

Public Comments on Agenda Item #12, June 17, 2015

Comments by

Matt O'Connor, PhD, CEG and

Jeremy Kobar, MS, CFM

O'Connor Environmental, Inc.

Healdsburg, CA www.oe-i.com

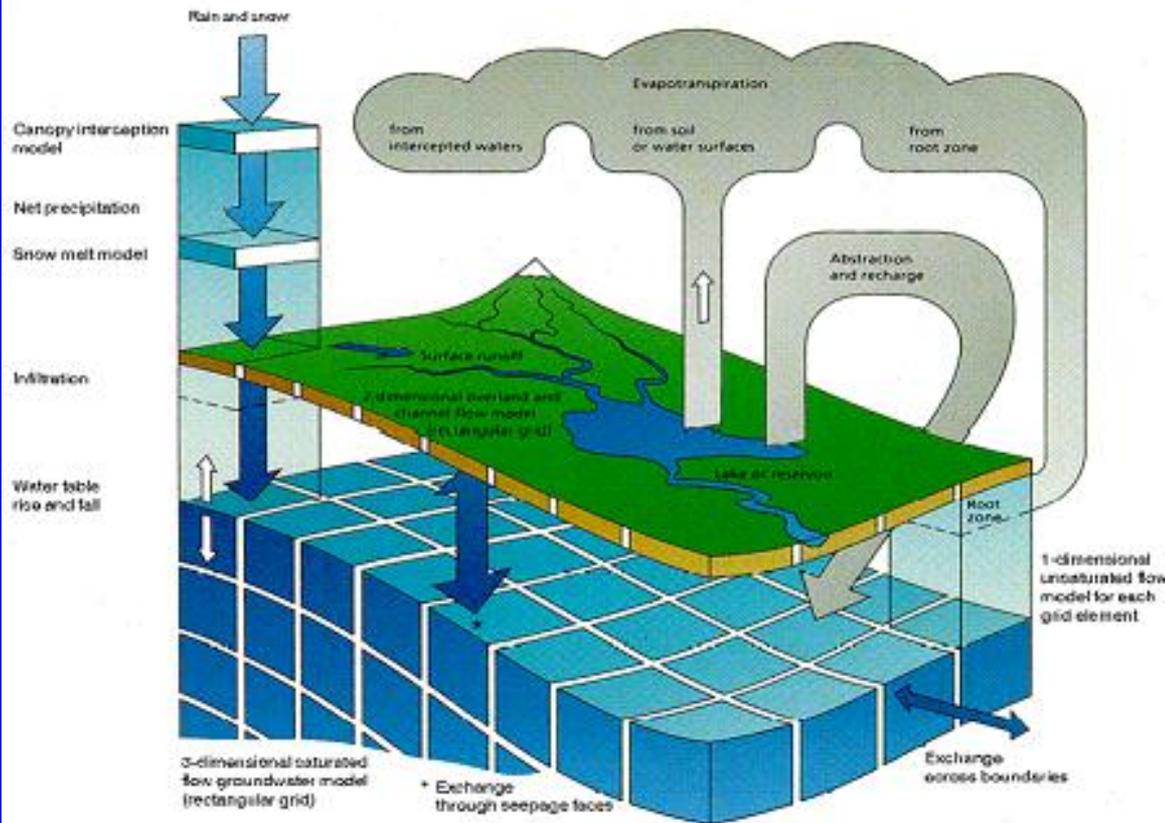
Hydrologic Modeling

- Project funded by California Department of Fish & Wildlife, Fisheries Restoration Program Grant to Gold Ridge Resource Conservation District
- OEI work in collaboration with Gold Ridge RCD
- Objectives
 - Evaluate spatial and temporal variation in summer base flow
 - Evaluate effects of water use and climate variability
 - Assist in planning fish habitat restoration projects

Model Overview

MIKE SHE

an Integrated Hydrological Modelling System



Precipitation

Evapotranspiration

Overland Flow

Unsaturated Flow

Groundwater Flow

River and Lakes

Irrigation

Sediment Transport

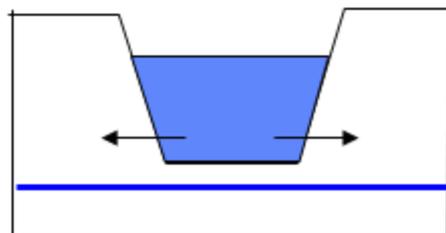
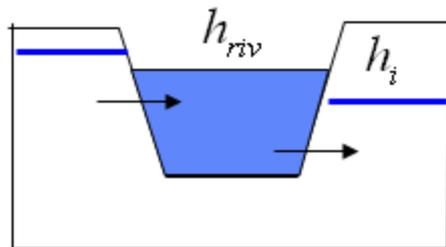
Water Quality

Model Overview

Water Level Gradient

Head difference between the river and the saturated zone is calculated as:

$$\Delta h = h_i - h_{riv}$$



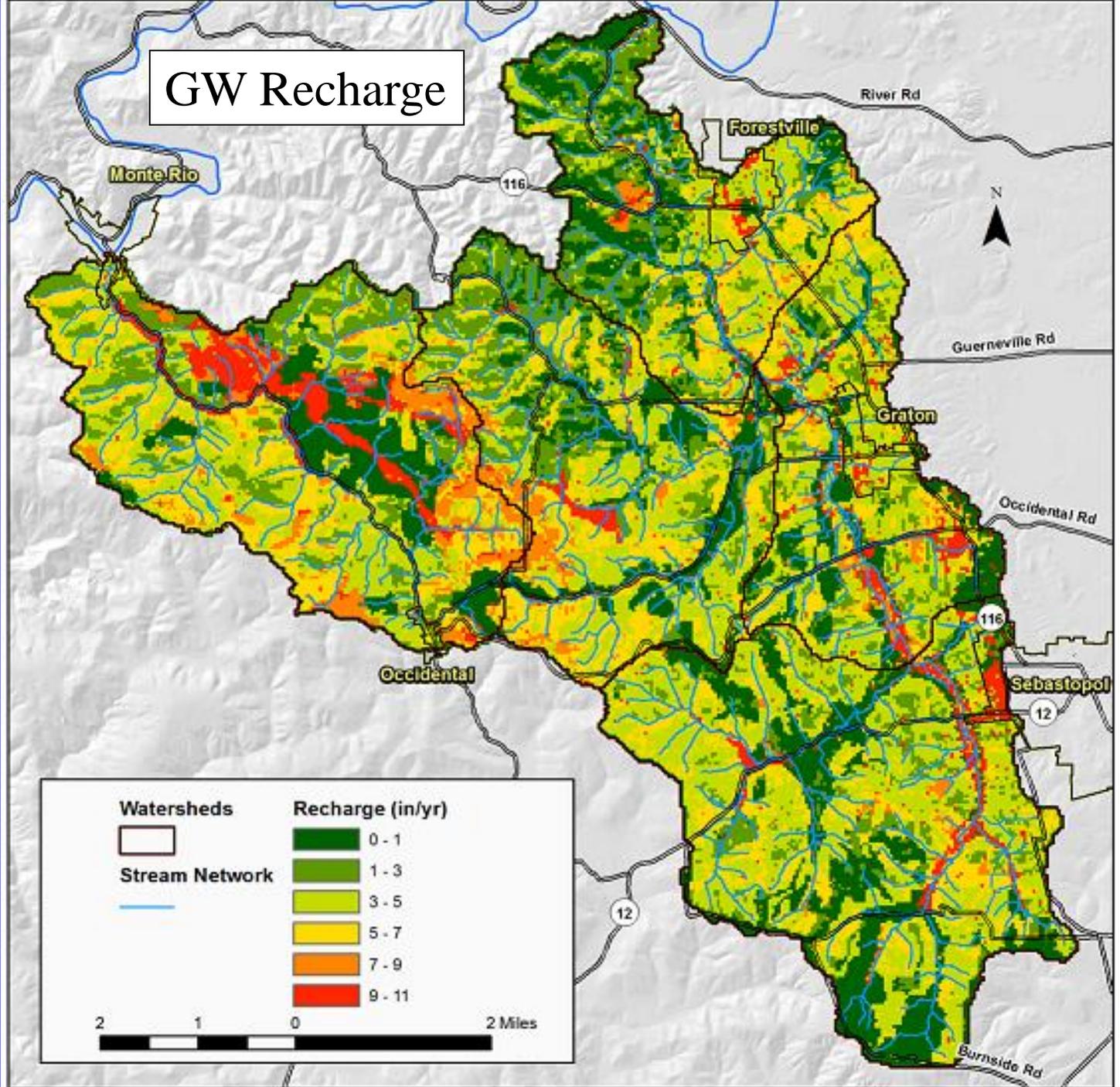
Conductance

Conductance calculated as the harmonic mean of the hydraulic conductivity of the aquifer and the river bed:

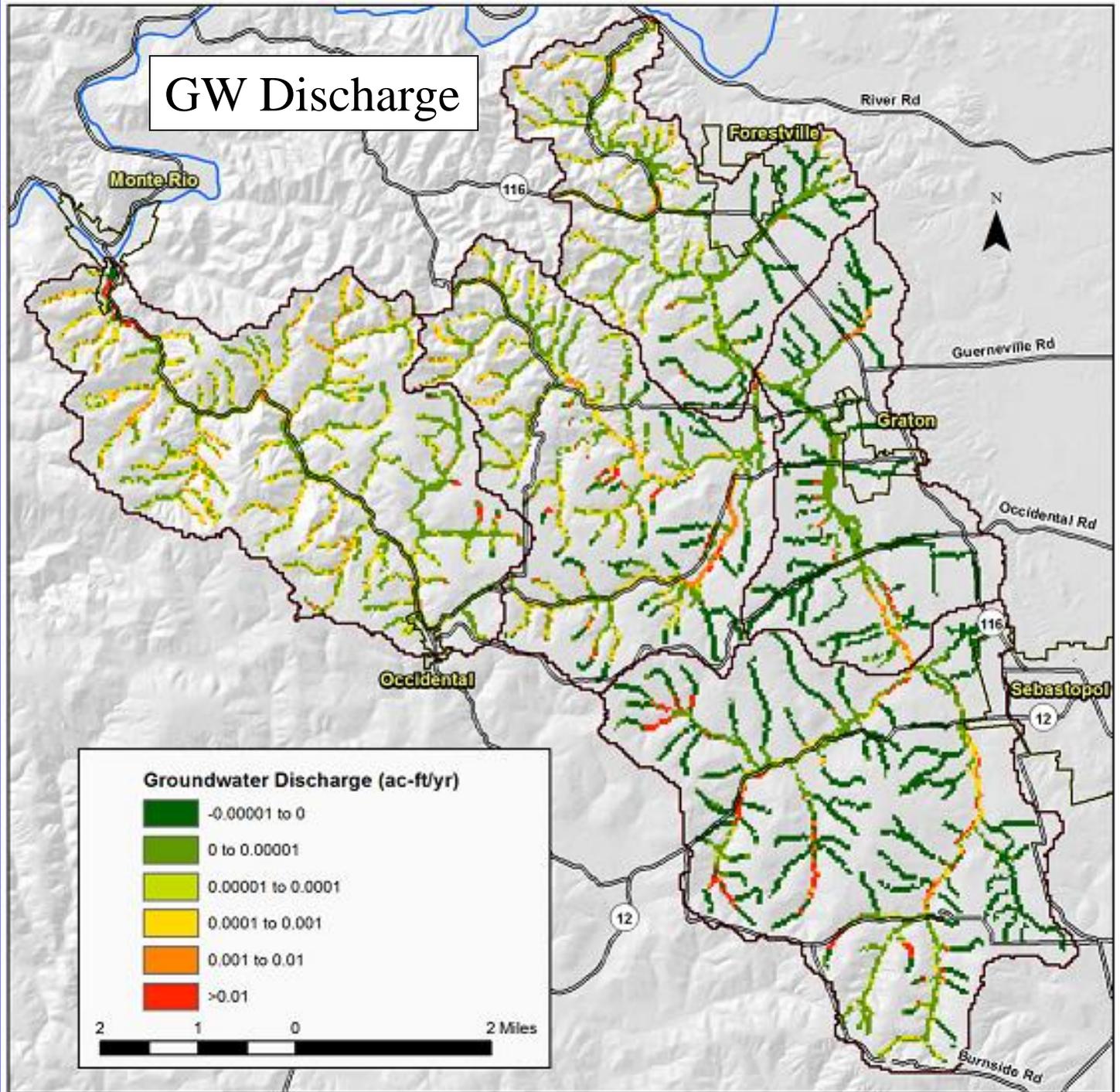
$$C_{i,sz-river} = \frac{1}{\frac{ds}{C_i \cdot da_i \cdot dx} + \frac{1}{C_{i,river} \cdot w_i \cdot dx}}$$

| | |
|---------------|--|
| h_{riv} | river water level |
| h_i | head in grid cell i |
| C_i | hydraulic conductivity in saturated zone |
| $C_{i,river}$ | leakage coefficient of river lining |
| da_i | saturated layer thickness |
| dx | SZ grid size |
| ds | Average flow length - distance |
| w_i | wetted perimeter in grid cell i |

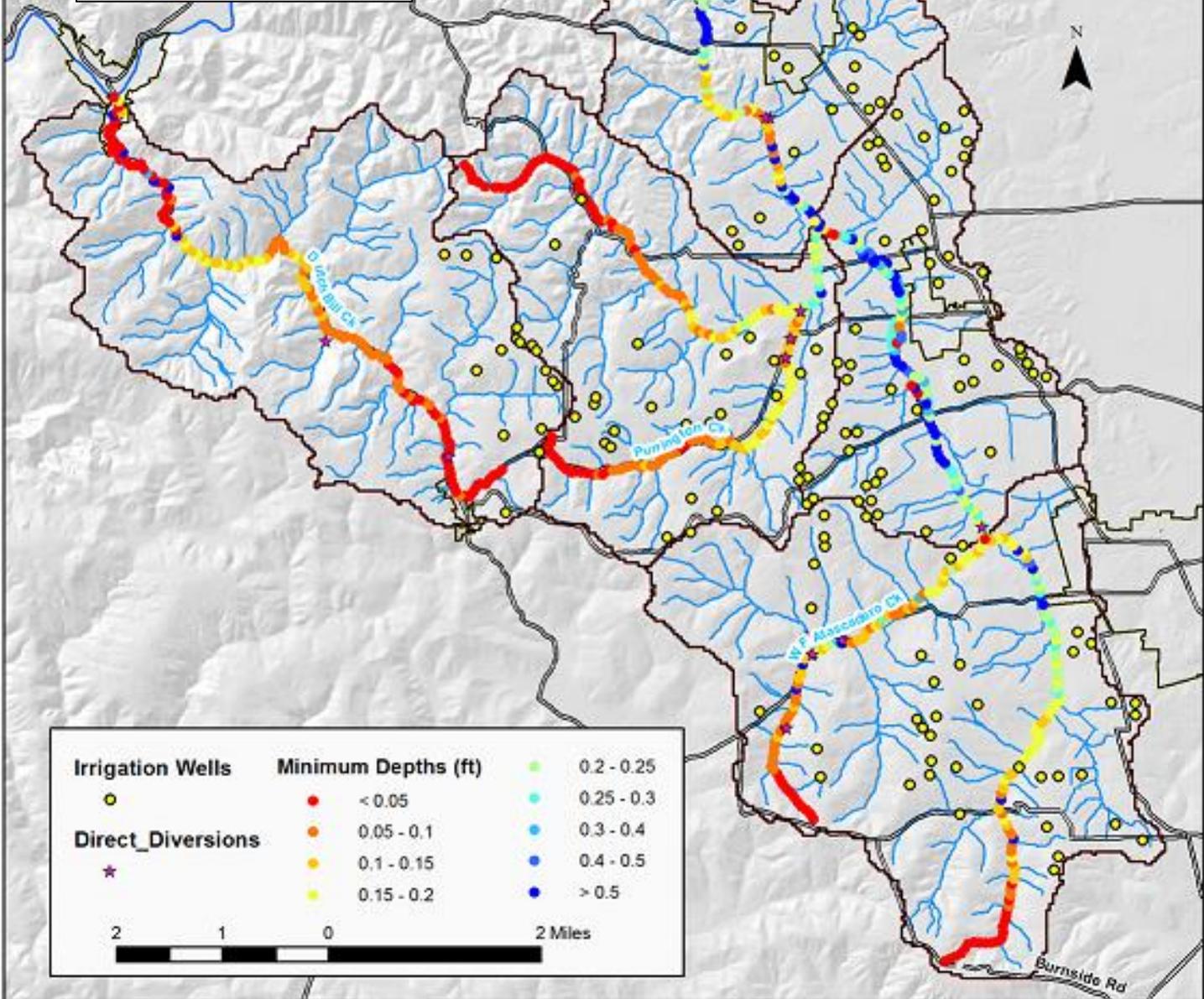
GW Recharge



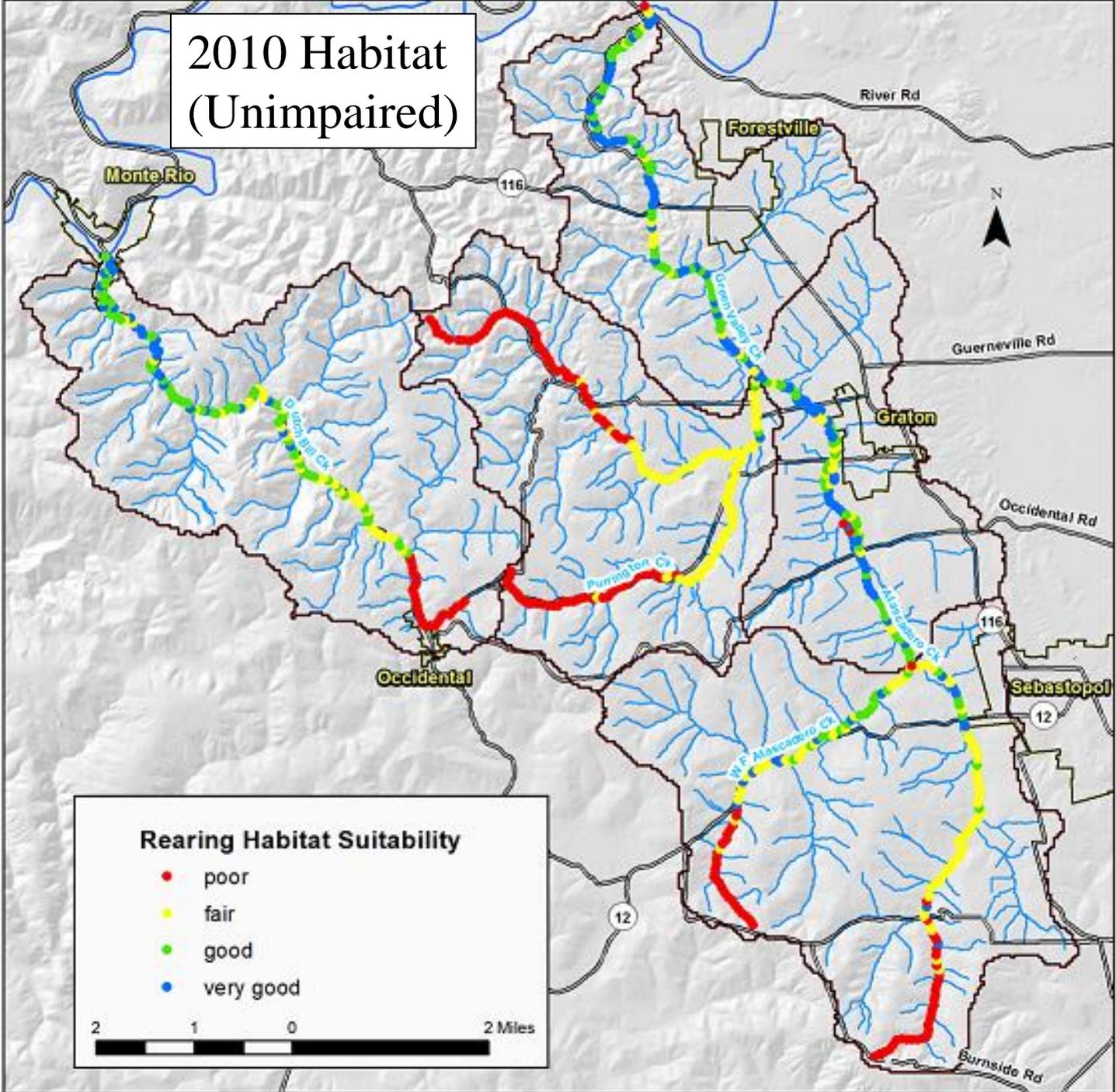
GW Discharge



Water Year 2014 Water Depths



2010 Habitat
(Unimpaired)



1977 Habitat (Climate Change)

