



Site Constraints

TRPA Code of Ordinances requires that all property owners implement Best Management Practices (BMPs), including erosion control and infiltrating the volume of a 20-year/1-hour storm (design storm) on-site. Certain site characteristics make it impractical to infiltrate the design storm on-site and are considered constrained. TRPA still requires site constrained properties to install source control BMPs. Although a portion of a site may be constrained the remainder of the site may still be required to come into full BMP compliance, including infiltrating the design storm.

Properties unable to meet the BMP Calculation Spreadsheet sizing restrictions without designing excessively large infiltration systems may instead install source control BMPs and receive a *Source Control Certificate* with the understanding that constrained properties must participate in an existing or future area-wide regional water quality treatment program to receive a full *BMP Certificate of Completion*.

Regardless of the infiltration site constraint listed below, properties are always required to install sediment source control measures on-site, so that any water that discharges off-site is sediment free. Source control measures include but are not limited to:

- Pave dirt driveways
- Armor under roof driplines with gravel, contained planter beds, or established herbaceous vegetation
- Armor under raised decks and stairs with gravel
- Vegetate and/or mulch all bare soil in compliance with fire defensible space requirements*
- Stabilize eroding or unstable slopes
- Install parking barriers to prevent soil compaction and protect BMPs
- Restore and re-vegetate compacted soil

**Some bare soil may be acceptable for the property to be compliant with BMPs and fire defensible space requirements to ensure a five-foot non-combustible perimeter around every structure and provide adequate spacing between vegetation. If the bare soil is showing signs of erosion it should be protected with either vegetation or an inorganic mulch (e.g. gravel).*

Site constraints include the following conditions:

Seasonal high-water table

TRPA Code § 60.4.6.A.1 states: “The bottom of infiltration trenches or dry wells shall be minimum of one foot above the seasonal high water table.” If the depth to seasonal high ground water is shallow, infiltration of the design storm may be difficult or impossible.

Stream Environment Zones

Stream Environment Zones (SEZs) are protected, highly sensitive areas and infiltration of stormwater is prohibited within them. Direct stormwater away from the SEZ to higher capability land where infiltration is appropriate. If that is not possible the site may be constrained.

Slow soils

Soils with a low saturated hydraulic conductivity (Ksat), or a slow infiltration rate, makes it difficult to infiltrate the design storm, especially if there is a large amount of impervious surface contributing to one area. A Ksat

value less than or equal to 1"/hr is considered constrained unless there is minimal contributing impervious surface and a relatively large area to infiltrate it. Slow soils are considered constrained to avoid a large amount of excavation to infiltrate relatively clean water. The amount of excavation and site disturbance may cause more harm than the achieved benefit.

Rocky soil/Bedrock near or at grade

Large boulders or bedrock are common in the Lake Tahoe Region may make infiltration of the design storm impractical. Identify other areas on the property to convey and infiltrate runoff. This site constraint may apply to one area of the property, such as the driveway and not others; in which case infiltration is required on the rest of the property (e.g. roof driplines and decks).

Utility placement

Avoid installing improvements near utilities. Depending on the utility, there is a minimum separation that should be kept between the utility and BMPs. If the type and location of utilities make it impossible to install a conveyance and/or infiltration system, the site will be constrained in that area. Full compliance, including infiltration, will be required on other areas of the site where utilities are not an issue.

Retaining structures

Retaining walls are constructed most commonly along driveways to stabilize the surrounding soil. Retaining walls on both sides of a driveway makes conveyance and infiltration difficult and expensive Therefore, that portion of the site may be considered constrained. All other infiltration BMPs are required.

Cut and fill slopes/steep slopes

Properties in the Lake Tahoe Region are often built on cut and fill slopes and/or steep slopes. This may constrain infiltration because it is difficult to install an infiltration system with a level bottom. Excavating large amounts of soil on a steep slope may destabilize the slope. In some instances, a linear infiltration system may be installed along the contour of the slope. If that is not feasible make sure the slopes are stable and all source control BMPs are complete to ensure stormwater discharge is free of sediment. Armor roof driplines on steep slopes with rock riprap and convey the stormwater to a flat area if feasible.

Infiltration area restricted due to property boundaries

Property boundaries can limit the ability to install infiltration systems if there is minimal to no setback. Infiltration BMPs will be required on other areas of the site where property boundaries are not an issue.

No or minimal setback to the public right-of-way

Properties that have no or minimal setback to the public right-of-way are not required to install collection and conveyance driveway systems. If a roof or other impervious surface drains to the area, encourage installation of a gutter system to convey water to an on-site infiltration area.

Underground heating units

An underground heating unit previously installed under a driveway could be susceptible to damage if a conveyance system is then installed in the driveway. If a portion of the driveway flows on-site, then infiltration for that portion shall be designed and installed.

Subsurface contamination

There are a wide variety of existing subsurface soils, groundwater contamination sites, and active remediation sites within the urbanized areas of the Lake Tahoe Region. To protect groundwaters that are a source of drinking water from these sources of subsurface contamination, parcels located above should not include on-site

infiltration of the 20-year/ 1- hour design storm currently required by TRPA parcel-based BMP regulations. Infiltration of surface water on parcels with subsurface contaminated soil and groundwater plumes contradicts efforts to extract, remediate, and contain subsurface pollutants and contaminated groundwater plumes.

Tahoe Keys properties

Due to the presence of seasonal high groundwater and soils with slow infiltration rates in the Tahoe Keys, only shallow infiltration systems are effective and meet TRPA's requirement for one foot of separation between the bottom of an infiltration system and seasonal high groundwater. Appropriate systems sized in accordance with the BMP Calculation Spreadsheet may include a sediment trap within a shallow gravel or prefabricated infiltration system, a shallow rock lined and/or vegetated infiltration basin and/or water spreading into adjacent vegetation.

Please note if utilizing pervious coverage exemption pursuant to TRPA Code § 30.4.6.D.1 full infiltration BMPs are required.