. The site is listed as inactive under the UST program on the Facility Site Identification web site.
18	33	Honeywell Inc. Shilshole/Trident Seafoods/Trident Akutan Bulk fuel storage	5303 Shilshole	Adjacent to alignment; Listed as RCRA – SQG, FINDS, Comprehensive Environmental Response, Compensation (CERC), No further remedial action planned (NFRAP), FTTS, above ground storage tank (AST) with various spills of petroleum hydrocarbons into Salmon Bay and 5 diesel ASTs on site. An Ecology site file was not available at the time of the review. The site is listed as an inactive RCRA SQG site on the Facility Site Identification web site.
19	7	Chuck's Ballard/ former service station/Ballard Eagles	5600-5614 24 <sup>th</sup> Avenue NW	Upgradient from alignment; Listed as CSCSL, LUST, UST, ICR, FINDS, VCP with TPH greater than the cleanup level in soil and groundwater, 4 USTs removed (2 unleaded gasoline, 1 leaded gasoline and 1 unreported contents). The Ecology site file included the following information: - USTs/LUSTs and a hydraulic hoist were formerly located on site. -The Voluntary Cleanup Program Action Report (July 2005) – reported that the TPH-gasoline and BTEX plume in groundwater extends across 24 <sup>th</sup> Avenue NW to the southwest and that petroleum impacted soil and groundwater likely remain beneath 24 <sup>th</sup> Avenue NW in this area.
20	9	Ballard Transfer Co. of WA	2417 NW Market Street	Adjacent to alignment; Listed as UST, LUST, ICR, FINDS with 3 USTs removed (1 unleaded gasoline, 1 waste oil and 1 unreported contents). The Ecology site file included the following information: -2 USTs (diesel) were removed 1990 and TPH and BTEX were detected in soil and TPH in was detected in groundwater at the site. -The site was "Reported Cleaned up" in 2000 but petroleum contaminated soil remained on site under pump islands after the clean up. The site is listed as an inactive LUST site and an active site under the UST program on Ecology's Facility Site Identification web site.

Map ID Number	EDR ID Number	Site	Address	Rationale
21	10	Chevron 90968	2021 Market NW	<p>Upgradient from alignment; listed as UST, LUST, RCRA SQG, CSCSL, FINDS, VCP, ICR with 4 USTs removed (2 unleaded gasoline, 1 leaded gasoline, 1 waste oil and 1 unreported contents). TPH concentrations in groundwater reported greater than the cleanup level.</p> <p>The Ecology Site file included the following information:</p> <p>A soil venting system and groundwater pump and treat systems were installed in 1990. Ecology granted an NFA for on site soil in 1994. Free product was noted in one well during the November 2006 monitoring event in the Ecology file.</p>
22	10	Sparkle Cleaners	2011 NW Market Street	<p>Upgradient from alignment; listed as RCRA SQG, FINDS, CSCSL with halogenated organic compounds confirmed in groundwater and suspected in soil.</p> <p>In 2000, Ecology notes perchloroethene in the groundwater at the site greater than MTCA Method A and the site is awaiting Site Hazard Assessment. The site is listed as active under the RCRA SQG program and an inactive cleanup site under the Toxics program on Ecology's Facility Site Identification web site.</p>
23	11	Arnold's Deli	2654 NW Market	<p>Adjacent to alignment; Listed as LUST, CSCSL NFA, ICR with soil and groundwater impacted by petroleum hydrocarbons.</p> <p>The Ecology site file included the following information:</p> <p>- NFA was granted in 1995 for removal of 3 LUSTs and subsequent cleanup. --One gasoline LUST was identified in 2004 with benzene and gasoline range petroleum hydrocarbons in soil and groundwater. Listed in Ecology file as awaiting cleanup in 2005.</p>
24	20	NOAA Ship Oceanographer, Jacobsen Terminals	5355 28 <sup>th</sup> Avenue NW	<p>Adjacent to alignment; Listed as VCP, ERNS, CSCSL, UST ICR with halogenated compounds confirmed in groundwater. The site is listed as an inactive hazardous waste generator on Ecology's Facility Site Identification web site.</p>
25	NA	(former) Richfield Service Station	3001 NW Market	<p>Upgradient from the alignment. Historic use as a gas/service station. An Ecology site file was not available at the time of the review.</p>
26	NA	Color Tech	1405 NW 46 <sup>th</sup> Street	<p>Adjacent to the alignment. Approximately thirty 55-gallon drums were observed standing on grass along NW 45<sup>th</sup> Street behind Color Tech. They appeared to be in good condition – contents unknown. An Ecology site file was not available at the time of the review.</p>

Map ID Number	EDR ID Number	Site	Address	Rationale
27	NA	Covich Williams	5109 Ballard Avenue NW	Adjacent to the alignment; 5 upright ASTs in concrete secondary containment were observed on site (contents unknown) and dozens of 55-gallon drums on pallets were observed both inside and outside the building. Most 55-gallon drums appear to be in good condition except for 6 drums (contents unknown) which are dented, rusted and appear to be in poor condition sitting on a pallet on the asphalt outside of the building. An Ecology site file was not available at the time of the review.
28	NA	X Ray Auto	2639 NW Market	Adjacent to the alignment; Site occupied by operating auto shop. Housekeeping appeared to be good. An Ecology site file was not available at the time of the review.
29	NA	Wilson Brothers Brake Repair	5450 Shilshole Avenue	Adjacent to the alignment; Site occupied by operating brake repair shop. Housekeeping appeared to be ok. An Ecology site file was not available at the time of the review.
30	NA	Beacon Automotive Shop	5456 Shilshole Avenue	Adjacent to the alignment; Site occupied by operating auto shop. Housekeeping appeared to be good. An Ecology site file was not available at the time of the review.
31	NA	Former gas station	2654 NW Market	Upgradient from alignment; Site occupied by former gas station, very dilapidated. Store and pumps still occupy the site. Site appears to be used for parking. An Ecology site file was not available at the time of the review.
32	NA	Wolf's Garage	5414 28 <sup>th</sup> Avenue NW	Adjacent to the alignment; Site occupied by operating auto shop. Housekeeping appeared moderately poor. An Ecology site file was not available at the time of the review.
33	11	Ballard Oil	5300 26 <sup>th</sup> Avenue NW	Adjacent to the alignment. Listed as RCRA SQG with no violations. Ecology files state that poor housekeeping practices were kept at the site, there was not secondary containment around oil drums and catch basins at the site needed cleaning during a 2005 site inspection
34	NA	Pacific Fisherman, Inc. Storage Lot	SE corner of 26 <sup>th</sup> Ave. NW and NW Market St.	Adjacent to the alignment. The site is used as storage for equipment and tanks without any visible secondary containment and has the potential to pose an environmental concern at the site if there have been any leaks or releases associated with the equipment that have impacted soil or groundwater in the Project alignment. An Ecology site file was not available at the time of the review.



Map ID Number	EDR ID Number	Site	Address	Rationale
35	NA	Fenpro (former)	5400 28 <sup>th</sup> Avenue NW	Upgradient from the alignment. A former LUST was located on this property. The 1993 LUST decommissioning report (EMCON Northwest, Inc.) indicates that impacted groundwater did not migrate past the south boundary of the site, however, there is a potential for environmental concern from this former LUST site if impacted groundwater migrated onto the Project alignment prior to LUST removal and monitoring. The site is listed as an inactive RCRA hazardous waste generator site on Ecology's Facility Site Identification web site.
36	NA	NW 54 <sup>th</sup> Street strip parcel	NW 54 <sup>th</sup> St. between 26 <sup>th</sup> Avenue NW and 28 <sup>th</sup> Avenue NW	On a portion of the future alignment. The north portion of this site was obscured from view and access was denied during the associated Phase I ESA site reconnaissance. Existing conditions on this portion of the site may pose potential environmental concerns to the Project alignment in this location. The site has been historically used as a railroad ROW, which has the potential to pose an environmental concern if there have been any historic releases, leaks or spills upgradient from, adjacent to or onto the Project alignment. An Ecology site file was not available at the time of the review.

## POTENTIAL EFFECTS

### *How Will the Project Affect Hazardous Materials?*

The completed Project is not likely to affect hazardous materials. Bike paths are considered to be non-pollution generating surfaces by WSDOT.

### *Will Project Construction Affect Hazardous Materials?*

Various elements throughout the Project alignment will require construction activities that have the potential to encounter contaminated media, release contaminants and/or alter contaminant pathways. These construction activities include:

- Railroad track relocation,
- Excavations associated with retaining walls,
- Pavement removal,
- Grading,
- Utility excavations/trenches, and
- Landscape excavations.

### **Hazardous Material Sites**

Potential construction effects along the Project alignment include releases of contaminants to the environment by ground-disturbing (including grading, utility excavations, landscape excavations, etc.) or

dewatering activities. During construction, an uncontrolled hazardous substance could be encountered 1) in areas with known contamination or downgradient from areas of known contamination, 2) in areas where recorded activities such as hazardous waste generation or fuel storage in USTs have the potential to affect soils or groundwater, or 3) in other areas not identified in the environmental database search. Potential construction effects specific to the substantially contaminated sites identified in this report are discussed below.

### ***Substantially Contaminated Sites***

#### **Fentron Site**

The portion of the proposed trail (and alternative routes) that is located adjacent to and south of the Fentron site will be constructed on publicly owned right-of-way between the Fentron property and the railroad tracks in this location. There is no property acquisition planned in this location.

Soil in the planned trail right-of-way that was historically impacted by the Fentron site has been excavated and “clean” soil was used as backfill in this area. The groundwater level in this area has been measured at approximately 8 feet below ground surface. The construction activities in this area would consist of limited grading and paving for the trail and associated utility installation.

There is a low potential for grading planned on this portion of the trail to encounter impacted media as the excavation associated with grading is not likely to extend through the clean fill at the site to the depth of groundwater. There may be a potential to encounter impacted groundwater at the site if catchbasins or utility trenches extend to the depth of groundwater.

Excavation associated with the trail construction may come in contact with the Fentron site treatment wall where it crosses beneath the right-of-way in one location (as shown on Figure 4). Planned excavation may need to be modified in order to avoid damaging the existing treatment wall if grading or utilities extend to depths greater than 3 feet below ground surface in this location.

#### **Ballard Oil Bulk Plant/Mobil Oil Canal Bulk Plant**

The portion of the trail (for all alternatives) that is adjacent to the Ballard Oil/Mobil Oil Canal Bulk Plant site is located in publicly owned right-of-way upgradient of the Ballard Oil site. No property acquisition is planned in this area of the project alignment.

The construction activities in this area would consist of grading and paving and associated utility installation. There is a low potential for excavation associated with drainage swale and catchbasin installation in this portion of the site to encounter impacted groundwater or soil associated with the bulk plant site due to the location of the trail upgradient from the site. Additionally, petroleum hydrocarbon impacted soil was historically removed from the bulk plant site and bioremediated.

There is a low potential that construction activities would come in contact with impacted groundwater plume as groundwater flow in this area is to the south, away from the planned trail alignment.

#### **Former Ballard Auto Wrecking**

The proposed trail alignment (for all alternatives) is located in publicly owned right-of-way in this location. No property acquisition is planned in this area of the project alignment. The site is located approximately 500 feet north and upgradient of the proposed trail alignment.

The construction activities in this area would consist of grading and paving and associated utility installation for the trail. There may be a low potential for excavation associated with drainage swale and

catch basin excavation in this area to encounter contaminated groundwater associated with the auto wrecking site. There is a low potential for the excavation associated with trail construction in this area to encounter impacted soil associated with auto wrecking site because of the site's distance from the trail alignment.

### **Ballard Recycling**

The proposed trail alignment (for all alternatives) is located in publicly owned right-of-way in this location. No property acquisition is planned in this area of the project alignment. The site is located approximately 900 feet north and upgradient of the proposed trail alignment.

The construction activities in this area would consist of grading and paving for the trail and associated utility installation. There may be a low potential for excavation associated with drainage swale and catch basin excavation in this area to encounter contaminated groundwater associated with the Ballard Recycling site. There is a low potential for the excavation associated with trail construction in this area to encounter impacted soil associated with recycling site because of the site's distance from the trail alignment.

### **Other Sites of Concern**

The regulatory database search indicated that reasonably predictable sites adjacent to and upgradient from the Project alignment have either impacted media (soil, groundwater, surface water and/or sediment) present, completed a cleanup, are currently being cleaned up, or are subject to restrictive covenants and/or institutional controls. Please see Appendix C for the complete regulatory database search for additional details.

Potential construction effects associated with these other sites of concern along the Project alignment include releases of contaminants to the environment by ground-disturbing (including grading, utility excavations, landscape excavations, etc.) or dewatering activities. During construction, an uncontrolled hazardous substance could be encountered 1) in areas with known contamination or downgradient from areas of known contamination, 2) in areas where recorded activities such as hazardous waste generation or fuel storage in USTs have the potential to affect soils or groundwater, or 3) in other areas not identified in the environmental database search. In such cases, the possible environmental effects could include the following:

- Potential release of contaminant air emissions (dust and volatile organic compounds), soil, sediment, surface water and groundwater during construction.
- Potential alteration of contaminated groundwater plume(s) (e.g. in the vicinity of the Fentron site) and generation of contaminated water during dewatering activities.
- Potential alteration of contaminated migration pathways due to excavation and other construction activities.

Potential types of hazardous substance contamination (of soil and groundwater) that are most commonly encountered on, or adjacent to, similar urban project sites (such as those identified in Table 2 and Table 3) that may be encountered during project construction include;

- petroleum hydrocarbons,
- halogenated and/or non-halogenated volatile organic compounds (VOCs),
- polychlorinated biphenyls (PCBs),

- polycyclic aromatic hydrocarbons (PAHs) and/or other semi-volatile organic compounds (SVOCs),
- pesticides/herbicides,
- cyanide, and/or
- metals.

Note that other contaminants, such as metals, VOC or SVOC compounds can be associated with petroleum hydrocarbon impacted sites. Also, above ground electrical utilities that may be relocated could potentially include polychlorinated biphenyls (e.g. PCBs in transformers). Release of PCBs during the removal/relocation of transformers could have an effect on human health and the environment. Contamination not managed properly in accordance with existing regulations could potentially affect human health and ecological receptors.

### **Potential Health Effects**

Potential health effects of exposure to the contaminants of concern that could potentially be encountered at or adjacent to the sites of concern include the following as identified in the United States Department of Health and Human Services Agency for Toxic Substances and Disease Registry:

- Diesel/gasoline-range petroleum hydrocarbons – Irritated eyes, skin, and mucous membrane; fatigue; blurred vision; dizziness; slurred speech; confusion; convulsions; headache; and dermatitis.
- Metals (including arsenic, chromium, copper, lead and cadmium) – irritation to nose, dermatitis, gastrointestinal disturbances, peripheral neuropathy, skin ulcers, linked to cancer (in humans and animals), irritated eyes and respiratory system, lassitude (weakness, exhaustion), insomnia, anorexia, anemia, gingival lead line (lead), tremor, wrist and ankle paralysis, encephalopathy, kidney disease, hypotension, pulmonary edema, dyspnea (breathing difficulty), chills, muscle aches; nausea, vomiting, diarrhea, and anosmia (loss of the sense of smell).
- Benzene – Irritated eyes, skin, nose, respiratory system, dizziness, headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion), bone marrow depression and is a potential occupational carcinogen.
- Polychlorinated biphenyls – acne-like symptoms, known as chloracne; birth defects, irritation to eyes, nose and throat; acute and chronic exposure can cause liver damage, and symptoms of edema, jaundice, anorexia, nausea, abdominal pains and fatigue. PCBs are a suspect human carcinogen.
- Polycyclic aromatic hydrocarbons (PAHs) – Skin reddening or corrosion; ingestion can cause nausea, vomiting, blood pressure fall, abdominal pain, convulsions and coma; damage to the central nervous system can also occur; irritating to eyes and mucous membranes. Fifteen PAHs have been identified as carcinogenic.
- Halogenated solvents – effects on the central nervous system; irritation to mucous membranes, eyes and skin, and to a lesser extent effects on the lungs, liver and kidneys. Perchloroethylene is a confirmed animal carcinogen with unknown relevance to humans.
- Non halogenated solvents – nausea, pain, vomiting, pneumonitis, dermatitis, headache, dizziness, and central nervous system depression with ingestion; loss of consciousness, ringing in the ears, insomnia, trembling, unsteady gait, vertigo, conjunctivitis, temporary impairment of vision and/or

other transient eye damage/ulceration, eye irritation and clouded or double vision with inhalation. Liver and/or kidney injury may also result from exposure.

- Pesticides/herbicides – irritation to eyes, skin; numbness and tingling in the tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; incoordination, imbalance, difficulty breathing, gagging, vomiting, diarrhea, agitation, convulsions, loss of consciousness; vomiting; and is considered a potential occupational carcinogen.
- Cyanide – Effects on Animals: asphyxiation, brain damage, heart damage, gastrointestinal hemorrhaging; animals lethally or sublethally poisoned by cyanides have exhibited optic nerve and retinal damage; and central nervous system lesions with repeated exposure.

Effects on Humans: weakness, headache, confusion, vertigo, fatigue, anxiety, dyspnea, occasionally nausea and vomiting, rapid breathing skin irritation, severe nose irritation, coma and convulsions (fatal if absorbed in large amount).. Long-term exposures have produced thyroid changes.

### **Construction Hazards**

A consequence typically encountered during project construction is the unintentional release of hazardous substances. For example, hydraulic hoses on heavy equipment may drip hydraulic oil while in use. Cleaning up material and disposing of it could add more time and costs to construction operations. Large spills of hazardous materials during construction could also require emergency response agency intervention. These are hazards on all construction projects, but they are particularly acute for construction over water or where stormwater runs to nearby bodies of water and rivers. However, we do not anticipate any of these impacts as a result of this Project because a Stormwater Pollution Prevention Plan (SWPP) plan is required by a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit and City of Seattle Standard Specifications. See the following section for additional details regarding measures to avoid or minimize effects.

Additional construction impacts associated with roadway stripping and repaving and any clearing associated with construction staging areas potentially include a temporary increase of pervious surfaces in the area and may also temporarily create areas sensitive to erosion. This could result in impacts to groundwater and/or stormwater at the site. Best Management Practices (BMPs) such as silt fences, hay bales, etc. should be employed to minimize the impacts of these activities on the surrounding properties and Salmon Bay to the south.

### **Underground Storage Tanks**

Underground storage tanks (USTs) or sites with former USTs and/or leaking underground storage tanks (LUSTs) have been identified adjacent to the Project area. Unidentified or abandoned tanks may also exist in or adjacent to the site. Hazardous materials or substances from previous LUSTs or unidentified existing LUSTs and/or associated piping could be encountered during excavation and have the potential to impact soil and/or groundwater along the Project alignment. Further information regarding contaminants associated with site-specific USTs and LUSTs are described in the Baseline Conditions section of this report.

### **Utility Trenches**

Utility trenches have the potential to encounter unidentified contaminants. These trenches could provide preferential pathways for contaminant migration and could pose a risk to worker health and safety and public health and the environment if construction activities result in a release of contaminants.

There may be the potential that trenches associated with utility relocation could encounter contaminated media associated with the Fentron site if utility trenches are excavated to the depth of groundwater. The impacted soil at the site was removed during an historical cleanup action thus utility trenches at the Fentron site have a low potential to encounter contaminated soil.

There may be the potential that utility trenches associated with drainage swale installation and utility relocation could encounter contaminated media associated with the Ballard Oil/Mobil Oil Canal Bulk Plant. However, the potential to encounter impacted media at the site is likely low because of the site's downgradient location and the historical soil remediation activities that were completed.

There may also be the potential that utility trenches (e.g. drainage swales and conveyance, utility relocation, etc.) could encounter contaminated media associated with the other substantially contaminated sites and reasonably predicible sites (identified in Tables 2 and 3) that are adjacent to or upgradient from the trail alignment or in locations where contamination is encountered that has not been previously identified.

#### **Asbestos-Containing Materials/Lead-Based Paint**

The sheet metal and chain link fence located on the NW 54<sup>th</sup> Street strip parcel may need to be moved or demolished to accommodate the planned future Trail alignment. Additionally, there may be other structures located on the NW 54<sup>th</sup> Street strip parcel which may need to be demolished to accommodate the Trail that were obscured by the fence at the time of the Phase I ESA site visit. It is not anticipated that any other structures will need to be demolished for this Project.

Should these or any other structures need to be demolished, potential release of asbestos-containing materials or lead-based paint during the removal of structures could have an effect on worker health and safety, human health and the environment. However, SDOT will conduct lead-based paint and asbestos surveys to determine appropriate handling for debris associated with demolition of any structures. See the following section for additional details regarding measures to avoid or minimize effects.

#### **Cleanup Liability**

Washington State Department of Ecology's Focus Paper No. 94-129 indicates that "under the Model Toxics Control Act a potentially liable person can be:

- A current or past facility owner or operator,
- Anyone who arranged for disposal or treatment of hazardous substances at the site,
- Anyone who transported hazardous substances for disposal or treatment at a contaminated site, unless the facility could legally receive the hazardous materials at the time of transport,
- Anyone who sells a hazardous substance with written instructions for its use, and abiding by the instructions results in contamination."

Therefore there is the potential for SDOT to become a potentially liable person if one or more of these conditions are met.

The most likely scenario where SDOT would assume environmental liability would be in the acquisition of a contaminated site. We understand that SDOT plans to acquire one property as part of this project, the NW 54<sup>th</sup> Street strip parcel. There is a potential for SDOT to incur environmental liability if historic or current activities have contaminated soil and/or groundwater at the NW 54<sup>th</sup> Street strip parcel.

Liability can also be incurred if construction activities cause contaminated media to spread, increase contamination at a site or prevent the implementation of future cleanup actions. Construction activities may also have the potential to impede future cleanup by liable parties on adjacent or upgradient properties if the project elements are permanent or difficult to remove.

SDOT has the potential to incur environmental liability if project elements impede a future cleanup. Such liability has the potential to be incurred for the cleanup sites located adjacent to or upgradient from the Project alignment including those properties identified as substantially contaminated; Fentron, Ballard Oil/Mobil Oil Canal Bulk Plant, Former Ballard Auto Wrecking, and Ballard Recycling. SDOT also may have the potential to incur environmental liability in association with the properties identified as “reasonably predictable” in Table 3 if project elements impeded a future cleanup. However, most of the project features are such that they would be able to be readily removed and replaced should there be a need to conduct a cleanup beneath the site associated with adjacent or upgradient properties.

#### ***What are the Indirect Effects of the Project on Hazardous Materials?***

In addition to Project construction effects, an overall beneficial indirect effect to the area will likely result from increased use of the Trail by commuters, resulting in lower automobile traffic volumes. SDOT anticipates no detrimental indirect effects related to hazardous materials from the construction or operation of the Project.

#### ***What are the Unavoidable Adverse Effects?***

No specific unavoidable adverse effects (such as uncontained spills or releases of hazardous materials that impact soil or groundwater before they can be contained or remediated) are anticipated for this project, though the potential for unavoidable negative effects to arise always exists. However, general mitigation measures can be taken to control, mitigate, or eliminate any possible potential effects. These general mitigation measures are discussed in the section headed “How will the Project mitigate unavoidable negative effects?”

### **MEASURES TO AVOID OR MINIMIZE EFFECTS**

#### ***What Will be Done to Avoid or Minimize Adverse Effects from Hazardous Materials?***

SDOT will comply with all applicable environmental procedures. SDOT will manage contaminated media that may be encountered within the Project study area as listed below:

- Management of contaminated media such as soil or groundwater, control and management of hazardous wastes, and transport of hazardous substances will be conducted consistent with applicable environmental regulations.
- SDOT may acquire additional information regarding the nature and extent of contamination at the identified sites for specific project actions, as needed, in order to avoid or cleanup impacted media prior to/during construction. This information can be obtained through research of publicly available data, and by conducting Phase I environmental site assessments and Phase II environmental site investigations.
- SDOT will phase construction activities in concert with any needed cleanup activities to avoid contaminated areas. Communication among the responsible parties and the regulatory agencies, and coordination of schedules, would lessen environmental impacts.

- SDOT will implement construction techniques that minimize disturbance to the subsurface and prevent the transport of contaminants to uncontaminated areas, as necessary. These techniques will address dewatering activities, site grading and excavation, and stormwater pollution prevention.
- SDOT will conduct additional studies, as needed, to determine if asbestos-containing materials or lead-based paint are present in structures prior to demolition activities to minimize exposure to workers, the public and the environment. Applicable regulations pertaining to the handling and disposal of these materials will be followed if structures are found to contain these substances.

SDOT will manage construction activities to mitigate impacts to public services, impacts to the environment (i.e. construction related releases) and worker and public health and safety:

- SDOT will follow careful construction practices to protect against hazardous material spills from routine equipment operation during construction. SDOT will require a Spill Prevention, Control and Countermeasures (SPCC) plan as required by WSDOT Standard Specification 1-07.15.
- SDOT will identify any utilities that need to be relocated or protected. Utility work will be completed in a manner that will minimize utility service interruptions to the community.
- Electrical transformers containing oil, considered a hazardous substance under state regulations, will be handled carefully in order to avoid a release or accidental spill during the relocation of transformers. Workers involved with handling transformers containing oil will be trained in the identification and proper handling of hazardous materials.
- SDOT will prepare a worker Health and Safety Plan that would minimize the effects of identified and unanticipated hazardous substance impacts from contaminated soil and groundwater to the public and worker health and safety.

#### ***What Will be Done to Minimize Construction Effects?***

SDOT will conduct the following activities to avoid or minimize effects to human health or the environment.

#### **Known or Suspected Contamination within the Proposed Project Area**

- SDOT will be responsible for remediating and monitoring any contamination found on properties acquired for this Project. SDOT will further evaluate the identified properties before acquisition or construction occurs. Contamination in soils will be evaluated relative to MTCA cleanup levels.
- Management of contaminated media such as soil or groundwater, control and management of hazardous wastes and transport of hazardous substances will be conducted consistent with applicable environmental regulations.
- SDOT may conduct additional studies (as needed) to locate undocumented USTs and fuel lines prior to construction. Areas of concern include current and former residential and commercial structures as well as fuel tanks associated with former industrial sites. USTs encountered within the Project alignment would be permanently decommissioned and properly removed before general construction activities are started.
- SDOT will meet all regulatory conditions imposed at potentially contaminated properties in the Project alignment.



- SDOT will meet all appropriate discharge approvals if water affected with hazardous materials is encountered and needs to be managed during construction.
- SDOT may conduct additional modified environmental site assessments or transaction screening evaluations, as needed, for sites located adjacent to the Project alignment to further identify site conditions. Even sites not located within a Project area or alignment could have adverse impacts on the design and construction of the Project due to off-site migration of contaminants. The site assessment would include a review of existing environmental conditions with a focus on the potential for off-site contamination by groundwater or surface water.

### **Known or Suspected Contamination Outside the Project Alignment**

Contaminated groundwater originating from properties located hydrologically upgradient from the Project could migrate to the Project site. SDOT generally would not incur liability for groundwater contamination that has migrated into the Project area as long as the agency does not acquire the source of the contamination. SDOT will manage the associated contaminated media within the Project area in accordance with all applicable rules and regulations.

### **Unknown Contamination**

The potential to discover previously unidentified contamination is a risk associated with all construction projects. Contaminated sites discovered during construction will be managed so that construction activities comply with state and federal environmental regulations. SDOT will follow procedures for unknown contamination handling, reporting and disposal as outlined in the WSDOT Environmental Procedures Manual (EPM) Chapter 620.08 and all applicable City of Seattle codes and specifications.

### **Worker and Public Health and Safety**

SDOT will comply with the following regulations and agreements to minimize the effects of hazardous materials on worker and public health and safety:

- State Dangerous Waste Regulations, Chapter 173-303 WAC.
- Safety Standards for Construction Work, Chapter 296-155 WAC.
- National Emission Standards for Hazardous Air Pollutants, CFR, Title 40, Volume 5, Parts 61 to 71.
- General Occupational Health Standards, Chapter 296-62 WAC.
- SDOT Standard Specifications for Municipal Construction 2008 Section 1-07.1(2).
- Seattle Municipal Code 21.16.300.
- Seattle Municipal Code 6.202.020.

### **Hazardous Materials Spills During Construction**

SDOT will prepare and implement a SPCC plan as required by WSDOT Standard Specifications 2008 Section 1-07.15(1) (<http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm>) to minimize or avoid effects hazardous materials will have on soil, surface water and groundwater should a spill occur.

### **Hazardous Materials Spills During Operation**

Hazardous materials spills are unlikely to occur during the operation of the completed Trail extension. However, SDOT will notify Ecology in the event of an accidental spill along the Project alignment during the operational phase.

### **How Will the Project Mitigate Unavoidable Negative Effects?**

No specific mitigation measures for unavoidable negative effects (such as uncontained spills or releases of hazardous materials that impact soil, groundwater etc. before they can be contained or remediated) are anticipated for this project, though the potential for unavoidable negative effects to arise always exists.

There is a low potential for unavoidable negative effects to be encountered in association with the Former Ballard Auto Wrecking and Ballard Recycling sites due to their distance from the project alignment. However, general mitigation measures can be taken to control, mitigate, or eliminate any possible potential negative effects.

SDOT will handle all impacted material encountered during construction in accordance with all applicable rules and regulations and will utilize best management practices as described in the project specific construction plans and specifications. Environmental regulations require the following to appropriately handle contaminated media that may potentially be encountered:

- Appropriate management techniques for contaminated media such as soil or groundwater.
- Strict control and management of hazardous wastes.
- Appropriate transportation of hazardous substances.

SDOT will utilize the following general mitigation practices to control, mitigate, or eliminate potential negative effects associated with encountering contaminated media (including spills, releases, worker and public health and safety etc.).

#### **Management of Contaminated Media**

- Impacted soil and groundwater that may be encountered at the site will be characterized, handled and disposed in accordance with all applicable rules, regulations and discharge approvals to minimize the potential for releases to surrounding properties.
- Construction activities will be phased in concert with needed cleanup activities to avoid contaminated areas and will be planned so as to minimize disturbance to the subsurface to prevent the transport of contaminants to uncontaminated areas.

#### **Spills**

- Best management practices will be implemented in order to protect against hazardous material spills from routine equipment operation during construction.
- SDOT will prepare and implement a SPCC plan and a Stormwater Pollution Prevention Plan (SWPPP) to minimize or avoid effects hazardous materials will have on soil, surface water and groundwater should a spill occur.

#### **Utility Services**

- SDOT will identify any utilities that need to be relocated or protected prior to start of construction to protect services to the surrounding community.

#### **Training**

- Workers will be trained in the proper identification, handling and disposal of contaminated media that may exist in properties and buildings affected by the project.
- Workers will be trained in the proper procedures should accidental spills of hazardous materials occur.

- Workers will be trained in procedures to prevent hazardous material from migrating offsite and coming into contact with the general public (e.g., via erosion or dust control problems).

#### **Health and Safety**

- SDOT will prepare a worker Health and Safety Plan that would minimize the effects of identified and unanticipated hazardous substance impacts from contaminated soil and groundwater on worker and public health and safety.

Specific mitigation measures related to the substantially contaminated sites Fentron and Ballard Oil Bulk Plant/Mobil Oil Canal Bulk Plant that may be taken where project activities encounter unavoidable negative impacts are as follows.

#### **Fentron**

Site specific measures to mitigate impacts from halogenated solvents (or other potential contaminants associated with the site) that may be encountered on the project alignment adjacent to the Fentron site include the following:

- SDOT will require the construction contractor to prepare a worker Health and Safety Plan to minimize the effects of identified and unanticipated hazardous substance impacts from contaminated soil and groundwater on worker and public health and safety.
- The contractor shall train workers in the proper monitoring and identification of impacted media. 40-hour HAZWOPER training will be required for workers involved in the characterization, handling and containment of contaminated material.
- Work activities will be suspended and the project Engineer will be notified immediately if a hazardous substance is detected at concentrations equal to or greater than established Permissible Exposure Limits (PELs) as defined in the site specific health and safety plan. Work activities will also be ceased and the Engineer notified if potentially impacted material, as identified by field observations (e.g. staining, sheen, odor, volatile vapor detection), is encountered. Additional soil, groundwater and/or air sampling and testing shall be performed to determine the nature of the impacted material and the manner in which the impacted media will be handled. Disposal procedures shall be determined by Local, State, and Federal regulations.
- The contractor will be required to provide personal protective equipment (PPE) to workers at the site. The PPE shall be readily accessible to workers in the event that monitoring detects hazardous substances in concentrations equal to or greater than the established PELs or suspected hazardous materials are encountered.
- SDOT will require the construction contractor to prepare and implement a Spill Prevention, Control and Countermeasures (SPCC) plan and a Stormwater Pollution Prevention Plan (SWPPP) to minimize or avoid effects hazardous materials will have on soil, surface water, and groundwater should a spill occur. Workers shall be trained in the proper procedures for addressing accidental spills of hazardous materials.

#### **Ballard Oil Bulk Plant/Mobil Oil Canal Bulk Plant**

Site specific measures to mitigate impacts from petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and halogenated solvents (or other potential contaminants associated with the site) that may be encountered on the project alignment adjacent to the Ballard Oil site include the following:

- SDOT will require the construction contractor to prepare a worker Health and Safety Plan to minimize the effects of identified and unanticipated hazardous substance impacts from contaminated soil and groundwater on worker and public health and safety.
- The contractor shall train workers in the proper monitoring and identification of impacted media. 40-hour HAZWOPER training will be required for workers involved in the characterization, handling and containment of contaminated material.
- Work activities will be suspended and the Engineer will be notified immediately if a hazardous substance is detected at concentrations equal to or greater than established PELs as defined in the site specific health and safety plan. Work activities will also be ceased and the Engineer notified if potentially impacted material, as identified by field observations (e.g. staining, sheen, odor, volatile vapor detection), is encountered. Additional soil, groundwater and/or air sampling and testing shall be performed to determine the nature of the impacted material and the manner in which the impacted media will be handled. Disposal procedures shall be determined by Local, State, and Federal regulations.
- The contractor will be required to provide PPE to workers at the site. The PPE shall be readily accessible to workers in the event that monitoring detects hazardous substances in concentrations equal to or greater than the established PELs or suspected hazardous materials are encountered.
- SDOT will require the construction contractor to prepare and implement an SPCC plan and a Stormwater Pollution Prevention Plan (SWPPP) to minimize or avoid effects hazardous materials will have on soil, surface water, and groundwater should a spill occur. Workers shall be trained in the proper procedures for addressing accidental spills of hazardous materials.

#### ***What are the Recommendations for Further Investigation?***

SDOT is considering acquiring the NW 54<sup>th</sup> Street strip parcel property to accommodate the future Trail alignment along NW 54<sup>th</sup> Street between 26<sup>th</sup> Avenue NW and 28<sup>th</sup> Avenue NW. GeoEngineers completed a Phase I ESA (GeoEngineers, 2007) for the parcel property in association with this potential acquisition. The Phase I ESA concluded that there is a potential to encounter solvent (and possibly other) contamination in soil and groundwater beneath this area. Further evaluation of this potential would require additional research and/or explorations and sampling and testing of soil, groundwater or surface water. The Phase I ESA concluded that it may be prudent to conduct a Phase II ESA (including soil and groundwater investigation) at the strip parcel to characterize potential impacts to groundwater and soil at that location, and to evaluate the potential liabilities associated with ownership of the site.

Further investigations into the status of environmental concerns at adjacent and/or upgradient sites are not anticipated at this time. Additional investigation of the former Fentron site may be prudent to accurately map existing remediation structures and impacted soil and groundwater that may be affected by construction of the Project. This is important because media removed from this remedial action area may be deemed as dangerous waste; and if deemed so, will require special handling and disposal procedures.

#### ***What are the Cost Estimates for Further Investigations?***

Should SDOT decide to conduct further investigations of identified sites of concern adjacent to or upgradient from the Project alignment, or for due diligence purposes prior to potential property acquisitions (beyond the 54<sup>th</sup> Street strip parcel), the following cost estimates may be used as a reference.

- The average cost of a Phase I Environmental Site Assessment can range from approximately \$5,000 to \$10,000 per site.

- The cost of a Phase II Environmental Site Investigation can cost, on average, approximately \$25,000 per site but can be much higher depending on the magnitude of the study and contaminants of concern.

These costs can vary dramatically based on the historic and current land use of a site, the size of the site and the type of land use on adjacent sites (e.g. industrial versus residential site uses). Industrial sites and sites within industrial areas (such as the case of this project area) generally have greater research needs for characterization of environmental conditions than residential sites.

### ***Preliminary Mitigation Cost Estimates?***

No specific mitigation measures are required because no unavoidable negative effects are anticipated for this Project, though general mitigation measures can be taken to control, mitigate, or eliminate any possible potential effects since the potential for unavoidable negative effects to arise always exists. SDOT will handle all impacted material encountered during construction in accordance with all applicable rules and regulations and will utilize best management practices as described in the project specific construction plans and specifications. Costs associated with handling and disposal of impacted material potentially encountered at the site are discussed below.

### ***General Cost Estimates for Excavation and Disposal of Impacted Media Potentially Encountered in the Project Alignment?***

Should impacted material be encountered within the proposed Project alignment, the following general cost estimates can be used for planning purposes. However, a Project specific cost estimate will be required in order to accurately budget for excavation and/or disposal efforts that may be completed if SDOT encounters contaminated materials within the Project alignment.

The estimated cost for excavation and disposal of contaminated soil includes:

- excavation, temporary on-site storage and replacement of overburden soils that need to be removed to access the underlying contaminated soil (where applicable) - \$12 per cubic yard;
- excavation and handling of contaminated soil - \$6 per cubic yard;
- transportation and tipping fees for disposal of contaminated material at an appropriate upland facility - \$40 per ton (as stated previously, this cost estimate could be much higher [\$180 to over \$240/ton] if media is deemed dangerous waste);
- restoration of the contaminated zone by backfilling with imported granular soil - \$8 per cubic yard for material and \$6 per cubic yard for placement; and
- Disposal and treatment of dewatering water - \$2 per gallon (as stated previously, this cost estimate could be much higher if water is deemed dangerous waste).

Costs associated with mobilization, site preparation, dewatering of the excavation and contaminated material, analysis of the dewatering water, utility and pavement replacement and other site restoration are NOT included in the estimates provided.

Excavation and disposal estimates of this nature are generally accurate within 50 percent of actual costs. Additionally, where soil and groundwater disposal requires disposal in a facility that accepts dangerous waste (soil or groundwater with elevated concentrations of specific chemicals of concern) increased costs will be incurred. The cost of groundwater classified as dangerous waste ranges from \$0.80 to \$1.16 per

gallon when the groundwater is delivered in bulk quantities or approximately \$179 per drum if delivered in drums. Disposal costs for soil classified as dangerous waste are estimated to range from about \$180/ton to \$240/ton, but may vary depending on stabilization needs. These estimated costs include transportation and disposal fees.

### **LIMITATIONS**

This Hazardous Materials Technical Memorandum has been prepared for use by SVR Designs and the City of Seattle, Department of Transportation. GeoEngineers has performed this Hazardous Materials study of the Burke Gilman Trail Corridor located between 11<sup>th</sup> Avenue NW and the Ballard Locks in general accordance with the scope and limitations of our proposal dated January 26, 2007.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted environmental science practices for Hazardous Material Technical Memorandums in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

## Acronyms and Abbreviations

Term	Meaning
AST	Above ground Storage Tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
Ecology	Washington State Department of Ecology
EDR	Environmental Data Resources, Inc.
EPA	Environmental Protection Agency
EPM	Environmental Procedures Manual
ESA	Endangered Species Act
FHWA	Federal Highway Administration
ICR	Interim Cleanup Report
LUST	Leaking Underground Storage Tank
MANIFESTS	Hazardous Waste Manifest Data
MTCA	Model Toxics Control Act
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Act
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PSI	Preliminary Site Investigation
RCRA	Resource Conservation and Recovery Act
RCRA – SQG	Resource Conservation and Recovery Act – Small Quantity Generator
RCW	Revised Code of Washington
ROW	Right-of-way
SDOT	City of Seattle Department of Transportation
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control act
VOC	Volatile Organic Carbon
UST	Underground Storage Tank
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act
WSDOT	Washington State Department of Transportation

## Glossary

Term	Meaning
Brownfields	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. (Public Law 107-118 (H.R. 2869) January 2002).
Comprehensive Environmental Response Compensation and Liability Act (CERCLA)	Federal legislation that requires the parties responsible for contamination to conduct or pay for the cleanup. If the U.S. Environmental Protection Agency's (EPA's) efforts to take an enforcement action for the cleanup are not successful, the Federal government can clean up a site using the CERCLA Trust Fund.
Code of Federal Regulations (CFR)	The Code of Federal Regulations is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government. It is divided into 50 titles that represent broad areas subject to federal regulation. Each volume of the CFR is updated once each calendar year and is issued on a quarterly basis. (National Archives and Records Administration Web site: <a href="http://www.gpoaccess.gov/cfr/about.html">http://www.gpoaccess.gov/cfr/about.html</a> )
Downgradient	The direction of flow; i.e., downstream.
EDR Report	A list of databases searched for potential hazardous materials contamination, including selected detailed information from federal and state lists, and maps illustrating the identifiable sites within the indicated search radius.
General housekeeping	This describes how well the site is maintained. For example, observations may record if soil is stained or if garbage, junk cars, and/or discarded chemical containers are scattered about the property.
Groundwater	That portion of the water below the ground surface that is free flowing within the soil particles. Groundwater typically moves slowly, generally at a downward angle because of gravity, and eventually enters into streams, lakes, and oceans.
Leaking Underground Storage Tank (LUST)	A known leaking tank located underground typically containing hazardous materials, most commonly petroleum products.
Model Toxics Control Act (MTCA)	Washington State legislation adopted as the counterpart to the Federal Superfund law, also known as CERCLA. Like CERCLA, MTCA sets up a process to identify, investigate, and cleanup contaminated properties that are, or may be, a threat to human health or the environment. MTCA allows for the assessment of damages where the contamination injures wildlife or the environment.
National Pollutant Discharge Elimination System (NPDES)	The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements under Sections 307, 318, 402, and 405 of the Clean Water Act. (NPDES glossary Web site: <a href="http://cfpub2.epa.gov/npdes/glossary.cfm?program_id=0#N">http://cfpub2.epa.gov/npdes/glossary.cfm?program_id=0#N</a> )
No further action (NFA)	An official acknowledgement from the Washington State Department of Ecology that a contaminated site has undergone cleanup or no longer poses a threat to human health or the environment.
Pollutant	Any substance introduced into the environment that contaminates or otherwise adversely affects the usefulness of a resource.
Polychlorinated Biphenyls (PCBs)	Polychlorinated biphenyls are aromatic compounds containing two benzene nuclei with two or more substituted chlorine atoms.
Reasonably predictable sites	Locations that are expected to exhibit recognized combinations of environmental conditions based on previous experience in similar situations and/or best professional judgment.
Remediation	An action to identify, eliminate, or minimize hazardous substances that pose a threat to human health or the environment.



Term	Meaning
Right-of-way	Land purchased prior to the construction of transportation improvements along with land for sound walls, retaining walls, stormwater facilities, and other project features. This also includes permanent or temporary easements for construction and maintenance. Vacant land may also be set aside for future highway expansion under certain circumstances.
Spill Prevention Control and Countermeasures (SPCC) Plan	A plan for minimizing effects to soil, surface water, and groundwater in the event of a spill of contaminated soil, petroleum products, contaminated water, or other hazardous substances. The SPCC plan addresses construction procedures, equipment, and materials.
Storm drain	A sewer that carries stormwater and surface water, street wash, and other wash waters or drainage, but excludes sewage and industrial wastes; also called a storm sewer.
Substantially contaminated site	A property that possesses a potential for substantial contamination of soil, groundwater, surface water, and/or sediment; contains contaminants that are persistent or expensive to manage; and lacks reliable estimates of remediation costs.
Volatile organic compound (VOC)	An organic (carbon-based) compound that readily forms vapors at normal temperature and pressure. The term is generally applied to organic solvents, certain paint additives, aerosol spray can propellants, fuels (such as gasoline and kerosene), petroleum distillates, dry cleaning products, and many other industrial and consumer products, ranging from office supplies to building materials.
Windshield survey	The process of driving by an area to look at properties for general housekeeping and verify property addresses; a method of observing a study area by driving the area in a vehicle.

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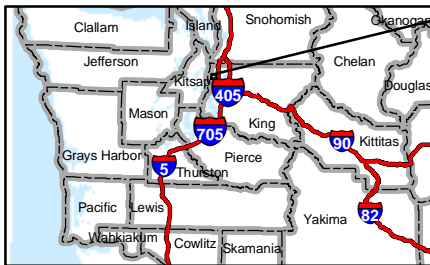
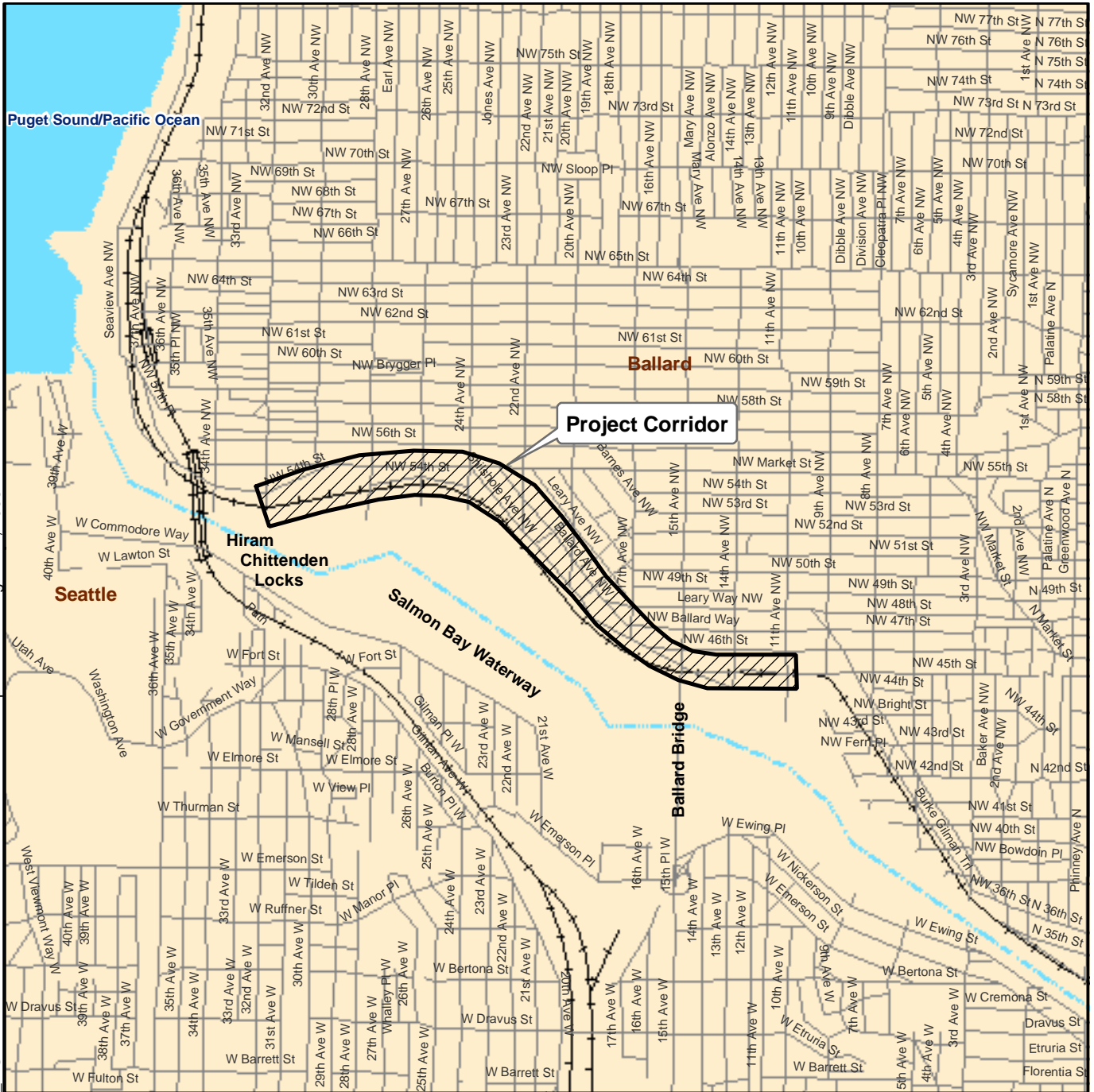
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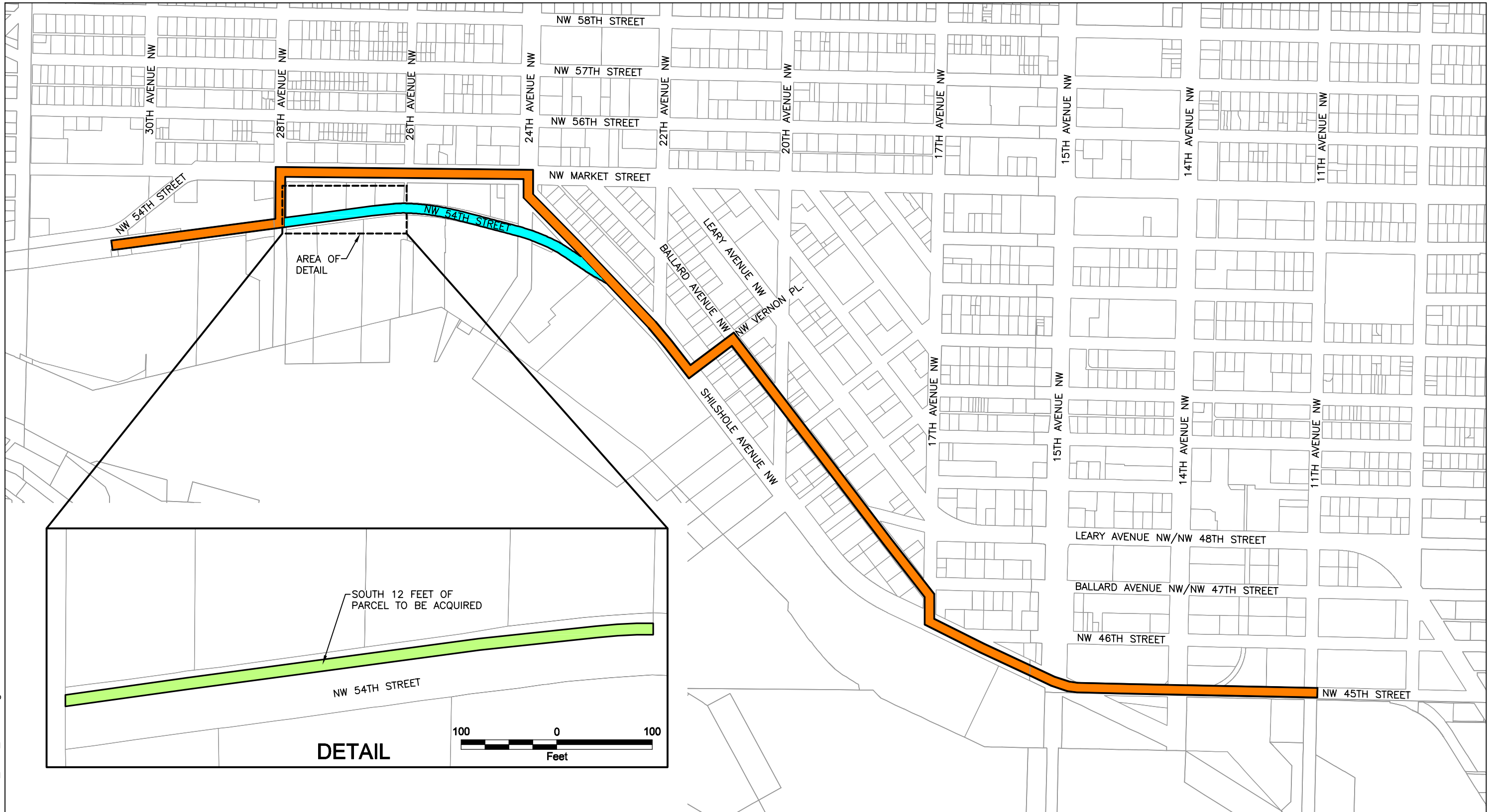


- Notes:
1. The locations of all features shown are approximate.
  2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
  3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Interstates, state routes, and roads from TIGER 2000.  
 County boundaries, cities, and waterbodies from Department of Ecology.  
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<b>Vicinity Map</b>	
Burke Gilman Trail Corridor - 11th Avenue NW to the Ballard Locks King County, Washington	
<b>GEOENGINEERS</b> 	<b>Figure 1</b>

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**Legend**

- Recommended route
- Future portion of recommended route



**Notes:**

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Data parcels provided by King County GIS data

**Site Plan - Recommended Route**




Burke Gilman Trail Corridor -  
11th Avenue NW to the Ballard Locks  
King County, Washington



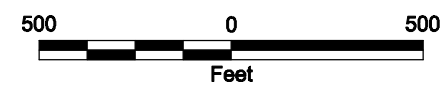
**Figure 2**

Map ID	Site
1	Fentron
2	Ballard Oil/Mobil Oil Canal Bulk Plant
3	(former) Ballard Auto Wrecking
4	Ballard Recycling
5	Wyman Property
6	Jacobsen Terminals Inc.
7	Mobil Canal Bulk Plant/ Norvac Services
8	Nor Quest Seafoods Inc/ Trident Seafoods
9	BNSF Manhole NW 45th St
10	Leary Way Station
11	Former Time Oil Property/ Bill's Tires
12	Seattle Cedar Lumber Manufacturing
13	Dearmand Property
14	Olympic Athletic Club
15	Salmon Bay Center
16	CD Stimson Co, Salmon Bay Tech Center/ Tri Graphics Inc.
17	Cowman Campbell Paint Co
18	Honeywell Inc. Shilshole/ Trident Seafoods/ Trident Akutan Bulk fuel storage
19	Chuck's Ballard/ former service station/ Ballard Eagles
20	Ballard Transfer Co. of WA
21	Chevron 90968
22	Sparkle Cleaners
23	Arnold's Deli
24	NOAA Ship Oceanographer, Jacobsen Terminals
25	(former) Richfield Service Station
26	Color Tech
27	Covich Williams
28	X Ray Auto
29	Wilson Brothers Brake Repair
30	Beacon Automotive Shop
31	Former gas station
32	Wolf's Garage
33	Ballard Oil
34	Pacific Fisherman, Inc. Storage Lot
35	Fenpro (Former)
36	NW 54th St. Strip Parcel

**Legend**


-  Recommended route
-  Future portion of recommended route
-  Potential sites of concern

Notes:  
 1. The locations of all features shown are approximate.  
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.  
 Reference: Data parcels provided by King County GIS data

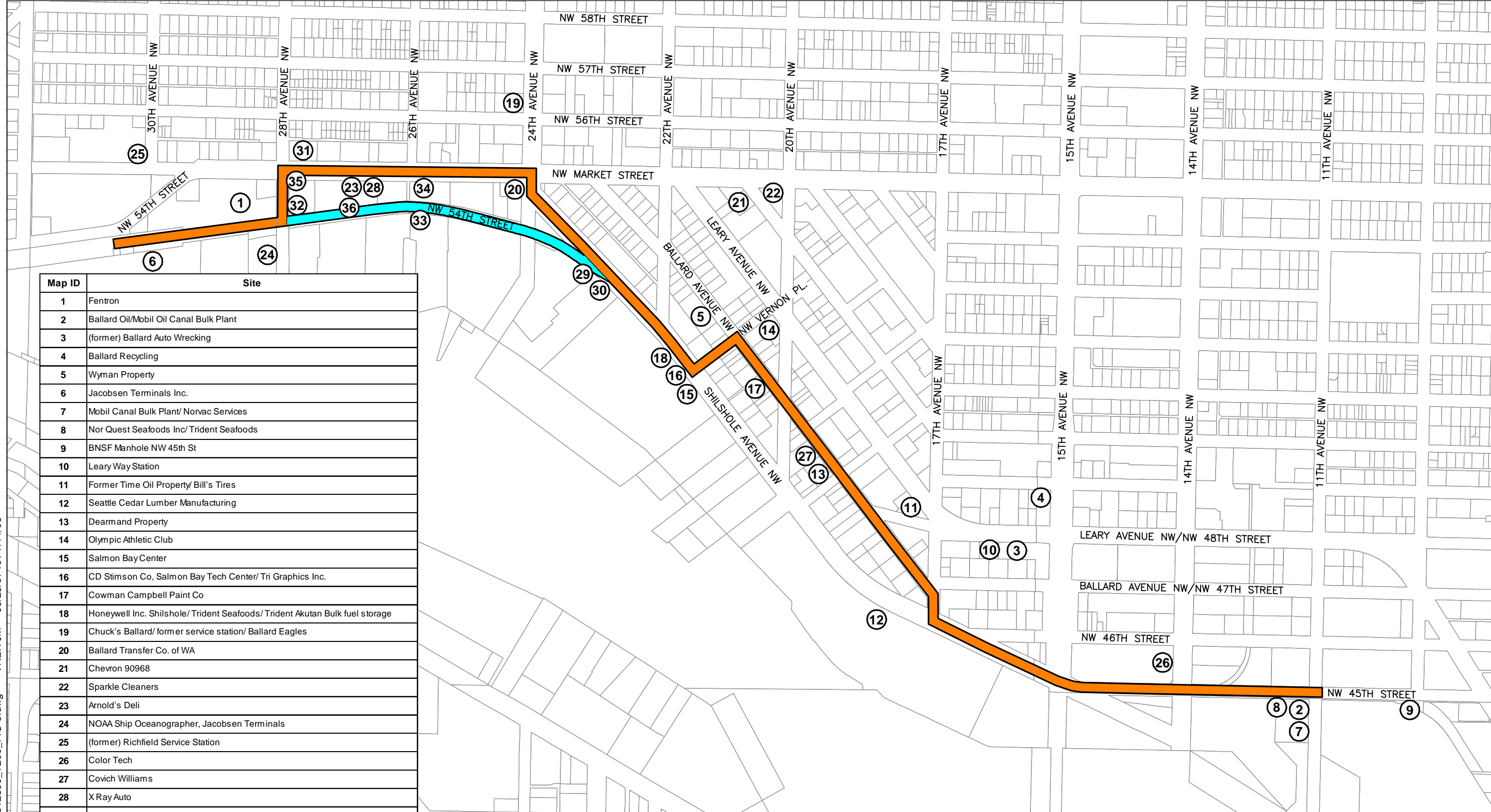


**Site Plan - Potential Sites of Concern**

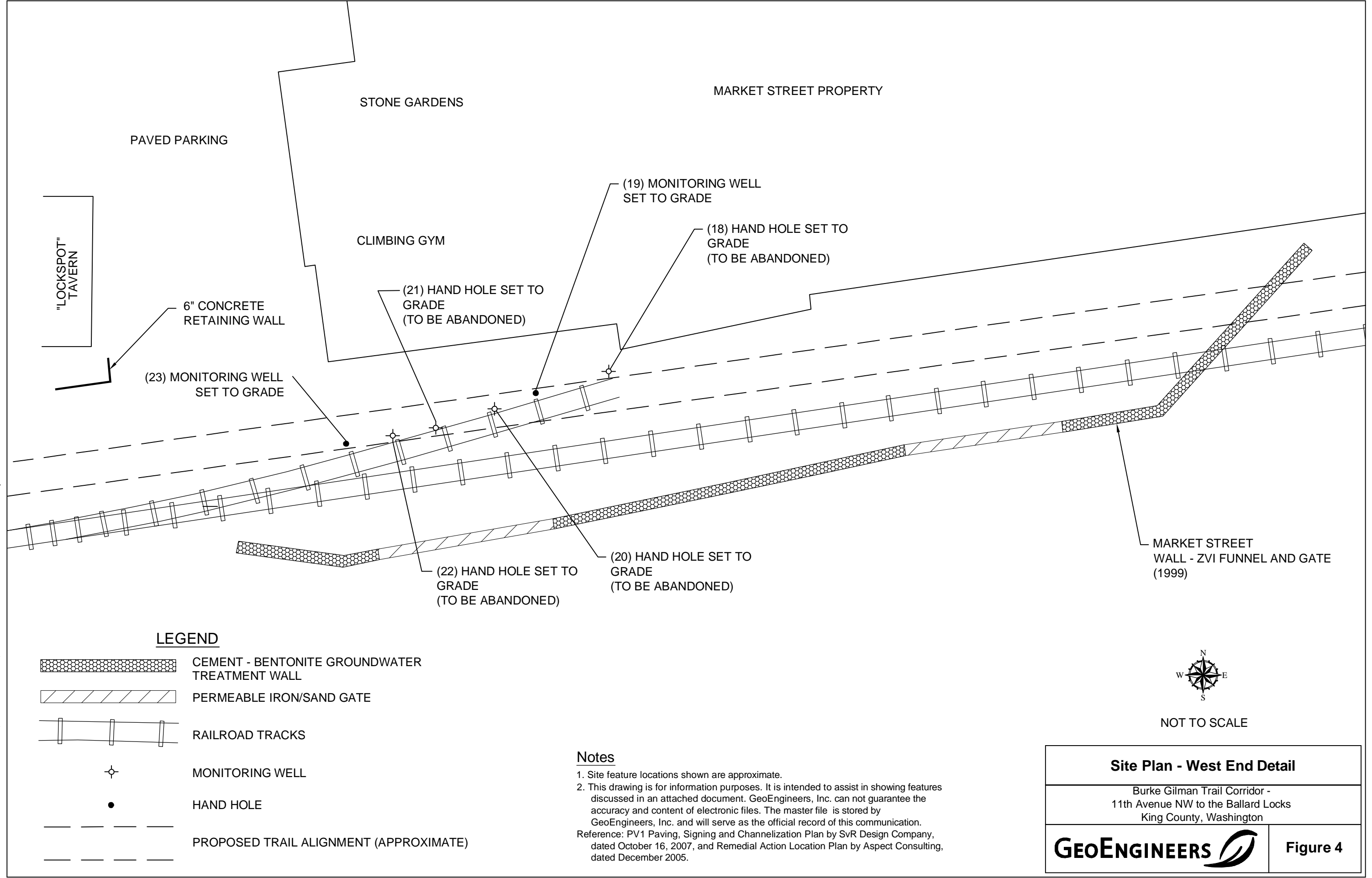
Burke Gilman Trail Corridor -  
11th Avenue NW to the Ballard Locks  
King County, Washington



**Figure 3**



P:\0\0129128\00\CAD\012912800\_T200\_FIG-4.DWG\TAB:FIG-4, MODIFIED BY THICHAUD ON MAR 20, 2008 - 11:57



**Notes**

1. Site feature locations shown are approximate.
  2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
- Reference: PV1 Paving, Signing and Channelization Plan by SvR Design Company, dated October 16, 2007, and Remedial Action Location Plan by Aspect Consulting, dated December 2005.

<b>Site Plan - West End Detail</b>	
Burke Gilman Trail Corridor - 11th Avenue NW to the Ballard Locks King County, Washington	
<b>GEOENGINEERS</b> 	<b>Figure 4</b>



***APPENDIX A***  
***METHODOLOGY***

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## APPENDIX A METHODOLOGY

### HOW DID WE COLLECT INFORMATION ON HAZARDOUS MATERIALS FOR THIS REPORT?

Information was collected for this technical memorandum by:

- Reviewing and summarizing publicly available records and databases to obtain information indicating the location of hazardous materials.
- Identifying historical land use of the Project area.
- Evaluating local geology and soil types, surface drainage pathways, groundwater depths, and overall groundwater flow direction by reviewing available geologic literature and topographic maps. GeoEngineers used this information to evaluate the potential migration pathway of hazardous materials in the environment.
- Conducting a windshield survey to observe site features and possible sources of hazardous materials.
- Interviewing a contact (Jeremy Porter, Aspect Consulting) knowledgeable of site conditions at the former Fentron site.
- Completing a Phase I Environmental Site Assessment (ESA) for the property located on the south 12 feet of tax parcel 1125039104 (NW 54<sup>th</sup> Street strip parcel) that Seattle Department of Transportation (SDOT) is considering acquiring for the future Burke Gilman Trail (Trail) alignment between 26<sup>th</sup> Avenue NW and 28<sup>th</sup> Avenue NW.

This technical memorandum identified hazardous material sites adjacent to the Project alignment and within the Project alignment where the NW 54<sup>th</sup> Street strip parcel acquisition is planned. Further investigation is recommended for any other parcels identified in this memorandum as sites of concern that may be acquired for this Project in the future.

### HOW WERE INDIVIDUAL SITES CONSIDERED FOR IN-DEPTH ANALYSIS?

The initial screening process for determining which sites required further analysis included the following two criteria:

- The site is located within or adjacent to the Project alignment and potentially contained hazardous materials.
- The site contained hazardous materials and was located hydraulically at an incline higher than the proposed Project alignment.

GeoEngineers further assessed the sites identified for in-depth analysis, and determined whether these sites were “reasonably predictable” or “substantially contaminated” with respect to the presence of hazardous materials.

“Reasonably predictable” sites are sites where recognized environmental conditions are known based on existing data or can be predicted based on site observations, previous experience in similar situations or by using best professional judgment. These sites are typically small, the contaminants are localized and are relatively non-toxic, and abatement/remediation activities are routine (e.g., asbestos abatement or petroleum hydrocarbon-contaminated soil remediation).

“Substantially contaminated” sites are typically large or have large volumes of contaminated materials, have a long history of industrial or commercial land use, and the contaminants are persistent, difficult or expensive to manage.

GeoEngineers identified which sites required further analysis by collecting information from the sources listed below.

## **REGULATORY DATABASE REVIEW**

GeoEngineers reviewed local, state and federal databases to identify potential sources of hazardous materials that could affect the planned Project alignment provided by Environmental Data Resources, Inc. (EDR)<sup>2,3</sup>. GeoEngineers, Inc. contracted EDR, Inc. to conduct a regulatory database search consistent with WSDOT, American Society for Testing and Materials, and Federal Highway Administration (FHWA) standards and guidelines. EDR provided a comprehensive search of existing environmental regulatory agency databases for known or suspected contaminant-related concerns within the Project area. Appendix B contains the full database list and results of EDR’s database research.

## **HISTORICAL RESEARCH**

GeoEngineers conducted historical research efforts to identify and characterize past land use activities. From these records, GeoEngineers:

- Compiled a land use inventory using aerial photographs, Sanborn Fire Insurance Maps and Polk City directories. Reviewed aerial photographs dated between 1936 and 2004.
- Compiled a land use inventory using Sanborn Fire Insurance Maps. Reviewed Sanborn Fire Insurance maps dated between 1893 and 1968.
- Compiled a land use inventory using Polk City Directories. Reviewed Polk City Directories dated between 1920 and 2005.
- Interviewed Mr. Jeremy Porter (Aspect Consulting, July 31, 2007) regarding remediation activities and monitoring at the former Fentron site located on and adjacent to the west portion of the planned Project alignment between 26<sup>th</sup> Avenue NW and 28<sup>th</sup> Avenue NW.

## **DATA VALIDATION**

GeoEngineers requested and reviewed publicly available files from the Washington State Department of Ecology (Ecology) for specific properties where hazardous materials were likely to exist based on the EDR report and historical background research. This review focused on identifying the nature and extent of known contamination and cleanup activities on properties within the Project area.

## **WINDSHIELD SURVEY**

GeoEngineers conducted a windshield survey of the Project area, focusing on properties where hazardous materials were known or suspected to be present. The survey included properties adjacent to or upgradient from the Project alignment that could affect construction or operation within the Project alignment. GeoEngineers conducted a windshield survey by driving along the proposed Project

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<sup>2</sup> Environmental Data Resources, EDR Data Map, 2007.

<sup>3</sup> The EDR report includes a list of databases that we reviewed, including selected detailed information from federal and state lists, and maps illustrating the identifiable sites within the indicated search radius. Sites are located on the focus maps provided by EDR. The EDR report is attached as Appendix B.

alignment to a) verify the addresses of identified hazardous materials sites and b) look for previously unidentified hazardous materials sites that might affect Project construction or operation. GeoEngineers noted the following information during the windshield survey:

- The presence of improvements on the site.
- The usage and physical setting, including slope, drainage features and soils.
- Indications suggesting the presence of USTs, above-ground storage tanks, buried pipelines, drums, hazardous and/or solid waste disposal, soil staining and distressed vegetation.
- General housekeeping observations<sup>4</sup>.
- Adjacent and nearby properties with a potential to contribute hazardous materials.

### ***Windshield Survey Summary of Observations – Project Site***

A representative of GeoEngineers performed a visual reconnaissance of the site on March 15, 2007 and on June 12, 2007 (in association with the Phase I ESA). In conducting the windshield survey, GeoEngineers looked only at features in plain sight from public access corridors. GeoEngineers did not enter any properties or view conditions within buildings. The Phase I ESA site reconnaissance also only included features in plain sight from public access corridors as we were denied access to the north portion of the NW 54<sup>th</sup> Street strip parcel property at the time of the site visit.

Table A-I below summarizes conditions observed during our windshield survey and site reconnaissance. The following section contains additional details regarding conditions of potential environmental significance observed during our windshield survey and a summary list of known or suspect environmental conditions identified by this portion of our study. Photographs of the site were taken to document observations made during our reconnaissance. Site photographs are available in our files.

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<sup>4</sup> General housekeeping observations include noting how well the site is maintained. For example, the GeoEngineers notes if soil is stained or if garbage, junk cars, and/or discarded chemical containers are scattered about the property.

**Table A-1. Summary of Windshield Survey Observations – Project Site**

Feature	Observed		Comment, Location and/or Description and other development on site (e.g. pavement, etc.)
	Yes	No	
Structures (existing)	x		<ul style="list-style-type: none"> <li>- Occupied by the east bound lane of NW45 St between 11<sup>th</sup> and 14<sup>th</sup></li> <li>- Occupied by paved and gravel shoulder of Shilshole Avenue NW and railroad tracks, travels underneath 15<sup>th</sup> Avenue NW Bridge and crosses Shilshole Avenue NW at 17<sup>th</sup> Avenue NW</li> <li>- Occupied by west shoulder (paved) of 17<sup>th</sup> Avenue NW between Shilshole Avenue NW and Ballard Avenue</li> <li>- Occupied by the westbound lane of Ballard Avenue between 17<sup>th</sup> Avenue NW and NW Vernon Place. Crosses to south side of Shilshole Avenue NW at NW Vernon Place</li> <li>- Occupied by south shoulder (asphalt and gravel) of Shilshole Avenue NW between Vernon Place and 24<sup>th</sup> Avenue NW</li> <li>- Occupied by asphalt shoulder of 24<sup>th</sup> Avenue NW (east side) between Shilshole Avenue NW and NW Market Street</li> <li>- Occupied by the south sidewalk of NW Market Street between 24<sup>th</sup> Avenue NW and 28<sup>th</sup> Avenue NW</li> <li>- Occupied by the gravel and asphalt shoulder (west side) of 26<sup>th</sup> Avenue NW between NW Market Street and NW 54<sup>th</sup> Street</li> <li>- Occupied by a dirt and gravel roadway and a steel plate and chain link fence along NW 54<sup>th</sup> Street (north side) between 26<sup>th</sup> Avenue NW and 28<sup>th</sup> Avenue NW</li> <li>- Occupied by southbound lane of 28<sup>th</sup> Avenue NW between NW Market Street and NW 54<sup>th</sup> Street</li> <li>- Occupied by railroad tracks and dumpster, partially paved behind Stone Gardens gym, between 28<sup>th</sup> Avenue NW and 30<sup>th</sup> Avenue NW</li> </ul>
Structures (evidence of former)		x	
Heating/Cooling System		x	
Floor Drains, Sumps or Drywells		x	
Aboveground Storage Tanks (ASTs)		x	
Underground Storage Tanks (USTs) or Evidence of USTs		x	
Drums or Other Containers	x		There appeared to be containers of varying types stored on the north side of the steel plate and chain link fence located on the NW 54 <sup>th</sup> Street strip parcel property.
Chemicals or Hazardous Materials (other than de minimis quantities of cleaning products)		x	
Evidence of Leaks, Spills or Releases Surrounding ASTs, USTs, and/or Chemical Storage Areas		x	
Stained or Corroded Floors, Walls or Drains (other than apparent water stains or minor oil stains on pavement from parked vehicles)		x	
Pipes of Unknown Origin or Use		x	
On-site Septic System		x	
Sewage Disposal System		x	
Potable Water Supply		x	
Solid Waste Refuse Dumpsters	x		Dumpsters located along the sidewalk of NW Market Street and behind Stone Gardens Gym
Hydraulic Hoists		x	
Oil/Water Separators		x	
Discolored or Stained Soil or Vegetation Potentially from Hazardous Substances	x		Some soil staining was observed along the south side of Shilshole Avenue NW. Staining appeared to be associated with vehicle traffic.
Hazardous Waste Disposal Areas		x	

Feature	Observed		Comment, Location and/or Description and other development on site (e.g. pavement, etc.)
	Yes	No	
Uncontained Debris, Refuse or Unidentified Waste Materials		x	
Standing Water or Other Liquids	x		Small ponds of water were observed in depressions along south shoulder of Shilshole Avenue NW between 15 <sup>th</sup> Avenue NW and 24 <sup>th</sup> Avenue NW and behind Stone Gardens Gym
Catch Basins and Storm Water Drainage	x		Various stormwater catchbasins are located along the roadways adjacent to the project alignment, on 17 <sup>th</sup> Avenue SW, Ballard Avenue, NW Vernon Place and NW Market.
Pits/Ponds/Lagoons		x	
Waste or Wastewater Discharges		x	
Unusual Odors		x	
Stressed Vegetation		x	
Fill Material	x		There is evidence of fill throughout the site, particularly along Shilshole Avenue NW.
Water Wells (agricultural, domestic, monitoring)	x		Monitoring wells were observed near the railroad tracks behind Stone Gardens Gym.
Pad-Mounted Transformers		x	
Pole-Mounted Transformers	x		Various pole mounted transformers were observed along the Trail alignment (along Shilshole Avenue NW, 17 <sup>th</sup> Avenue NW, Ballard Avenue and NW Market Street)
Other Conditions of Environmental Concern		x	

### Findings

The planned Trail alignment is primarily occupied by paved roadways except where the shoulder of Shilshole Avenue NW is surfaced in gravel, where the Trail alignment travels on the concrete sidewalk on the south side of NW Market Street and between 26<sup>th</sup> Avenue NW and 30<sup>th</sup> Avenue NW where the Trail alignment runs parallel to railroad tracks on soil and gravel behind the former Fentron site (currently occupied by Stone Gardens Gym, Curves Gym and other commercial businesses) and along the NW 54<sup>th</sup> Street strip parcel.

Known or suspect environmental conditions identified by this portion of the study are listed below:

- The monitoring wells observed south of the Stone Gardens Gym are associated with the ongoing groundwater monitoring of contaminant plumes originating from the Fentron site. Construction activities in this portion of the site may encounter impacted soil or groundwater associated with those contaminant plumes.
- The surface of the south shoulder of Shilshole Avenue NW appears stained in some locations. The staining appears to be associated with vehicular traffic and activities associated with the railroad tracks in this location. The surface staining in these locations could indicate impacted soil and/or groundwater which may have the potential to impact the Trail construction.
- The unknown conditions of the north portion of the NW 54<sup>th</sup> Street strip parcel, due to lack of access, may pose environmental concerns if there have been any historic or existing leaks, spills or releases on this portion of the property.
- The location of dumpsters along the Trail alignment parallel to NW Market Street may pose an environmental concern to the Project in those areas if illegal dumping of chemicals or hazardous substances has occurred and leaked from these dumpsters.

- There is evidence of the use of fill in most areas of the site. The nature and origins of the fill were not apparent during the site visit. The existence of fill of unknown origins along the planned Trail alignment could pose an environmental concern to the project if the fill material is impacted by contaminants and Project activities encounter such material during the construction.
- Pole mounted transformers can pose an environmental concern to the site if there have been historical leaks of the insulating oil in the transformers, particularly in older transformers containing PCBs. The transformers along the planned Trail alignment appeared to be in good condition but PCB content could not be assessed from the ground as labeling was not visible.

**Windshield Survey Summary of Observations – Adjacent Properties and Vicinity**

We viewed properties located adjacent to and surrounding the site on March 15, 2007 from accessible public rights-of-way and the site. We did not enter adjacent properties or buildings. The site generally is situated in an area that is heavily developed with commercial, retail and industrial uses. The Findings section, below, contains additional details regarding conditions of potential environmental significance observed during our windshield survey and a list of known or suspect environmental conditions identified by this portion of our study. Table A-II below outlines adjacent land uses and pertinent observations with respect to conditions that could pose a recognized environmental condition on the subject site.

**Table A-2. Adjoining Streets and Adjacent Properties Observations**

Direction	Adjoining Street	Position Relative to Site <sup>5</sup>	Adjacent Property and Use
North	Shilshole Avenue NW, Ballard Avenue, and NW Market Street	Upgradient	The north adjacent property is generally occupied by numerous commercial and retail facilities including automotive repair shops along Shilshole Avenue NW; an industrial painting and sandblasting facility (east of 15 <sup>th</sup> avenue NW); mini storage facility (on Ballard Avenue); steel fabricator (near Shilshole Avenue NW and NW 46 <sup>th</sup> Street); a large storage area (appears to be storing construction and boat repair equipment) located beneath 15 <sup>th</sup> Avenue NW; a spa and salon; Fenpro Inc. warehouse (located north of the NW 54 <sup>th</sup> Street strip parcel), mini-storage and two gyms. A seep was observed on the northwest corner of 14 <sup>th</sup> Avenue NW and NW 45 <sup>th</sup> Street. The seep was daylighted for approximately 2 feet and then entered into a catchbasin. This seep is outside of the planned Trail alignment.
South	NW 45 <sup>th</sup> Street, 17 <sup>th</sup> Avenue NW, Ballard Avenue, NW Vernon Place, Shilshole Avenue NW, 24 <sup>th</sup> Avenue NW, 28 <sup>th</sup> Avenue NW	Downgradient	From east to west; the south adjacent properties are generally occupied by commercial, retail and industrial facilities including: paving stone supply, engine manufacturer, antique store, offices, shipping facilities, publishing company, bulk fuel facility, restaurants, hardware store, automotive repair, sheet metal works, aluminum window manufacturing facility, automotive repair businesses, train tracks and boat yards. One monitoring well was observed south of the Ballard Inflatable Boats building
East	30 <sup>th</sup> Avenue NW	Crossgradient	The east adjacent property is occupied by Hiram Chittendon Locks and associated paved parking.
West	11 <sup>th</sup> Avenue NW	Crossgradient	The west adjacent property is occupied by a United States Post Office facility and a shopping center.

<sup>5</sup> The inferred shallow groundwater flow direction in the site vicinity is to toward Salmon Bay, to the south and southwest along the planned Trail alignment.

## Findings

The properties located adjacent to the planned Trail alignment and in the surrounding area are occupied by commercial, retail and industrial facilities. Various boat yards and fuel facilities are located along the south side of Shilshole Avenue NW and various automobile repair shops are located adjacent to planned Trail alignment in several locations.

Known or suspect environmental conditions identified by this portion of the study are listed below:

- The heavy industrial traffic, particularly along Shilshole Avenue NW, may pose environmental concerns to the site if there have been historic spills or leaks associated with these activities.
- The presence of various automotive repair facilities may pose a potential environmental risk to the planned Trail alignment if there have been spills or releases associated with activities at these sites that have impacted groundwater that may have the potential to migrate onto the planned Trail alignment.
- A monitoring well observed to the south of Ballard Inflatable Boats may be associated with contamination in this area that was not identified during this study.
- Monitoring wells observed along the planned Trail alignment south of Stone Gardens Gym are associated with the ongoing monitoring of impacted groundwater at the former Fentron site. Information obtained during our interview with Mr. Porter (Aspect Consulting) indicates that the impacted groundwater at the site migrates beneath the planned Trail alignment.
- The presence of ship yards, fuel facilities and railway tracks along the south side of Shilshole Avenue NW have the potential to pose environmental concerns to the portion of the planned Trail alignment in that area.
- The former gasoline station located on the north side of NW Market Street at 28<sup>th</sup> Avenue NW may pose an environmental concern if groundwater at the site was potentially impacted by the activities at the site. Potentially impacted groundwater at the site may have migrated into the planned Trail alignment in this area and could pose a potential environmental concern for the Project.
- The bulk fuel facility located at 5109 Ballard Avenue is located on the south adjacent property to this portion of the planned Trail alignment. The presence of rusted and dented 55-gallon drums stored on pallets in the storage yard outside the building may pose a potential environmental concern if there are leaks or releases associated with this site that may have impacted the planned Trail alignment in this area.
- The Pacific Fisherman, Inc. storage lot is located on the southeast corner of the intersection of NW Market Street and 26<sup>th</sup> Avenue NW (on the east adjacent property to the NW 54<sup>th</sup> Street strip parcel portion of the future Trail alignment). The presence of tanks, electrical equipment and boat-related equipment may pose a potential environmental concern if there are leaks or releases associated with this site that have impacted the planned Trail alignment in this area.



**APPENDIX B**  
**BURKE GILMAN TRAIL EXTENSION ROUTE OPTIONS**





## APPENDIX B

The six alternative options are described in the tables and figures below.

### RECOMMENDED OPTION

**Table B-1: Route Option 1 – Two Way**

Section of Route	Pathway	Acquisition
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street. 45 <sup>th</sup> Street will remain two-way.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street on the south side of the train tracks running parallel to NW 45 <sup>th</sup> Street. The trail will cross the tracks twice and the railroad spur will be relocated.	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Same as recommended	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Same as recommended	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Same as recommended	No
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Same as recommended	No

**Table B-2: Route Option 1 – One Way**

Section of Route	Pathway	Acquisition
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street. 45 <sup>th</sup> Street will remain two-way.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street on the south side of the train tracks running parallel to NW 45 <sup>th</sup> Street. The trail will cross the tracks once and the railroad spur will be relocated. Trail will cross NW 45 <sup>th</sup> Street at 17 <sup>th</sup> Avenue NW.	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Same as recommended	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Trail will travel south from Ballard Avenue on the west side of Vernon place with landscaping to Shilshole Avenue North. Trail will then travel on the south side of Shilshole Avenue North from Vernon Place to 24 <sup>th</sup> Avenue NW.	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Same as recommended	No
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Same as recommended	No

**Table B-3: Route Option 2 – Two Way**

Section of Route	Pathway	Acquisition
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street. 45 <sup>th</sup> Street will remain two-way.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street on the south side of the train tracks running parallel to NW 45 <sup>th</sup> Street. The trail will cross the tracks twice and the railroad spur will be relocated.	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Same as recommended	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Same as recommended	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Trail will travel south of NW Market Street between landscaping and sidewalk	No
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Trail will travel along railroad corridor, north of the tracks. Railroad spur will be removed and dumpster located near the entrance to the Ballard Locks will be removed.	No

**Table B-4: Route Option 2 – One Way**

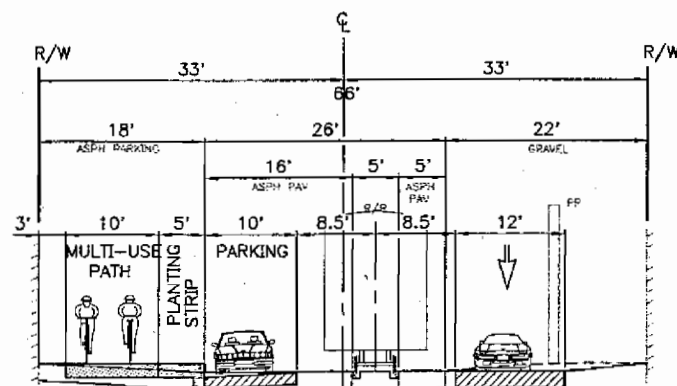
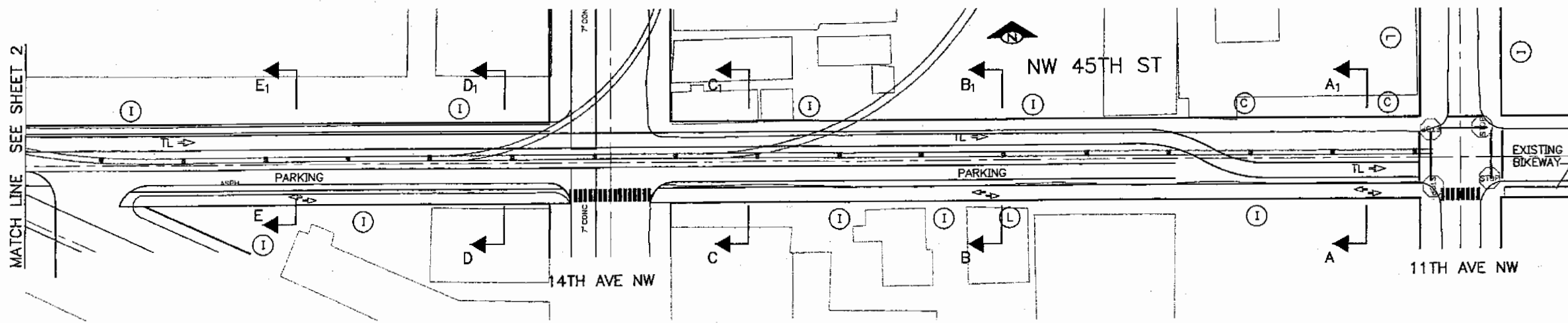
Section of Route	Pathway	Acquisition
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the North side of NW 45 <sup>th</sup> Street. 45 <sup>th</sup> Street will become one-way.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Same as recommended	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Same as recommended	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Same as recommended	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Same as recommended	No
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Same as recommended	No

**Table B-5: Route Option 3 – Two Way**

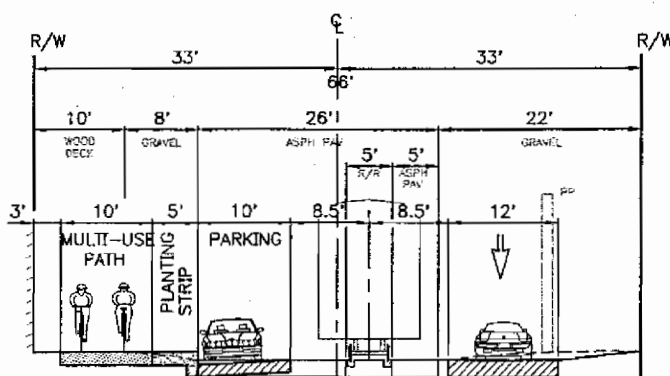
Section of Route	Pathway	Acquisition
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street and landscaping. 45 <sup>th</sup> Street will remain two-way.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail runs on south side of railroad tracks and crosses tracks and NW 45 <sup>th</sup> Street at 17 <sup>th</sup> Avenue NW	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Same as recommended	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Same as recommended	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Same as recommended	No
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Trail will travel along railroad corridor, north of the tracks. Railroad spur will be removed and dumpster located near the entrance to the Ballard Locks will be removed.	No

**Table B-6: Route Option 4 – Two Way**

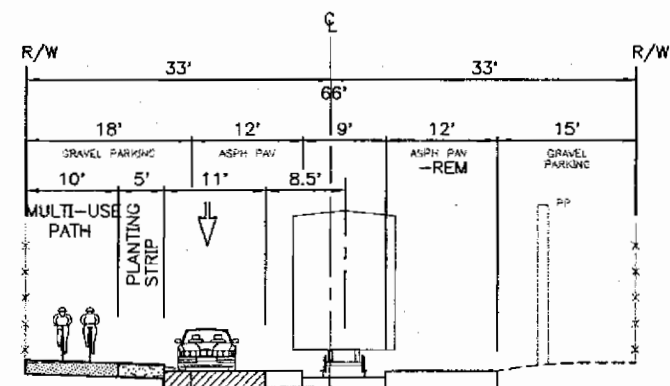
Section of Route	Pathway	Acquisition
11 <sup>th</sup> Avenue NW to 15 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Trail will run along the south side of NW 45 <sup>th</sup> Street and landscaping. 45 <sup>th</sup> Street will remain two-way.	No
15 <sup>th</sup> Avenue NW to 17 <sup>th</sup> Avenue NW on NW 45 <sup>th</sup> Street	Same as recommended	No
17 <sup>th</sup> Avenue NW and Ballard Avenue to Vernon Place and Ballard Avenue	Same as recommended	No
Vernon Place to 24 <sup>th</sup> Avenue NW on Shilshole Avenue North	Trail along the west side of Vernon Place to Shilshole Avenue North with landscaping and a fence to the west of the Trail.	No
24 <sup>th</sup> Avenue NW to 28 <sup>th</sup> Avenue NW on NW Market Street	Same as recommended	No
28 <sup>th</sup> Avenue NW to 30 <sup>th</sup> Avenue NW	Same as recommended	No



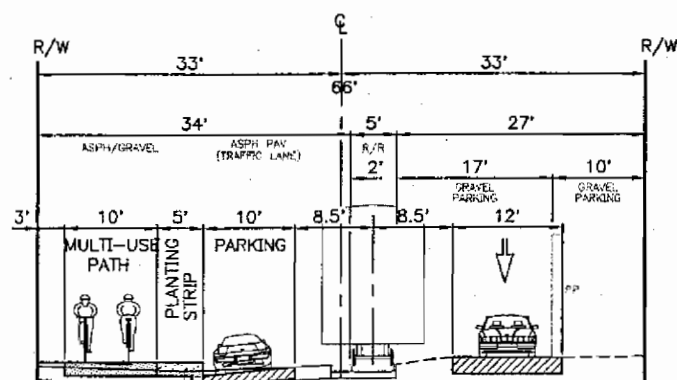
**SECTION C-C<sub>1</sub>**  
 NW 45TH ST  
 11TH AVE NW TO 14TH AVE NW  
 SCALE: 1" = 10'



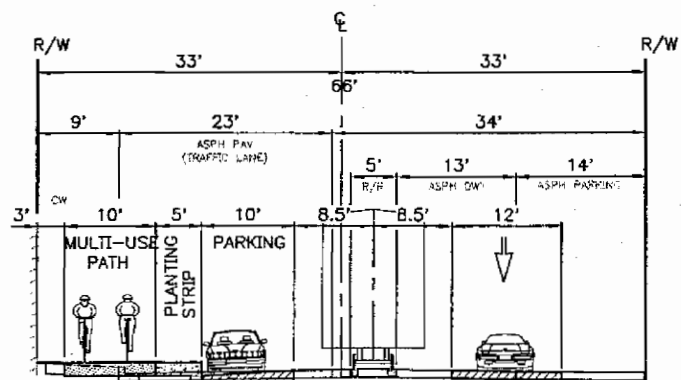
**SECTION B-B<sub>1</sub>**  
 MID-BLOCK OF NW 45TH ST  
 11TH AVE NW TO 14TH AVE NW  
 SCALE: 1" = 10'



**SECTION A-A<sub>1</sub>**  
 NW 45TH ST  
 11TH AVE NW TO 200' W  
 SCALE: 1" = 10'



**SECTION E-E<sub>1</sub>**  
 NW 45TH ST  
 14TH AVE NW TO 15TH AVE NW  
 SCALE: 1" = 10'



**SECTION D-D<sub>1</sub>**  
 NW 45TH ST  
 14TH AVE NW TO 100' W  
 SCALE: 1" = 10'

**DRIVEWAY LEGEND**

- (R) = RESIDENTIAL
- (C) = COMMERCIAL
- (I) = INDUSTRIAL
- (L) = LOADING DOCK

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**RECOMMENDED ROUTE**

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 Please be advised that this plan sheet is just one piece of a technical design study to evaluate SEVERAL options for routing pedestrians and bicycles through the South Ballard corridor from roughly 11th Ave NW to the Ballard Locks. This plan sheet represents one piece of one alternative included in the conceptual design. For more information on the study and the routes included in the study, please visit the project web site:  
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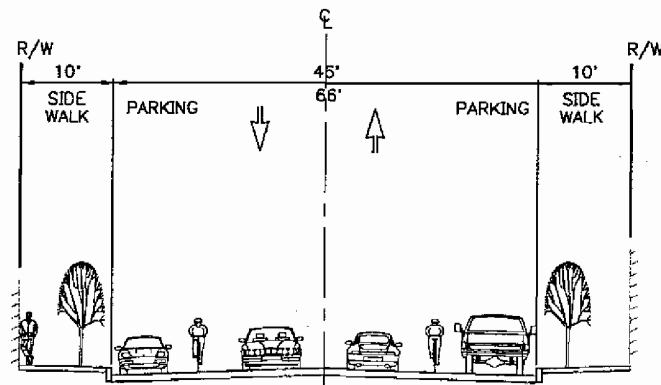
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**BALLARD CORRIDOR DESIGN STUDY**  
**(11TH AVE NW TO LOCKS)**

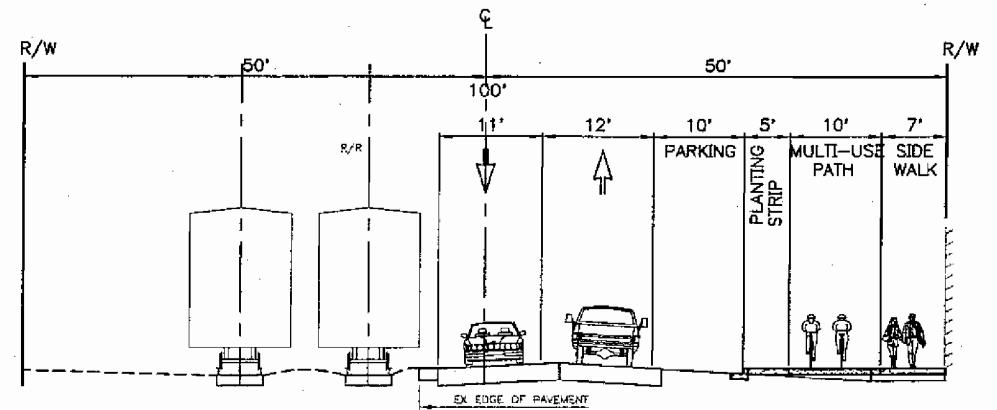
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SHEET	1 of 6

**DRIVEWAY LEGEND**

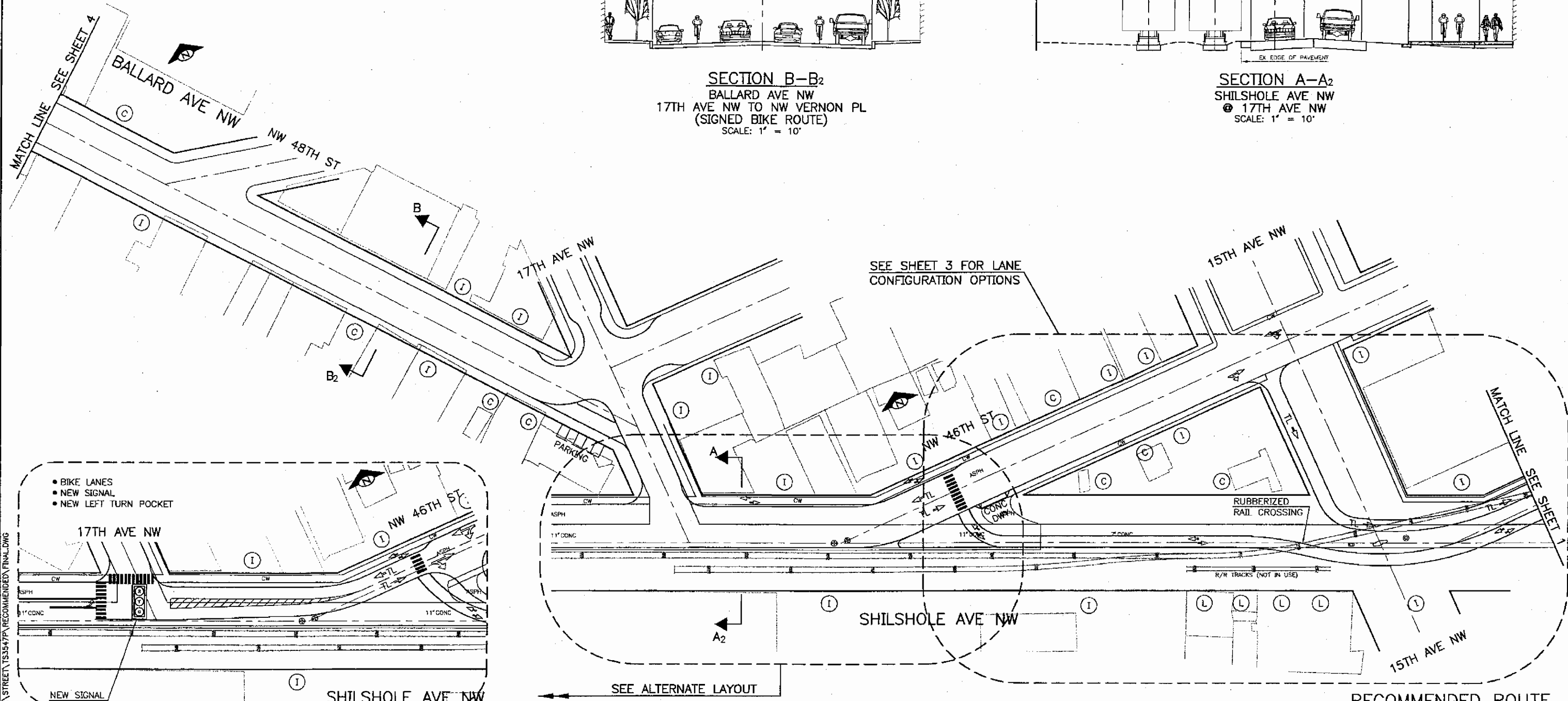
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**SECTION B-B2**  
BALLARD AVE NW  
17TH AVE NW TO NW VERNON PL  
(SIGNED BIKE ROUTE)  
SCALE: 1" = 10'



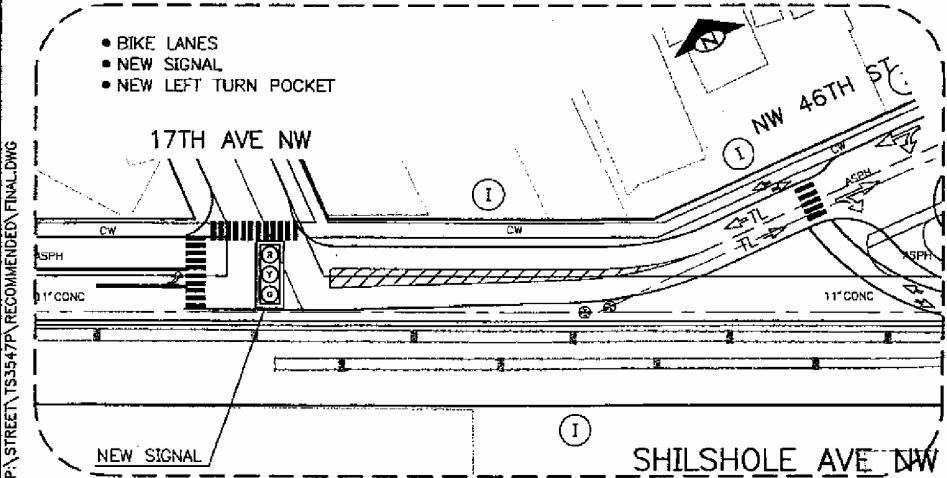
**SECTION A-A2**  
SHILSHOLE AVE NW  
@ 17TH AVE NW  
SCALE: 1" = 10'



SEE SHEET 3 FOR LANE CONFIGURATION OPTIONS

SEE ALTERNATE LAYOUT

RECOMMENDED ROUTE



- BIKE LANES
- NEW SIGNAL
- NEW LEFT TURN POCKET

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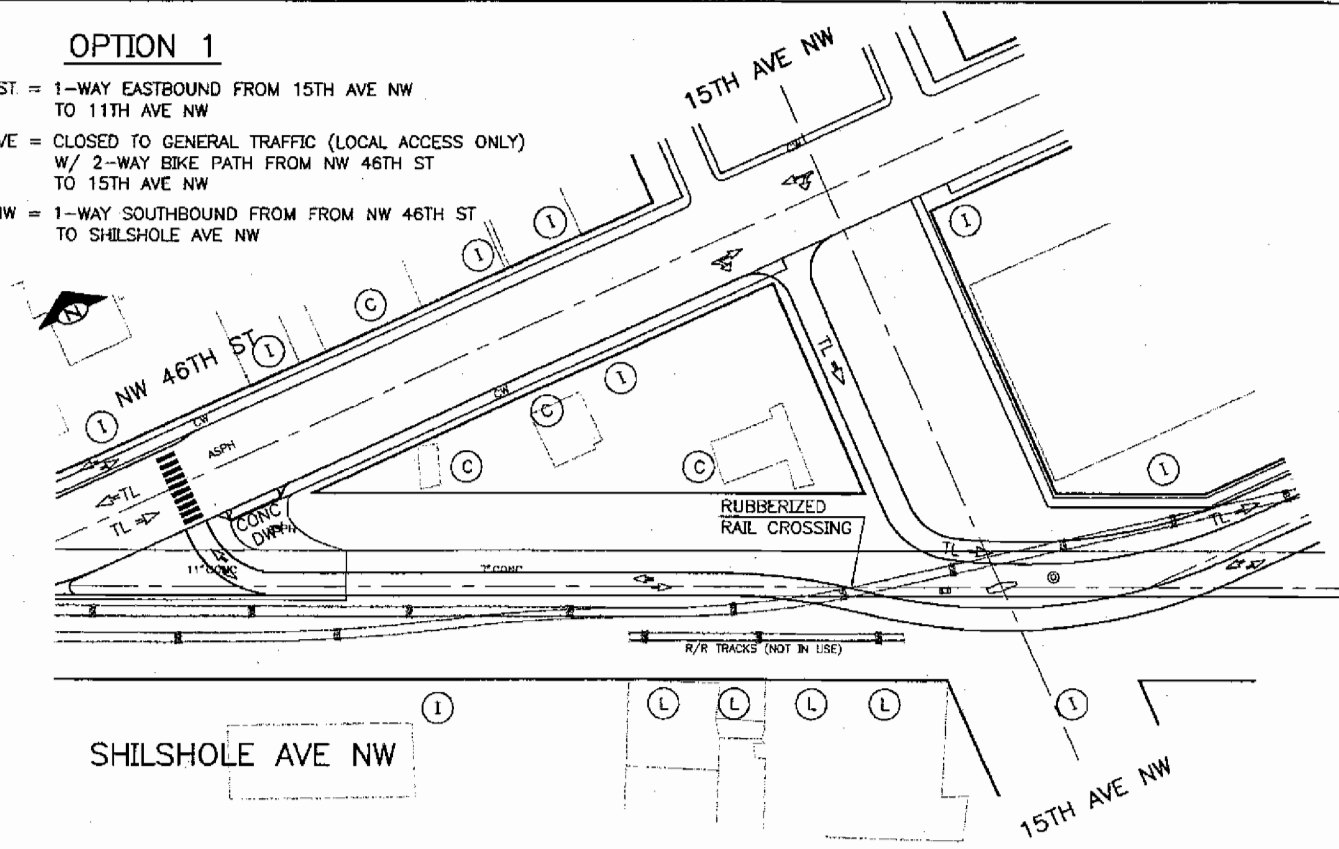
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**BALLARD CORRIDOR DESIGN STUDY  
(11TH AVE NW TO LOCKS)**

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SHEET 2 OF 6	

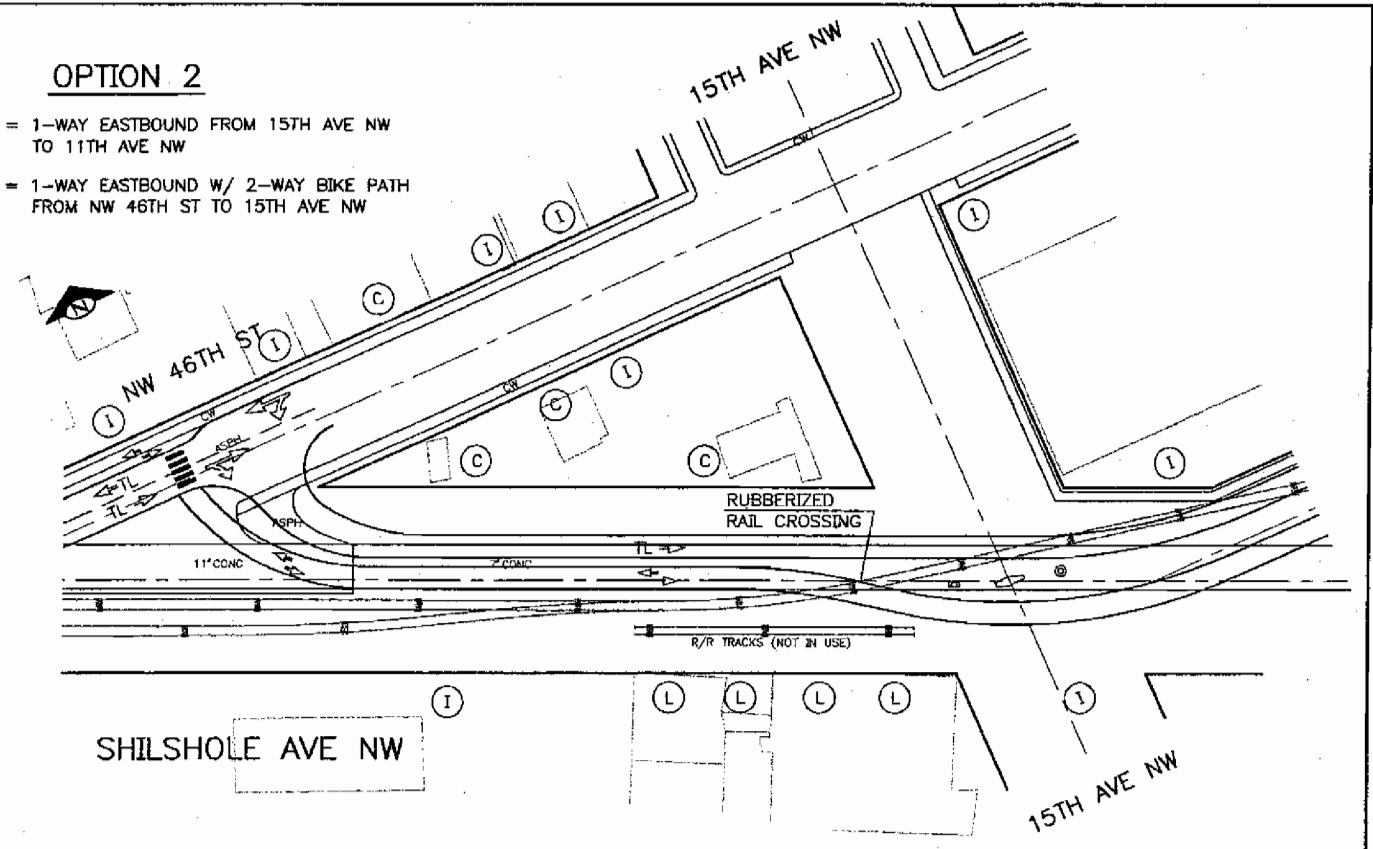
**OPTION 1**

NW 45TH ST = 1-WAY EASTBOUND FROM 15TH AVE NW TO 11TH AVE NW  
 SHILSHOLE AVE = CLOSED TO GENERAL TRAFFIC (LOCAL ACCESS ONLY) W/ 2-WAY BIKE PATH FROM NW 46TH ST TO 15TH AVE NW  
 15TH AVE NW = 1-WAY SOUTHBOUND FROM FROM NW 46TH ST TO SHILSHOLE AVE NW



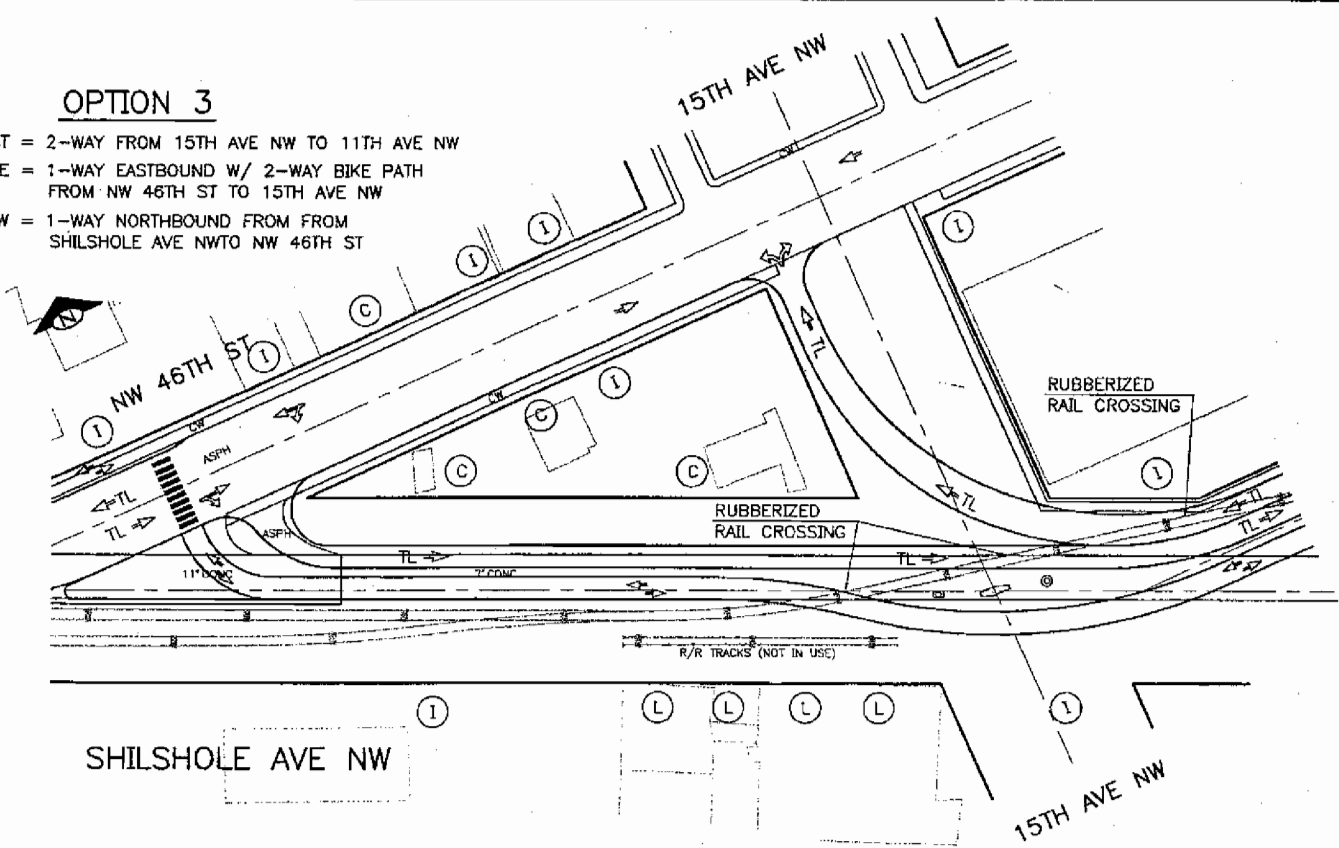
**OPTION 2**

NW 45TH ST = 1-WAY EASTBOUND FROM 15TH AVE NW TO 11TH AVE NW  
 SHILSHOLE AVE = 1-WAY EASTBOUND W/ 2-WAY BIKE PATH FROM NW 46TH ST TO 15TH AVE NW



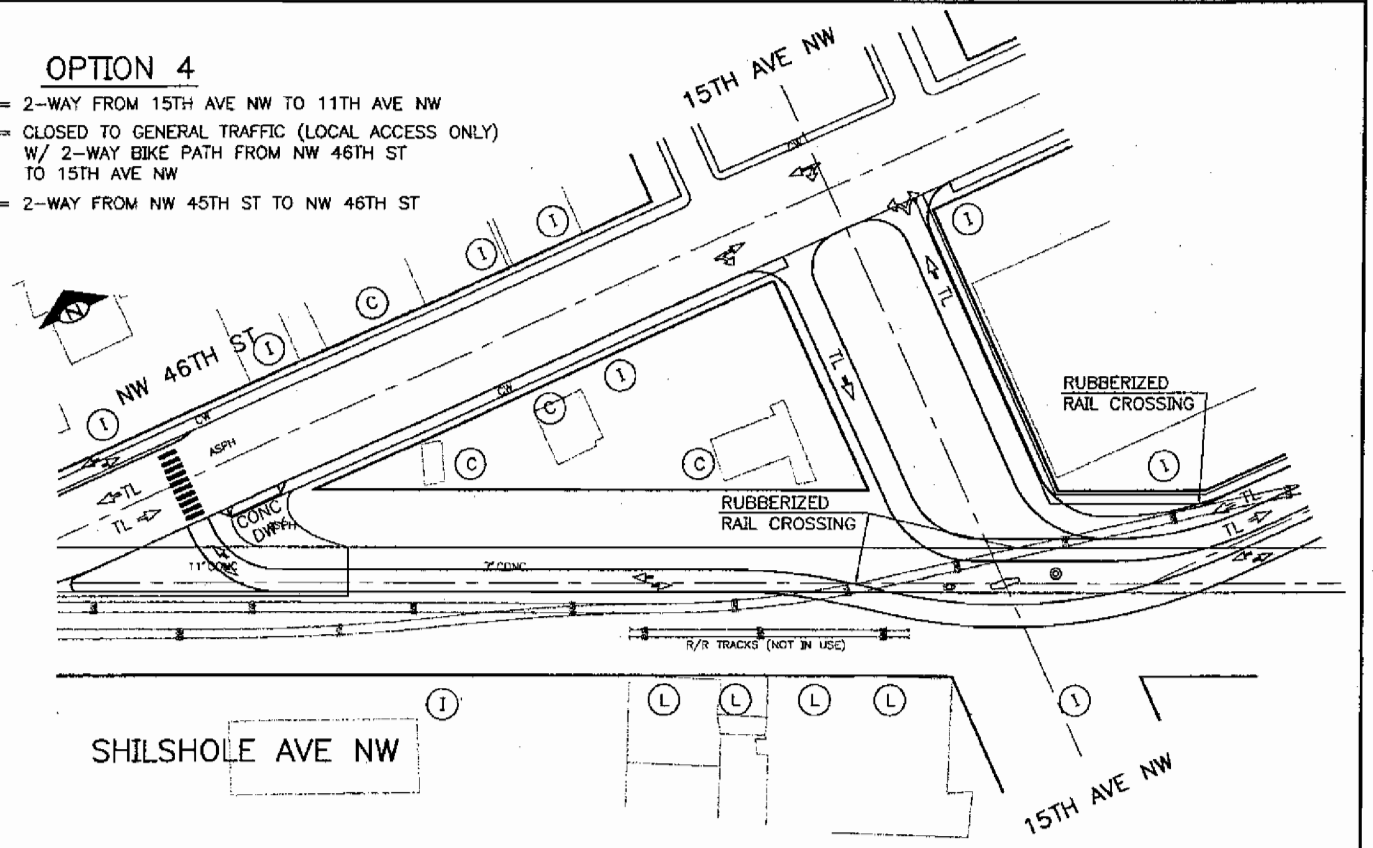
**OPTION 3**

NW 45TH ST = 2-WAY FROM 15TH AVE NW TO 11TH AVE NW  
 SHILSHOLE AVE = 1-WAY EASTBOUND W/ 2-WAY BIKE PATH FROM NW 46TH ST TO 15TH AVE NW  
 15TH AVE NW = 1-WAY NORTHBOUND FROM FROM SHILSHOLE AVE NW TO NW 46TH ST



**OPTION 4**

NW 45TH ST = 2-WAY FROM 15TH AVE NW TO 11TH AVE NW  
 SHILSHOLE AVE = CLOSED TO GENERAL TRAFFIC (LOCAL ACCESS ONLY) W/ 2-WAY BIKE PATH FROM NW 46TH ST TO 15TH AVE NW  
 15TH AVE NW = 2-WAY FROM NW 45TH ST TO NW 46TH ST



**LANE CONFIGURATION OPTIONS**

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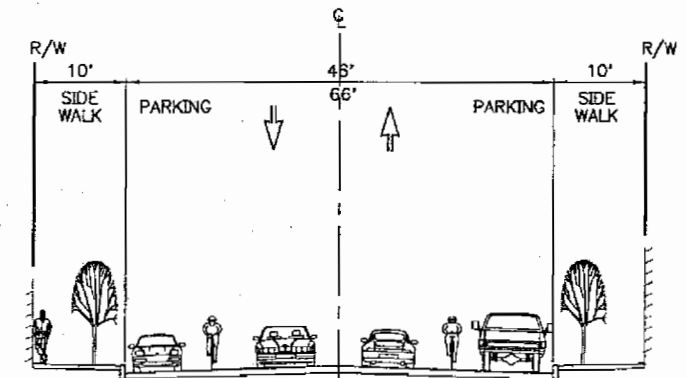
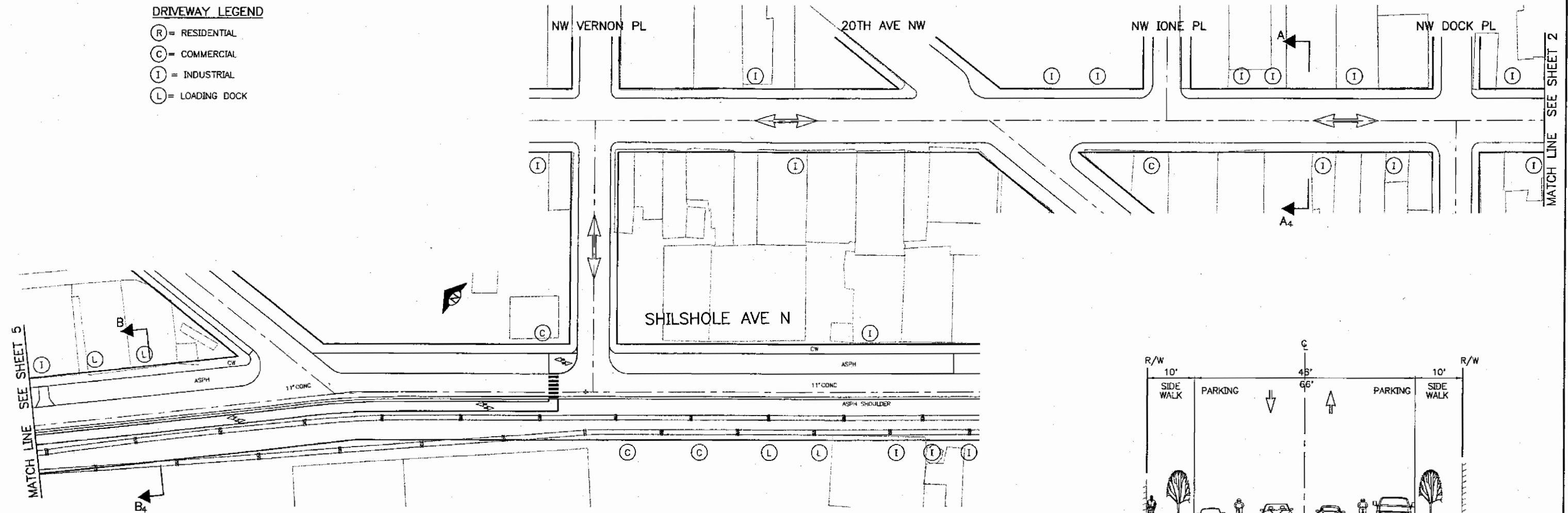
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**BALLARD CORRIDOR DESIGN STUDY**  
**(11TH AVE NW TO LOCKS)**

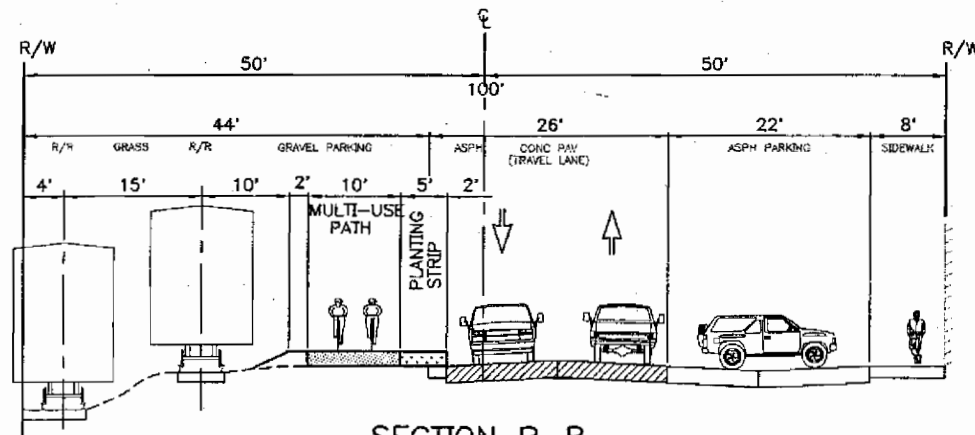
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CO	TS3547P
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**DRIVEWAY LEGEND**

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- (L) = LOADING DOCK



**SECTION A-A<sub>4</sub>**  
 BALLARD AVE NW  
 17TH AVE NW TO NW VERNON PL  
 (SIGNED BIKE ROUTE)  
 SCALE: 1" = 10'



**SECTION B-B<sub>4</sub>**  
 SHILSHOLE AVE NW  
 22ND AVE NW TO 24TH AVE NW  
 SCALE: 1" = 10'

**RECOMMENDED ROUTE**

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 11/11/11  
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 11/11/11  
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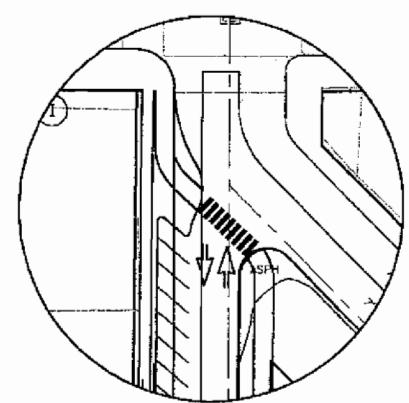
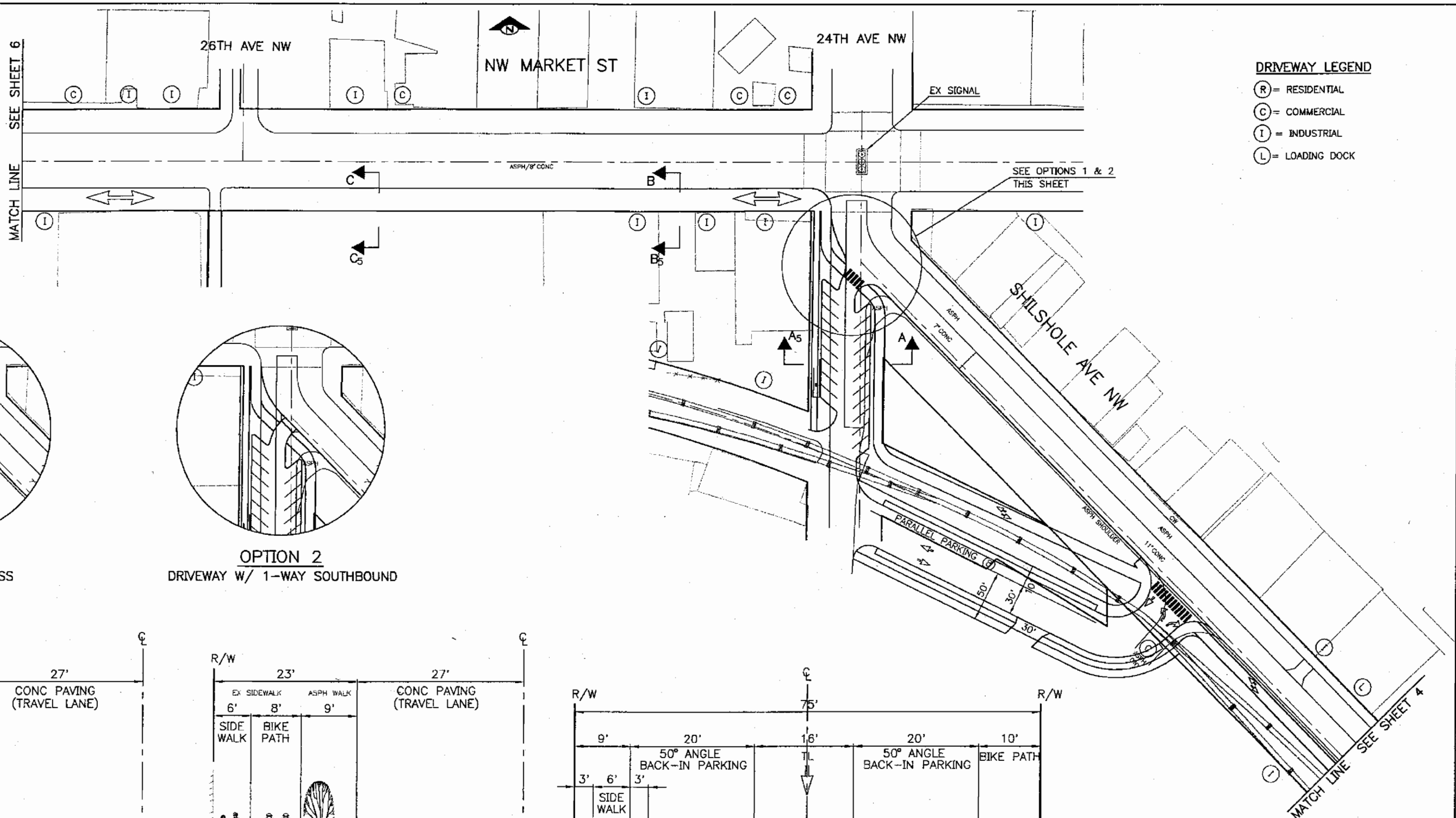
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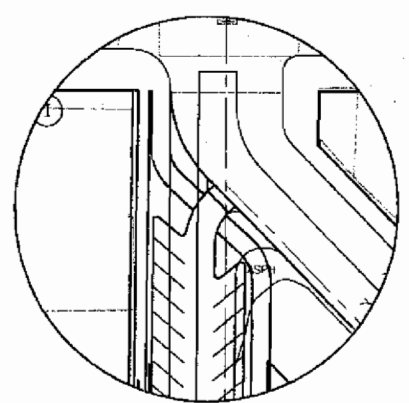
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**BALLARD CORRIDOR DESIGN STUDY**  
**(11TH AVE NW TO LOCKS)**

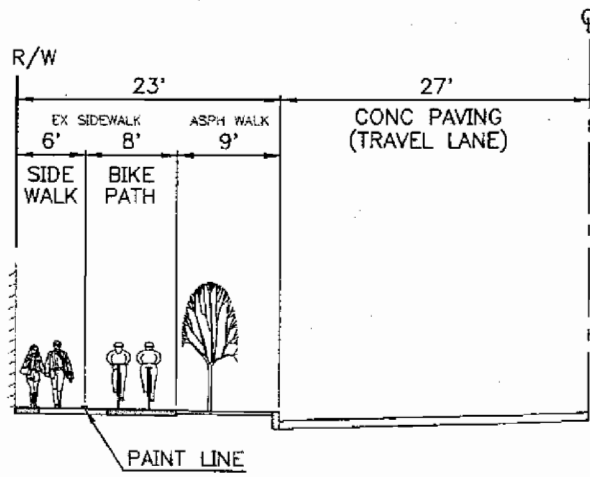
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CO	TS3547P
VAULT PLAN NO. XXX-XX	
SHEET 4 OF 6	



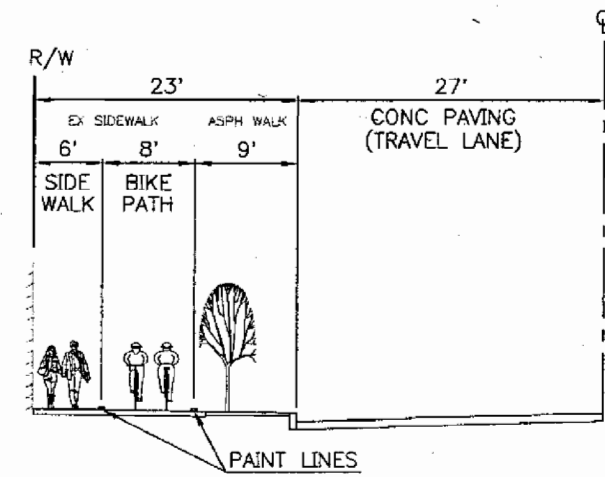
**OPTION 1**  
2-WAY LOCAL ACCESS



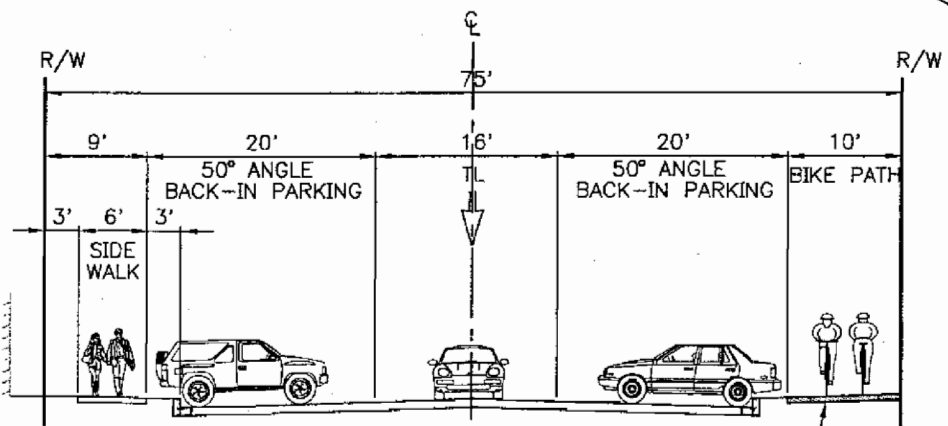
**OPTION 2**  
DRIVEWAY W/ 1-WAY SOUTHBOUND



**SECTION C-C<sub>5</sub>**  
NW MARKET ST  
MID-BLOCK CROSSING TO 26TH AVE NW  
SCALE: 1" = 10'



**SECTION B-B<sub>5</sub>**  
NW MARKET ST  
24TH AVE NW TO MID-BLOCK CROSSING  
SCALE: 1" = 10'



**SECTION A-A<sub>5</sub>**  
24TH AVE NW  
NW MARKET ST TO RAILROAD R/W  
SCALE: 1" = 10'

**RECOMMENDED ROUTE**

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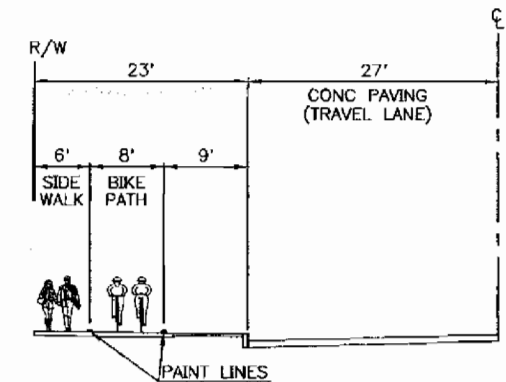
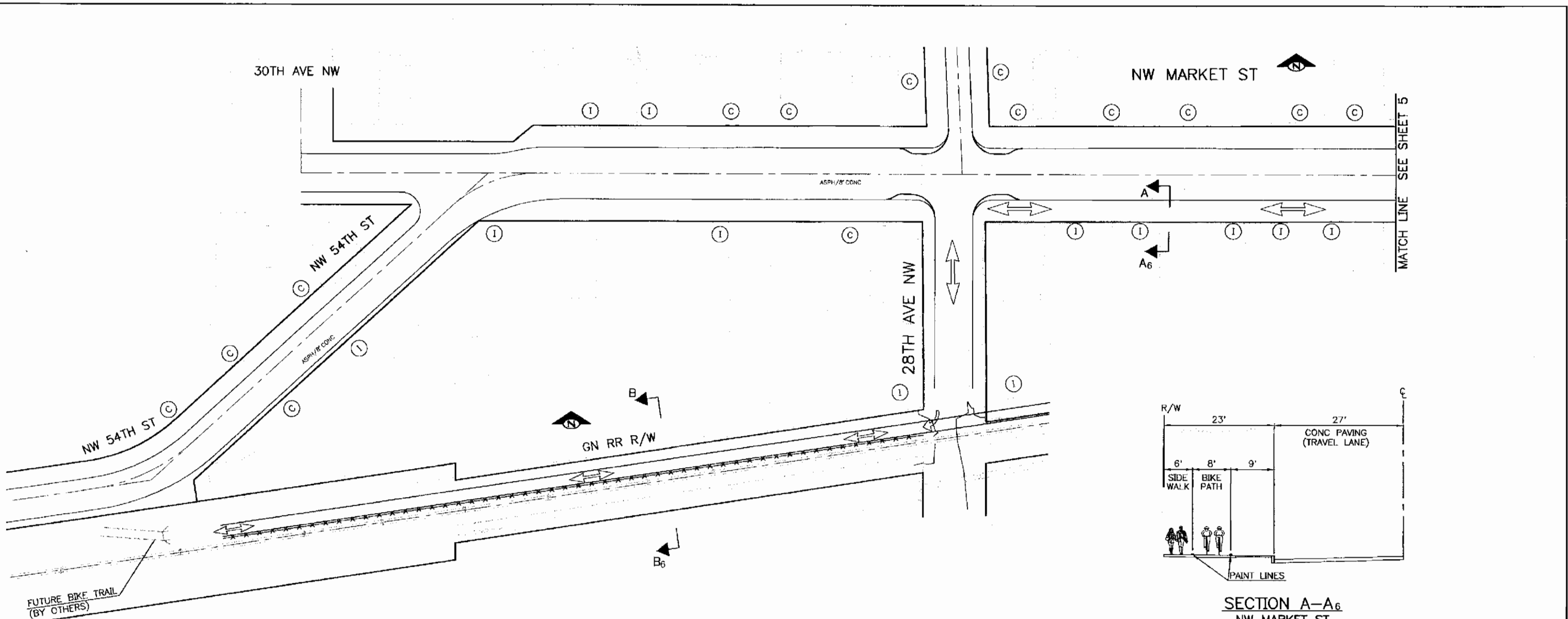
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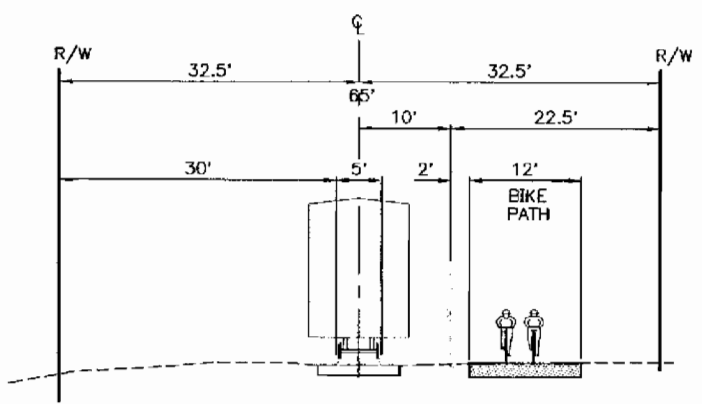
**BALLARD CORRIDOR DESIGN STUDY**  
**(11TH AVE NW TO LOCKS)**

NO.	PC	TS3547P
R/W		
CO		TS3547P
VAULT PLAN NO.	XXX-XX	
SHEET	5 OF 6	





**SECTION A-A<sub>6</sub>**  
 NW MARKET ST  
 26TH AVE NW TO 28TH AVE NW  
 SCALE: 1" = 10'



**SECTION B-B<sub>6</sub>**  
 RAILROAD CORRIDOR  
 28TH AVE NW TO BALLARD LOCKS  
 SCALE: 1" = 10'

**DRIVEWAY LEGEND**

- (R) = RESIDENTIAL
- (C) = COMMERCIAL
- (I) = INDUSTRIAL
- (L) = LOADING DOCK

**RECOMMENDED ROUTE**

**BALLARD CORRIDOR DESIGN STUDY  
 (11TH AVE NW TO LOCKS)**

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**IMPORTANT!!!**  
 Please be advised that this plan sheet is just one piece of a technical design study to evaluate SEVERAL options for routing pedestrians and bicycles through the South Ballard corridor from roughly 11th Ave NW to the Ballard Locks. This plan sheet represents one piece of one alternative included in the conceptual design. For more information on the study and the routes included in the study, please visit the project web site:  
[www.cityofseattle.net/td/bcds11thlocks.asp](http://www.cityofseattle.net/td/bcds11thlocks.asp)

APPROVED FOR ADVERTISING  
 SEATTLE, WASHINGTON ..... 20  
 BY: .....  
 CONTRACTING MANAGER

NAME OR INITIALS AND DATE	INITIALS AND DATE
DESIGNED .....	REVIEWED: .....
CHECKED .....	DES. SPU CONST. ....
	TRANS. PROJ. MGR. ....
DRAWN .....	RECEIVED .....
CHECKED .....	REVISED AS BUILT .....
ALL WORK DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.	

**City of Seattle**  
**SEATTLE**  
**TRANSPORTATION**

ORDINANCE NO. .... APPROVED .....

FUND: .....

SCALE: H. V. INSPECTOR'S BOOK. ....



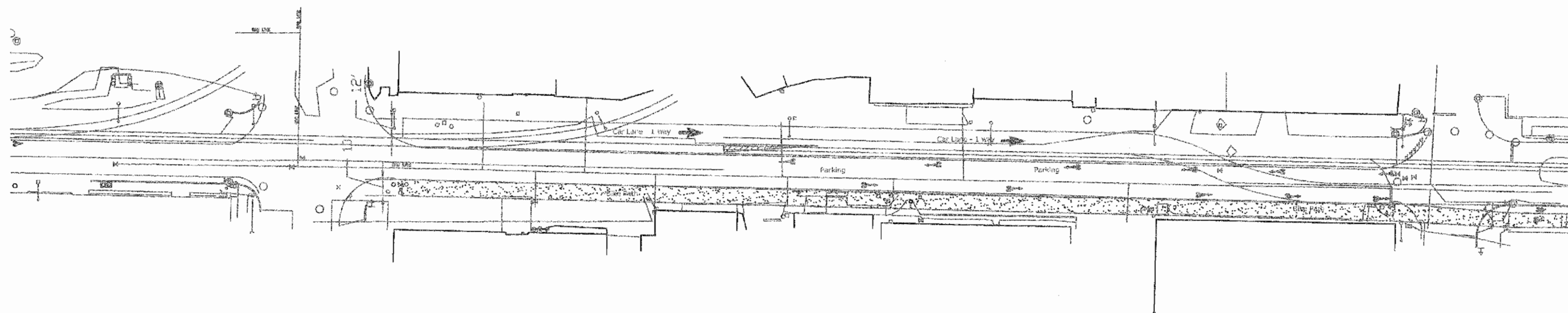
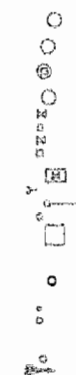
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# Burke-Gilman Trail (11th Ave. to 14th Ave.)

## Option 1

January 19, 2007

SvR # 06031



### Option 1: Parking in Center

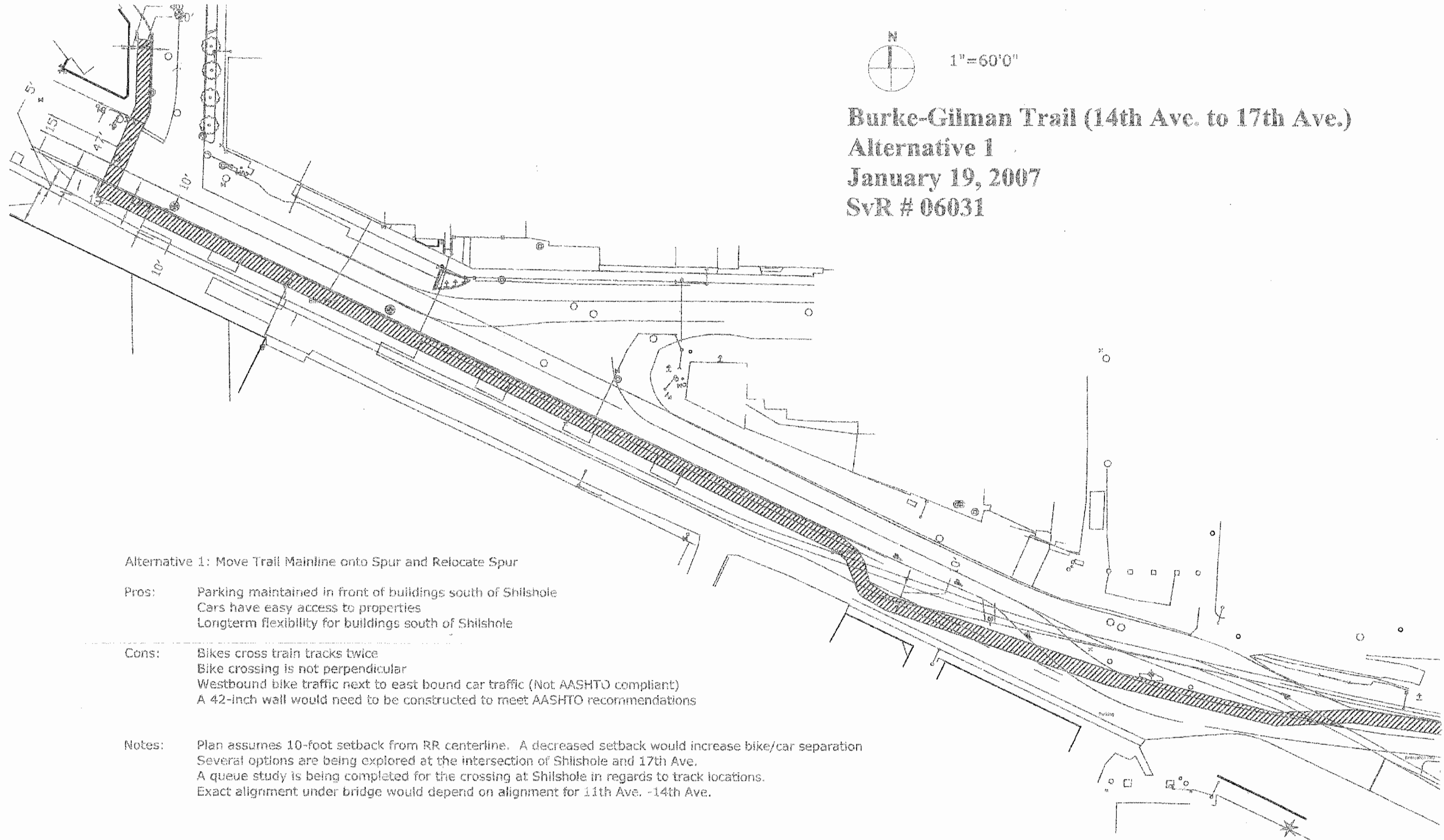
**Pros:** Simplifies bike and car crossing at 11th Ave.  
Bikes are farther away from train tracks and travel lanes  
Organizes parking

**Cons:** Parking eliminated from southside businesses  
Installation of drive lane and drainage on northside of 45th St.  
Existing utilities/structures on southside (power poles, etc.) must be relocated  
Guy wire conflicts need to be resolved



1"=60'0"

**Burke-Gilman Trail (14th Ave. to 17th Ave.)  
Alternative 1  
January 19, 2007  
SvR # 06031**



Alternative 1: Move Trail Mainline onto Spur and Relocate Spur

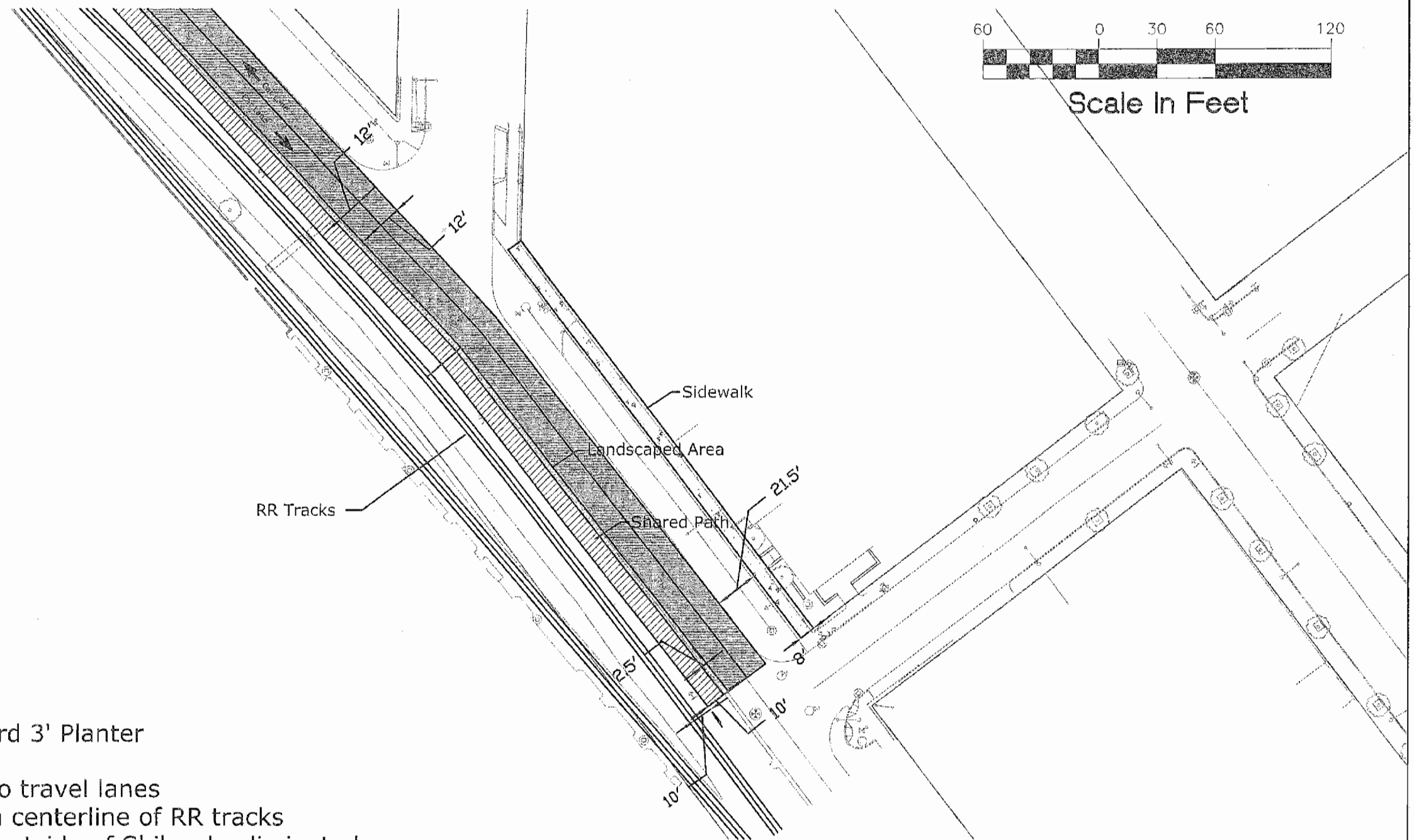
Pros: Parking maintained in front of buildings south of Shilshole  
Cars have easy access to properties  
Longterm flexibility for buildings south of Shilshole

Cons: Bikes cross train tracks twice  
Bike crossing is not perpendicular  
Westbound bike traffic next to east bound car traffic (Not AASHTO compliant)  
A 42-inch wall would need to be constructed to meet AASHTO recommendations

Notes: Plan assumes 10-foot setback from RR centerline. A decreased setback would increase bike/car separation  
Several options are being explored at the intersection of Shilshole and 17th Ave.  
A queue study is being completed for the crossing at Shilshole in regards to track locations.  
Exact alignment under bridge would depend on alignment for 11th Ave. -14th Ave.

Plotted: Mar 05, 2007 - 8:20:08am By gibsonp  
File: C:\06c\06031c BGT\Design\Vermon\_22\_Option1.dwg Layout: Layout1 Layerset:

**DRAFT**



**Option 1: Nonstandard 3' Planter**

- Pros:** No changes to travel lanes  
Path 10' from centerline of RR tracks
- Cons:** Parking on westside of Shilesole eliminated  
Path does not meet AASHTO Guidelines for distance away from travel lane



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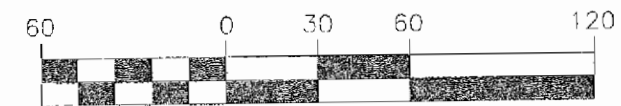
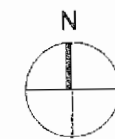
**BURKE-GILMAN TRAIL**

Vernon Ave. to 22th Ave.

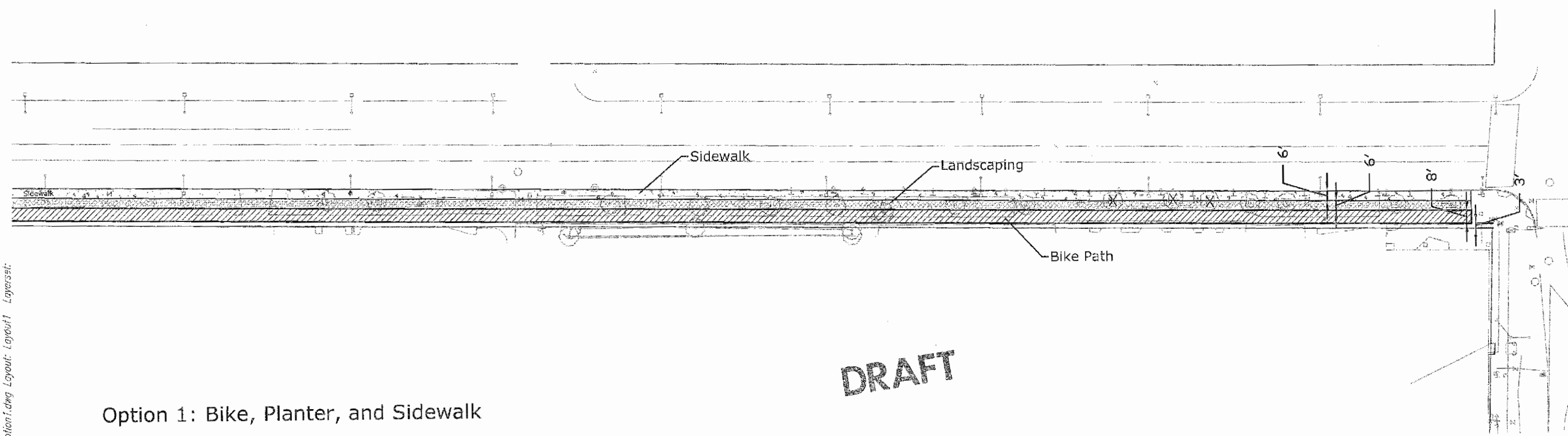
Option 1

SvR # 06031

03/01/07



Scale In Feet



**DRAFT**

**Option 1: Bike, Planter, and Sidewalk**

**Pros:** Most trees are preserved

**Cons:** Sidewalk has light, poles and sign in it.  
Building doors open onto bike path  
Bus shelter needs to be relocated

Plotted: Mar 05, 2007 - 8:28:00am By gibsonp  
File: G:\06031c BGT\Design\24\_28\_Option1.dwg Layout: Layout1 Layer: 1

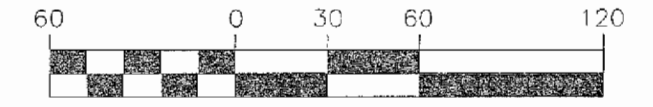
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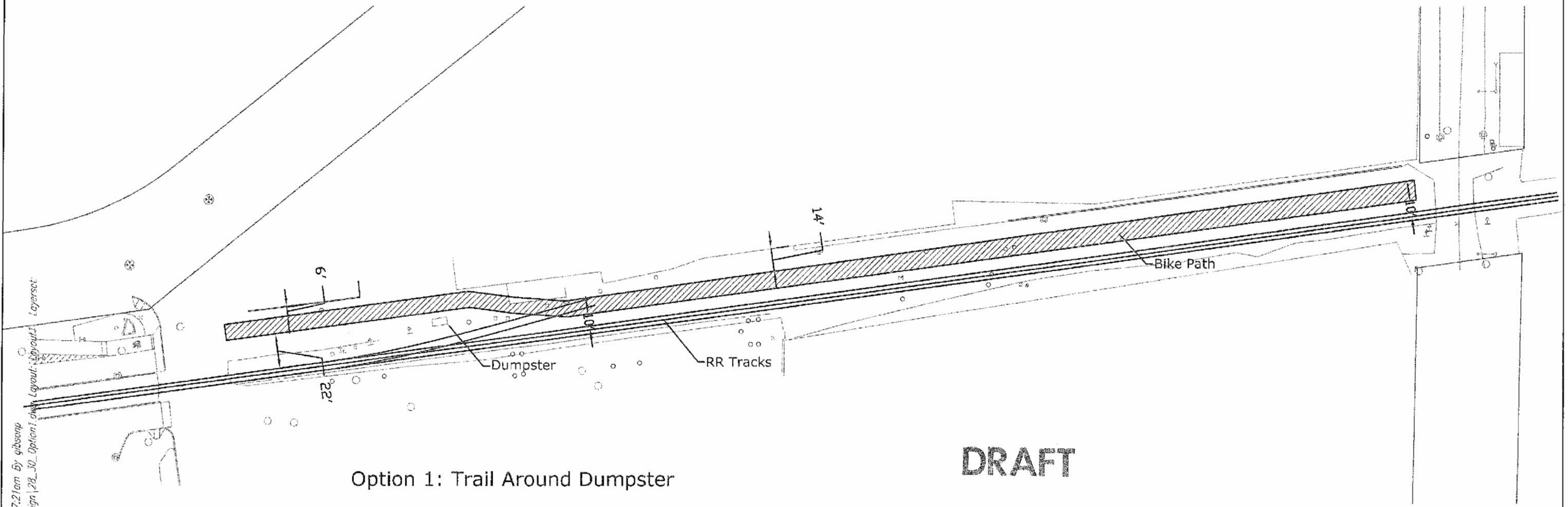
**BURKE-GILMAN TRAIL**

24th Ave. to 28th Ave.  
 Option 1  
 SvR # 06031

03/01/07



Scale In Feet



**DRAFT**

- Option 1: Trail Around Dumpster
- Pros: Dumpster remains in current location
- Cons: RR Track spur need to be removed.

Plotted: Mar 05, 2007 - 8:47:21am by gibsomp  
File: G:\06c\06031c\_BCT\Design\28\_30\_Option1.dwg Layer:sc1



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**BURKE-GILMAN TRAIL**  
28th Ave. to 30th Ave.  
Option 1  
SvR # 06031

03/01/07



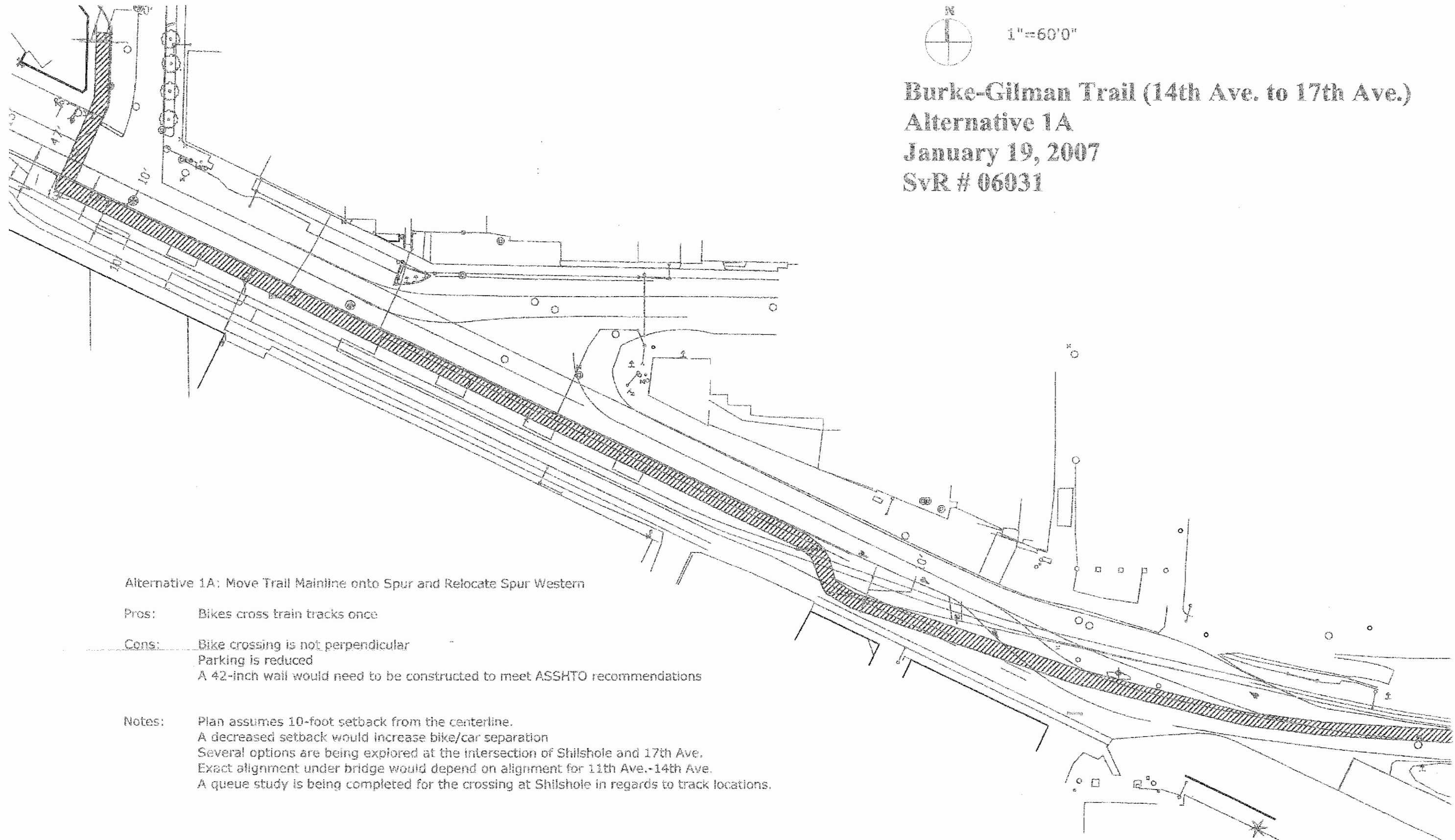
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# Burke-Gilman Trail (14th Ave. to 17th Ave.)

## Alternative 1A

January 19, 2007

SvR # 06031



Alternative 1A: Move Trail Mainline onto Spur and Relocate Spur Western

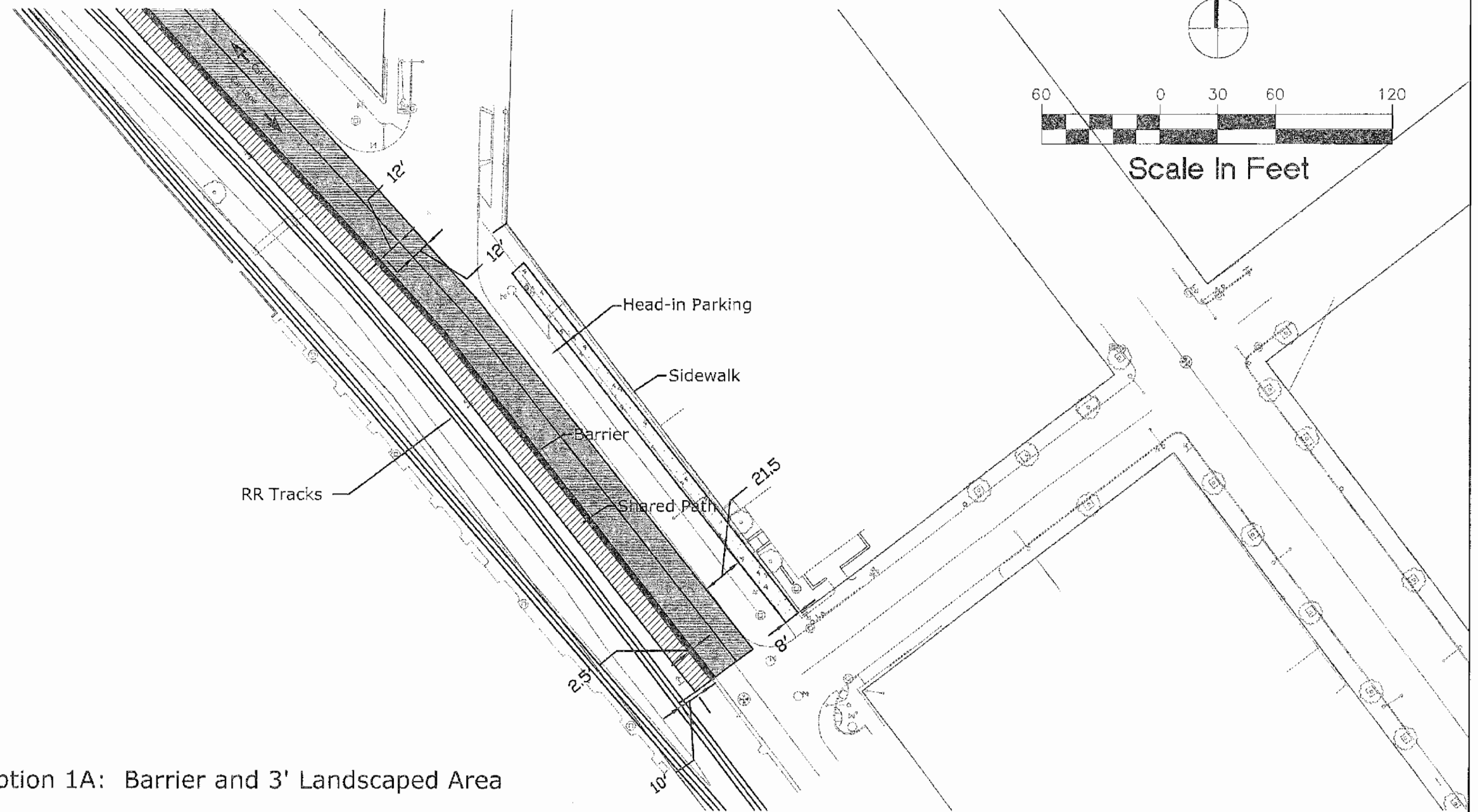
Pros: Bikes cross train tracks once

Cons: Bike crossing is not perpendicular  
Parking is reduced  
A 42-inch wall would need to be constructed to meet ASSHTO recommendations

Notes: Plan assumes 10-foot setback from the centerline.  
A decreased setback would increase bike/car separation  
Several options are being explored at the intersection of Shilshole and 17th Ave.  
Exact alignment under bridge would depend on alignment for 11th Ave.-14th Ave.  
A queue study is being completed for the crossing at Shilshole in regards to track locations.

Plotted: Mar 05, 2007 - 8:46:33am By gibsomp  
File: G:\06c\06031c\_BGT\Design\ Vernon\_22\_Option1A.dwg Layout: Layout1 Layerset:

**DRAFT**



**Option 1A: Barrier and 3' Landscaped Area**

**Pros:** Meets AASHTO Guidelines  
Shared path 10' from RR track centerline  
Travel lanes and eastside of Shilshole unchanged

**Cons:** Cost to install barrier



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**BURKE-GILMAN TRAIL**

Vernon Ave. to 22 th Ave.

Option 1A

SvR # 06031

03/01/07





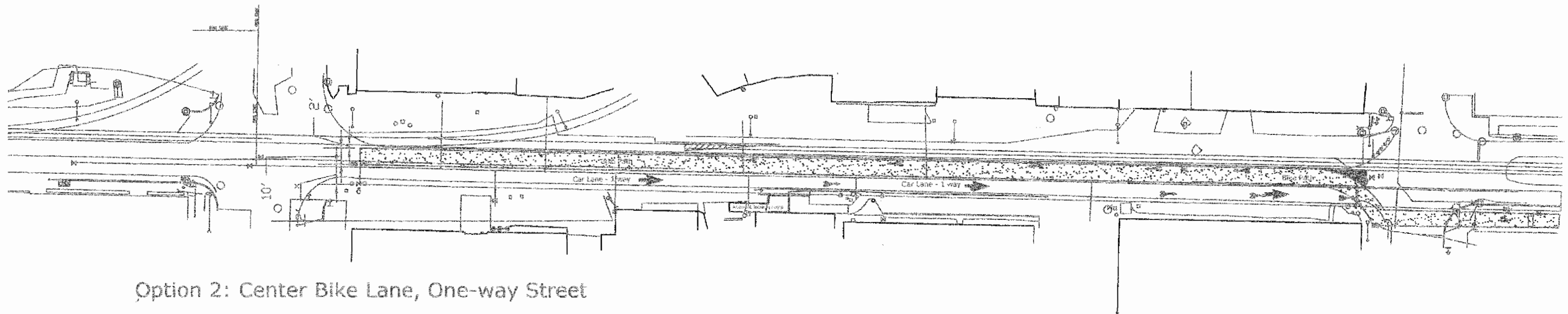
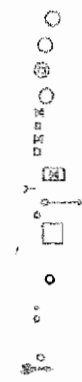
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## Burke-Gilman Trail (11th Ave. to 14th Ave.)

### Option 2

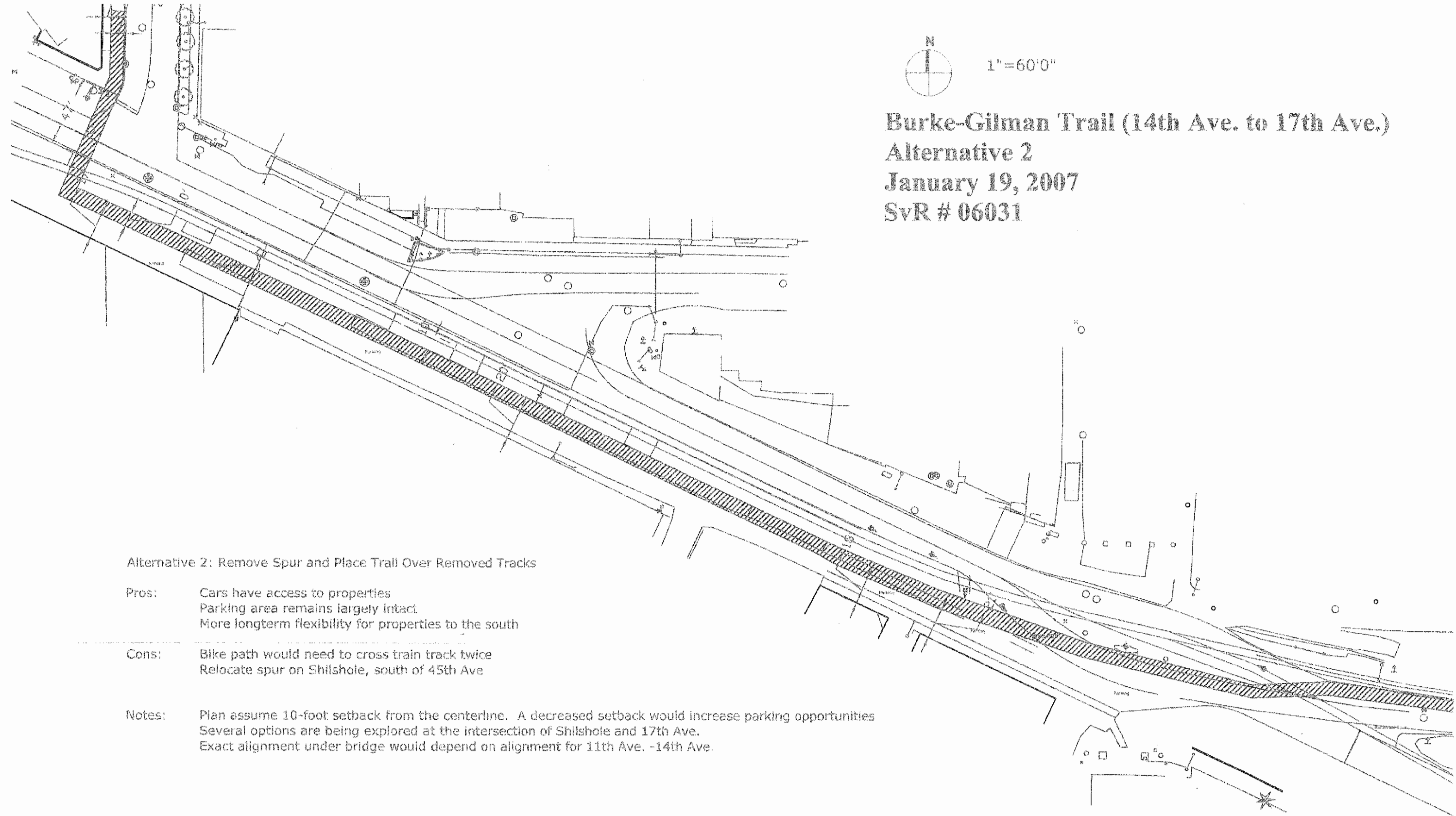
January 19, 2007

SvR # 06031



#### Option 2: Center Bike Lane, One-way Street

- Pros:
- Bikes don't cross train tracks
  - Cars have easy access to properties
  - Parking is retained on both sides
  - Loading dock remains untouched
  - Minimal street improvements required
  - Greater longterm flexibility in how space and right-of-way ROW adjacent to properties may be improved
- Cons:
- Bike/car crossing at intersection at 11th Ave. is problematic.
  - A 42-inch wall would need to be constructed to separate Bike Path from cars to meet AASHTO recommendations
- Notes:
- Breaks in fence for driveways on north side to be determined
  - 11th Ave. intersection needs further study



N  
1"=60'0"

**Burke-Gilman Trail (14th Ave. to 17th Ave.)  
Alternative 2  
January 19, 2007  
SvR # 06031**

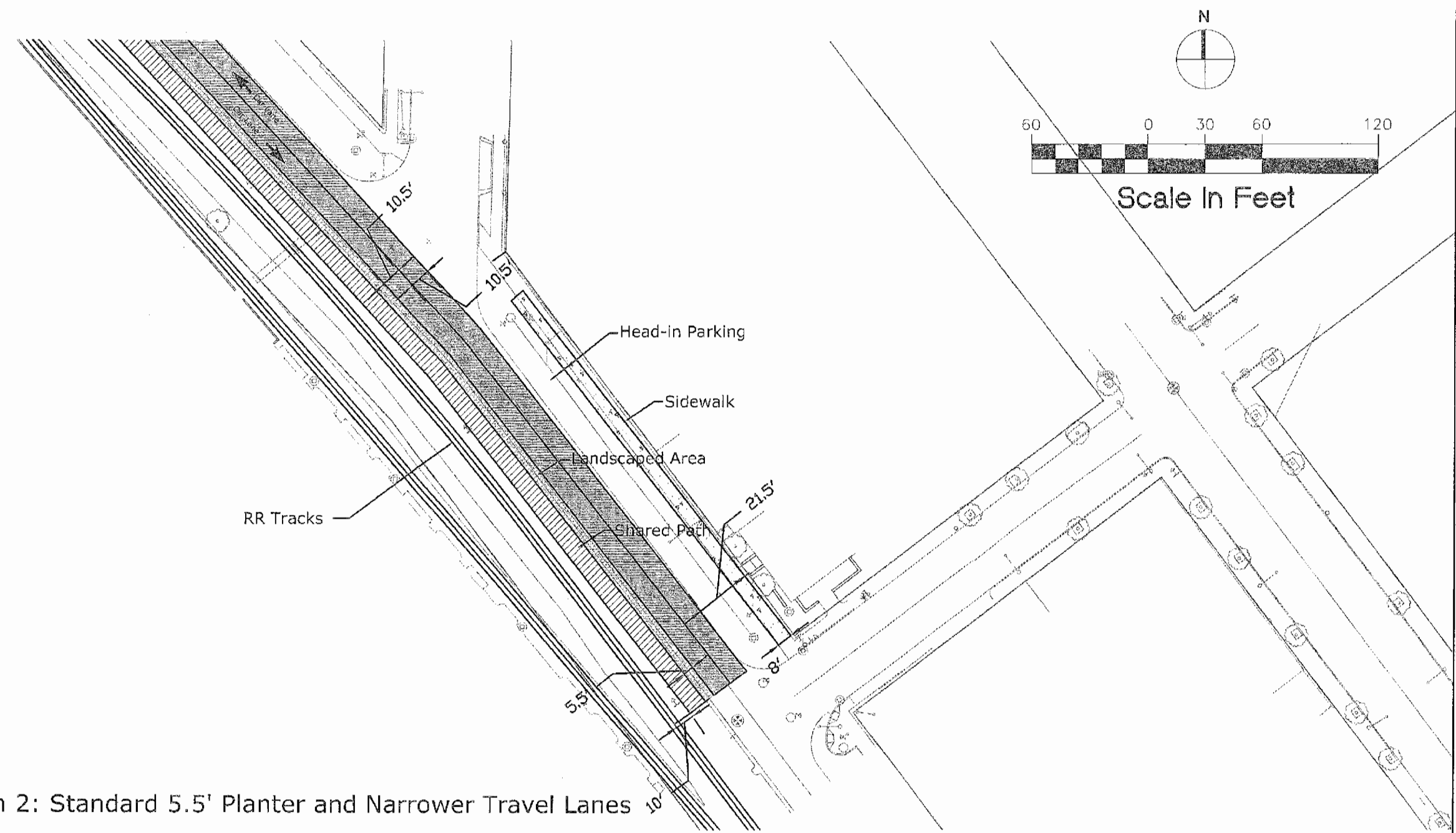
**Alternative 2: Remove Spur and Place Trail Over Removed Tracks**

**Pros:** Cars have access to properties  
 Parking area remains largely intact  
 More longterm flexibility for properties to the south

**Cons:** Bike path would need to cross train track twice  
 Relocate spur on Shilshole, south of 45th Ave

**Notes:** Plan assume 10-foot setback from the centerline. A decreased setback would increase parking opportunities  
 Several options are being explored at the intersection of Shilshole and 17th Ave.  
 Exact alignment under bridge would depend on alignment for 11th Ave. -14th Ave.

**DRAFT**



Option 2: Standard 5.5' Planter and Narrower Travel Lanes

Pros: Meets AASHTO Guidelines  
Eastside of Shilshole remains unchanged

Cons: Travel lanes narrowed to 10.5'

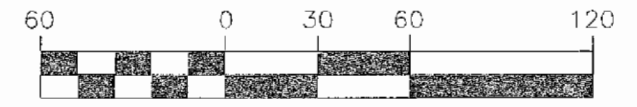
Plotted: Mar 05, 2007 - 8:22:36am By gibsonp  
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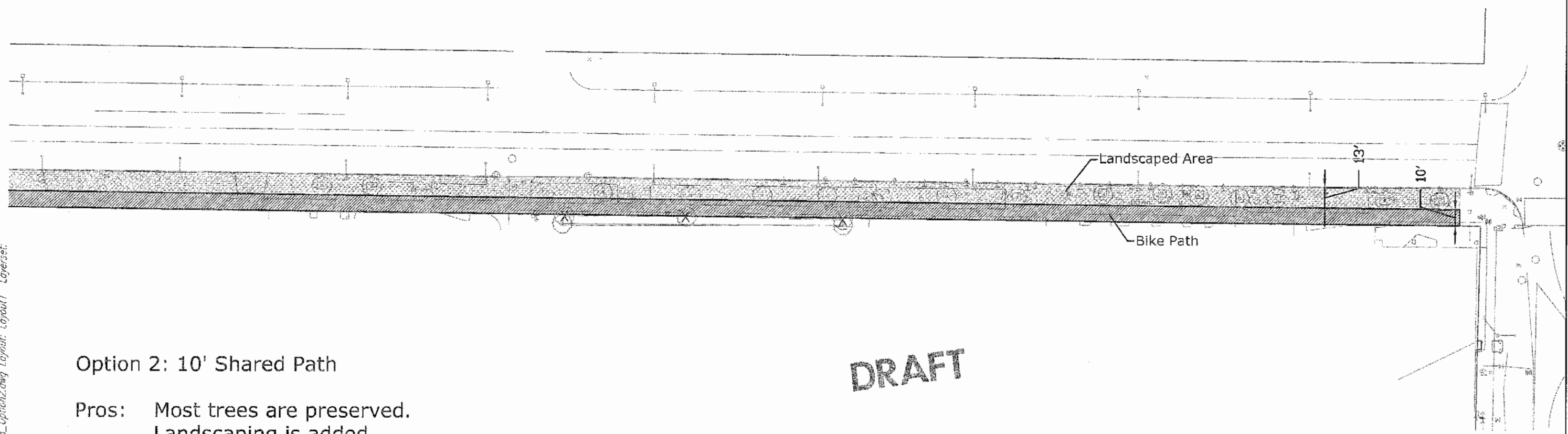
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**BURKE-GILMAN TRAIL**  
 Vernon Ave. to 22 th Ave.  
 Option 2  
 SvR # 06031

03/01/07



Scale In Feet



Option 2: 10' Shared Path

- Pros: Most trees are preserved.  
Landscaping is added.
- Cons: Bus Shelter needs to be relocated  
Building door opens onto shared trail

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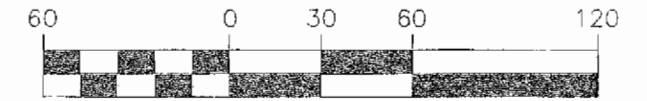
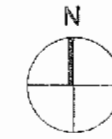
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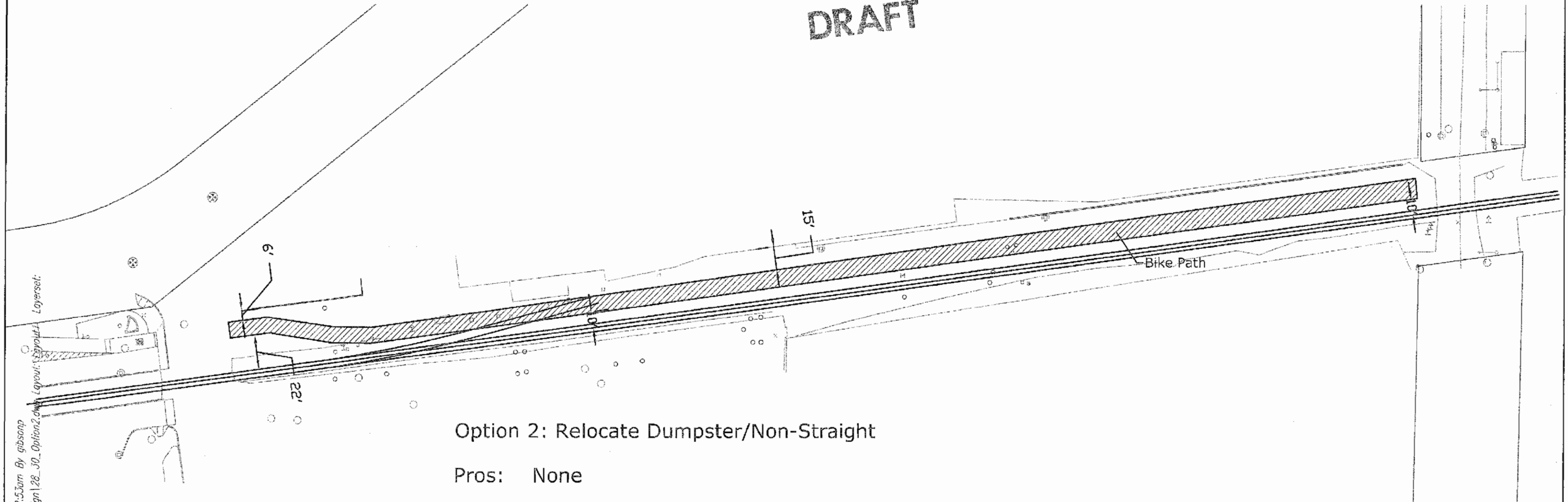
**BURKE-GILMAN TRAIL**  
 24th Ave. to 28th Ave.  
 Option 2  
 SvR # 06031

03/01/07



Scale In Feet

**DRAFT**



Option 2: Relocate Dumpster/Non-Straight

Pros: None

Cons: Dumpster needs to be relocated  
RR Track Spur needs to be removed.

Plotted: Mar 05, 2007 - 8:42:53am By gibsomp  
File: C:\06c\06031c BGT\Design\28\_30\_Option2.dwg Layout: Layout1 Layerset:



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**BURKE-GILMAN TRAIL**

28th Ave. to 30th Ave.

Option 2

SvR # 06031

03/01/07



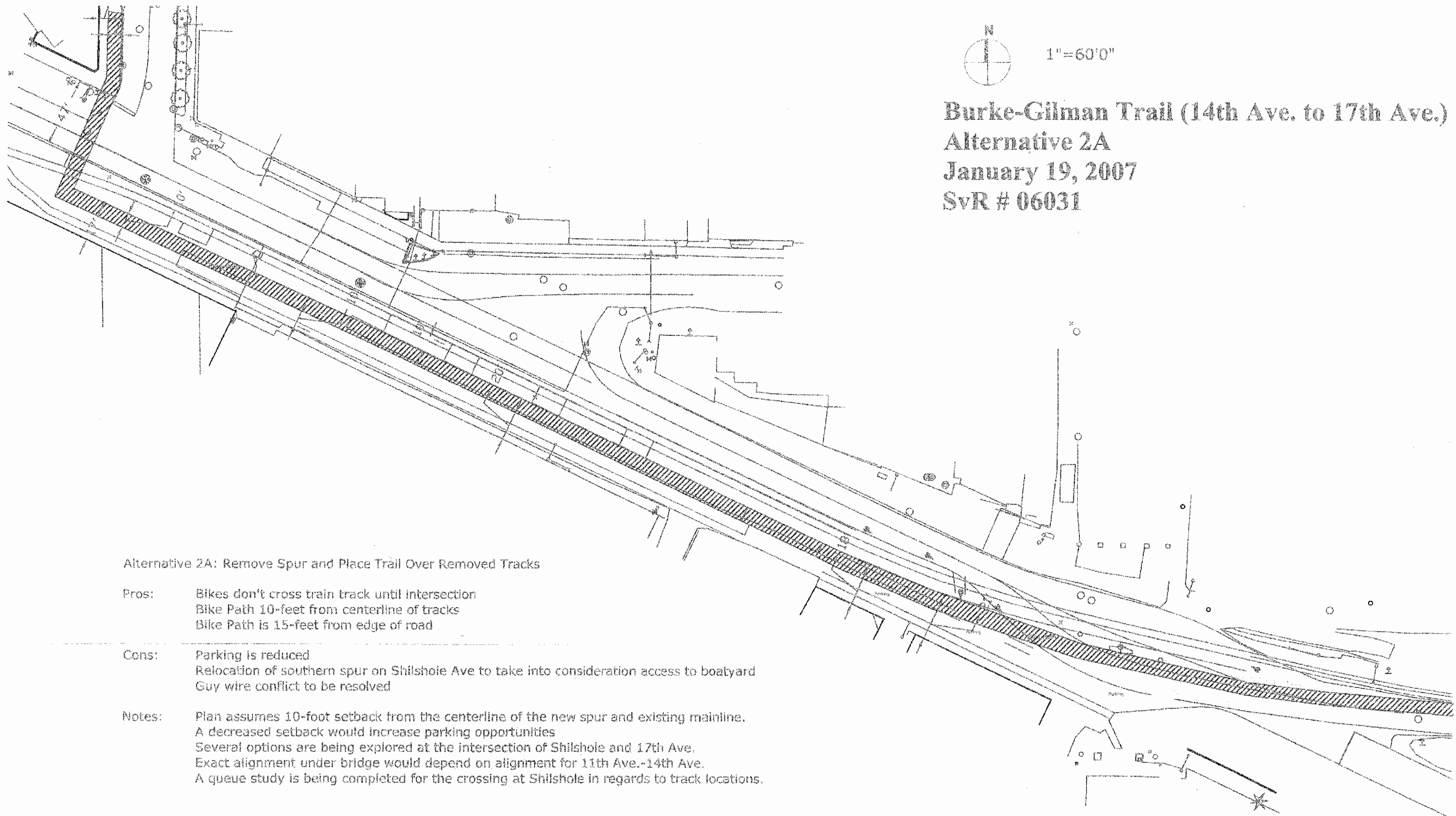
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# Burke-Gilman Trail (14th Ave. to 17th Ave.)

## Alternative 2A

January 19, 2007

SvR # 06031



### Alternative 2A: Remove Spur and Place Trail Over Removed Tracks

Pros: Bikes don't cross train track until intersection  
Bike Path 10-feet from centerline of tracks  
Bike Path is 15-feet from edge of road

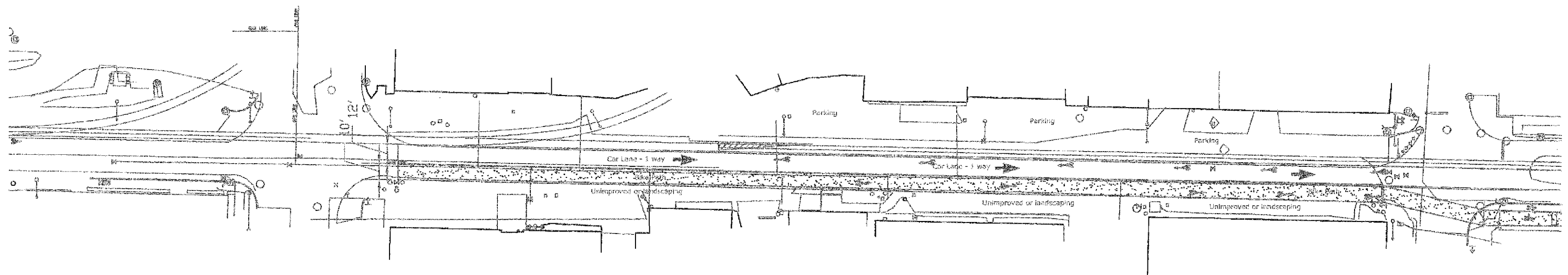
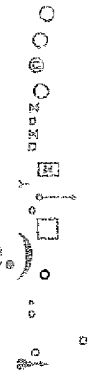
Cons: Parking is reduced  
Relocation of southern spur on Shilshole Ave to take into consideration access to boatyard  
Guy wire conflict to be resolved

Notes: Plan assumes 10-foot setback from the centerline of the new spur and existing mainline.  
A decreased setback would increase parking opportunities  
Several options are being explored at the intersection of Shilshole and 17th Ave.  
Exact alignment under bridge would depend on alignment for 11th Ave.-14th Ave.  
A queue study is being completed for the crossing at Shilshole in regards to track locations.



1"=60'0"

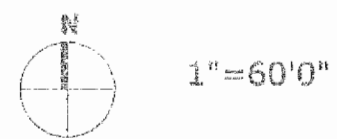
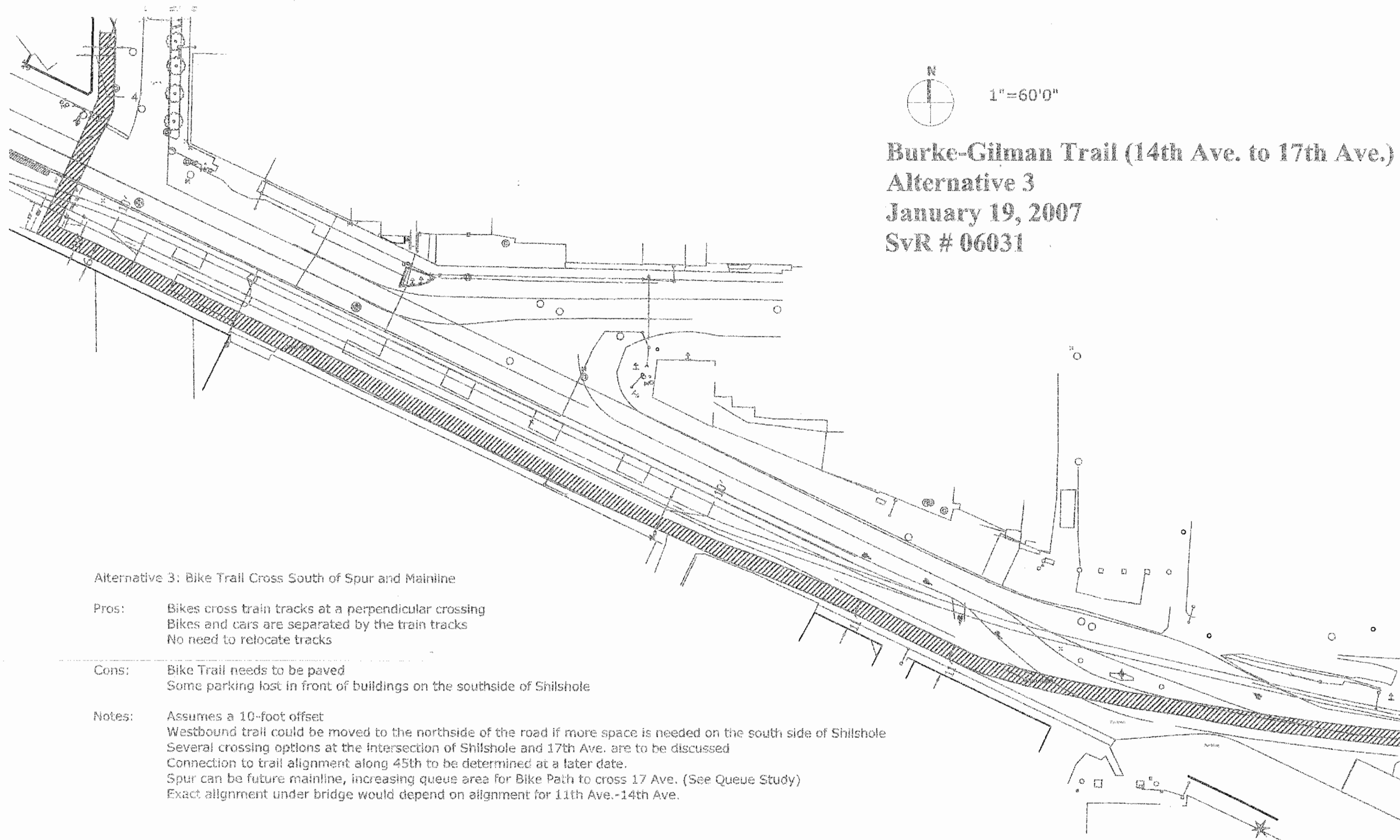
**Burke-Gilman Trail (11th Ave. to 14th Ave.)**  
**Option 3**  
**January 19, 2007**  
**SvR # 06031**



**Option 3: Center One-way Street**

- Pros:**
- Simplifies bike and car crossing at 11th Ave.
  - Bikes are farther away from train tracks
  - Maintains loading dock
  - Does not require a total relocation of utilities on southside of 45th St.

- Cons:**
- A 42 inch wall would need to be constructed to meet AASTHO recommendations



**Burke-Gilman Trail (14th Ave. to 17th Ave.)  
 Alternative 3  
 January 19, 2007  
 SvR # 06031**

**Alternative 3: Bike Trail Cross South of Spur and Mainline**

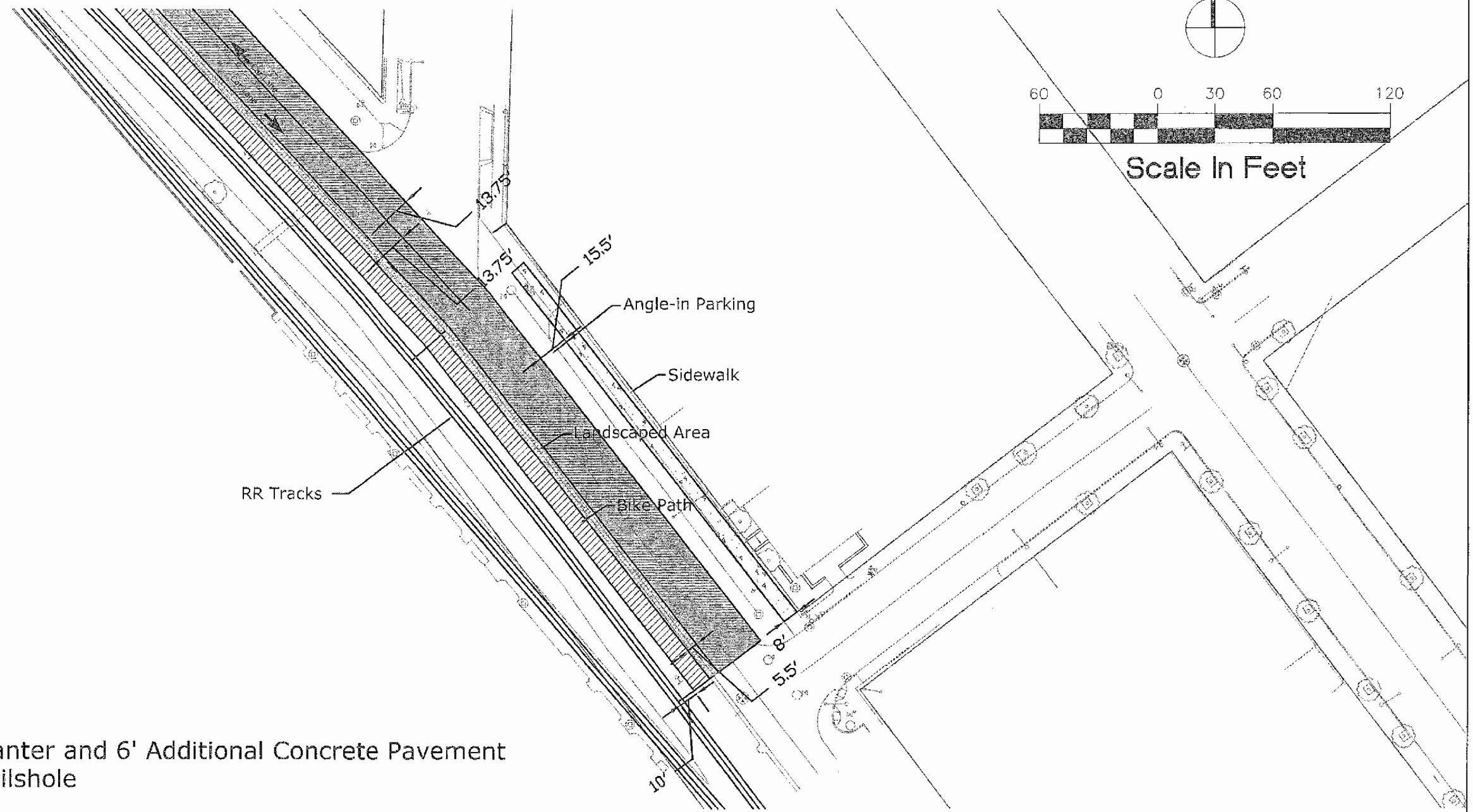
**Pros:** Bikes cross train tracks at a perpendicular crossing  
 Bikes and cars are separated by the train tracks  
 No need to relocate tracks

**Cons:** Bike Trail needs to be paved  
 Some parking lost in front of buildings on the southside of Shilshole

**Notes:** Assumes a 10-foot offset  
 Westbound trail could be moved to the northside of the road if more space is needed on the south side of Shilshole  
 Several crossing options at the intersection of Shilshole and 17th Ave. are to be discussed  
 Connection to trail alignment along 45th to be determined at a later date.  
 Spur can be future mainline, increasing queue area for Bike Path to cross 17 Ave. (See Queue Study)  
 Exact alignment under bridge would depend on alignment for 11th Ave.-14th Ave.



**DRAFT**



Option 3: Standard 5.5' Planter and 6' Additional Concrete Pavement to Eastside of Shilshole

Pros: Travel lanes widened  
Meets AASHTO Guidelines

Cons: Cost of removing concrete on westside of Shilshole and adding concrete to eastside of Shilshole  
Parking reduced on eastside of Shilshole

Plotted: Mar 05, 2007 - 8:23:53am By gibsomp  
File: G:\06031c\BC7\Design\Vernon\_22\_Options3.dwg Layout: Layout1 Layerset:



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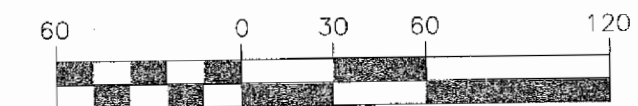
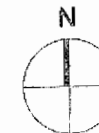
**BURKE-GILMAN TRAIL**

Vernon Ave. to 22 th Ave.

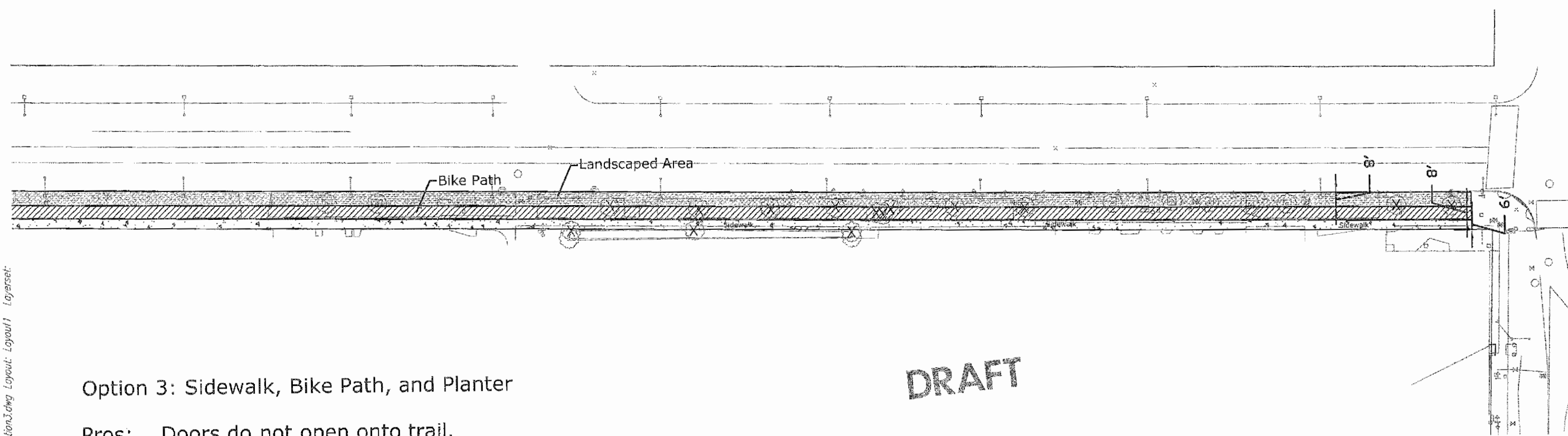
Option 3

SvR # 06031

03/01/07



Scale In Feet



Option 3: Sidewalk, Bike Path, and Planter

- Pros: Doors do not open onto trail.
- Cons: Many trees have to be demolished.  
Bus Shelter needs to be relocated.

Plotted: Mar 05, 2007 - 8:35:47am By glosong  
File: C:\06c\06031c\_BGT\Design\24\_28\_Option3.dwg Layout: Layout1 Layerset:



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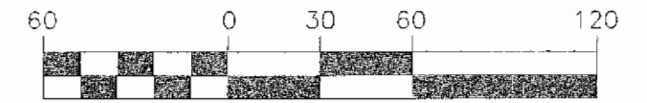


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**BURKE-GILMAN TRAIL**

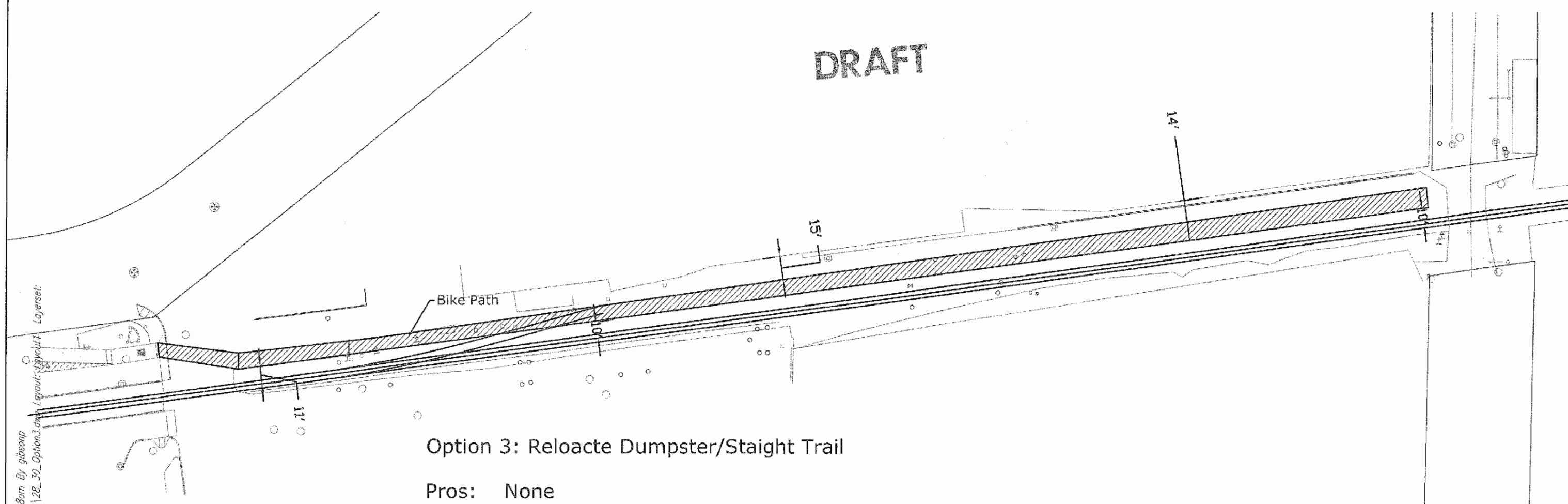
24th Ave. to 28th Ave.  
 Option 3  
 SvR # 06031

03/01/07



Scale In Feet

DRAFT



Option 3: Reloacte Dumpster/Staight Trail

Pros: None

Cons: Dumpster needs to be removed.  
RR Track Spur needs to be removed.

Plotted: Mar 05, 2007 - 8:44:18am By gibsomp  
File: C:\06c\06031c\_BGT\Design\28\_30\_Option3.dwg Layout: SvR.dwg Layer: 1



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BURKE-GILMAN TRAIL

28th Ave. to 30th Ave.

Option 3

SvR # 06031

03/01/07



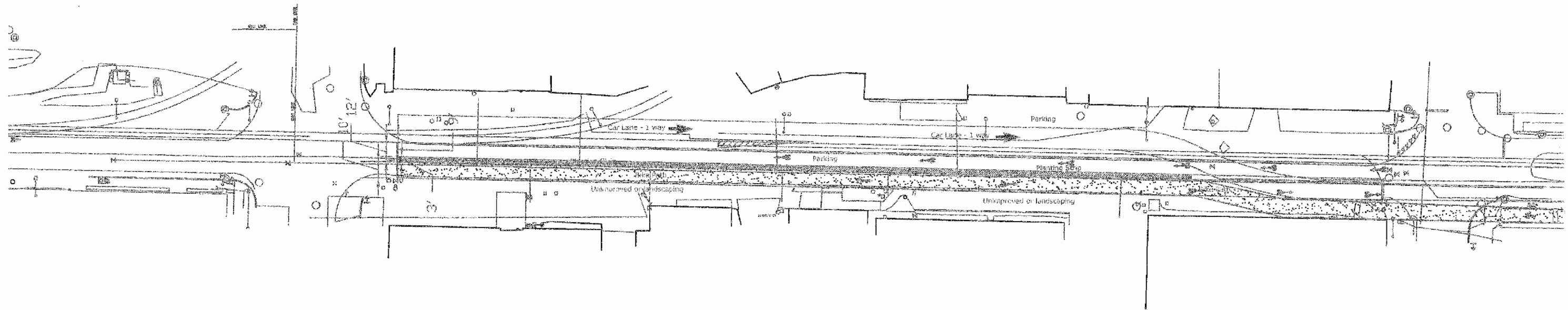
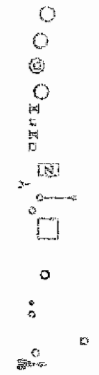
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## Burke-Gilman Trail (11th Ave. to 14th Ave.)

### Option 4

January 19, 2007

SvR # 06031



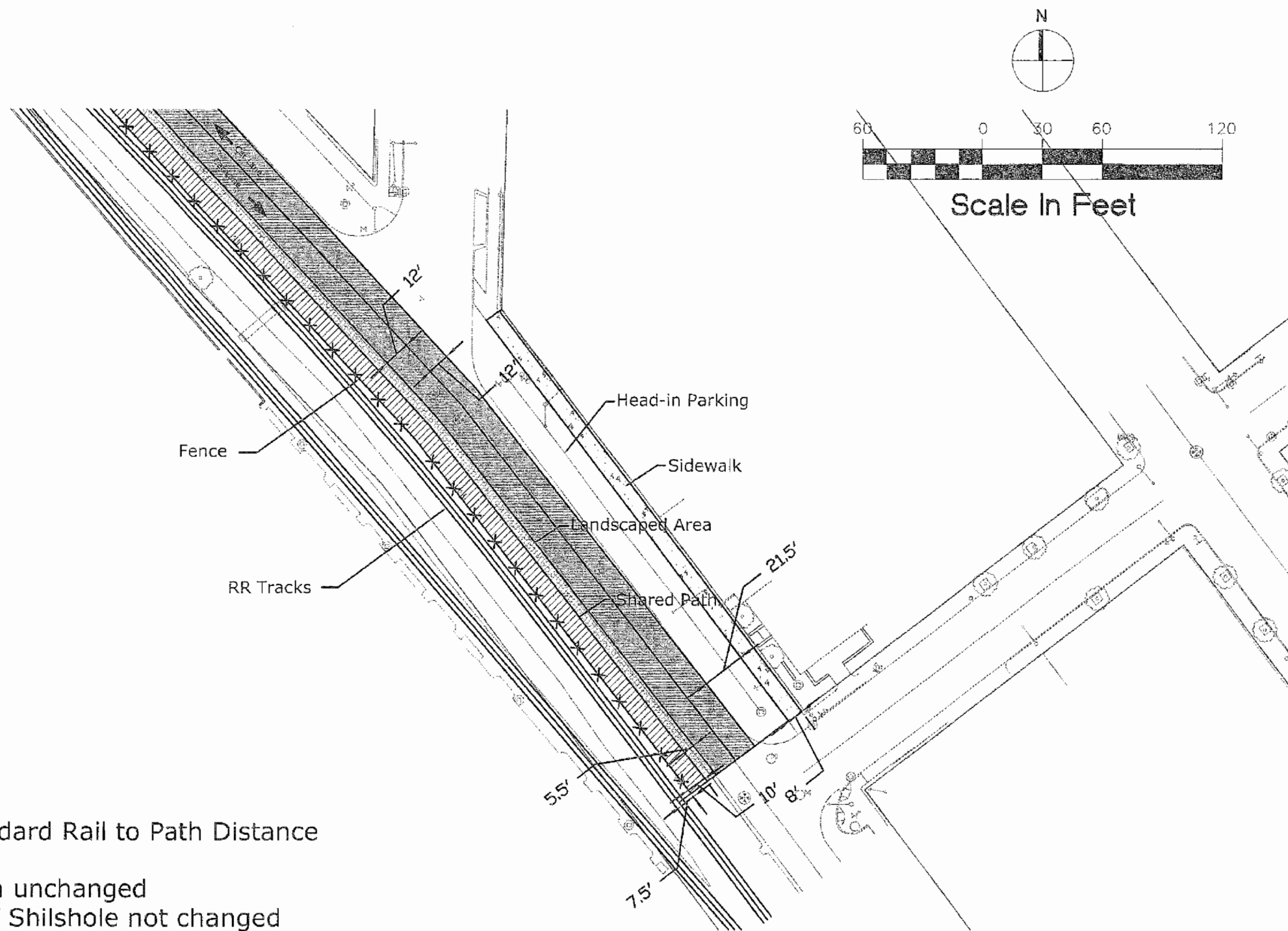
#### Option 4: Parking in Center

- Pros:
- Simplifies bike and car crossing at 11th Ave.
  - Bikes are away from train tracks and car travel lane
  - Organizes parking
  - Separates parked cars and bike path
- Cons:
- Utilities/structures south of 45th St. need to be relocated
  - Parking eliminated from southside businesses
  - Installation of drive lane and drainage on northside of 45th St.

Notes: May be able to reduce size of loading dock to create more room for parking

Plotted: Mar 05, 2007 - 8:26:01am By gibsomp  
File: C:\06c\06031c BGT\Design\Yemon\_22\_Option4.dwg Layout: Layout1 Layerset:

**DRAFT**



**Option 4: Nonstandard Rail to Path Distance**

**Pros:** Road width unchanged  
Eastside of Shilshole not changed

**Cons:** Centerline from center of RR tracks to edge of path is 7.5'.  
Cost to install fence



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**BURKE-GILMAN TRAIL**

**28th Ave. to 30th Ave.**

**Option 4**

**SvR # 06031**

03/01/07



***APPENDIX C***  
***REGULATORY DATABASE REPORT***  
***(ENVIRONMENTAL DATA RESOURCES, INC.)***  
***(CD ATTACHED)***

---



**APPENDIX D**  
**HAZARDOUS MATERIALS TECHNICAL MEMORANDUM**  
**AGENCY COMMENT FORM – COMPLETED BY**  
**SDOT**

---

**Burke Gilman Trail Corridor Project  
AGENCY COMMENT FORM**

Document: HAZARDOUS MATERIALS DISCIPLINE REPORT

Reviewer: DAVE HOOPER - SDOT - 206-684-3751 - david.hooper @seattle.gov

Chapter No.	Page No.	Line No.	Exhibit No.	Priority	Comment	Reviewer	Action Taken by Tech Lead
					General: With input from WSDOT's hazmat person, Tanya Peterson, the format and the information found in the HMDR seems to be sufficient to comply with the "old" Checklist. Below are some specific comments on the doc. Please contact me should you have questions.	DH	-NA-
	1				Include a brief executive summary with bullet points similar to <b>1.0</b> in the Checklist. This is helpful to WSDOT to informed upfront of the findings in the report.	DH	Added Executive Summary
	12				<b>Construction Hazards</b> A SPCC plan is not required for a NPDES permit. A Storm Water Pollution Plan is required.	DH	Corrected to include reference to SWPP
	14	third bullet			SDOT will not necessarily assume cleanup liability for removal of LUST/UST in the ROW. This would only be true should it be proven that the City is the owner of the tanks. Please delete.	DH	Deleted as requested
	14	fourth bullet			SDOT cannot assure that the site will be properly contained after construction is completed so contaminants do not migrate offsite. This is often times impossible. Please delete.	DH	Deleted as requested
	15				<b>How will the Project mitigate unavoidable negative effects</b> It is always anticipated that this may happen. Please modify. See also <b>Page 16, second paragraph.</b>	DH	Changed to indicate best management practices and regulations will be followed to best control, mitigate, or eliminate effects
	15				<b>Recommendations for Further Investigations</b> Phase I and Phase II will be initiated for only for properties acquired by SDOT. Outside investigations are not anticipated. Please modify this sentence.	DH	Modified text as requested
	A-2				Please include summary of actual windshield tour.	DH	Added summary of windshield reconnaissance





***APPENDIX E***  
***WSDOT COMMENT FORM***

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**Burke Gilman Trail Corridor Project**  
**Comment form**

Chapter No	Page No.	Line No.	Exhibit No	Priority	Comment	Reviewer	Action taken by tech lead
	7		Table 2		Disagree that the Ballard oil bulk plant is properly classified as a reasonably predictable site.	TMS	Re-classified as substantially contaminated, edited text to reflect change
	8		Table 2		Map sites 3 and 4 should be linked together and classified as a substantial contaminated site.	TMS	Re-classified as substantially contaminated, edited text to reflect change. Left as two separate sites since Ecology identified sites as independent from one another
	13				<p>The discussion of potential effects is inadequate. We expect to see a discussion centered on the proposed construction. The potential designs are included in Appendix B. Consider, for example, what might the project do that would prevent a liable party from conducting cleanup in the future. The city could become a liable party if they impede future cleanup.</p> <p>There is inadequate discussion of the effects for utilities construction and relocation.</p>	TMS	Updated text with more detailed discussion of impacts of proposed construction.
	15		Bullet 3		Bullet three identifies a Health and Safety Plan to minimize effects of impacts from contaminated soils and groundwater. However, these health effects are not adequately identified in the potential effects section.	TMS	Discussed health effects of contaminants in the potential effects section
	17				Which Standard Specification will be primary for Spill Control Plans? The only reason to see two named is if the city specification supplements WSDOT's specification.	TMS	Changed to only list WSDOT SPCC plan specification

Chapter No	Page No.	Line No.	Exhibit No	Priority	Comment	Reviewer	Action taken by tech lead
	17				The last section which deals with unavoidable negative effects appears awkward. There are multiple subjects included here; dealing with managing contaminated media, worker training, and spills to name a few. The whole section on mitigation needs to be better organized to make it clear what effect is being addressed by what mitigation action.	TMS	Reorganized section to clarify effects being addressed by mitigation action.
	18				It is not clear whether the Phase I report prepared by GeoEngineers made a case for conducting a Phase II investigation for property to be acquired. If the other report recommends another investigation, it should be repeated here. Without due diligence the city may be solely responsible for future cleanup and may not be able to include previous liable parties.	TMS	Updated text to indicate that the Phase I concluded that a Phase II investigation may be prudent to characterize existing conditions at the site.

**Revised Final Hazardous Materials, Technical Memorandum  
Burke Gilman Trail Corridor  
11<sup>th</sup> Ave NW to the Ballard Locks, Seattle WA.  
July 18, 2008**

**Comment Form**

Page No. / Exhibit No.	6/3/08 Comments by TMS on 3/21/08 Draft	Revision Made by Tech Lead/ Comments by TME on 10/2/08	Revision Made 10/9/08
7/ Table 2	Disagree that the Ballard Oil Bulk Plant is properly classified as a reasonably predictable site	<p><b>Revision Made:</b> Revised and moved to Table 2, Substantially Contaminated Properties.</p> <p><b>Suggested Revision:</b> None</p>	None
8/ Table 2	Map sites 3 and 4 should be linked together and classified as a substantial contaminated site	<p><b>Revision Made:</b> Revised and moved to Table 2, Substantially Contaminated. Does not appear to be linked but is identified and a site history is briefly defined.</p> <p><b>Recommendation:</b> A couple sites in the report stated the “site status” was not listed in the Ecology site file at the time of the file review.” However, a quick search identified Ballard Recycling and Sparkle Cleaners as “Active” on the DOE Facility Site Atlas (ID# 2355 and 17554653). An updated on-line Facility Site Atlas search is recommended.</p>	Table 2 and 3, Page 7 and 9 – 13 An on-line Facility Site Atlas search was completed and the tables were updated with the applicable information.
13	The discussion of potential effects is inadequate. We expect to see a discussion centered on the proposed construction. The potential designs are included in Appendix B. Consider, for ex. what might the project do that would prevent a liable party from conducting cleanup in the future. The city could become a liable party if they impede future cleanup. There is inadequate discussion of the effects for utilities construction and relocation.	<p><b>Revision Made:</b> The discussion of potential effects has been briefly modified in paragraph one with subsequent bullet points by listing various construction activities, but still lacks clarity as to the site specific impacts for those sites Identified in Table 2 as substantially contaminated.</p> <p><b>Suggested Revision:</b> Under the “Hazardous Materials Site” section, specifically discuss each site identified as “substantially contaminated” and state in detail how the site impacts the project, based on planned acquisition and construction work (i.e., excavation plans). For example, the Fentron site is listed with a substantially contaminated plume that extends down gradient in a south-southwest direction of the planned Trail alignment. Discuss what acquisition (if any) is planned for this site and if/how planned excavation work may be impacted by this site.</p> <p>For all other sites <u>not</u> considered “Substantially Contaminated,”</p>	Page 14 – 16 Text was added discussing each substantially contaminated site is discussed with regards to specific impacts on the project.

Page No. / Exhibit No.	6/3/08 Comments by TMS on 3/21/08 Draft	Revision Made by Tech Lead/ Comments by TME on 10/2/08	Revision Made 10/9/08
<u>(Rev. Pg. 16)</u>		<p>include a separate sub-heading titled "Other Sites of Concern." This section will apply to the remaining sites in Table 3, and can include the general information that currently exists in the report.</p> <p><b>Revision Made:</b> The liabilities of the city are addressed but are still discussed insufficiently.</p> <p><b>Suggested Revision:</b> Add a Cleanup Liability Section. State that liability can incur when acquiring a contaminated site and when construction causes contamination to spread, become worse or prevent parties from conducting future cleanup. Identify which properties SDOT may inherit cleanup liability through acquisition. Move the added paragraph found under "Construction Hazards" into this new "Cleanup Liability" Section. Then specifically identify sites where construction may impede an existing PRP's future cleanup (if any).</p> <p><b>Revision Made:</b> The discussion of the effects for utilities is again brief and inadequate.</p> <p><b>Suggested Revision:</b> Specifically explain what sites SDOT may potentially encounter impacted media during trenching, particularly those sites identified as substantially contaminated.</p>	<p><b>Page 19 – 20 A cleanup liability section has been added with the information requested.</b></p> <p><b>Page 18 – 19 Discussion of the effects for utilities is expanded to discuss sites where SDOT may potentially encounter impacted media during trenching.</b></p>
<u>Pg. 15 / Bullet 3</u> <u>(Rev. Pg. 15)</u>	<p>Bullet three identifies a Health and Safety Plan to minimize effects of impacts from contaminated soils and groundwater. However, these health effects are not adequately identified in the potential effects section.</p>	<p><b>Revision Made:</b> Potential health effects language was added on page 15, but the text is out of place.</p> <p><b>Suggested Revision:</b> Create a new sub-heading for Potential Health Effects and add this language there.</p>	<p><b>Page 17 Created new sub-heading Potential Health Effects with the referenced language included.</b></p>
17	<p>Which Standard Specification will be primary for Spill Control Plans? The only reason to see two named is if the city specification supplements WSDOT's specification.</p>	<p><b>Revision Made:</b> Revision pg. 19 identifies the use of WSDOT Specification 2006 as the primary guidance for Spill Control Plans.</p> <p><b>Recommendation:</b> The current amended Specification 2008 must be used. The April amendment for the SPCC plan is</p>	<p><b>Page 22 Changed to refer to the 2008 Specification</b></p>

Page No. / Exhibit No.	6/3/08 Comments by TMS on 3/21/08 Draft	Revision Made by Tech Lead/ Comments by TME on 10/2/08	Revision Made 10/9/08
		available at: <a href="http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm">http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm</a>	
<b><u>Pg. 17 (Rev. Pg. 19 &amp; 20)</u></b>	The last section which deals with unavoidable negative effects appears awkward. There are multiple subjects included here; dealing with managing contaminated media, worker training, and spills to name a few. The whole section on mitigation needs to be better organized to make it clear what effect is being addressed by what mitigation action.	<p><b>Revision Made:</b> This section has been modified by organizing <i>general</i> mitigation practices that SDOT will utilize when encountering affected media.</p> <p><b>Suggested Revision:</b> Detail <i>site specific</i> mitigation measures for sites identified as substantially contaminated where the project may encounter unavoidable negative impacts during construction activities.</p>	<b>Page 22 – 24 Site specific mitigation measures for unavoidable negative impacts are now discussed in this section</b>
18	It is not clear whether the Phase I report prepared by GeoEngineers made a case for conducting a Phase II investigation for property to be acquired. If the other report recommends another investigation, it should be repeated here. Without due diligence the city may be solely responsible for future cleanup and may not be able to include previous liable parties.	<p><b>Revision Made:</b> After Completion of the Phase I ESA by GeoEngineers 2007, it was concluded that there is a potential of encountering hazardous materials in the soil and groundwater of the subject area. It is recommended by GeoEngineers that a Phase II be conducted with sampling and testing of the soil and groundwater to help avoid or reduce liabilities that could be encountered when construction begins.</p> <p><b>Suggested Revision:</b> None</p>	None