Sierra Valley Groundwater Sustainability Plan

Advisory Committee Summary Sheet

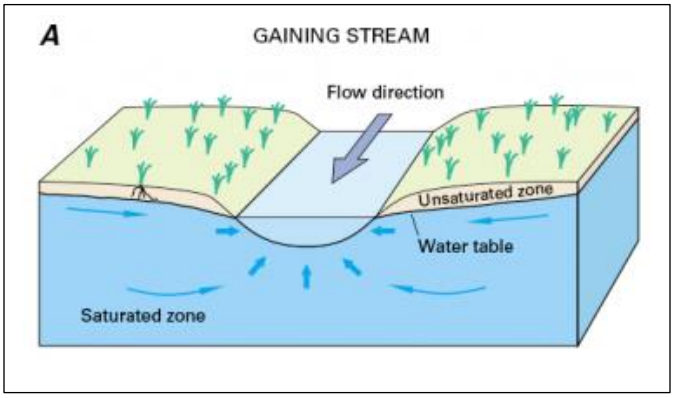
INTERCONNECTED SURFACE WATER (ISW) and GROUNDWATER-DEPENDENT ECOSYSTEMS (GDEs)

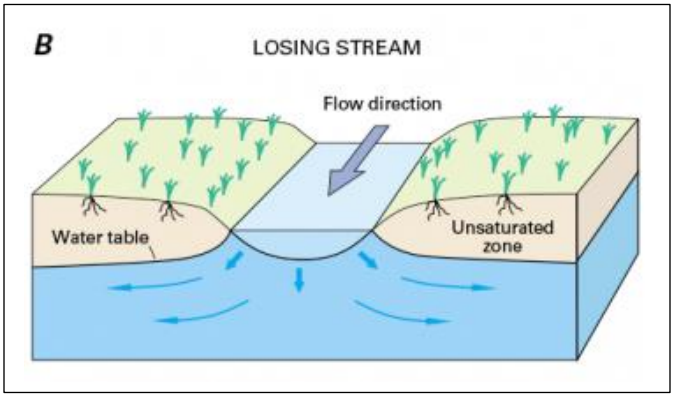
Background

Conditions and features seen at ground level can be connected to, and supported by groundwater resources. For example, streams may be connected to groundwater. Similarly, vegetation may rely on subsurface water supplies. These two concepts are similar yet different. Interconnected surface water involves connections to groundwater that occur at or very near the surface. Groundwater-dependent ecosystems can be supported by groundwater resources found up to 30 feet below the surface for some deeply rooted plant species.

Interconnected Surface Water

Interconnected Surface Water refers to waters at ground level that at are connected to groundwater by a continuous saturated zone. Where groundwater elevation is higher than surface water, groundwater flows into a stream or lake, the body of surface water "gains" water from the adjoining groundwater (Figure A). Conversely, where groundwater elevation is lower than surface water elevation, streams and lakes "loses" water to the adjoining groundwater (Figure B).





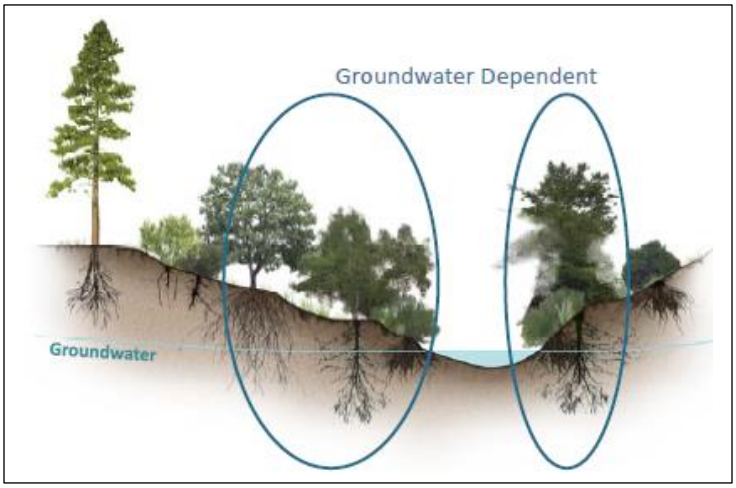
The relationship between groundwater and surface water can be mapped by:

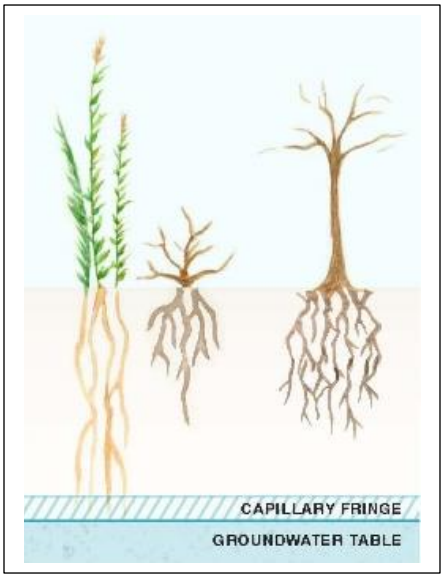
- Starting with a map of surface water areas (the National Hydrography Dataset);
- Comparing surface water elevations with nearby groundwater elevations and whether the gradients in groundwater causes water to flow toward or away from the stream; and/or
- Conducting field assessments of surface water during dry times of the year (where the absence of surface water strongly suggests an absence of connections to groundwater).

The general approach to mapping Integrated Surface Water (ISW) is to start with the largest possible representation of ISW, or a channel network, then eliminating those bodies of surface water where no saturated zone connects it to groundwater – or where seasonal water bodies that are dry during summer and/or fall.

GROUNDWATER-DEPENDENT ECOSYSTEMS

DWR defines GDEs as ecological communities or species that depend on groundwater for some of their water needs. Access to groundwater may occur below ground (such as roots reaching the aquifer) or at the surface (for example, at springs, streams, or marshes that are fed by groundwater sources). GDEs are one of the beneficial users of groundwater in the basin. They can also support special-status species of plants and animals (i.e., those that are state or federally listed).





For vegetation, the vegetation type and the depth of plant roots relative to groundwater levels are the key determinants to whether vegetation is:

- Likely dependent on groundwater (roots extend to, or beyond, groundwater levels or depend on interconnected surface water)
- Potentially dependent on groundwater (plants species typically use groundwater, but groundwater may be too deep for roots to access)
- Not dependent on groundwater (dominant plant species does not use groundwater)

Where the surface is more than 30 feet above groundwater, it is assumed that vegetation is not dependent on groundwater. Other species (birds, fish, amphibians, insects, etc.) that depend on the vegetation and habitat sustained by groundwater are also part of a GDE.

As with the approach to mapping Interconnected Surface Water, mapping GDEs begins by mapping all vegetation – then eliminating vegetation that does not interact with groundwater.

PROPOSAL FOR ISW-GDE IN GSP

1. Refine mapping of Sierra Valley Interconnected Surface Water (ISW) and Groundwater-Dependent Ecosystems.
2. Until ISW-GDE areas are better understood, ***Measurable Objectives*** and ***Triggers*** for will be based on groundwater levels as a proxy.