

## STAFF REPORT

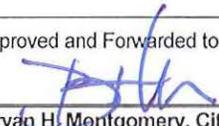
**Date:** Tuesday, June 28, 2016

**To:** Bryan H. Montgomery, City Manager

**From:** Kevin Rohani, P.E. Public Works Director/ City Engineer

**Subject:** Presentation on Requirements of the Municipal Regional Permit (MRP 2.0) for Green Infrastructure (Provision C.3.j)

Approved and Forwarded to City Council:

  
Bryan H. Montgomery, City Manager

### Background and Analysis

The City's National Pollution Discharge Elimination System (NPDES) Permit (No. CA0083313) is issued by the Central Valley Regional Water Quality Control Board. However, historically we have implemented the NPDES permit issued by the San Francisco Bay Regional Water Quality Control Board due to our geographical location between the Central and San Francisco Bay region boundaries. The City of Oakley is a co-permittee and 76 other agencies within the San Francisco Bay region. The City participates in the Contra Costa Clean Water Program (CCCWP) pertaining to coordinated efforts between municipalities within Contra Costa County. The previous San Francisco regional NPDES Permit, also known as the Municipal Regional Permit (MRP 1.0) became effective in December 2009 and was re-issued November 2015 (MRP 2.0, Permit No. CAS612008).

MRP 2.0 became effective on January 1, 2016. As part of the reporting requirements for the Permit, the City is required to report progress on the development of a Green Infrastructure Plan development and implementation on the FY 2015-2016 Annual Report.

In MRP 2.0, provisions C.11 and C.12 require the Permittees to reduce discharges of Mercury and Polychlorinated Biphenyl (PCB), respectively. A portion of these load reductions must be achieved by retrofitting existing impervious surfaces with Green Infrastructure. The Permit requires that municipalities assess each infrastructure project and add green infrastructure features where feasible.

The Permit defines Green Infrastructure as follows:

*"Infrastructure that uses vegetation, soils, and natural process to manage water and create healthier urban environments. At the scale of a city or county, Green Infrastructure refers to the patchwork of natural*

*areas that provide habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water.”*

Contra Costa Permittees, collectively, must implement Green Infrastructure to reduce – from 2014 levels – mercury loadings by 9 grams per year and PCB loading by 23 grams per year by 2020. Permittees must plan for substantially larger reductions in the following decades.

Green Infrastructure on both public and private land can serve to achieve these load reduction requirements. Implementation on private land is achieved by implementing stormwater requirements for new development and redevelopment, which are carried forward largely unchanged from MRP 1.0.

In MRP 2.0, Provision C.3.j includes requirements for Green Infrastructure planning and implementation. Provision C.3.j has two main elements to be implemented by municipalities:

1. Preparation of a Green Infrastructure Plan for the inclusion of Low Impact Development (LID) drainage design into storm drain infrastructure, including streets, roads, storm drains, etc.
2. Early Implementation of Green Infrastructure Projects

#### GREEN INFRASTRUCTURE PLAN

The Green Infrastructure Plan requirements and deadlines are as follows:

- Annually report progress on Green Infrastructure
- Prepare a framework or work plan to be approved by the City Council by June 30, 2017
- Submit a Green Infrastructure Plan with the 2019 Annual Report

The Green Infrastructure Plans are intended to describe how each jurisdiction will, in the coming decades, shift their impervious surfaces and storm drain infrastructure from gray, or conventional, storm drain infrastructure where runoff flows directly in to the storm drain and then to creeks and the Bay, to a more resilient, sustainable system that slows runoff by dispersing it to vegetated areas, harvest and uses runoff, promotes infiltration and evapotranspiration, and uses bioretention to detain, retain, and treat stormwater.

Among the specific requirements is to summarize the other planning documents that are updated or modified to incorporate Green Infrastructure requirements. These may include:

- General Plans
- Specific Plans

- Complete Streets Plans
- Transportation Plans
- Storm Drain Master Plans
- Pavement Management Plans
- Urban Forestry Plans
- Other plans that may affect the future alignment, configuration or design of impervious surfaces such as streets, parking lots, sidewalk and roofs

Staff is coordinating with other Contra Costa municipalities, through the CCCWP, to develop a model framework or workplan. This model will be adapted to meet the City's needs and brought to the City Council during FY 2016-17.

#### EARLY IMPLEMENTATION (No Missed Opportunities)

Provision C.3.j.ii requires that each Permittee review current infrastructure (capital improvement) projects planned for implementation during the permit term that have potential for Green Infrastructure measures to allow for no missed opportunities. This is a submittal requirement for each annual report including:

*“ ... a summary of how each public infrastructure project with green infrastructure potential will include green infrastructure measures to the maximum extent practical during the permit term. For any public infrastructure project where implementation of green infrastructure measures is not practicable, submit a brief description for the project and the reasons green infrastructure measures were impracticable to implement.”*

Staff has coordinated with other Contra Costa municipalities, through the Contra Costa Clean Water Program (CCCWP), to develop model guidance for reviewing capital improvement programs and projects, identifying green infrastructure potential, advancing planning and design of potential green infrastructure features, and documenting decisions regarding implementation of green infrastructure. Attachment B provides the guidance for identifying green infrastructure potential for municipal Capital Improvement Projects. The model guidance will be adopted to meet the City's needs and will be implemented by the Public Works and Engineering Department effective immediately.

#### Fiscal Impact

The fiscal impact of developing a Green Infrastructure Plan is to be determined, but is expected to be significant, as an unfunded mandate; particularly the cost of incorporating the Green Infrastructure Plan elements to future Capital Improvement Projects.

#### **Attachments**

- 1) Green Infrastructure Example Photos
- 2) Guidance for Identifying Green Infrastructure Potential for Municipal Capital Improvement Projects

Attachment 1 - GI Examples



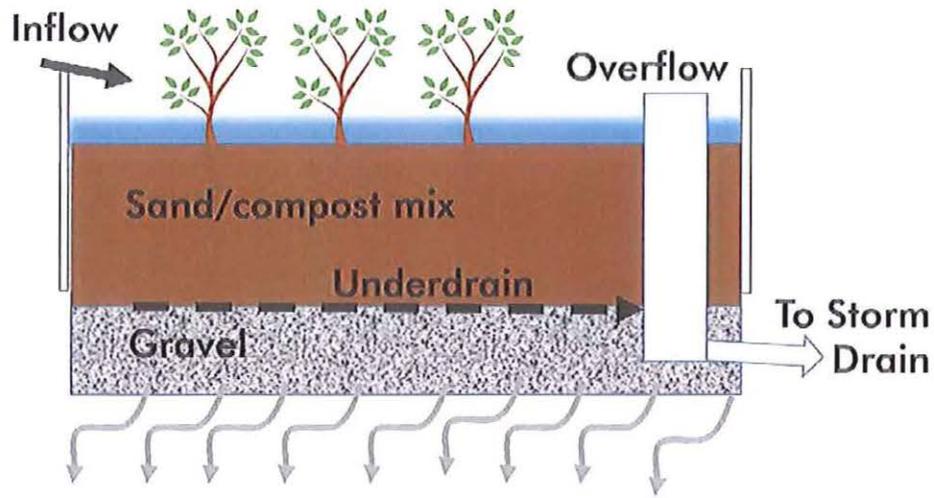
Green Infrastructure: Bioretention facility with active and passive landscape uses (El Cerrito)



Green Infrastructure: Bioretention facilities treating street runoff.



Green Infrastructure: Bioretention treating runoff from residences and a private street  
(Contra Costa County)



Green Infrastructure: Illustrative cross-section of Bioretention Facility

**Guidance for Identifying Green Infrastructure Potential  
In Municipal Capital Improvement Projects (22 March 2016 DRAFT)**

**Background**

In MRP 2.0, Provisions C.11 and C.12 require the Permittees to reduce discharges of Mercury and PCBs, respectively. A portion of these load reductions must be achieved by implementing Green Infrastructure. Permittees, collectively, must implement Green Infrastructure to reduce mercury loading by 48 grams/year and PCB loading by 120 grams/year by 2020, and plan for substantially larger reductions in the following decades. Green Infrastructure on both public and private land can serve to achieve these load reduction requirements. Implementation on private land is achieved by implementing stormwater requirements for new development and redevelopment (Provision C.3.a. through Provision C.3.i.). These requirements were carried forward, largely unchanged, from MRP 1.0.

MRP 2.0 defines Green Infrastructure:

Infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water.

In practical terms, most green infrastructure will take the form of diverting runoff from existing streets, roofs, and parking lots to one of two stormwater management strategies:

1. Dispersal to vegetated areas, where sufficient landscaped area is available and slopes are not too steep.
2. Bioretention facilities, built according to criteria similar to those currently required for regulated private development and redevelopment projects under Provision C.3.

In some cases (see "Preliminary Sizing and Drainage Analysis" below), the use of tree-box-type biofilters may be appropriate. In other cases, where conditions are appropriate, existing impervious pavements may be removed and replaced with pervious pavements.

In MRP 2.0, Provision C.3.j. includes requirements for Green Infrastructure planning and implementation. Provision C.3.j. has two main elements to be implemented by municipalities:

1. Preparation of a Green Infrastructure Plan for the inclusion of LID drainage design into storm drain infrastructure, including streets, roads, storm drains, etc.
2. Early implementation of Green Infrastructure Projects (No Missed Opportunities),

This guidance addresses the second of these requirements.

Provision C.3.j.ii. requires that each Permittee review current infrastructure (capital improvement) projects, prepare a list of infrastructure projects planned for implementation during the permit term that have potential for green infrastructure measures, and submit the list with each Annual Report, including:

... a summary of how each public infrastructure project with green infrastructure potential will include green infrastructure measures to the maximum extent practical during the permit term. For any public infrastructure project where implementation of green infrastructure measures is not practicable, submit a brief description for the project and the reasons green infrastructure measures were impracticable to implement.

This requirement has no specified start date; “during the permit term” means beginning January 1, 2016.

### **Processing a Capital Improvement Program (CIP) Project List and Annual Reporting**

The CIP project list provides a good starting point for review of public infrastructure projects.

Some projects can be readily identified as having no Green Infrastructure potential. Other projects may appear on the list with only a title, and it may be too early to identify whether Green Infrastructure could be included. Still others have already progressed past the point where the design can reasonably be changed (roughly, this would be about 50% design, although that will vary from project to project).

Some “projects” listed in a Capital Improvement Program may provide budget for construction throughout the jurisdiction or a portion of the jurisdiction, such as a tree planting program, curb and sidewalk repair/upgrade, or ADA curb/ramp compliance. These should be addressed in a programmatic way, so that the personnel responsible for determining the scope of construction work in the field know how to review each work order to identify, assess, and implement green infrastructure opportunities.

It is recommended to apply one of the following identifiers to each project on the CIP list:

1. **No Potential** - Identified in initial screening as having no Green Infrastructure potential. For example, the project does not include any exterior work. *Reporting:* Keep a record of the reason for the “no potential” determination. It is not necessary to list these projects in Annual Reports.
2. **Too Early** – There is not yet enough information to assess the project for Green Infrastructure potential—an assessment is to be conducted if and when the project moves forward to conceptual design. *Reporting:* In the Annual Report, list the project as a “potential” Green Infrastructure project, and note the status. In the “GI Included?” column, state “to be determined” or “TBD.”
3. **Too Late** – Project is under construction or has moved to a late design phase (roughly, past 50% design). *Reporting:* In the Annual Report, list the project as a “potential” Green Infrastructure project, and note the design or construction phase in the “Status” column. In the “GI Included?” column, state “too late.”
4. **Programmatic Approach** – Green Infrastructure potential will be assessed, and green infrastructure implemented where practicable, on a work order basis as the project budget is expended. *Reporting:* In the Annual Report, list the project as a “potential” Green Infrastructure project. In the “GI Included?” column, state “Programmatic.”
5. **Yes** – Project may have Green Infrastructure potential pending further assessment of feasibility, incremental cost, and availability of funding. If the public infrastructure project is subject to stormwater requirements for new developments (Provision C.3), follow current guidance. *Reporting:* If funding for the project has been identified, list the project in the “Planned Green Infrastructure Projects” table in the Annual Report. If funding has not been identified, list the project in the “potential” Green Infrastructure projects table and note the funding and other contingencies for inclusion of Green Infrastructure in the project.
6. **No** – A project-specific assessment has been completed, and Green Infrastructure is impracticable. *Reporting:* In the Annual Report, list the project as a “potential” Green Infrastructure project. In the “GI Included?” column, state “No.” Briefly state the reasons for the determination in the rightmost column. If needed, prepare a more detailed statement of the reasons for the determination and keep in project files.

## **Process for Assessing Green Infrastructure Potential of a Capital Improvement Project**

### **Initial Assessment of Green Infrastructure Potential**

Consider opportunities that may be associated with:

- Alterations to roof drainage from existing buildings
- New or replaced pavement or drainage structures (including gutters, inlets, or pipes)
- Concrete work
- Landscaping, including tree planting
- Streetscape improvements and intersection improvements (other than signals)

### **Step 1: Information Collection/Reconnaissance**

For projects that include alterations to building drainage, identify the locations of roof leaders and downspouts, and where they discharge or where they are connected to storm drains.

For street and landscape projects:

- Identify and locate drainage structures, including storm drain inlets or catch basins
- Identify and locate drainage pathways, including curb and gutter

Identify landscaped areas, and paved areas that not required for pedestrian or vehicle movement, that are adjacent to, or down gradient from, roofs or pavement. These are potential facility locations. *If there are any such locations, continue to the next step.*

### **Step 2: Preliminary Sizing and Drainage Analysis**

Beginning with the potential facility locations that seem most feasible, identify possible pathways to direct drainage from roofs and/or pavement to potential facility locations—by sheet flow, valley gutters, trench drains, or (where gradients are steeper) via pipes.

Delineate (roughly) the drainage area tributary to the potential facility location. Typically, this requires site reconnaissance, which may or may not include the use of a level to measure relative elevations.

Calculate a preliminary sizing factor (facility area/tributary area) for the potential facility location. Note the following guidelines (not strict rules, but targets):

- Sizing factor  $\geq 0.5$  for dispersal to landscape
- Sizing factor  $\geq 0.04$  for bioretention
- Sizing factor  $\geq 0.004$  (or less) for tree-box-type biofilters

For bioretention facilities and tree-box-type biofilters, note if there are potential connections from the underdrain (typically 2.0 feet below soil surface for bioretention facilities, 3.5 feet below surface, if possible, for tree-box-type biofilters).

If, in this step, you have confirmed there may be feasible potential facility locations, *continue to the next step.*

### **Step 3: Barriers and Conflicts**

*Note that barriers and conflicts do not necessarily mean implementation is infeasible; however, they need to be identified and taken into account in future decision-making.*

Note issues such as:

- Confirmed or potential conflicts with subsurface utilities
- Known or unknown issues with property ownership, or need for acquisition or easements
- Availability of water supply for irrigation, or lack thereof
- Nexus to the CIP project—extent to which green infrastructure is an “add on” vs. integrated with the rest of the project

### **Step 4: Project Budget and Schedule**

Note constraints on the CIP project schedule, such as a regulatory mandate to complete the project by a specific date, grant requirements, etc., that could complicate aligning a separate funding stream for the green infrastructure element.

### **Step 5: Assessment—Does the Project Have Green Infrastructure Potential?**

Consider the ancillary benefits of green infrastructure, including opportunities for improving the quality of public spaces, providing parks and play areas, providing habitat, urban forestry, mitigating heat island effects, aesthetics, and other valuable enhancements to quality of life.

Based on the information above, would it make sense to include green infrastructure into this project—if the addition could be made cost-neutral? Identify any additional conditions that would have to be met for green infrastructure elements to be constructed consequent with the project.