



**CITY OF KIRKLAND**  
**Department of Public Works**  
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www.ci.kirkland.wa.us

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## MEMORANDUM

**To:** Joan Lieberman Brill, Senior Planner  
**From:** Ray Steiger, P.E., Capital Projects Manager  
**Date:** January 15, 2008  
**Subject:** HCC questions related to the City's Capital Improvement Program (CIP)

Joan,

I have had an opportunity to listen to the questions raised by the Houghton Community Council at their December 19, 2007 meeting, specifically the questions that they raised with regards to the 2008-2013 CIP; I have summarized responses in this memo and attachments.

The questions (to paraphrase somewhat) were as follows:

1. What is the linkage between the street improvements that are identified in the (Figure T-6) Transportation Improvement list in the Comprehensive (Comp) Plan and the non-motorized transportation plan (NMTP)? Is there a link between the City's bicycle Level of Service (LOS) and the transportation improvements?
2. In the projects that are listed in Table T-5 and shown on Figure T-6, there seems to be no reference to "green options" or Low Impact Development (LID) techniques; does this mean that they aren't being considered?
3. Why are most of the identified bikelane projects unfunded? Will this list allow us to meet our LOS for bikelanes? And what is the process for prioritizing projects?
4. In City projects, what is the lead time between the start of design and construction?
5. What is the threshold for when a project goes out to bid verses an annual process (specific reference was made to the annual street preservation program)?

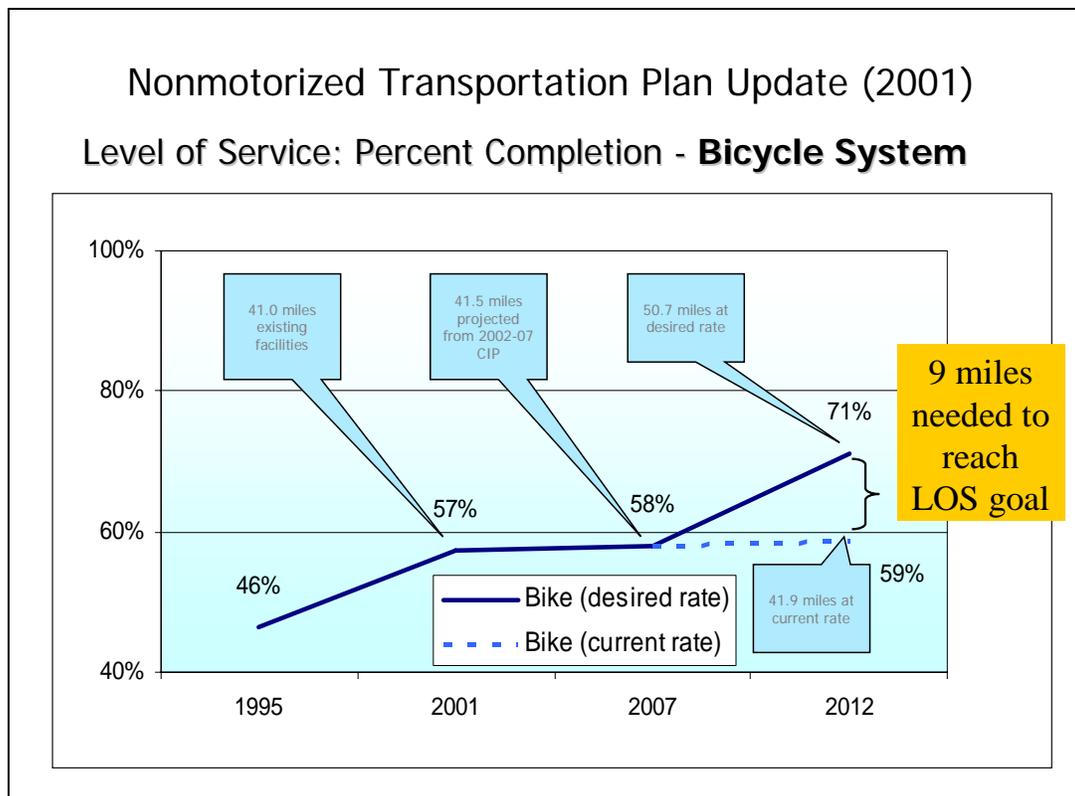
I refer to attachments with this memo for responses to some of the questions, and as you pointed out at the meeting, they are all very good questions. This HCC has touched on a series of issues that we are right in the middle of developing and implementing into our way of looking at the CIP.

1. The street improvements shown on the transportation list are a combination of those improvements that are essential for the vehicular LOS (they are required to meet concurrency), commercial circulation projects that were identified in the Totem Lake Plan, various intersection improvements, and two arterial improvements (124<sup>th</sup> Ave NE, and 132<sup>nd</sup> Ave NE). The NMTP, currently undergoing its third update since being created in 1995, identifies bike routes throughout the City. Some of the identified bike routes are existing and some are planned; Figure T-2 in the Comp Plan replicates the bicycle routes that are identified in the NMTP.

As Public Works staff assembles the scope of work for a street improvement, the identified non-motorized routes are incorporated into the project scope. This coordination takes place at the planning stages of the project and is a matter of general practice during the CIP process. A second indicator of the strong connection between the City's goal of providing multiple transportation options is the 2006 adopted policy (codified via Ordinance #4061) referred to as the City's Complete Streets policy (Attachment A). This policy calls for the planning, development, and construction of pedestrian and bicycle facilities as the norm in all transportation facilities.

Unlike vehicular LOS, the bicycle LOS is not a *requirement* under the City's comprehensive plan. If vehicular LOS is not achieved, then a number of possible actions could ensue: development may not be able to be permitted, additional projects may need to be installed prior to allowing development, or others. This is due to the fact that vehicular LOS is a concurrency issue; the facilities must be in place to accommodate growth. Bicycle LOS on the other hand is a goal – expenditures toward this goal are encouraged at a level that will allow the City to attain the goal. If however the LOS is not met, there would not be the requirements to alter current development. That being said, the bicycle LOS is improved with the construction of many of the identified transportation improvements.

One of the results of the update of the NMTP regularly is to assemble a report card on the progress of the efforts along the goal of bicycle LOS. The attached graph, somewhat outdated, is from the 2001 update of the NMTP; it is an indicator of progress and anticipated outcome based on the 2002-2007 CIP. This report card is again being updated as a part of the current NMTP update.



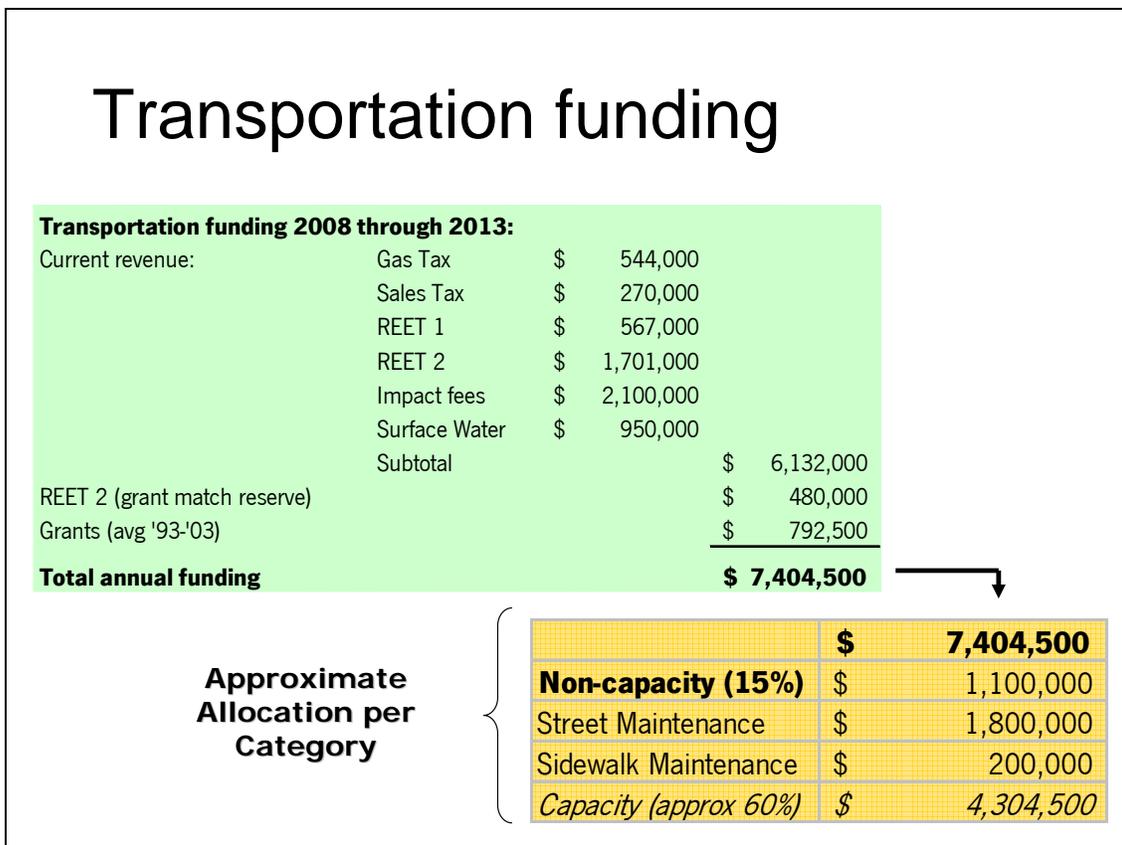
There are close links between the City's street improvements and the non-motorized plan. These links occur early in project development and post construction as evidenced by the periodic report card of progress.

2. The concept of LID techniques during planning and construction of transportation improvements has advanced rapidly in the last few years. The opportunity to utilize sustainable practices, "green" options, or other descriptions of this approach may include, among others, allowing surface water to infiltrate into the soils, using recycled

materials for construction, selecting drought tolerant planting materials is becoming more and more viable as research and advances are made. In 2006, the City funded an analysis of opportunities to use LID elements in the projects that are identified in the 2008-2013 CIP. A copy of the introduction and purpose of the report is included as Attachment B; the full report identifies locations, constraints, and pros and cons of the approach and will be presented to City Council this spring.

Project descriptions that are used in Table T-5 and shown on Figure T-6 are not full descriptions of the projects; full descriptions are shown in the CIP document. The CIP document has a number of references to “evaluating the use of Low Impact Development standards”.

- The City’s transportation projects typically all compete for the same funding. Some competitive grants are available at a State and Federal level specifically for bike lanes and bike facilities, and the City actively pursues those grants. As mentioned in the response to question 1 previously, the City is required to meet the vehicular LOS, and thus projects that allow the City to meet the vehicular (capacity) LOS receive the highest priority for City funding. Following capacity projects, maintenance needs addressed through the Annual Street Preservation and Sidewalk Maintenance Programs are funded at an established amount, and the remaining funding is apportioned to all non-motorized (non-capacity) facilities including sidewalks and bike lanes. The table below indicates funding available for each of the three main transportation categories (capacity, maintenance, and non-capacity) for the current CIP timeframe:



Among non-capacity projects, sidewalks typically receive a higher priority than bike lanes (Note: when sidewalks are designed and constructed along an identified bike route, the bike lane width will be accommodated in the project). The prioritization of all non-capacity projects is done using a set of criteria developed by a citizen group in 1995 and updated in 1997; the criteria are available for review at the City’s website:

[http://www.ci.kirkland.wa.us/depart/Public\\_Works/Transportation\\_Streets/Transportation\\_Project\\_Evaluation.htm](http://www.ci.kirkland.wa.us/depart/Public_Works/Transportation_Streets/Transportation_Project_Evaluation.htm)

This prioritization is reviewed every two years as a part of the CIP process, and all projects are re-evaluated and project ranking is updated. Based on the existing prioritization process, with funding as it currently stands, it is unlikely that the City will reach the bicycle LOS goal that is currently identified in the 2001 NMTP.

4. The lead time between a project's start of design and actual construction is variable. Larger projects that involve federal funding or significant right of way acquisition may last four to five years. Smaller projects such as sidewalk repairs or small utility replacement projects may be completed in a single year. As a general reference, the CIP document lists funding for given phases of a project; information in the CIP indicates the year a project is started, prior funding (if publication of the document is beyond the project start year), and a breakdown by phase of a project. Typically, during the design of a given project, an open house or project information will be distributed to the surrounding or impacted properties. A generic project schedule is attached as Attachment C.
  
5. Project construction is accomplished in three ways: private development, City maintenance personnel, and the public bid process. Private development is usually a negotiated contract amount between an owner and a contractor; the City only regulates standards and quality of work on the design, permitting, and construction. City maintenance personnel can legally construct up to 10% of the City's Capital Project's budget in a given year (Revised Code of Washington 35.22.620). The work to be done by City forces is identified during the bi-annual budget process and is structured around historic practices and Council directives. Modifications to this maintenance LOS must be approved by the City Council and are open to public comment and review. Coordination with CIP projects by City forces is done as a matter of practice. For the Annual Street Preservation Program, once a list is developed by the Engineering staff, maintenance personnel will upgrade utility services, evaluate storm sewer piping, and perform structural patching of potholes, cracks, "alligatoring", and other distressed areas. The City will then perform the public bid process.

There are multiple thresholds to consider when determining a project award process to follow. In general, the City will utilize a "small works roster" for projects less than \$200,000 in estimated construction cost, and a public bid process for projects greater than \$200,000. The Small Works Roster is a listing of all eligible contractors who perform a particular line of work. It identifies their capabilities and key contact information. Using this list which is jointly maintained and used by a number of local municipalities, Staff will send information to prospective bidders for the project. Like the public bid process, contracts are awarded to the lowest responsible contractor. The most significant difference between the Small Works Roster process and the traditional public bid process is approximately a two to three week public advertisement period that is required with bidding. The Annual Street Preservation Program currently has a construction budget of \$1,300,000 and thus utilizes the public bid process.

Attachments (3)

Council Meeting: 10/03/2006  
Agenda: Unfinished Business  
Item #: 10. a.

ORDINANCE NO. 4061

AN ORDINANCE OF THE CITY OF KIRKLAND RELATING TO BICYCLE AND PEDESTRIAN WAYS ALONG TRANSPORTATION FACILITIES.

The City Council of the City of Kirkland do ordain as follows:

Section 1. The Kirkland Municipal Code is amended by the addition of a new Section 19.08.055 to read as follows:

**19.08.055 Bicycle and pedestrian ways along transportation facilities.**

(1) Bicycle and pedestrian ways shall be accommodated in the planning, development and construction of transportation facilities, including the incorporation of such ways into transportation plans and programs.

(2) Notwithstanding that provision of paragraph (1), bicycle and pedestrian ways are not required to be established:

- (a) Where their establishment would be contrary to public safety;
- (b) When the cost would be excessively disproportionate to the need or probable use;
- (c) Where there is no identified need;
- (d) Where the establishment would violate Comprehensive Plan policies; or
- (e) In instances where a documented exception is granted by the Public Works Director.

Passed by majority vote of the Kirkland City Council in open meeting this \_\_\_\_ day of \_\_\_\_\_, 2006.

Signed in authentication thereof this \_\_\_\_ day of \_\_\_\_\_, 2006.

\_\_\_\_\_  
MAYOR

Attest:

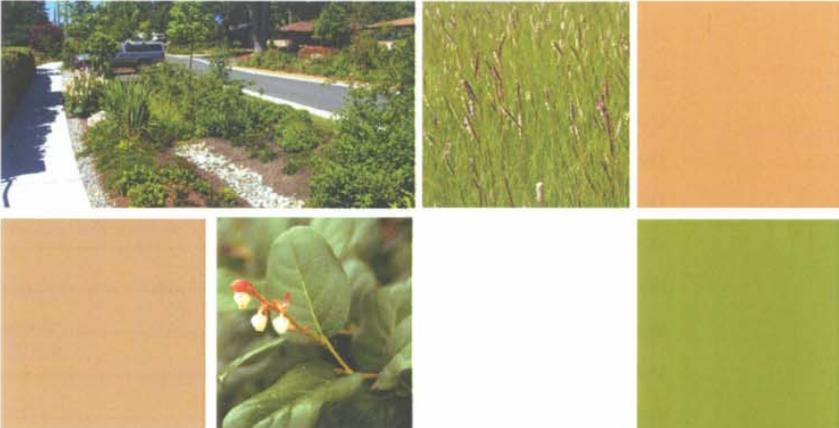
\_\_\_\_\_  
City Clerk

Approved as to Form:

\_\_\_\_\_  
City Attorney

# Low Impact Development (LID) Feasibility Study

Analysis of opportunities and constraints to incorporate LID elements into Capital Improvement Program (CIP) projects in Kirkland, Washington



Prepared for the City of Kirkland  
by SvR Design Company  
October 30, 2007



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## Introduction



### Project Summary

City of Kirkland staff and SvR Design Company reviewed the upcoming Transportation Projects in the Capital Improvement Program (CIP) for opportunities to incorporate Low Impact Development elements into each project. For example, if a project description included street widening or installation of a sidewalk, SvR evaluated the opportunity to include porous pavements or bioretention swales within the right-of-way. The review of the projects not only considered the transportation elements listed in the CIP transportation project descriptions but also the stormwater benefit, pedestrian and other non-motorized users, and the information and demonstration potential of the recommended elements.

City of Kirkland staff selected the following CIP transportation projects for review:

- 116<sup>th</sup> Avenue NE sidewalk, bicycle lanes, and equestrian trail (CIP Project #: NM 0001 000)
- NE 100<sup>th</sup> Street at Spinney Homestead Park sidewalk (CIP Project #: NM 0034 000)
- 116<sup>th</sup> Avenue NE (Highlands)sidewalk: (CIP Project #: NM 0044 000)
- 13<sup>th</sup> Avenue sidewalk (CIP Project #: NM 0054 000)
- 122<sup>nd</sup> Avenue NE sidewalk (CIP Project#: NM 0055 000)
- 6<sup>th</sup> Street sidewalk (CIP Project #: NM 0059 000)
- 99<sup>th</sup> Place NE/100<sup>th</sup> Avenue NE sidewalk (CIP Project #: NM 0060 000)
- Park Lane pedestrian corridor enhancements (CIP Project #: NM 0064 000)
- Central Way pedestrian enhancements (CIP Project #: NM 0065 000)
- 120<sup>th</sup> Avenue NE roadway improvements (CIP Project #: ST 0063 000)

### What is Low Impact Development?

Low Impact Development (LID) is an approach to stormwater management that integrates conservation of natural site features with small scale engineered landscape elements. These elements are designed to emulate natural hydrological and ecological processes to reduce water flows and improve water quality. Small LID elements can be distributed over residential, commercial, and/or industrial sites in order to further reduce peak water flows and provide water quality treatment (Puget Sound Action Team [PSAT], Washington State University [WSU], 2005).

Through incorporation of low impact development strategies, we attempt to mimic the natural ecosystem in the City of Kirkland by promoting natural vegetative processes including evaporation, transpiration, and infiltration of stormwater. By treating these elements *in situ*, the City of Kirkland has the potential to recreate the functional storage of and treatment that is supplied by native vegetation or historic forested conditions, while promoting a vibrant economy, creating healthy and aesthetically pleasing spaces for its residents, and protecting the ecology of the Lake Washington basin.



Bioretention system during large storm event at High Point Redevelopment, Seattle

### Why is LID important?

Over the last 25 years, Western Washington has seen rapid development within urban areas. As more trees and native vegetation areas are replaced with roadways, shopping centers, and housing developments to support the growth, new impervious surfaces increase the stormwater runoff and pollutants into nearby water bodies. For example, during a storm event in a developed area, water levels may rise rapidly due to a reduced amount of pervious surfaces, changes to soil structure and lack of vegetation which results in a surge of stormwater conveyed via conventional systems to discharge points in streams and lakes. In such storms, pollutants such as phosphorous, nitrogen, bacteria, heavy metals, hydrocarbons (i.e. oil and grease) are transported to aquatic ecosystems and can have impacts on plant, animal, and human health and activities (PSAT, WSU, 2005).

The LID approach emphasizes a distributed, "top-of-the-pipe" strategy to stormwater management by reducing water flow and providing treatment closer to the source of stormwater runoff. Conventional stormwater management tools utilize hard-surfaced, often subterranean structures to collect and rapidly convey stormwater from residential and commercial development to central control ponds for treatment and detention and/or direct discharge points in streams and lakes, often resulting in severe erosion and the transfer of pollutants to these discharge locations (PSAT, WSU, 2005).

## Introduction

### Why incorporate LID in Capital Improvement Program (CIP) projects?

An LID approach to capital improvement programs works to control the volume of stormwater by integrating site planning and stormwater management from the beginning of the design process of a project preserve a more hydrologically functional landscape (PSAT, WSU, 2005). Through an understanding of the fundamental functions of low impact development, a variety of strategies can be deployed at a small scale and often with modest project costs. For municipal CIP projects, this approach to building and infrastructure development will rely on solutions that protect and restore native soil and vegetation, which creates an overall cityscape that is more beautiful, environmentally sustainable, and healthy than using other conventional approaches. The City of Kirkland Natural Resource Management Plan and the Kirkland City Council Philosophy of Environmental Stewardship support LID in City of Kirkland projects.

The City of Kirkland is not alone in its work to investigate the potential to include LID in its CIP projects. For example, the Department of Planning and Development in the City of Seattle is currently working on a "Sustainable Infrastructure Initiative" that supports cross-departmental collaboration to incorporate a number of strategies to promote sustainability in its CIP projects, ranging from the inclusion of LID within public right-of-ways to water "swapping" to the reduction of carbon emissions in its ports (Presentation, Steve Moddemeyer, 7/12/2007). Seattle's Sustainable Infrastructure Initiative builds on the prior enactment of the "Green Factor" point-based system in which developers can choose a variety of options to meet City of Seattle landscaping requirements. Bonus points are provided for landscape proposals that include rain water harvesting, low-water use plants, larger trees, tree preservation, green roofs and green walls (City of Seattle, 2007). Prior to the "Green Factor" ordinance, SvR Design Company provided consultation to the City of Seattle in publishing a "Client Assistance Memo" regarding Green Parking Lot design that utilizes permeable pavement and natural drainage systems (City of Seattle, 2005).



Case Studies of street projects in Seattle that included LID systems versus conventional systems suggest that an LID approach to stormwater management can not only provide reductions in stormwater volumes as well as improvements in water quality, but also decrease project costs. Table 1 provides a cost comparison of street projects with LID and conventional systems.

**Table 1** Cost comparisons for LID natural drainage systems (NDS, i.e. a series of LID elements) and conventional drainage designs

Street Type	Local Street with Bioretention Swales (SEA Project) (LID)	Local Street (conventional)	Collector Street with a series of stair-stepping Bioretention Swales (Cascade Project) (LID)	Collector Street (conventional)	Broadview Green Grid (incorporates SEA & Cascade type designs) (LID)
Objectives & Measures					
Transportation & aesthetics	<ul style="list-style-type: none"> <li>1 sidewalk per block</li> <li>New street paving</li> <li>Traffic calming</li> <li>Enhanced landscaping</li> </ul>	<ul style="list-style-type: none"> <li>2 sidewalks per block</li> <li>New street paving</li> <li>No traffic calming</li> <li>Conventional landscaping</li> </ul>	<ul style="list-style-type: none"> <li>No street improvement</li> <li>Enhanced landscaping</li> </ul>	<ul style="list-style-type: none"> <li>No street improvement</li> <li>Conventional landscaping</li> </ul>	<ul style="list-style-type: none"> <li>1 sidewalk per block</li> <li>New paving</li> <li>Enhanced landscaping</li> </ul>
Stormwater management	<ul style="list-style-type: none"> <li>Higher protection for aquatic biota</li> <li>More closely mimics natural hydrology</li> <li>Bio-remediate pollutants</li> </ul>	<ul style="list-style-type: none"> <li>Flood protection focus</li> <li>Water quality treatment</li> </ul>	<ul style="list-style-type: none"> <li>Improved water quality treatment</li> <li>Some flood protection</li> </ul>	<ul style="list-style-type: none"> <li>Flood protection focus</li> <li>Water quality treatment</li> </ul>	<ul style="list-style-type: none"> <li>Higher water quality and aquatic biota protection</li> <li>Some flood protection</li> </ul>
% impervious cover	35%	35%	35%	35%	35%
Cost per block (330 linear feet)	\$325,000	\$425,000	\$285,000	\$520,400	\$280,000

Based on case studies of the Seattle Public Utilities' Street Edge Alternatives (SEA) Street project on 2<sup>nd</sup> Ave. NW and 110th Cascade Project in Seattle, Washington.

\*2000-2003 dollars

Source: Adapted from Cost Analysis of Natural vs. Traditional Drainage Systems Meeting NDS Stormwater Goals (2004) in (PSAT, WSU, 2005, p.89).

## Introduction



Washington's neighbors to the south are also finding ways to pair LID with CIP projects. The San Francisco Public Utilities Commission (SFPUC) expects to craft an evaluation process to review capital improvement projects for flood mitigation to determine the feasibility of LID approaches as part of its 5-year CIP program (SFPUC, 2007). Portland, Oregon has taken an even more comprehensive approach to LID by adopting a "Green Streets Policy" in April, 2007 that "directs City Bureaus and agencies to cooperatively plan and implement Green Streets as an integral part of the City's maintenance, installation, and improvement programs for its infrastructure located in the public right of way, and to integrate the Green Street Policy into the City's Comprehensive Plan, Transportation System Plan, and Citywide Systems Plan" (City of Portland, Auditor's Office, 2007). In passing this resolution, the Portland City Council recognized that "60 to 70 % of Portland stormwater is attributable to paved streets and runoff directed from private property and concentrated in the public right of way" and streets with LID elements are "an effective way to help manage stormwater volume and water quality". Portland's Green Streets Policy emphasizes the need for "identifying and evaluating opportunities to partner" to coordinate land use planning and capital improvement projects as well as to encourage cross-bureau collaboration in planning (City of Portland, Auditor's Office, 2007).

In addition to the inclusion of LID in CIP projects, a number of cities in Washington, including Kirkland, have adopted ordinances and/or revised their comprehensive plans to promote and/or require LID in private development (City of Kirkland, 2007, see Appendix A) (PSAT, 2000). For example, the City of Issaquah revised its municipal code to allow "deviations from stormwater design standards to achieve 'low impervious surface development.'" Issaquah's municipal code also provides up to a 50 percent reduction in stormwater utility fees for a project that infiltrates 100 percent of its stormwater. Employing more of an encouragement approach, the cities of Lacey and Tumwater have adopted ordinances which promote voluntary preservation of 60-65 percent of natural habitat or forested areas in developments. In order to achieve goals of "zero effect drainage," the City of Lacey will "grant administrative variances from traditional standards to achieve the ordinance's goal," including "constructing narrower roads without curb and gutter" and "using pervious paving systems." Island County adopted a stormwater ordinance that permits developers to include LID in their projects using design standards based on *Low Impact Development Design Strategies—An Integrated Design Approach*, Prince Georges County, Maryland, 2000. While the City of Issaquah offers incentives for LID and Lacey and Tumwater encourage the voluntary inclusion of LID in projects, the City of Olympia *requires* LID in projects within a specific drainage basin. Some of Olympia's LID regulations include tree protection and replacement requirements, impervious surface limits, minimum tree density requirements, allowances for increased sidewalk planter widths (up to 25'), and matching post-development stormwater discharge rates to pre-development discharge rates (PSAT, 2000).

The examples of LID incorporated both in CIP and in private development projects suggest that this approach to stormwater management is gaining greater acceptance and implementation. The next section provides more detail about a number of specific elements that comprise LID.

### LID in commercial areas



Vine Street, Seattle (before)



Vine Street, Seattle - Cistern Steps (after)



Vine Street, Seattle - Cistern Steps (after)

### LID in residential areas



Highpoint, Seattle (before)



Highpoint Redevelopment  
(Bioretention swales & porous pavement) (after)



Highpoint Redevelopment  
(Bioretention swales) (after)

Attachment C

ID	Task Name	Duration	Start	Finish	4, 2007		Otr 1, 2008			Otr 2, 2008			Otr 3, 2008			Otr 4, 2008			Otr 1, 2009			Otr 2, 20	
					Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
3	Consultant selection	10 days	Fri 11/23/07	Thu 12/6/07																			
4	Consultant contract negotiation	15 days	Fri 12/7/07	Thu 12/27/07																			
5	Consultant NTP	0 days	Tue 1/8/08	Tue 1/8/08																			
6	Survey	10 days	Tue 1/22/08	Mon 2/4/08																			
7	30% design/engineer's estimate	20 days	Tue 2/5/08	Mon 3/3/08																			
8	RFI from Planning	0 days	Fri 2/8/08	Fri 2/8/08																			
9	Planning review of project	15 days	Mon 2/11/08	Fri 2/29/08																			
10	SEPA process	20 days	Mon 3/3/08	Fri 3/28/08																			
11	SEPA determination by Planning	0 days	Fri 3/28/08	Fri 3/28/08																			
12	ROW needs determined/obtained	5 days	Wed 2/27/08	Tue 3/4/08																			
13	public meeting(s)	0 days	Mon 3/3/08	Mon 3/3/08																			
14	60% design/engineer's estimate	10 days	Tue 3/4/08	Mon 3/17/08																			
15	90% design/engineer's estimate	10 days	Tue 3/18/08	Mon 3/31/08																			
16	Final PS&E	20 days	Tue 4/1/08	Mon 4/28/08																			
17	Council authorize to bid	0 days	Tue 5/6/08	Tue 5/6/08																			
18	Bid opening	0 days	Mon 6/2/08	Mon 6/2/08																			
19	Council award contract	0 days	Tue 6/17/08	Tue 6/17/08																			
20	Contractor contract executed	20 days	Tue 6/17/08	Mon 7/14/08																			
21	Pre-construction meeting	0 days	Mon 6/30/08	Mon 6/30/08																			
22	Contractor NTP	0 days	Mon 7/14/08	Mon 7/14/08																			
23	Construction	21 wks	Tue 7/29/08	Mon 12/22/08																			
24	Signal pole/controller submittal	0 days	Mon 8/4/08	Mon 8/4/08																			
25	City review/approval	10 days	Tue 8/5/08	Mon 8/18/08																			
26	Signal pole/order/delivery	12 wks	Tue 8/19/08	Mon 11/10/08																			
27	Substantial completion (letter)	0 days	Mon 12/22/08	Mon 12/22/08																			
28	Punch-list	15 days	Tue 12/23/08	Mon 1/12/09																			
29	Construction completed	0 days	Mon 1/12/09	Mon 1/12/09																			
30	Council accept work	0 days	Mon 1/26/09	Mon 1/26/09																			

