

Drainage Management on Bluffs

January 17th, 2025
Friday Harbor

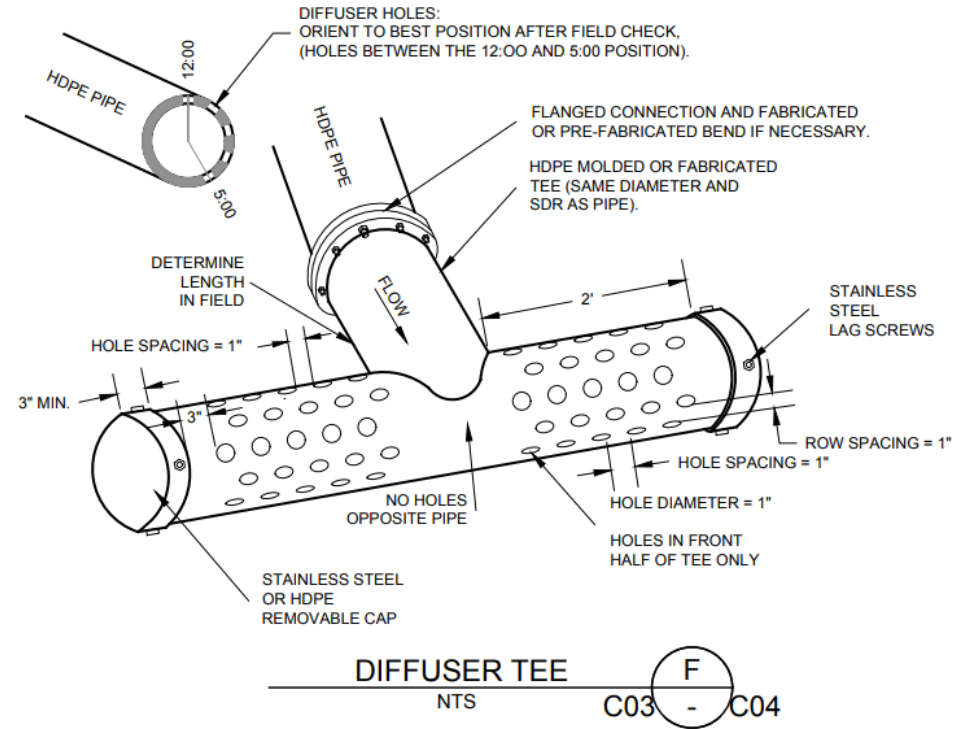


Friends *of the*
San Juans



The Need for Drainage

Permits, Engineering, Geotechnical & Biologist



Water Management Goals

- Manage sheet flow by capturing it or reducing velocity.
- Capture stormwater from hardened surfaces.
- Capture groundwater (sometimes).
- Convey/tightline stormwater and groundwater to safe infiltration area.
- Infiltrate water away from slope crest.





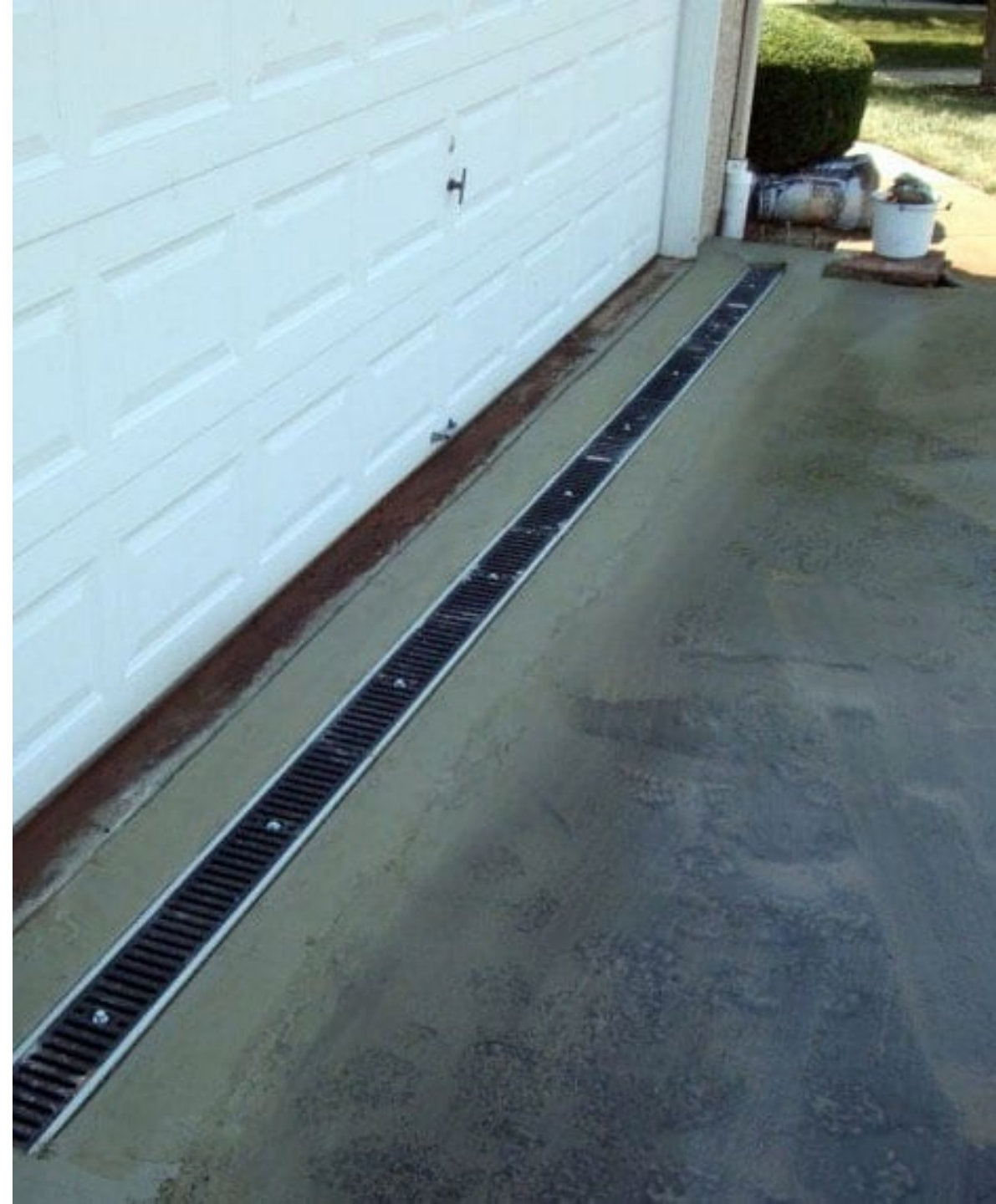
Managing Sheet Flow

- Surface roughening & vegetative cover
- Channel drain
- Erosion control logs
- Silt fences
- Soil berms



Channel Drain

- Commonly in front of garages
- Steel and cement prefabbed or plastic for landscapes





Capture Water




Transport
(conveyance)
and
release.



Long-term vs short-term



A black corrugated pipe lies on a rocky beach. A blue clipboard with a red pen is placed on a log behind the pipe. The beach is covered in smooth, multi-colored stones and shells. In the background, there are large rocks, a forest, and a body of water under a cloudy sky.

Black
corrugated
pipe ends up
as beach
trash.

Sound Slope & Shoreline Inc.
Freeland, WA

Solid Wall
HDPE Fusion
Tube

SDR 17



HDPE Fusion Tube



Stormwater Mapping

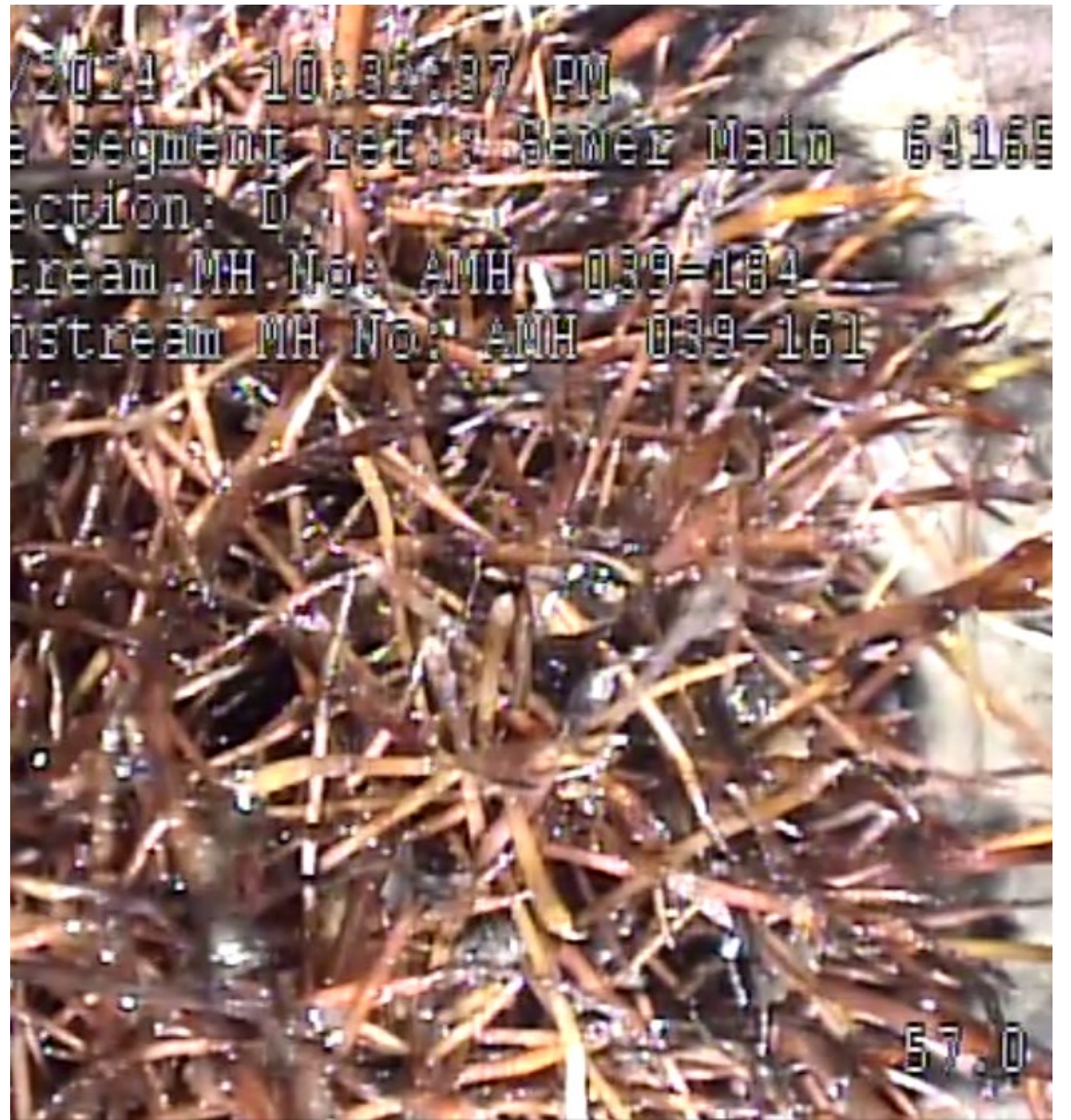
- Use fish tape to conduct the drain line
- Put the locates on a map
- Find the pipes

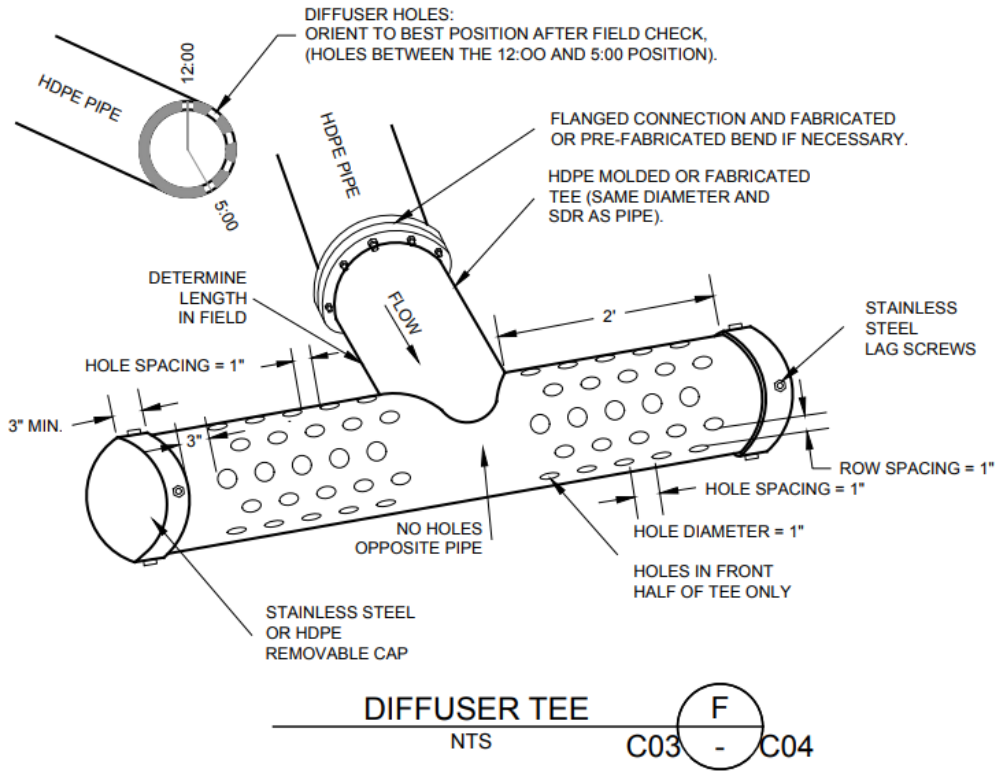
5-year old
curtain drain
filled with
soil





French/Curtain Drain Issues



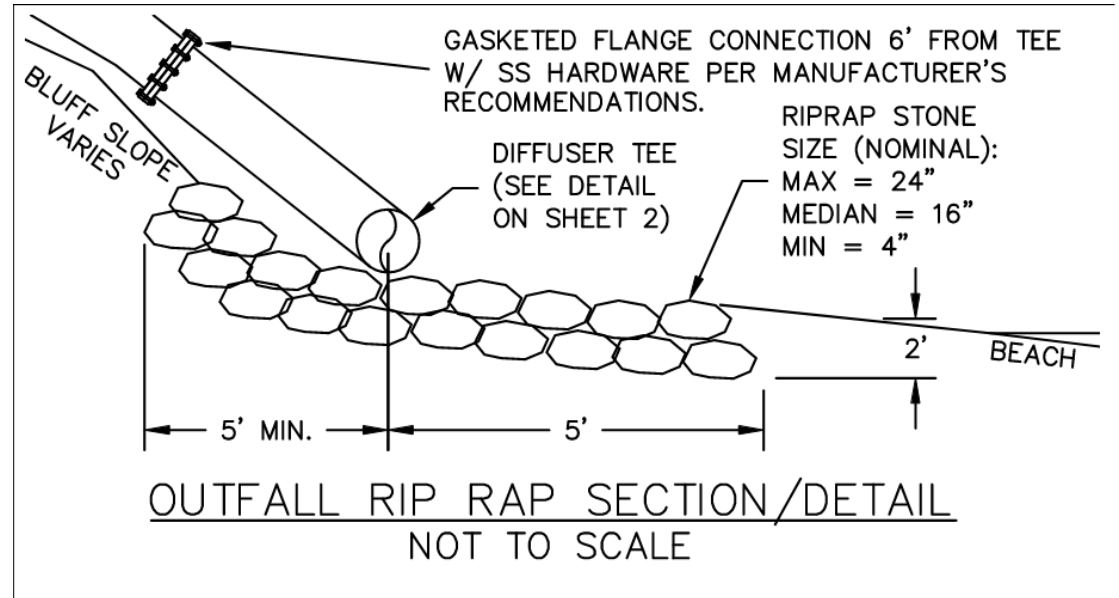
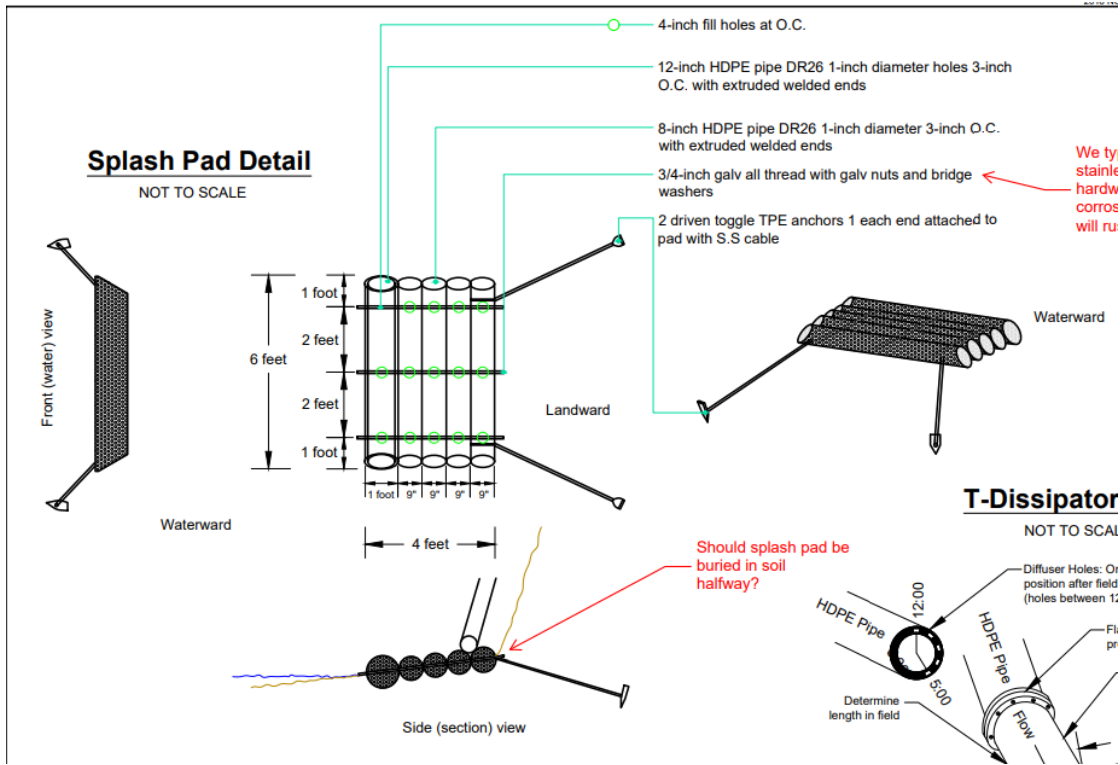


Engineering

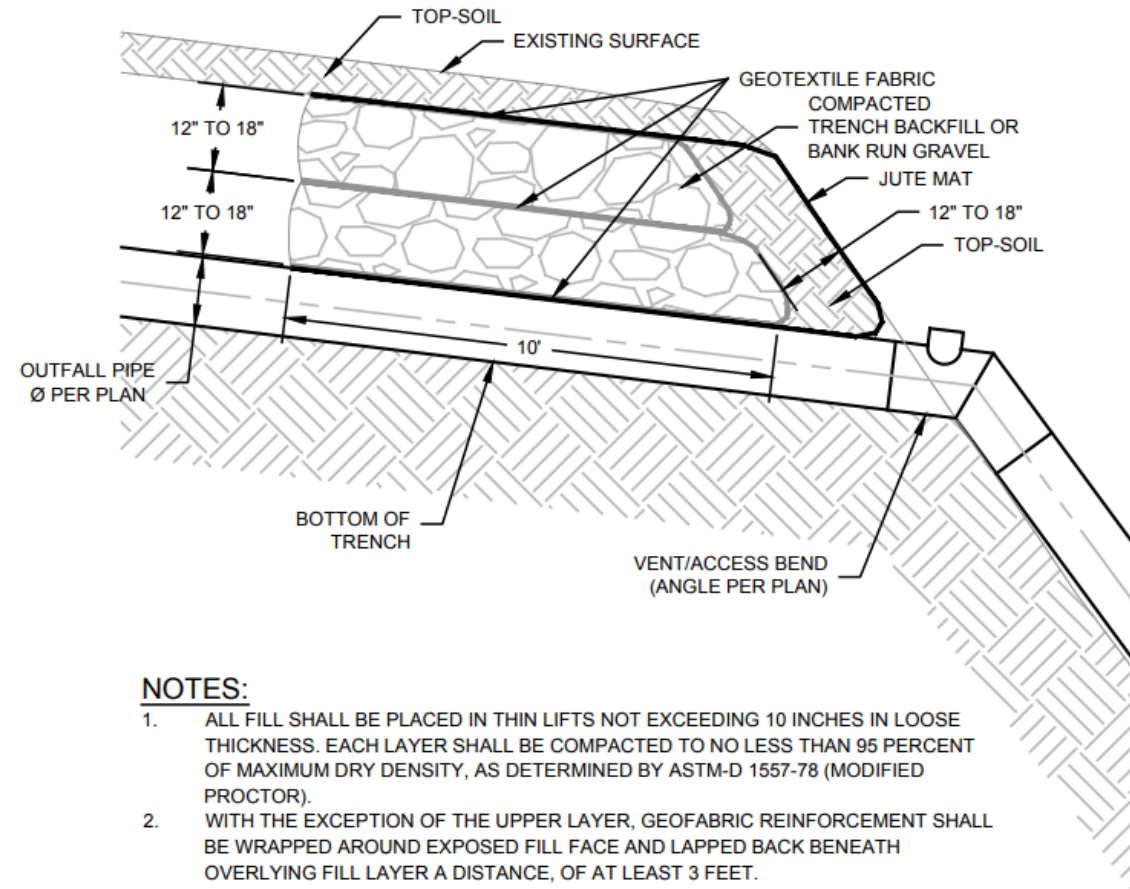


Outfall





Trench Dam Bluff Pillow





Landslide in Bellingham from corrugated pipe.

Note the western redcedar.



Landslide on Bainbridge Island –
corrugated pipe duct tape to PVC outfall at crest

Recap

- Make sure the drainage is engineered.
- Review the engineering plans in depth and ask as many questions as you can.
- Review the biologist recommendations and verify the work can be performed within those provisions.
- Don't use duct tape.





PENINSULA
ENVIRONMENTAL

Questions?

john@peninsulaeg.com