Considerations During Construction for Projects with LID
Idea of Low Impact Development

- Restore or mimic natural hydrology
- Promote infiltration, evapotranspiration, storage
Terminology

Control Measures

Green Infrastructure

Low Impact Development
Terminology

Site Design Strategies

Treatment Control BMPs

Permanent BMP or Post-Construction BMP
LID Functions

- Infiltration
- Uptake
- Filtration
- Adsorption
- Evapotranspiration
- Biofiltration
Overview of (a Few) LID Controls
Infiltration Basin

- Shallow impoundment that uses the natural filtering ability of the soil to remove pollutants
- Stores runoff prior to infiltration
- High pollutant removal efficiency
- Helps recharge groundwater
Bioretention

- Shallow impoundment that uses engineered soil and plants to remove pollutants
- Stores runoff prior to infiltration
- High pollutant removal efficiency
- May help recharge groundwater
- Consider underdrain in poor soils
- Consider grading, inlets, overflow, planting
Vegetated Swale

- Open, shallow vegetated channels that collect and convey runoff

- Treats runoff through filtering by the vegetation, filtering through subsoil matrix, and/or infiltration

- Traps particulate pollutants (suspended solids and trace metals), promotes infiltration, reduces velocity

- May require high flow bypass

- Consider O&M, access
Vegetated Biofilter

- Similar to vegetated buffer, but with infiltration
- Filtered runoff discharges through an underdrain system
- Additional physical and biological processes
- Consider structural support of pavement
Construction
Construction

- Protect subgrade
- Materials
- Installation
- Protection from erosion and sedimentation
- Protect from construction activities
- Staging and sequencing
Key Points of Construction

- Protect subgrade
Key Points of Construction

- Installation
Key Points of Construction

Materials and media
- Plant health and infiltration
- Pollutant removal goals
- Consistency between specs, approved products, and product supplied
Key Points of Construction

- Protection from erosion and sediment
Key Points of Construction

- Protect from construction activities
- Staging and sequencing
- Soil conditioning
- Vegetation
Construction Closeout

- Protect with BMPs
- Establish vegetation
- Prevent invasive species
- Irrigate where necessary for establishment
Post-Construction O&M

- Manage sediment, trash
- Maintain infiltration (if applicable)
- Maintain vegetation
- Avoid pests, disease vectors
- Maintain Function
- Meet Aesthetic Goals
Example/Exercise

Temporary Erosion and Sedimentation Control
1. In what order would you construct these 3 items, to have a successful bioretention?

2. Where would you need BMPs during construction, assuming stormwater falling on the site flows left to right, and north to south, draining to inlets at the southeast corner of the site?
What Could Go Wrong?
What Happens in Construction?
Stormwater Quality Pond Example
POST-CONSTRUCTION STORM WATER MANAGEMENT FACILITY. FACILITY IS NOT TO BE USED FOR CONSTRUCTION STORM WATER MANAGEMENT OR SEDIMENT CAPTURE FROM CONSTRUCTION ACTIVITIES. INSTALL SIGN MARKING THESE FACILITIES. ENSURE SEDIMENT FROM CONSTRUCTION SITE DOES NOT ENTER BMPS. IF SEDIMENT/DEBRIS DOES ENTER THESE FACILITIES, REMOVE IT AND RESTORE FACILITIES IMMEDIATELY.
Rain Garden Example
See Note

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Protection (and Lack of Protection)
of Contributing Areas and Flows
Another Project on the Bioretention Site
Thank you

Questions?

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