Check Dams

Check dams are low barriers within a drainage ditch, enhanced swale, or berm and swale complex. These dams sit perpendicular to the flow of water, with the intention of backing water up to allow for infiltration and sediment removal. Check dams retain some porosity, allowing for water to leak through the stones and vegetation.

Typically, check dams are constructed of rock with mixed vegetation to enhance stabilization and filtration. They are designed primarily to provide erosion control, sediment control, and suspended solids removal from runoff. In addition, they can provide a small amount of pollution removal.

Check Dams can be used to extend the use of swales to areas with greater than a 4% slope, but **should not be used without professional consulting in areas with slopes greater than 8%.**

Advantages

- Extends use of swales past 4% slope
- Relatively inexpensive and easy to construct
- Reduces sedimentation
- Can be more easily used higher in the watershed

Disadvantages

- **Maximum slope of swale with a check dam is 8% without professional assistance**
- Moderate maintenance needed
- Can be breeched when flow volumes and/or velocities are high during certain storm events

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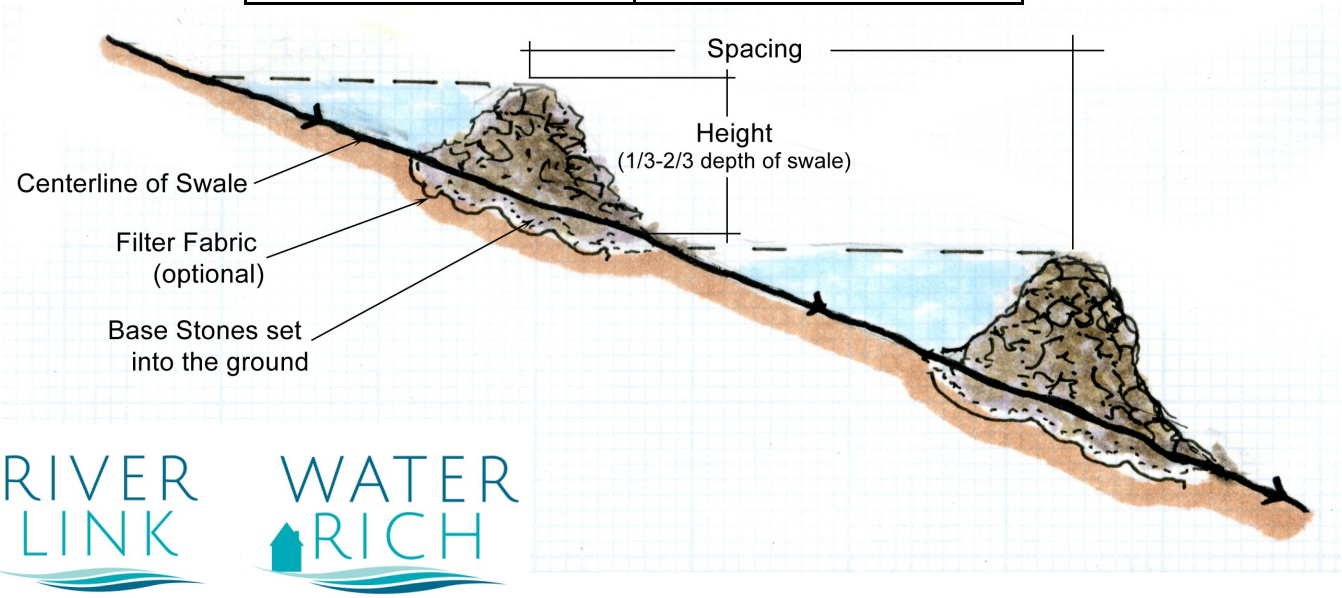
Check Dams

Design Considerations

- Using an erosion control blanket will help stabilize a new check dam. This material will eventually biodegrade.
- When working in a swale on a slope greater than 6%, you will need to flatten the slope above the check dam to provide enough ponding space during rain events.
- Rocks are the typical material for permanent check dams, although there is a multitude of materials, such as coir fiber logs, available from companies specializing in erosion and sediment control management. A list of local suppliers can be found in Appendix C: Local Professionals.
- A mixture of rock sizes is preferable. Size of rock will depend on the slope of the drainage and drainage area.
- Locate check dams in generally straight areas of the drainage. Space as suggested below based on slope of drainage.
- Check dams should occur within the limits of the drainage, but can be used as secondary spillway if necessary, although additional drainage might be needed.
- Planting around the edges assists in the long term stabilization.

% Slope of Drainage	Spacing Between Check Dams (in feet)
1	200
2	100
4	50
6	33
8	25



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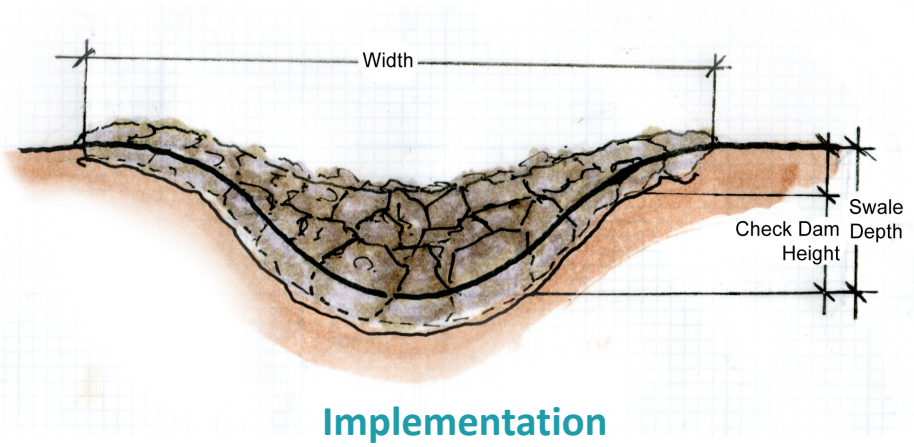
Check Dams

Materials

- Site analysis
- Site map
- Calculator
- A-frame Level
- Flagging or other marking materials
- Stone
- Wheelbarrow
- Shovel
- Hard rake
- Mattock
- Plants
- Filter fabric (optional)
- Coir fiber matting (optional)

Maintenance

- Keep free of weeds
- Inspect for damage after storm events, specifically moderate to large storm events
- Remove sediment collected within the pools on the upstream side of the check dam as needed.
- Add or remove rock as needed to maintain stability.
- Maintain plantings



Implementation

1. Begin by reviewing your overall site analysis to determine locations of the check dams based on the design considerations, advantages, and disadvantages.
2. Determine spacing between check dams by referencing the table on the previous page.
3. The size of the stones will need to increase as the volume of water and slope increase and soil stability decreases. The largest stones should be used as the base rocks.
4. Excavate a trench into the banks and bed of the swale in order to anchor the base rocks. The trench should be dug both in the bed of the drainage and in the stabilized side slopes of the swale. Optional: Place geotextile fabric in the trench to help stabilize the check dam against large storm events.
5. Place heavier stones in the base and on the downstream side of the check dam.
6. Secure the base stones firmly in position.
7. Place smaller stones around the larger stones as their weight and placement help make these as stable and secure as possible. The slope of the upstream and downstream faces of the check dam are determined by the angle of repose. This is the ability for the stones to stay securely in place base on their size, shape and weight. The upstream face should be more gradual (approximately 66% or 1.5-2:1) than the downstream face.
8. The top of the check dam should be concave, as the height should be no more than 1/2-1/3 of the swale depth.

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