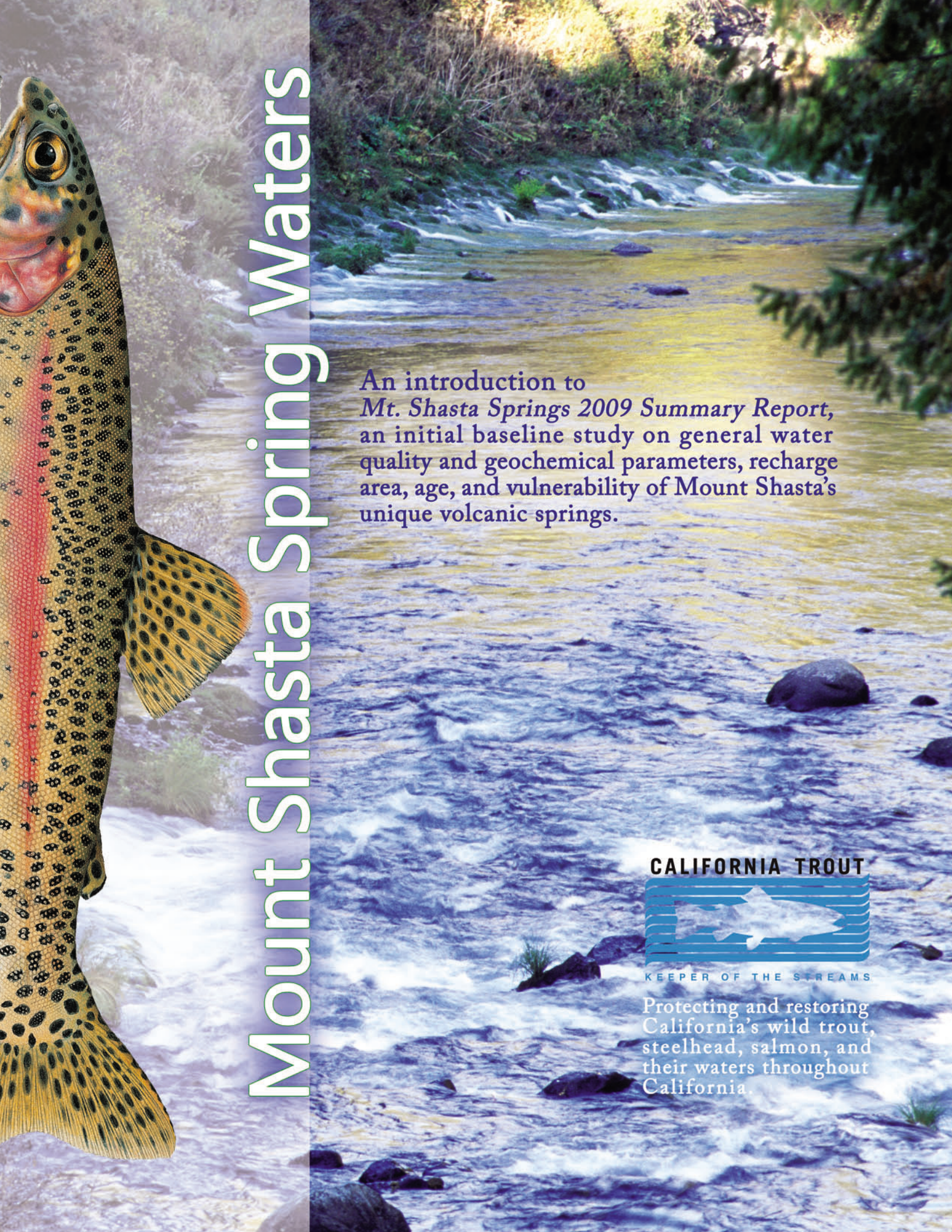


Mount Shasta Spring Waters

An introduction to
Mt. Shasta Springs 2009 Summary Report,
an initial baseline study on general water quality and geochemical parameters, recharge area, age, and vulnerability of Mount Shasta's unique volcanic springs.

CALIFORNIA TROUT

KEEPER OF THE STREAMS

Protecting and restoring California's wild trout, steelhead, salmon, and their waters throughout California.

Mount Shasta Spring Waters

Mount Shasta spring waters are vital to the ecology, economy and people in Siskiyou County and California.

The Mount Shasta volcano is located in the heart of the Klamath-Cascade Region in far northern California (about 50 miles south of the Oregon border). Mount Shasta's snowpack and glacial meltwater percolate through the volcanic geology and come out as hundreds of springs around the mountain. Mount Shasta's springs feed the Shasta River, the McCloud River, and the Upper Sacramento River.

Spring-fed rivers have a constant input of cold water, as opposed to rivers fed primarily by surface runoff. The cold, clean spring waters that issue from Mount Shasta provide ideal habitat for native trout, steelhead and salmon populations in the McCloud, Upper Sacramento and Shasta river watersheds. These cold waters are responsible for the unique life histories of the region's famous fish and will act as an important factor for the future of these fish in the face of climate variability.

Mount Shasta's cold, clean spring waters also feed critical municipal water supplies for the towns of Weed, Mount Shasta, Dunsmuir and McCloud. Mount Shasta spring water provides important inflow into Shasta Reservoir, which is vital to the state's agricultural, hydropower, municipal and industrial water supplies.

Despite their importance, no comprehensive study of Mount Shasta's unique spring resources exists. This lack of baseline information makes it difficult to formulate science-based water policy and management decisions. The need to better understand Mount Shasta's springs and their potential vulnerability to development became clear when Nestle Waters proposed to bottle spring water that feeds the McCloud River.

In 2007, to begin bridging this knowledge gap, CalTrout brought together a group of scientists to design an initial baseline study of Mount Shasta's springs. Study components such as which springs to study, what characteristics to study, and what equipment and sampling methods to use were determined. CalTrout hired AquaTerra Consulting to manage the study, perform the fieldwork, and write the report. The study ran from 2007-2009 and the Mt. Shasta Springs 2009 Summary Report was published in 2010. The Mt. Shasta Springs Vulnerability Rating, an addendum to the study, was published in 2011.

Mount Shasta Springs Study

Better understanding Mount Shasta's springs and groundwater will help inform science-based water policy and management decisions.

The study objectives were to assemble existing available data, establish a monitoring program at prioritized springs, and to develop a spring vulnerability rating. The study questions were: At what elevation on the mountain does the spring water originate? How long does it take for water to emerge as a spring? What are the recharge areas for regional groundwater? Are the springs related? How vulnerable are the springs to climate variation?

The scope of the Mount Shasta Springs study included taking water samples from 22 springs on Mount Shasta. Springs at high, middle, and low elevations in each of the three watersheds (Shasta, Upper Sacramento and McCloud) were sampled. The water samples were analyzed for a full suite of general water quality and geochemical parameters. A subset of the samples was also analyzed for oxygen and hydrogen isotopes. Five of the spring samples were age dated based on analysis of the tritium isotope. The flow of nine springs was monitored quarterly to determine if there are seasonal and/or yearly fluctuations. After the first year the study was refined and the 2009 report summarizes and analyzes the first two years of data.

The purpose of the sampling was to determine the elevation that spring water originates on the mountain (recharge elevation), approximate age of the water (residence time), and if any of the springs may be related (possible flow paths of groundwater through the mountain).

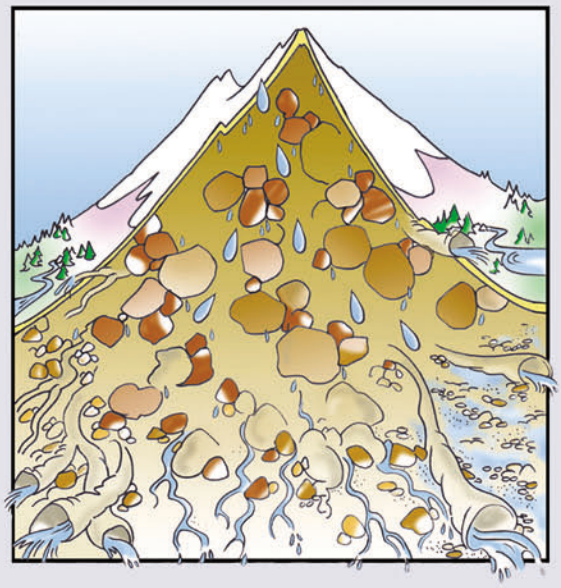
The information collected from the study was used to develop a vulnerability rating for the springs sampled. The rating analysis assumed that Mount Shasta spring waters could be vulnerable to land use (water quality), development (water use), and climate change (variability). The purpose of the vulnerability rating is to assist with water management decisions.

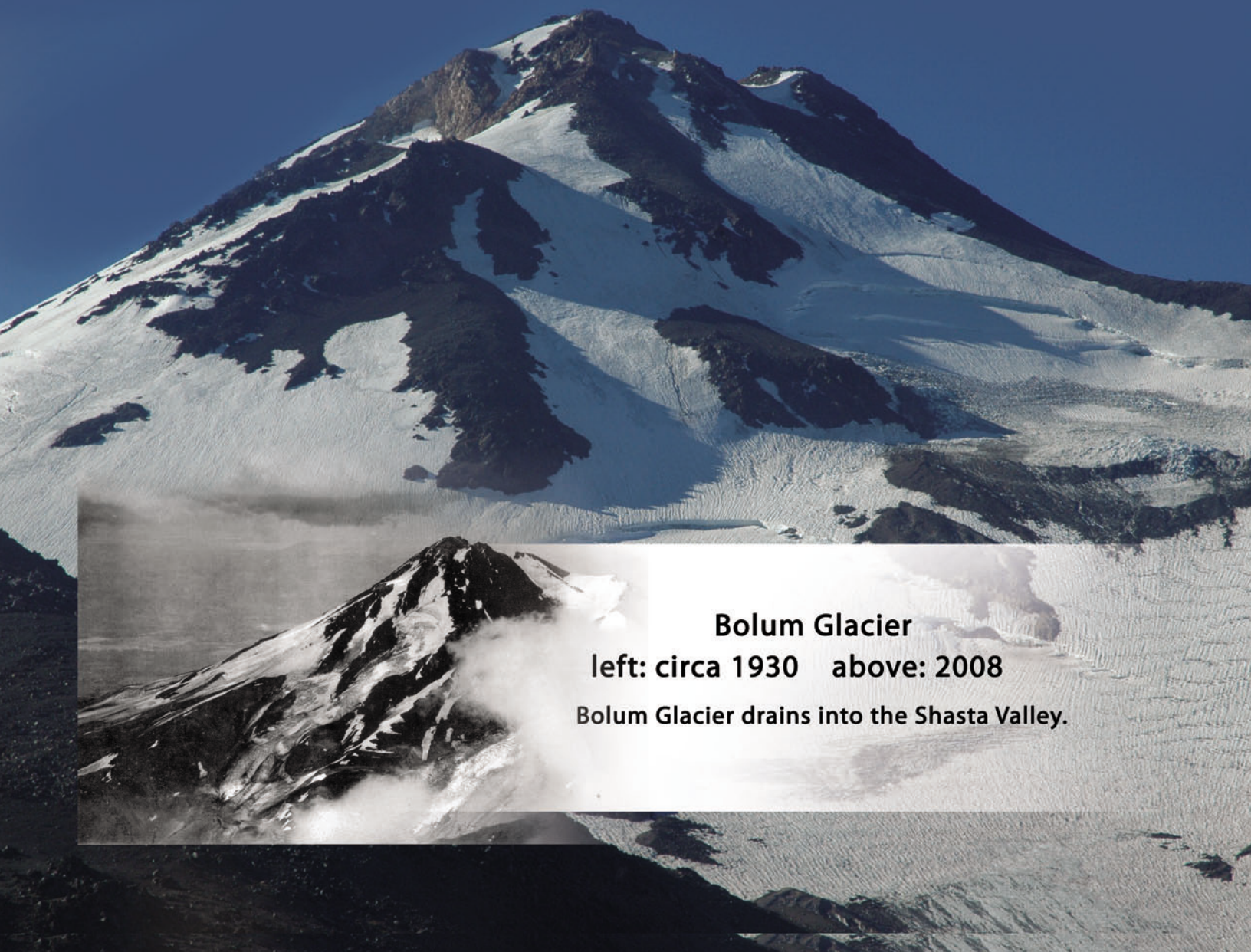
California Trout's goal is to protect the ecological and hydrological integrity of Mount Shasta's unique spring waters and to share information with the public.

Of the hundreds of springs emerging from Mount Shasta, three are called "Big Springs," one in each watershed.
Shasta Watershed
McCloud Watershed
Sacramento Headwaters Watershed
Shasta River Watershed
McCloud River Watershed
Upper Sacramento River Watershed
Crystal Geyser
Mt. Shasta Spring Water
Coca Cola (non-operational)
Big Springs-MS City Park
Mt Shasta
Dunsmuir
McCloud
Montague
Yreka
Fort Jones
Weed
Lake Shastina
LAKE SHASTINA
LAKE SISKIYOU
LAKE SHASTA
The Nature Conservancy
Klamath River
Shasta River
Scott River
Sacramento River
McCloud River
Pit River
IRON CANYON
Macdoel
Bear Wallow
Little Shasta Spring
Cold Bottle Spring
Smith Spring
Dorris Spring
Cold Spring
Jims Springs
Tunnel Spring
Evans Spring
Warm Spring
Bearwallow Spring
Maple Spring
Swabs Spring
Lower Maple Spring
Upper Maple Spring
Iron Trough Spring
Silvas Spring
Mud Spring
Horse Trough Spring
Klamathon Spring
Steep Trail Spring
Black Rock Spring
Cold Spring
Stock Trail Spring
Eaton Spring
Tecnor Spring
Shasta Valley Big Springs
Little Springs
Hole in the Ground Spring
Hidden Ranch Spring
Kettle Springs
Bridgefield Springs
Soda Spring
Carrick Spring
Boles Spring
Beaughton Creek Spring
Mt. Shasta Summit Spring
Black Butte Spring
Alpine Lodge Spring
McBride Springs
Big Springs-MS City Park
Howard Springs
Big Canyon Creek Spring
Bear Spring
Ney Springs
Trout Camp Spring
Heron Spring
Cave Springs
Upper Soda Springs
Popcorn Spring
Indian Springs
Soda Springs
Water Trough Springs
Big Spring
Cold Spring
Sardine Spring
Cold Spring
Shiloah Mineral Springs
Grouse Spring
Maple Spring
Indian Spring
Crystal Spring
Hackney Spring
Shoemaker Spring
Sheep Springs
Alder Spring
Frank Storey Spring
Clover Creek Spring
Shingle Spring
Shingle Springs
Filson Spring
Onion Spring
Bishop Spring
Pinto Spring
Lost Spring
Bear Spring
Harris Spring
Dry Creek Spring
Lava Crack Spring
Belnap Spring
Deter Spring
Point Spring
Cramer Spring
Junction Spring
North Ash Creek Spring
Green Butte Spring
Panther Meadow Spring
West Squaw Meadow Spring
Widow Spring
Buck Mountain Spring
Slagger Spring
Little Spring
Red Tank Spring
Sheepheaven Spring
Twin Springs
McKay Springs
Cold Spring
Deer Spring
Two Springs
Cub Spring
Bundora Spring
Muir Spring
Esperanza Spring
Hooper Spring
West Soda Cr Spring
East Squaw Valley Creek Springs
Squaw Meadow Spring
McCloud Big Springs
McCloud Soda Springs
Huckleberry Spring
Grass Spring
Deer Springs
Dad Lofton Spring
Willow
Jake Spring
Mud Spring
By Gonney Sp
Indian Spring
Mt. Shasta Spring Water Resources
Miles
Kilometers
Scale: 1:380,160 1 inch = 6 miles
Natural Resource Geospatial
CALIFORNIA TROUT
KEEPER OF THE STREAMS
LEGEND
Bottling Plants
Springs
Rivers and Streams
Rivers
Major Streams
Minor Streams
Diversions
Lakes
Communities
4th Field Watersheds
Roads
Other
Interstate
US Highway
State Highway
County Highway
Townships
Wilderness Boundaries
Wilderness Areas
Regional Ownership
Private, Local
Private Industrial Timberlands
Bureau of Land Management
Forest Service
National Park Service
State
The Nature Conservancy

Why are Mount Shasta Springs special?

Mount Shasta is the largest Cascade stratovolcano by volume at 120 cubic miles. Mount Shasta is made up of multiple cones of different ages. Overlapping fractured volcanic geology and lava tubes are the dominant repositories for water. The Mount Shasta volcano acts like a giant sponge. Rainfall, snowmelt and glacial meltwater filter through layers of volcanic rocks and come out as hundreds of springs around Mount Shasta. There are a few perennial streams flowing off the sides of the mountain, but most of the water is absorbed into the ground. This groundwater flows to the surface as springs, feeds the base flow of rivers, and is pumped by private and municipal wells.





Bolum Glacier
left: circa 1930 above: 2008

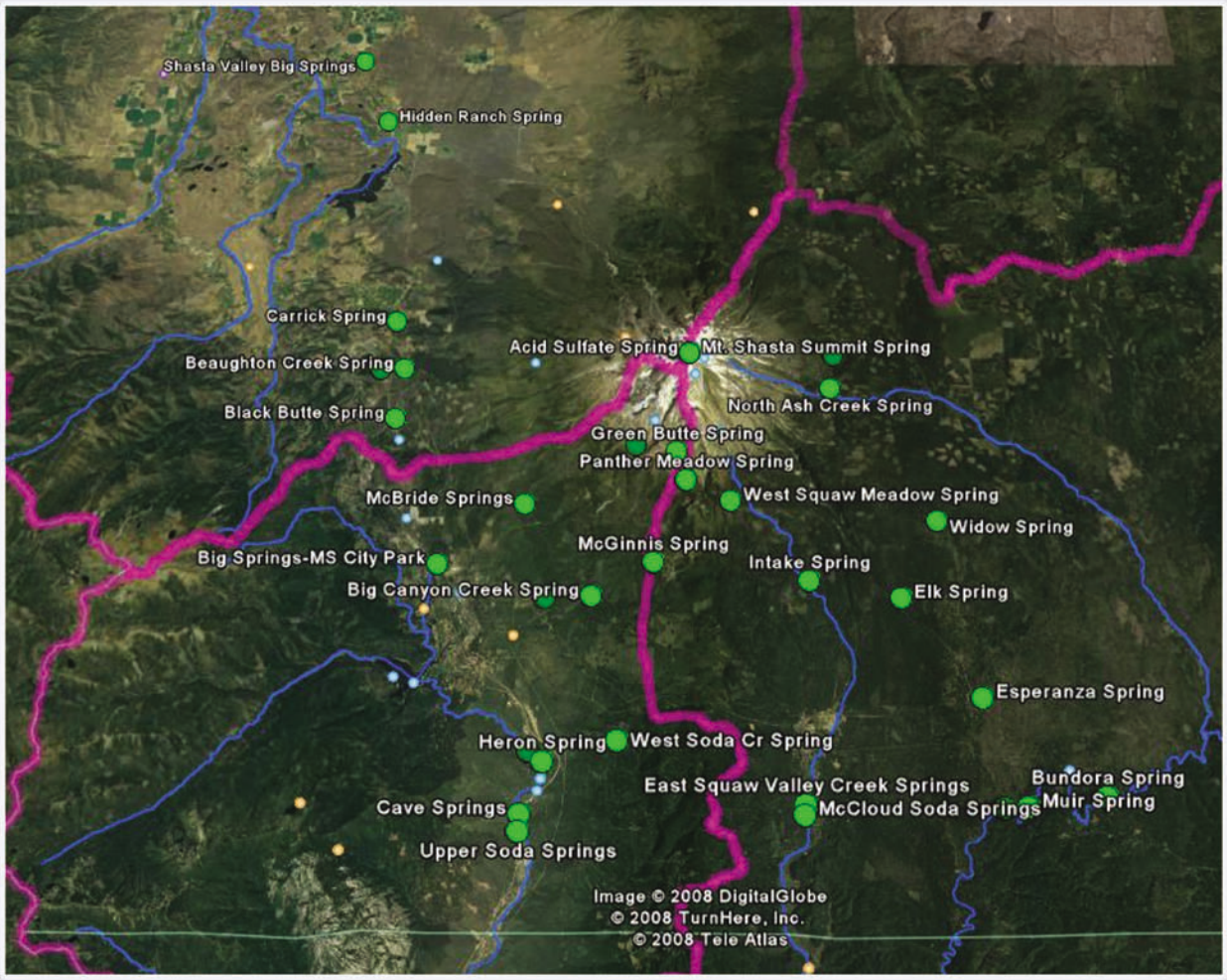
Bolum Glacier drains into the Shasta Valley.

The Age of the Water (Residence Time)

The age of the water, or residence time, is how long it takes for water that fell as rain or snow to percolate into the ground and emerge as a spring.

How do we calculate the age of water? Water younger than 50 years old is age dated through analysis of the tritium isotope. Prior to above ground nuclear testing there was 3 to 4 kilograms of the tritium isotope on the earth's surface. In the late 50's and early 60's nuclear testing in the high latitudes of the northern hemisphere increased tritium by 2 to 3 orders of magnitude, which enables us to measure concentrations of the isotope in water to determine the age of water less than 50 years old. Water older than 50 years would have to be determined using different methods, such as carbon dating.

How old is Mount Shasta's water?



5 Springs Tested For Age

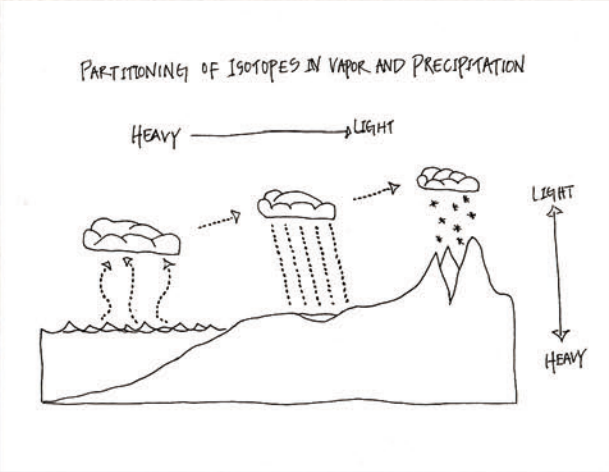
Spring	Watershed	Estimated Age
Carrick Spring	Shasta	>50 years
Mt. Shasta Big Springs	Sacramento	>50 years
Muir Springs	McCloud	14 years
Shasta N. Spring	Shasta	26 years
Shasta E. Spring	Shasta	44 years

How high on Mount Shasta does the water for a spring come from?

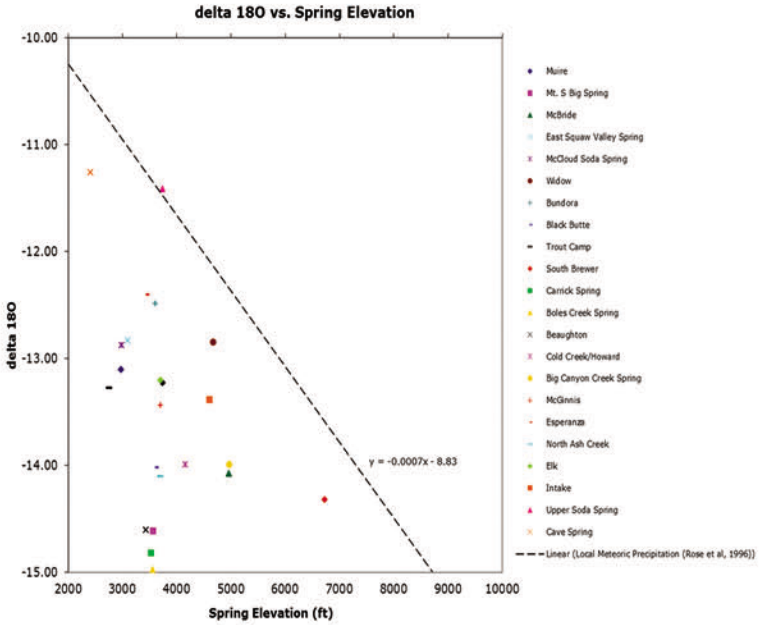
Recharge Elevation

Knowing the recharge elevation and the residence time of a spring gives us a good picture of how the spring may be vulnerable to climate variation and can help us predict drought conditions.

The recharge elevation for springs is determined by analyzing the stable hydrogen and oxygen isotopes in the water. As clouds release their precipitation, the heavier isotopes fall out at lower elevations leaving lighter isotopes to fall at higher elevations. Based on the isotopes in Mount Shasta's spring water, the elevation that the water fell as rain or snow is calculated.



The distance between the elevation where the rain or snow fell and the elevation a spring discharges (comes out of the ground) could be considered the recharge area of the spring. Of the 22 springs sampled for hydrogen and oxygen isotopes, the data indicates that the recharge elevation for almost all of them is above 5,200 feet, and thus lies within the protection of the Mount Shasta Wilderness boundaries.



This graph is based on the isotope analysis for the 22 springs sampled in the study. The y-axis is stable oxygen isotopes (delta 180) in rainwater. Using the regression line of oxygen isotopes in relation to elevation developed by Timothy Rose et al.1996, the approximate recharge elevation for the springs was determined.

McBride Springs
Upper Sacramento Watershed
The calculated recharge elevation for McBride Springs is 7408 feet.
The discharge elevation is 4969 feet.

What types of chemicals and minerals are in Mount Shasta's spring water? Are the springs related?

Water Quality and Geochemical Analysis

The differences in temperature and mineral content of Mount Shasta's springs indicate that the water takes multiple flow paths through the mountain, some shallow, some deep.

Even with some slight differences in temperature and mineral content, the majority of Mount Shasta's water is remarkably similar. It is very low in total dissolved solids and relatively young. The water moves fairly quickly through unweathered andesite and thus does not have a lot of time to pick up minerals from the rocks with the exception of the springs in the Shasta Valley, which have higher mineral content. A correlation was found between increased travel distance and increased mineral content. For springs with a longer flow path (>4000 feet) between recharge elevation and discharge elevation there is increased mineral content.

Most cold springs emerge from the ground at about 7 degrees Celsius (45°F) as determined by the mean atmospheric temperature at that location. These are categorized as cold non-thermal springs. Some of the springs emerging in the Shasta Valley are also slightly different in terms of temperature. They are characterized as slightly thermal springs, meaning they are warmer than the mean atmospheric temperature. The warming is thought to occur because the deep flow path of these springs comes close to Mount Shasta's magma. These springs are typically around 11 degrees Celsius (52°F). There are also slightly thermal mineral springs such as McCloud Soda Springs (McCloud watershed) and Upper Soda Spring (Upper Sacramento watershed) that have more extensive water and rock interactions and thus higher amounts of dissolved constituents such as sodium, magnesium, calcium and chloride.

Temperature and Minerals

Mount Shasta springs fall into three categories:

1. Cold (non-thermal) springs (<10°C)
2. Slightly thermal springs (≥11°C)
3. Slightly thermal mineral springs (>400mg/L dissolved constituents)

Esperanza Spring
McCloud Watershed
Recharge Elevation: 5054 feet
Discharge Elevation: 3437 feet

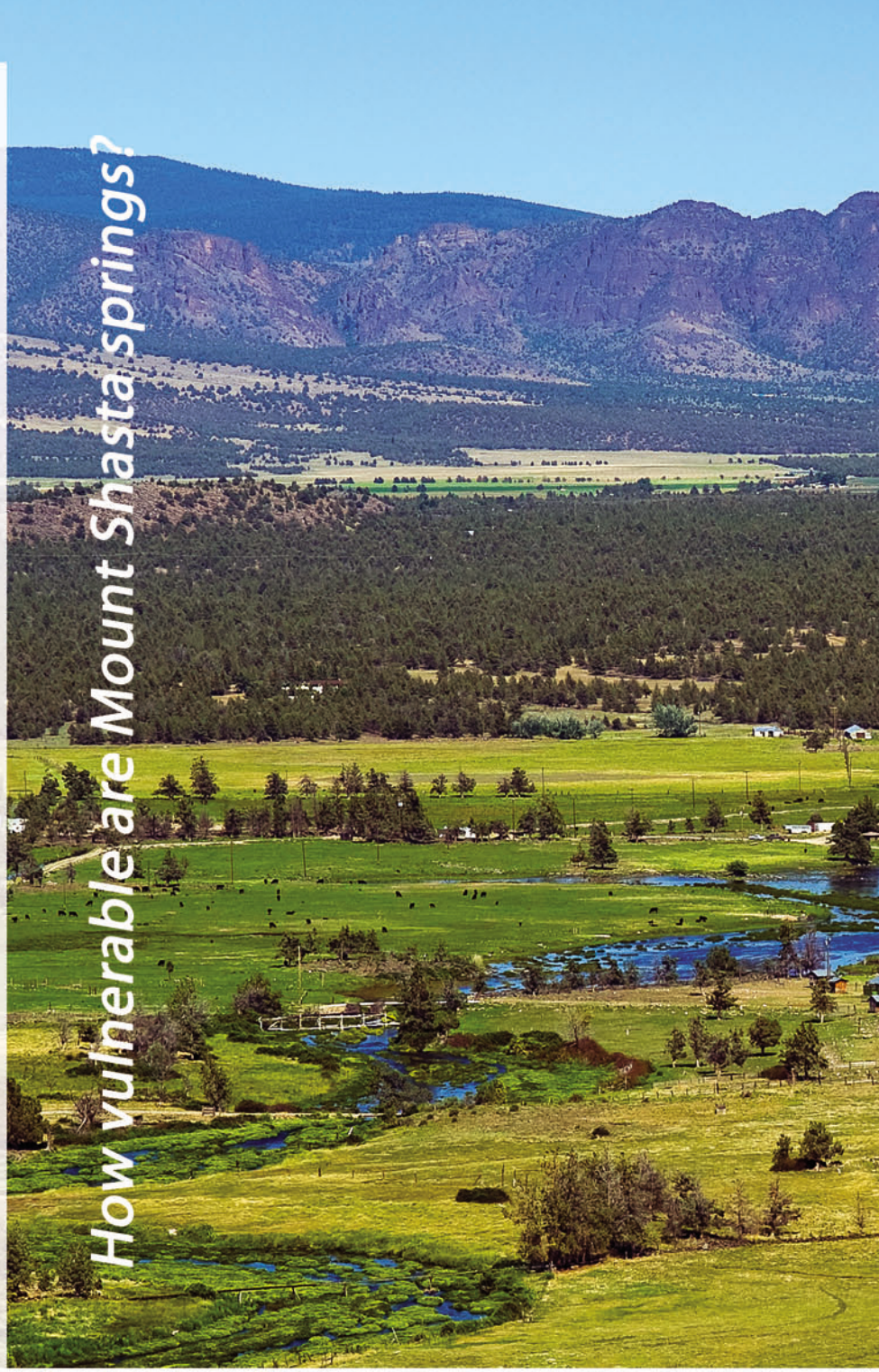
General Source Vulnerability

Most of the recharge area for the springs sampled is contained within the boundaries of the Mount Shasta Wilderness Area. As a result of the predominately highly protected nature of the recharge area of these springs, source vulnerability from a water quality perspective appears to be fairly low.

A 2006 UC Santa Cruz study found that Mount Shasta's glaciers are in a growth phase. The scientists theorized that in the past half-century the glaciers have been responding more to increased precipitation, as snowfall, than increased temperature. Given predicted warming trends the glaciers will likely shrink as precipitation comes in the form of rain. It is uncertain how changes in snowpack and temperature will affect spring discharges in the future. This raises questions of source supply vulnerability due to changes in total spring flows and the timing of spring flows.

Flow monitoring

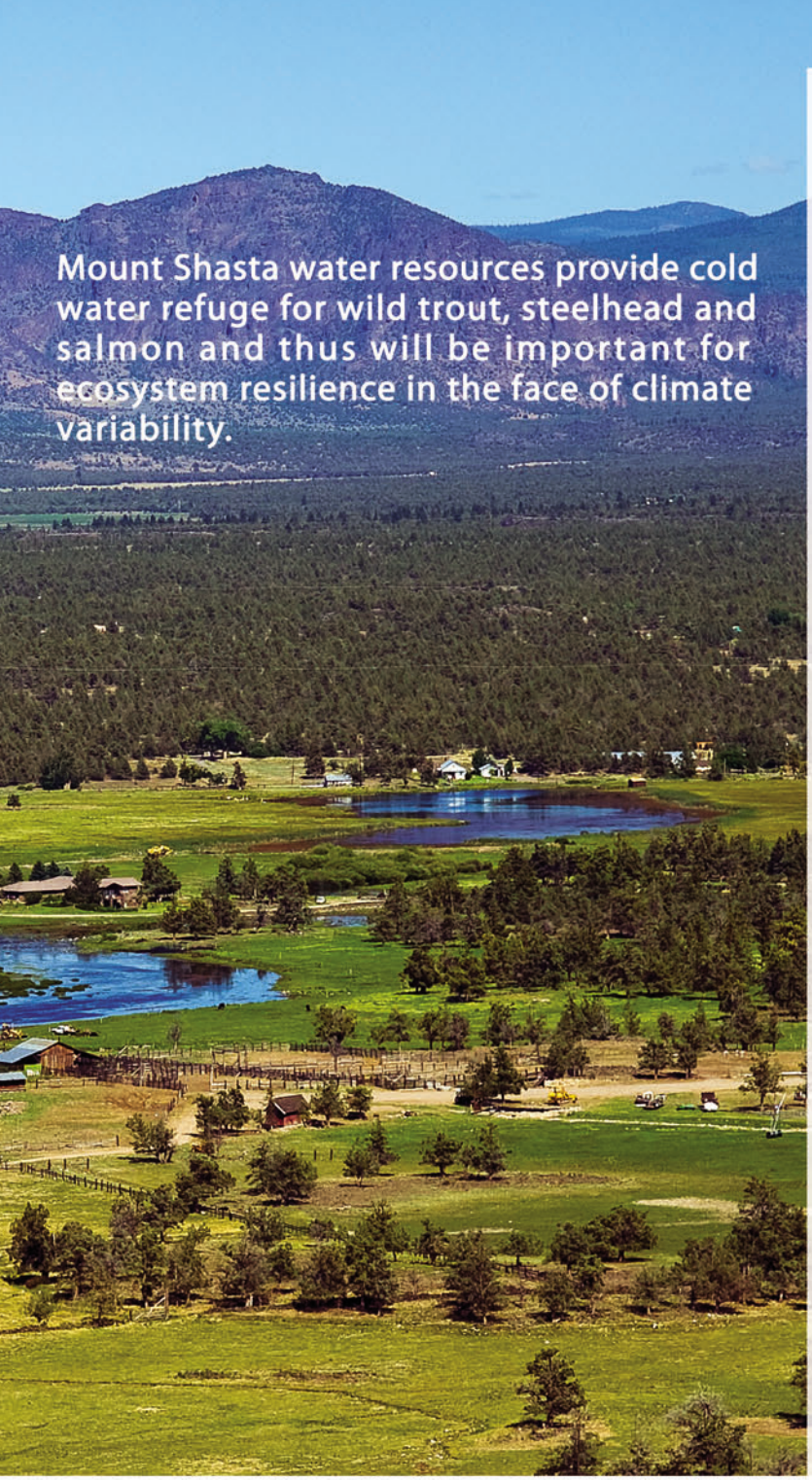
Limited flow monitoring was done of 9 springs (one reading per month) to identify if any of the spring flows fluctuate from season to season or watershed to watershed. The smaller springs (especially those at higher elevation) on the south side of the mountain showed fluctuation in flow throughout the year whereas springs on the north side did not seem to fluctuate. This may be due to the southside springs sourcing from snowpack and the north side springs sourcing higher on the mountain and being fed by glaciers.



Mount Shasta spring vulnerability rating showing one spring from each watershed.

Spring Name	Watershed	Description	Discharge Elevation (ft)	Calculated Recharge Elevation (ft)	Max recorded Discharge (cfs)	Average Temperature °C / °F	Age/Residence Time
Widow	McCloud	Discharges on the Mount Shasta Forest Subdivision property, unknown if spring channel is tributary to any other stream. Local recharge area, snow pack source likely.	4675	5676	0.512	4.31 / 39.76	No Data
Carrick Spring	Shasta	Slightly thermal spring emerging in Carrick Park. Long residence time and high mineral content. Highly utilized by agricultural diverters downstream.	3531	8464	8.529	10.6 / 51.08	>50
Trout Camp	Sacramento	A developed spring emanating from the mountainside above the Sacramento River. Local recharge mixing.	2753	6279	1.405	7.7 / 45.86	No Data

To see the vulnerability rating for all the springs included in the study see:



Mount Shasta Spring Vulnerability Rating

Monitoring data from the study was used to develop a vulnerability matrix to assist with future water management. Water quality vulnerability was based on the spring recharge area in relation to development and potential contamination sources. Water use vulnerability was based on the demands placed on the spring or its recharge area. Climate change vulnerability was based on the elevation of the spring's recharge area.

A vulnerability matrix identifies and describes each spring included in the study as well as outlines the discharge/recharge elevations for all the springs and rates each spring for potential vulnerabilities. The vulnerabilities analyzed were Water Quality, Water Usage, and Climate Change. Each spring is given a score for vulnerability within each of the three criteria with 5 being vulnerable to 1 being not vulnerable.

1. **Water Quality vulnerability** is defined as any potential for the spring to become contaminated by sediment, nutrients, heavy metals, and hydrocarbons. This includes contamination within the recharge area (septic infiltration, leaking gas tanks, etc.), run-off directly into the spring or spring channel, which primarily consists of sedimentation from erosion (often associated with logging, road building and development).

2. **Water Usage vulnerability** could be associated with any development within the spring's recharge area, above the discharge point, or below the discharge point that results in a net reduction in water available for ecological uses. This can include residential, industrial, agricultural, or community use of water from the spring resource.

3. **Climate Change vulnerability** is associated with the potential impact to spring production due to reduced snowpack within the recharge area. It was assumed that springs with lower recharge elevations or local recharge area (close to the discharge point) may be vulnerable to climate change impacts and springs with higher recharge elevation or longer residence time may be less vulnerable.

Potential Vulnerability (5= Vulnerable and 1= Not vulnerable)			Total Vulnerability Index	Vulnerability Explanation
Water Quality	Water Use	Climate Change		
3	3	4	10	The location of this spring (and its suspected recharge area) in relation to logging activities and residential development make it slightly more vulnerable to water quality and usage concerns. Its lower recharge elevation also make it more vulnerable to climate change.
1	5	1	7	Carrick Spring has low vulnerability for water quality and climate change concerns due to its high recharge area. The water usage concern is significant due to agricultural diversions downstream (over adjudicated).
3	3	3	9	This spring is suspected to have low/local recharge, making it more vulnerable to water quality (close to I-5) and climate change concerns.


Shasta Big Springs Complex
Courtesy of Val Atkinson

Mount Shasta spring waters support unique native trout, steelhead and salmon populations in the Shasta, Upper Sacramento and McCloud rivers.

Mossbrae Falls
Courtesy of Nathan Johnston

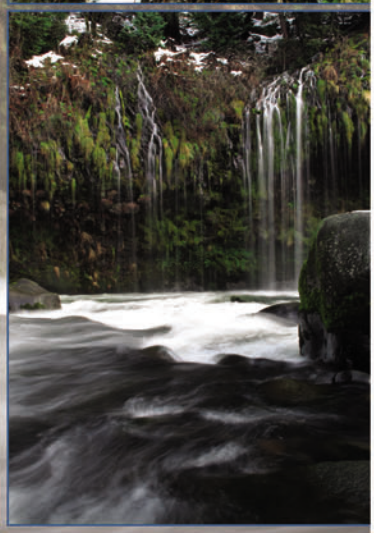
Watershed
Upper Sacramento River

Basin: **592 square miles**
Average precipitation:
39 inches per year
in Mt. Shasta City

Most of the water entering the Upper Sacramento River comes from the Trinity Divide (Eddy Mountains). Mount Shasta spring waters enter the watershed at Mount Shasta Big Springs (known as the headwaters of the Sacramento River located in Mt. Shasta City Park) and along the river in multiple places, most notably at Mossbrae Falls.

Snowpack

There are no glaciers on the southwest drainage of Mount Shasta. The smaller springs on the south side of the mountain showed fluctuation during the monthly flow monitoring visits. This could be due to their being fed by snowpack. Future studies may look at temperature and precipitation trends on the mountain with the potential to forecast how spring discharge may be impacted by climate variation.



Spring

Mount Shasta Big Springs

Description: Known as the headwaters of the Upper Sacramento River, three springs discharge at the base of Spring Hill in Mt. Shasta City Park. The spring has a high recharge elevation and long residence time.

Average discharge: **20 cubic feet per second**
Average Temperature: **7.2°C/45°F (cold non-thermal)**
Estimated Age: **>50 years**
Discharge elevation: **3567 feet**
Mean recharge elevation: **8170 feet**
Total vulnerability index: **6**
(Water Quality: 2 Water use: 3 Climate Change: 1)
Vulnerability explanation: With the spring emanating near the City of Mt. Shasta, the spring may be vulnerable to water quality contamination due to leaky sewer pipes, etc. and the large water bottling facility up gradient could impact production of the spring. The high recharge elevation could make the spring less vulnerable to climate change.

River Upper Sacramento River *Length:* 40 miles

Species Native: rainbow trout Introduced: brown trout

rainbow trout
Oncorhynchus mykiss

Watershed
Shasta River

Basin: **793 square miles**
Average precipitation:
9.8-18 inches per year

Glaciers

Meltwater from Bolam and Whitney glaciers emerges in the Shasta Valley. Thirty-nine percent of the snow and ice on Mount Shasta drains to the Shasta River watershed. Remarkably, Mount Shasta glaciers are currently growing, bucking the trend seen in other areas. Climate models predict this trend will reverse as temperature increases and precipitation comes as rain instead of snow, with the likely total retreat of the glaciers by the end of the 21st century.

Spring

Shasta Big Springs Complex

Description: This large low-elevation spring complex emerges in the Shasta valley floor in Big Springs Lake, Little Spring, and all along Big Springs Creek. It is highly utilized by agricultural diversions and is a significant source of cold water for the Shasta River.

Average discharge: **100 cubic feet per second (cfs) at the confluence of Big Springs Creek and Shasta River.**

Average temperature: **11.3°C/52°F. (slightly thermal)**

Estimated age: **Shasta E. Spring 44 years; Shasta N. Spring 26 years.** These two springs, only 300 feet apart with different ages and water chemistries, show the complexity Mount Shasta's fractured rock geology and that there are waters flowing in close but separate paths.

Discharge elevation: **2600 feet**

Mean recharge elevation: **>8200 feet**

Total vulnerability index: **10**
(Water Quality: 3 Water Use: 5 Climate Change: 2)

Vulnerability explanation: Shasta Big Springs are very vulnerable to usage concerns due to the agricultural diversions. They are slightly thermal springs with deep flow paths and high recharge elevations, making the springs less vulnerable to climate change impacts. Any local recharge mixing could impact water quality due to local pesticide use.

In the Shasta Valley, the Big Springs Complex provides constant nutrient rich spring waters (thought to come into contact with ancient marine layers deep within the mountain) that grow abundant vegetation and invertebrates. Thus, the Shasta River juvenile salmon grow 3 times faster than the juveniles in the adjacent Scott River, which is not spring-fed. Historically, the Shasta River was the second most productive salmon tributary to the Klamath River behind the Trinity. Many see the restoration of the Shasta River as a key step in rebuilding fish runs in the Klamath River.

River
Shasta River *Length:* **40 miles**

Species
Native: **coho salmon, Chinook salmon, steelhead**

coho salmon
Oncorhynchus kisitch

Watershed
McCloud River
Basin: **681 square miles**
Average precipitation:
70 inches per year

Glaciers
Meltwater from Hotlum, Konwakiton, Mud Creek, Wintun, and Watkins glaciers feeds the McCloud River Basin.

Spring
McCloud Big Springs

Description: This spring discharges directly into the McCloud River, emanating from the riverbanks as if it were pouring out of lava tubes.
Average discharge: **600 cubic feet per second**
Average temperature: **7°C/44°F (cold non-thermal)**
Estimated Age: **14 years**
Discharge elevation: **2983 feet**
Mean recharge elevation: **6039 feet**
Total Vulnerability Index: **5**
(Water Quality: 1 Water Use: 1 Climate Change: 3)
Vulnerability explanation: With a larger recharge area the spring is considered not vulnerable to water quality contamination or substantial water use. However, the short residence time and low recharge elevation may make the spring slightly more vulnerable to climate change due to reduced snowpack.

Before Shasta Dam (completed in 1944) blocked fish passage, the McCloud River hosted fall, winter and spring run Chinook salmon, steelhead, and the now extinct bull trout. The unique life histories of these fish populations were made possible by the constant, year round inflow of Big Springs along the McCloud River. In the late 19th century, the famed native McCloud rainbow trout were stocked throughout the world.

River
McCloud River *Length:* **50 miles**

Species
Native: **rainbow trout**
Historic: **Chinook salmon, steelhead**
Extinct: **bull trout**

McCloud redband
Oncorhynchus mykiss stonei

Where do we go from here?

Future Questions

Water supply forecasting including linking the timing and type of precipitation with the timing and quantity of spring flows will be an important tool to plan for future drought conditions.

To fully assess the vulnerability of Mount Shasta's springs, questions such as the following need to be addressed:

- If increased temperatures result in loss of snow pack and glacier volume, yet precipitation on the mountain increases, how will this change the sourcing to the springs of major interest, and how will it ultimately impact the watersheds of the three river systems sourced on the slopes of Mount Shasta?

- The type of precipitation (rain or snow) affects whether the precipitation runs off directly into waterways or whether it percolates into the ground and discharges at springs. If total precipitation increases as rain, will spring discharges decrease?

- How do existing climate models relate to snow pack and glaciers on the southern slopes of Mount Shasta?

- Where do weather patterns on the mountain tend to distribute precipitation and what are the differences in temperature trends?

Future Studies

Mount Shasta's spring waters provide potable water supply for the cities of Weed, Mt. Shasta, Dunsmuir and McCloud, and a significant percentage of water for the state's agricultural, hydropower, municipal and industrial water supplies.

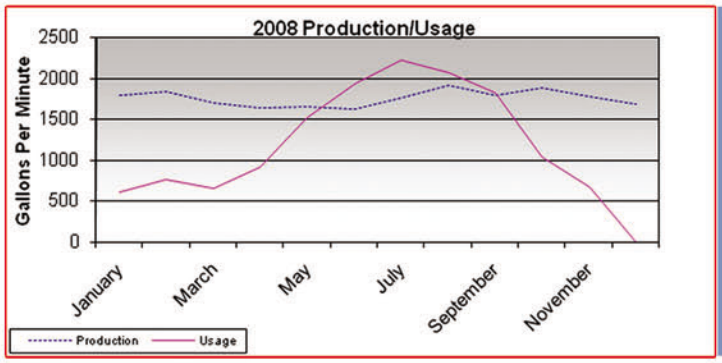
Understanding the recharge area and residence time of Mount Shasta's springs is important for the potable water supplies that these cities depend upon, as well as for the area's unique cold water ecosystems. Future studies may look at temperature and precipitation trends on the mountain with the potential to forecast how spring discharge may be impacted by climate variation.

To protect these critical spring water resources it is imperative that we continue to increase our knowledge and deepen our understanding of them.

Some important next steps are to:

- Chart historical snow pack on the mountain within the Mount Shasta Wilderness Area.
- Work with local communities to age date potable water sources and springs that have biological significance.
- Forecast potential drought years.
- Assess the connection between groundwater and surface water.

Courtesy of City of Mt. Shasta



The water source for the City of Mt. Shasta is Cold Spring (also known as Howard Spring). The city monitors the flow and usage rates of this spring and made the data available for the study. In years when spring usage surpasses spring production (such as 2008) the city supplies the additional water from groundwater wells.

Learn more: **The 33-page summary report complete with pictures, charts, and graphs, and the vulnerability rating can be read at: www.caltrout.org/mountshastasprings**

Our Conservation Initiatives

California Trout has a unique approach to conservation. We focus our efforts across three critical conservation initiatives:

Steelhead and Salmon Initiative

OUR GOAL

To restore healthy, self-sustaining populations of California's native steelhead and salmon across their historic range.

Imperiled Native Trout Initiative

OUR GOAL

To re-establish resilient populations of native inland trout which maintain the biodiversity and genetic integrity unique to California.

Blue Ribbon Waters Initiative

OUR GOAL

To preserve treasured angling experiences across California's most noteworthy fly fishing waters for future generations.

How We Work

HOW WE WORK

Our mission is to:	Protect and restore wild trout, steelhead, salmon and their waters throughout California		
We accomplish our work in three ways:	Advocate for fish and water policy		
	Leverage existing law		
	Restore fish habitat		
Our work is sound and unique because of our:	Strong foundation in science	Established partner network	Knowledgable staff in regional offices

Read SOS: California's Native Fish Crisis, Cal Trout's assessment of California's incredible diversity of trout, steelhead and salmon at http://caltrout.org/fish.

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Springs flowing into the McCloud River

(Front and back cover photo courtesy of Ned Boss)

McCloud redband trout *Oncorhynchus mykiss stonei* (Illustration courtesy of Joseph Tomelleri)

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