

May 15, 2018

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# Globeville Landing Outfall Environmental Monitoring and Maintenance Plan



# Topics Covered

- Purpose and goals
- Monitoring and maintenance activities
- Schedule
- Indicators of concern
- Follow up
- Schedule
- Questions/Discussion



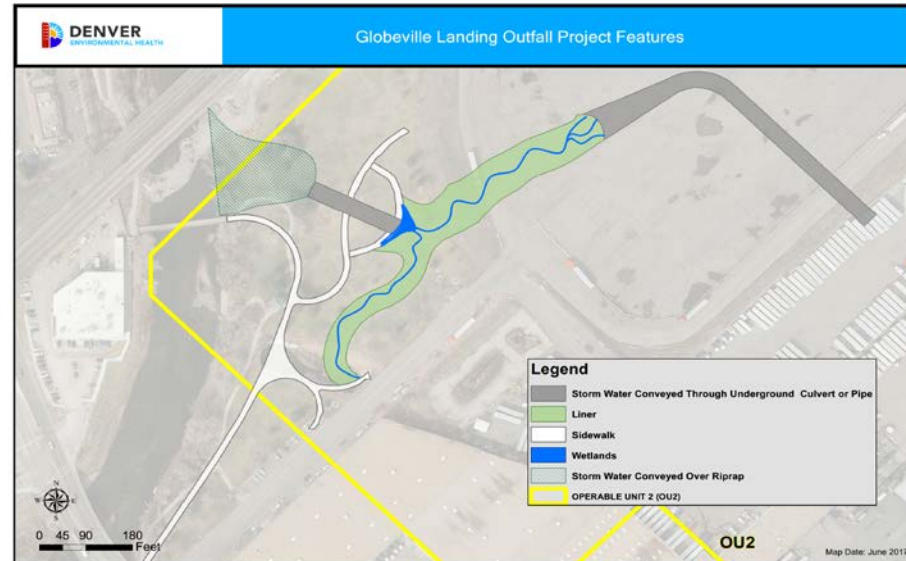
# GLOEMMP Purpose

Practices for monitoring and maintenance of GLO environmental components

Maintain impermeable barrier system to:

- prevent contaminants under lined area from impacting open channel storm water
- prevent storm water infiltration into contaminated media remaining below

In place until superseded by an approved plan



# Environmental Monitoring and Maintenance Activities

## Visual inspections

- Settling
- Erosion
- Retaining wall conditions
- Vegetation

## Land survey

- Settling
- cracking

## Vegetation survey

- Deep-rooted species

Table A: Environmental Monitoring and Training Activities

GLOEMMP Activity	Minimum Frequency	Responsible Entity	Look For	Action Taken	Documentation
Visual Inspection.	Semi-annually for the first year, then every other year, and after a 10-year or greater flood event.	GLOEMMP Project Manager.	Cracks in retaining walls, signs of slope failure, rodent holes, seepage or ponding, erosion damage and/or exposure of the orange construction fencing, excessive or uneven settlement.	Document conditions. Repair damage. Report significant events. Consult liner expert if significant damage is visible.	Visual Inspection Form, photographs.
Land Survey.	Operational completion, then one year following project completion, then every five years adjusted to provide information for EPA's OU2 five year review cycle.	GLOEMMP Project Manager coordinates.	Excessive or uneven settlement of concrete retaining walls.	Document conditions. Report significant events. Consult liner expert if significant settlement is great than 2 inches.	Tabulated elevations comparison to as-built elevations.
Vegetation Survey.	Annually.	P&R representative, GLOEMMP Project Manager coordinates.	Deep-rooted species. Changes in vegetation.	Document conditions. Remove deep-rooted species.	Summary of inspection from P&R, photographs.
Groundwater elevation monitoring.	Quarterly for 2 years following project completion and annually thereafter during the wet season (May through July).	GLOEMMP Project Manager coordinates.	Groundwater elevations compared to corresponding liner elevations. Maximum groundwater rise above the liner elevation should not exceed 3.8 feet. Notification level is 3.3 feet above liner elevation.	Document conditions. Notify EPA, as appropriate. Confirm groundwater elevations when an elevation level of 3.3 feet above the liner is reached. Consult liner expert following confirmation should groundwater elevations remain at or above 3.3 feet.	Groundwater elevation reporting.
Training.	Annually.	DDPHE Training Manager, CCoD staff	Ensure training is developed and made available.	Training modules. Document training.	Training completion forms kept on file.
Agency coordination.	Annually.	GLOEMMP Project Manager coordinates with Metro Wastewater, Urban Drainage & Flood Control District, Wastewater, P&R, Arts & Venues to determine annual work plans.	Agencies which may disturb soil in GLO Project area within OU2.	Documentation of contacts made.	Annual contact log kept on file.

# Environmental Monitoring and Maintenance Activities

Groundwater elevation monitoring

Land use controls

Training of work crews

- Denver Parks & Recreation
- Denver Wastewater
- Denver Arts & Venues

# Follow-up and Reporting

## Maintenance and Follow-up

- Routine and minor maintenance (vegetation, minor erosion repair, etc.)
- Damage or significant events (significant erosion, large flood, etc.)
- Electrical leak location surveys
- Major repairs

## Reporting



# Schedule

- Draft GLOEMM submitted to EPA and CDPHE 5/3/18
- Revised once EPA and CDPHE comments received
- Annual reports due 2/15 of each year

Thank you

Questions and discussion