



12 - Construction Site Management

Mary Halley



Module Content

- Importance of construction site management to Runoff Reduction
- Common Construction Mistakes
- Avoiding GIP failure



Time to Wake Up!



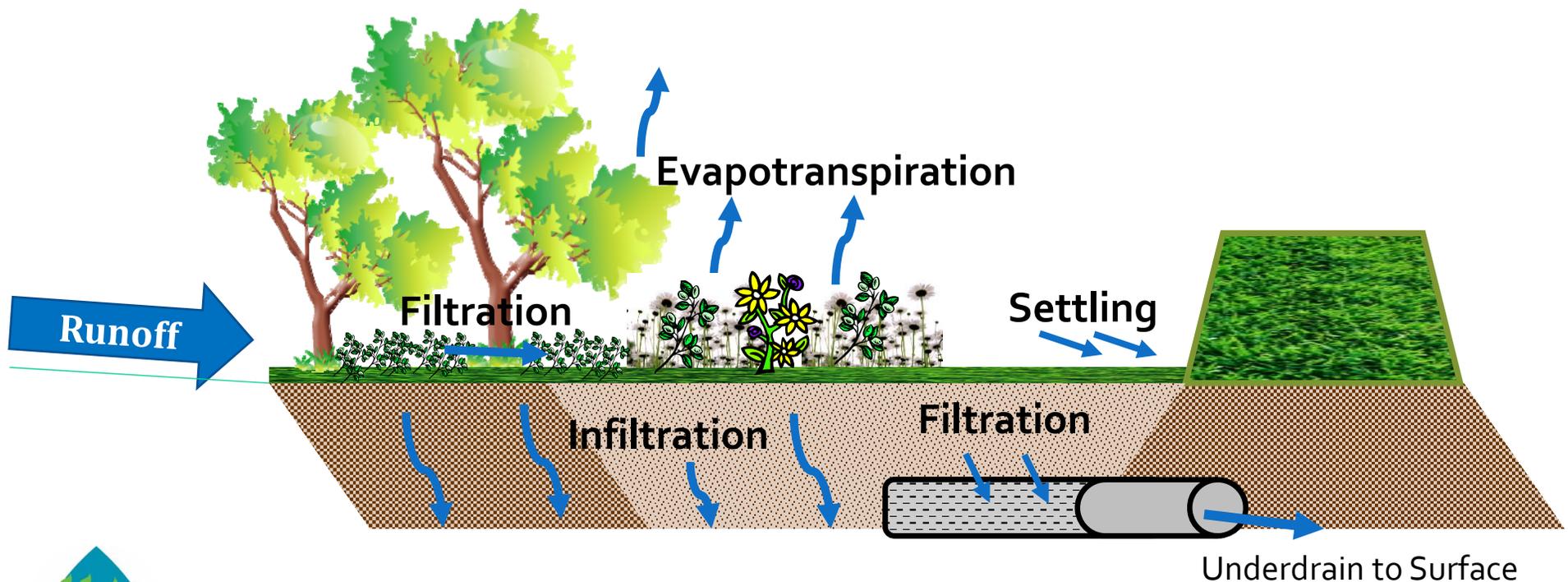
Same Site, Different Stages, Very Different Runoff

Stage of Development	Total Suspected Sediment (TSS) Concentration (mg/L)	Data Source
Open Land (Urban)	70 (median)	NURP, 1983
During Construction	20,000 to 160,000	McCaleb et al, 2008
Post Construction	69 to 100 (median)	NURP, 1983



Post-Construction BMP Mechanisms

- **Infiltration:** Runoff reduction & pollutant removal (all pollutants)
- **Evapotranspiration:** Runoff reduction & pollutant removal (nutrients)
- **Settling:** Pollutant removal (TSS, Phosphorus, Metals)
- **Filtration:** Pollutant removal (TSS, P, N, Metals)



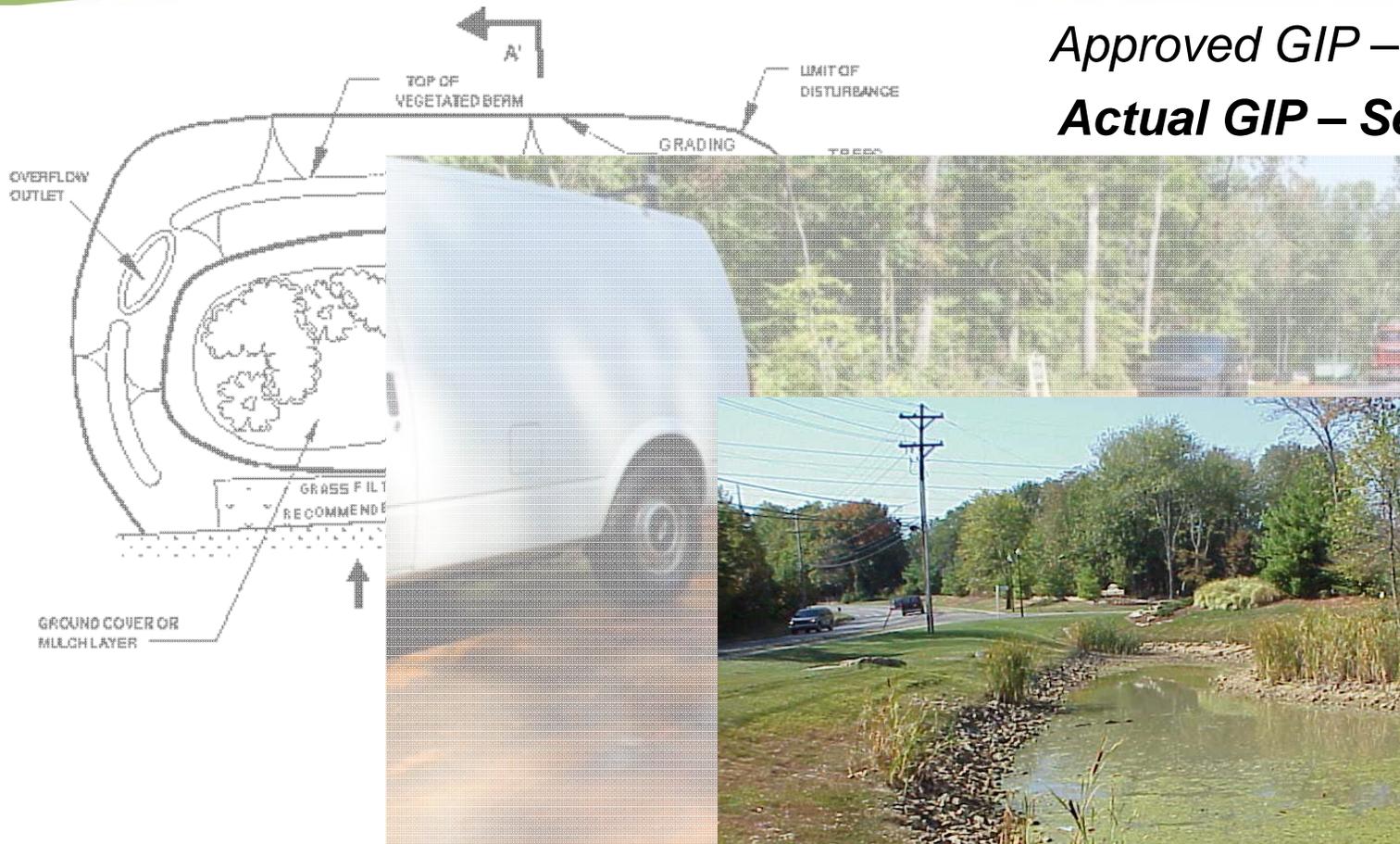
Sediment Impacts to BMP Mechanisms

- **Infiltration:** Clogs void spaces in porous soils and permeable pavements
- **Evapotranspiration:** Prevents infiltration and water uptake through roots, killing the vegetation
- **Settling:** Destroys the settling capability and cause uncontrolled sediment discharges if left unmaintained
- **Filtration:** Covers forest litter and vegetation, clogs void spaces in porous soils and in underdrains



From Design Approval to Operation

Approved GIP – Bioretention
Actual GIP – Sediment Basin



Different Stages, Similar Goals

During Construction

- Minimize the extent and duration of disturbance
- No discharge of sediment and construction materials
- Protect streams, wetlands and other natural features
- Inspect and maintain BMPs
- Stabilize disturbed areas

Post Construction

- Avoid soil disturbance and compaction in GIP areas
- No discharge of first 1-inch of rainfall (no pollutants)
- Protect streams, wetlands and other natural features
- Inspect and maintain BMPs
- Keep open space stabilized

The transition from construction to post-construction is the most critical time to ensure Green Infrastructure success!





Montgomery County, MD
Bioretention



GIPs are typically installed in final phases of construction, primarily to protect them from sediment discharges





GIPs look different from traditional BMPs. Subcontractors may not realize these are stormwater controls!





Final stage subcontractors, (home subcontractors, landscapers) need to have full knowledge of site GIPs too!

Vehicles, equipment or activities in the wrong area can cause failure.



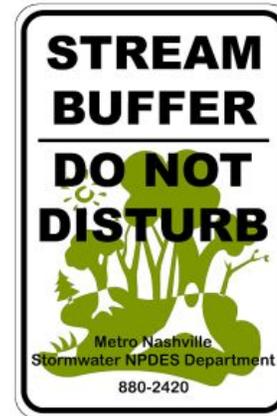
The Top 10 List of Poor Construction Site Practices

1. Poor on-site communication between contractor and subcontractors, vendors, landscapers
2. Failing to follow the approved construction sequencing and site phasing practices shown on EPSC plans
3. Installing Permanent Stormwater BMPs too early
4. Failing to stabilize areas upstream of Permanent Stormwater BMPs before installation
5. Failing to protect areas where BMPs will be installed
6. Failing to protect native vegetation or soil areas
7. Failing to clean-out temporary BMPs before installation of GIPs
8. Mass grading
9. Failing to install and maintain the proper EPSC BMPs
10. Failing to repair erosion areas quickly after exposure

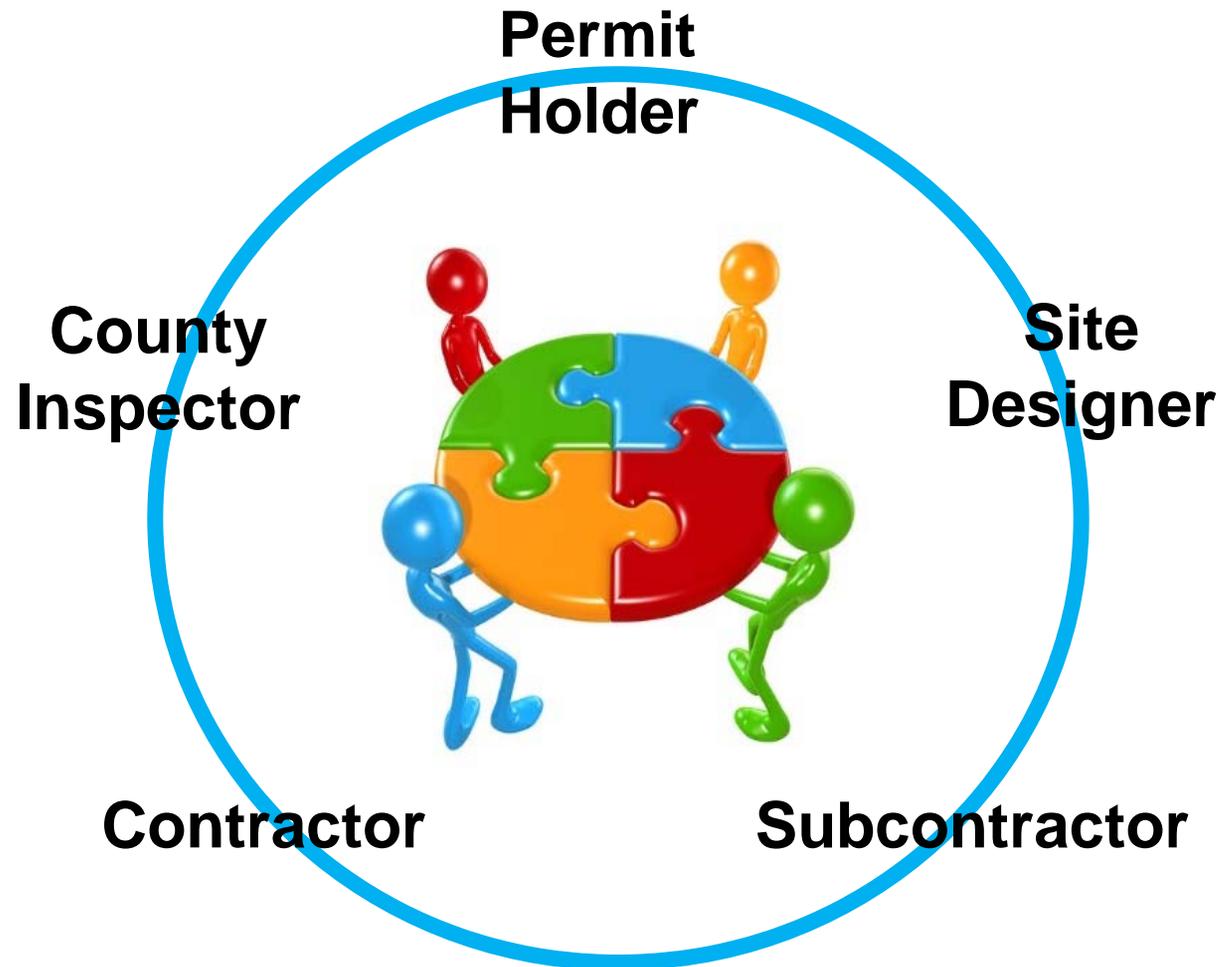


Communication Modes

- Signs, fencing and tape!!
- Morning tailgate meetings
- Subcontractor check-ins
- On-site plan updates
- On-site plan billboards
- Site inspection documents
- Tandem inspections



Communication Needs



Construction Phasing & Sequencing

- Most GIPs rely on **uncompacted soil** and/or **healthy vegetation**, so consider:
 - Adjustments to other construction activities to accommodate the GIP (parking areas, equipment storage, materials stockpiles, etc.)
 - Performing inspections during landscape installation
 - The time of year, anticipated weather, and need for watering plants
 - A short-term and long-term plant watering plan



Construction Phasing & Sequencing

- Before GIP installation:
 - Contributing drainage areas to GIPs must be stabilized
 - Unprotected GIP areas may require soil amendments
 - The potential for GIP compaction must be eliminated
 - Post-installation protection must be planned and ready



Figure 4-22 and 4-23. Mechanical equipment accelerated installation of a parking lot in Illinois and a street in Oregon.



Clean GIP Installations



Source: www.lid-stormwater.net



Final Thoughts

- Design plans should include phasing, sequencing, protection, and vegetation planning and maintenance.
- County Site Plan Reviewers and Site Inspectors will be more diligent about these elements – so you should too!
- Corrective actions will be required if there is evidence of soil compaction, sediment discharges to GIPs, or unhealthy vegetation.



Module Topic Summary

- Importance of construction site management to Runoff Reduction
- Common Construction Mistakes
- Avoiding GIP failure





Questions?

