





## TAM 30 - DRAINAGE SYSTEM EXAMPLE

### Notes (general recommendations; site specific exceptions may apply):

- Hire a drainage design professional with experience working on marine shorelines to design your drain system.
- Keep drain systems above ground (rather than buried) for easy monitoring and repair. Use landscape plants to hide the pipes from view. Avoid burying pipes because leaks or breaks can go undetected.
- Only drain clean water over a bluff, not stormwater runoff that may have picked up chemicals, fertilizers, or pet waste.
- Use at least 4" diameter or larger ASTM 3034 or Schedule 40 solid drain pipe (or equivalent strength pipe) on all installations near a slope and/or edge of a bluff. Solid, strong pipe is recommended because of its strength and longevity. Secure pipe connections with strong glue or other means, and monitor connection points regularly.
- Where feasible, secure the pipe to stationary supports such as staircase supports, etc. to keep the pipe from shifting during storms.
- Flexible corrugated drain pipe is not recommended for shoreline/slope drainage projects because of its tendency to leak and break.
- Glue all pipe fittings securely. Install a rubber coupler with stainless steel hose clamps where the pipe crosses sections of ground that show signs of cracking or settling. Monitor the system every year throughout the rainy season, and fix issues immediately.



Last two images courtesy of Aspen, LLC.

From Left to Right: A failed flexible black pipe lying on a landslide deposit caused by the leaking water; A high-risk break forming in a corrugated pipe as it drapes over the top of a bluff; An example of an energy diffusion system installed at the end of a pipe (locate such systems above, not on, the beach); A diffuser tee attached to the end of a solid pipe; A heavy-duty pipe connection clamp system located on a drain pipe carrying water over a bluff.

**LEGAL DISCLAIMER:** THIS TECHNICAL ASSISTANCE MEMO (TAM) SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ENGINEERED DESIGN, LOCAL CODES, AND/OR REGULATIONS. THE LANDOWNER IS RESPONSIBLE FOR COMPLIANCE WITH ALL CODES AND REQUIREMENTS, WHETHER OR NOT DESCRIBED IN THIS TAM. SEEK PROFESSIONAL GUIDANCE WHEN INSTALLING DRAINAGE SYSTEMS NEAR STEEP SLOPES AND MARINE BLUFFS.

Adapted from materials created by Mason Conservation District.