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Portland Bureau of Environmental Services

From: Tom Puttman, PE, AICP, LEED AP

RE: FLIP Green Infrastructure Opportunities and Concepts

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1. Relevant Policies, Programs and Plans

THE PORTLAND PLAN

The result of more than two years of research, workshops and meetings, the Portland Plan presents the strategic roadmap to help Portland thrive into the future. The plan's three integrated strategies and framework for advancing equity were designed to help realize the vision of a prosperous, educated, healthy and equitable Portland.

PORTLAND WATERSHED MANAGEMENT PLAN

Portland's Watershed Plan describes the approach the city uses to evaluate watershed conditions and implement projects to improve watershed health. FLIP has the potential to recommend specific watershed and stormwater management strategies to help achieve Watershed Plan goals of protecting natural resources, restoring critical ecosystems, and implementing stormwater solutions that integrate the urban area with the natural environment.

PORTLAND CLIMATE ACTION PLAN

Portland's roadmap to cut carbon emissions 40 percent by 2030 and 80 percent by 2050 (compared to 1990 levels). The plan builds upon a legacy of forward-thinking climate protection initiatives that have resulted in significant total and per person reductions in local carbon emissions. Objective 14 of the plan seeks to expand the urban forest canopy to cover 1/3 of Portland, and at least 50% of total stream and rive length in the city meet urban water temperature goals as an indicator of watershed health.

JOHNSON CREEK RESTORATION PLAN

Focused on the entire 52-square mile watershed, the Johnson Creek Restoration Plan is a call to action for watershed stakeholders to cooperate in implementing projects that achieve multiple objectives, such as reducing nuisance flooding, increasing water quality, and improving fish and wildlife habitat. The plan acknowledges the influence of people in creating the current watershed conditions and recognizes their role in ensuring the plan's goals and implementation.

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Watershed restoration is expected to evolve over a period of years to a more naturally functioning system that meets ecological and human needs and benefits both current and future residents.

PORTLAND STORMWATER MANAGEMENT MANUAL

Portland's Stormwater Management Manual (SWMM) is a technical document that outlines the City's stormwater management requirements. The requirements defined in the manual apply to all development and redevelopment projects within the City on both private and public property. Portland's approach to stormwater management emphasizes the use of vegetated surface facilities to treat and infiltrate stormwater on the property where the stormwater runoff is created. Infiltrating stormwater onsite with vegetated surface facilities is a multi-objective strategy that provides a number of benefits including but not limited to pollution reduction, volume and peak flow reduction, and groundwater recharge. These benefits play a critical role in protecting stormwater infrastructure and improving watershed health.

The SWMM complements and supports the City's Portland Watershed Management Plan, System Plan, Revegetation Program, Greenstreets Program, and other City standards and practices.

FOSTER GREEN ECODISTRICT ASSESSMENT

Based on the Portland Sustainability Institute's EcoDistrict Framework, the Foster Green EcoDistrict Assessment outlined recommended goals and strategies for distinct performance areas including social cohesion, equitable development, habitat & ecosystem function, access and mobility, materials management, energy, air quality and carbon, and water.

2. Relevant Planned Capital Improvements (5-year)

Approximately \$20M in capital improvements are planned over the next five years which could benefit green infrastructure. Improvements include:

BUREAU OF ENVIRONMENTAL SERVICES

- Freeway Lands Flood Mitigation Funding = \$8,000,000
- Various Stormwater Improvements = \$2,000,000 - 3,000,000

PARKS AND RECREATION

None.

BUREAU OF TRANSPORTATION

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- Foster Road Streetscape Plan - Currently unfunded.
- Foster Road Pedestrian Safety Improvements - \$10,000,000

3. Green Infrastructure Goals

SUSTAINABLE STORMWATER MANAGEMENT - EIA

Effective impervious area (EIA) is the impervious surface area that is directly connected to the stormwater management system (e.g., roof downspouts, parking lot inlets, or street inlets that are piped to a storm sewer or open channel). Impervious surface areas that flow onto pervious areas are considered “ineffective” (e.g., roof downspouts disconnected to landscaping, parking lots draining to swales, and streets draining to green streets). While they may generate runoff during very large events, they greatly reduce runoff for the more frequent, smaller events that can be the primary cause of erosion and flashiness in streams.

Much research has been done investigating the impacts of impervious area on stream function. For developing areas, it has been established that effective impervious area of more than 10% in the drainage basin, leads to channel instability and reduced habitat value.

SUSTAINABLE STORMWATER MANAGEMENT - GREEN FACTOR

Effective impervious area alone will not ensure a green Foster Corridor. However managing impervious area with green infrastructure such as rain gardens, stormwater planters, pervious pavement and ecoroofs will. Green factor is a new concept to help ensure better integration of development and nature. Sites are scored based on the percentage of green, landscape coverage over the site. Ideal green factors range from 0.30 to 0.60 (i.e, 30% to 60% green coverage).

Achieving EIA site goals using a green factor goal of 0.30 for all commercial (including MFR) properties and 0.60 for all residential (SFR only) properties would be an innovative approach to achieving green infrastructure objectives.

CONNECTIVITY AND SENSE OF PLACE

Development within the FLIP project area provides opportunities for bringing nature back to the city in the form of green infrastructure (green site, green streets and open spaces). Natural elements of the built environment provide environmental and human health benefits as well as economic benefits. Vegetation, such as trees planted along streets, shrubs and grasses in swales, and ecoroofs, lowers ambient temperatures providing for cooler summers. Stormwater facilities manage stormwater runoff sustainably and provide a visual connection between people and nature. Corridors should be lined with trees and incorporate green street facilities. Nodes should provide open space and provide places for stormwater infiltration.

ECOSYSTEM SERVICES

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Not included in current scope of work but should be considered to help drive watershed health improvements. Goals and strategies for ecosystem services could also provide potential project funding streams.

4. Green Infrastructure Strategies

GREEN SITES

Meeting EIA and Green Factor goals will require managing stormwater generated from private property on-site with green infrastructure facilities. New development should meet EIA and Green Factor goals through compliance with the SWMM. Existing development will need to be retrofitted. These retrofits could be as simple as downspout disconnects to more intensive retrofits including greenroofs and stormwater planters. BES and PDC should work together to establish a retrofit program for the FLIP area.

GREENSTREETS

General - Meeting EIA goals for streets will require aggressive implementation of greenstreet facilities through the FLIP study area. Low density streets could be retrofitted with stormwater swale curb extensions and high density streets could be retrofitted with stormwater planters in the sidewalk. Most greenstreet improvements will likely be retrofits. BES and PBOT should worked together to establish a greenstreet retrofit strategy for FLIP.

Foster Road East of I-205 - The diagonal nature of Foster Road east of I-205 creates a number of small, triangular pieces of land that could be converted into greenstreet facilities to further reduce EIA. A good example of these types of greenstreet facilities are found along Sandy Boulevard.

GREEN INFRASTRUCTURE CORRIDORS

To improve connectivity and sense of place as well as help achieve EIA goals, green infrastructure corridors should be considered. Green corridors fully maximize and integrate green infrastructure into the street environment. Primary focus is on nature and pedestrian scale transportation. Motor vehicle and transit is not prohibited however. See map for potential green infrastructure corridors.

PARKS AND OPEN SPACE

General - Neighborhood and regional scale parks and open space provide significant value to the community while also providing enhanced ecosystem function. A green infrastructure strategy should be coordinate with the FLIP parks planning work to help create new and foster existing street connections to existing parks and open space.

Forest Park East - Local stakeholders and City planners have noted the potential need for a large park/open scape similar in scale to Portland's Forest Park in east

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Portland. At 5,000 acres, establishing a new park the scale of Forest Park may not be possible; however, a large park in the scale of 1,000 acres might be. Preliminary area assessments could link the following areas together to form a new Forest Park East:

- East Lents Restoration Project (80 acres)
- East Lents Restoration Project Phase 3 (200 acres) - Potential flood mitigation improvements north of Foster Road.
- Freeway Lands Options (60 acres) - Convert the Freeway Lands site into flood mitigation lands.
- Springwater Corridor Trail Buffer (50 acres)
- Powell Butte (500 acres)

5. Attracting Additional Capital for Green Infrastructure

PUBLIC INVESTMENTS

Leverage existing partnerships with local, state and federal agencies to fund:

- Green Infrastructure Corridors - Work with BES, PBOT, DEQ and potentially ODOT to create a green infrastructure corridor retrofit demonstration pilot.
- Green Sites Demonstration Project - Work with BES, BPS and PDC to create a stormwater demonstration projects for residential and commercial retrofits.

PUBLIC PRIVATE PARTNERSHIP INVESTMENTS

Create new partnerships with local, state and federal entities to establish new funding mechanisms for green infrastructure:

- Ecosystem Services - Work with BES and the Willamette Partnership to identify a potential public private funding partnership with green infrastructure projects.