

RESTING SPRING

Location: East of Tecopa at the south end of the Resting Spring Range

Directions: Follow Old Spanish Trail Highway east from Tecopa approximately four miles. Spring is on the north side of the road within Resting Springs Ranch.

Latitude: N35.87720 (NAD83)

Longitude: W116.15694

Elevation: 1,767 ft

Background: Historically, this spring was a very important stopping point along the Old Spanish Trail Highway and a source of water for several of the local mining concerns. The spring location was at one time the site of the town of Tecopa.

Mendenhall (1909) wrote: "*The ranch and spring are at the south end of the Resting Spring Mountains. The waters well up from sandstone and are clear and wholesome.*" Mendenhall, continues: *The old San Bernardino and Salt Lake emigrant road passes these springs and goes through Emigrant Pass, just north of the ranch, and thence eastward by way of Stump Spring to Las Vegas. In the days of the old "Spanish Trail" these springs were known as the Archilette. J.C. Fremont camped by them April 29, 1844, and named them "Agua de Hernandez" for the survivor of a party of emigrants who were murdered there. Fremont rescued Hernandez and buried his companions. He described the place as "a grassy spot, with springs and bushes, which make a camping place".*"

Waring (1915) reported that the flow at Resting Springs was 260 gpm, with a water temperature of 80°F. The water at that time was being used for both domestic and irrigation purposes. Waring describes: *...Mr. Philander Lee, who has lived there since 1882, has made a real oasis of the place. About 25 acres of alfalfa, corn, and garden vegetables are irrigated by the main spring, which is said to yield 29 miner's inches (260 gallons per minute). The springs are situated in a small marshy area at the base of a terrace-like bank, 25 yards south of the steep slope of Resting Spring Mountain. The water rises in this marshy area mainly at four points around the edge of a natural basin about 8 yards in diameter, which is sunk several feet below the normal surface. The temperature of the water (80°) and its constant flow indicate that it is essentially of deep-seated or artesian character, but the mountain slope at whose base it issues is composed of quartzite that dips 60°NE, and the rise of the water may be determined largely by a fault along the western edge of the ridge. About 200 yards west of the main springs, a flow of perhaps half a gallon a minute has been developed in a small bank and piped to a water trough beside the road.*"

Description: Currently, the spring is in private hands, contained within Resting Springs Ranch. There is a discrete spring source that is protected by a spring box, from which water flows to a distribution box. From the distribution box, water is distributed for various uses around the Ranch. Based on the time needed to fill a five-gallon bucket, flow at the spring is estimated at 150-gpm. There is no overland discharge of flow from the Ranch property. The property contains many stands of palm trees and cottonwood trees. Underflow from the spring supports a large mesquite bosque.

Water Quality Parameters: from discharge point. No odor noted.

| Location ID | Date | Flow (gpm) | Temp (oC) | Spec Cond (μ S/cm \circ C) | TDS (mg/L) | DO (mg/L) | pH |
|----------------|-----------|---------------|--------------|--------------------------------------|---------------|--------------|------|
| Resting Spring | 1/23/2011 | 150 | 26.84 | 0.923 | 600 | 5.62 | 8.36 |

Use: Resting Spring is the water source for Resting Spring Ranch.

Access: The spring is on private property. Permission is needed to access the spring.

RESTING SPRING



Photograph 1: *Water flow from spring source*



Photograph 2: *Vegetation around Resting Spring*

RESTING SPRING



Photograph 3: *Vegetation around Resting Spring*



Photograph 4: *Vegetation around Resting Spring*

Resting Springs

May 25, 1994

Legend



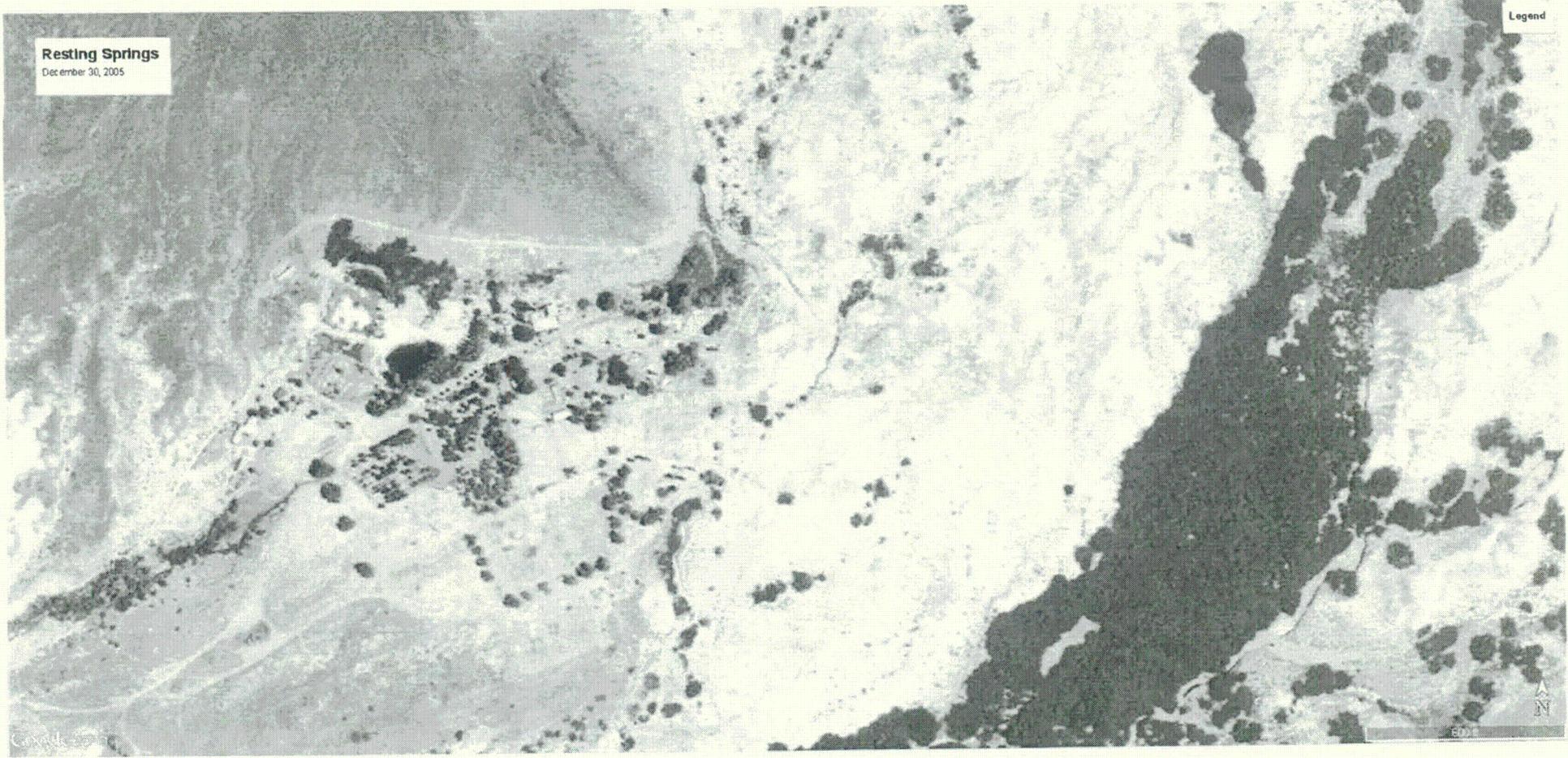
Google Earth

600 ft

Resting Springs

December 30, 2005

Legend



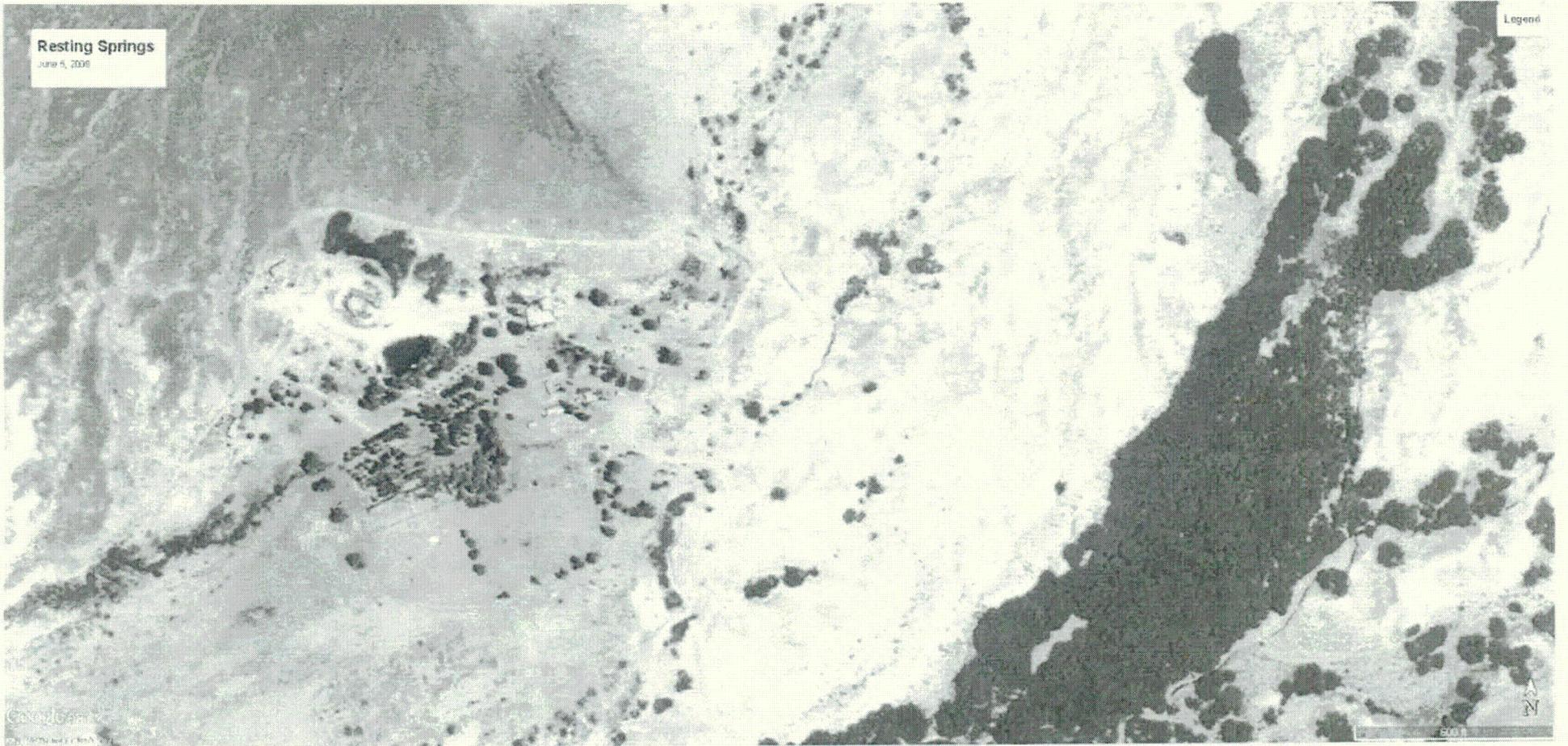
Copyright 2006



Resting Springs

June 4, 2006

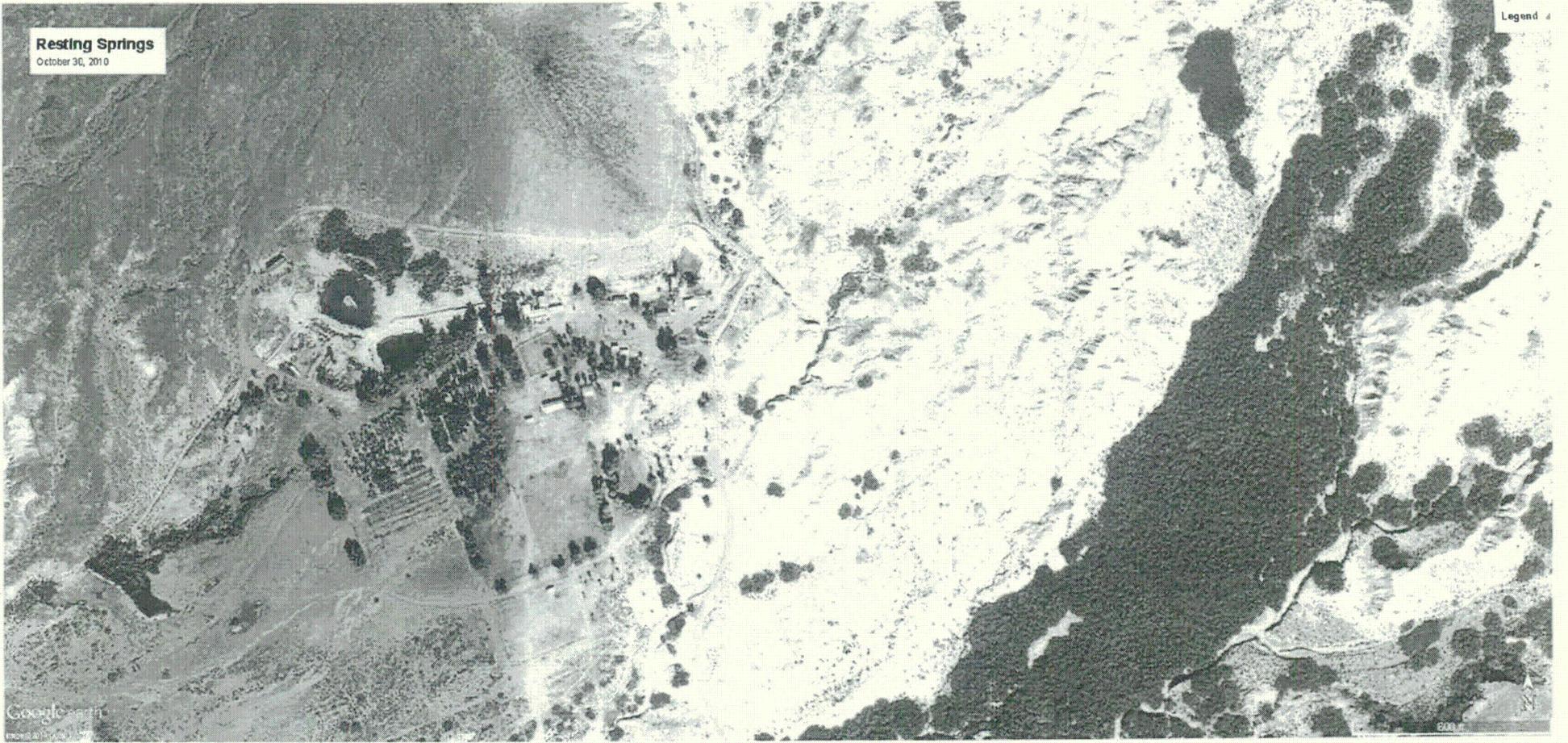
Legend



© 2006
DigitalGlobe

N

Scale bar



Resting Springs
October 30, 2010

Legend

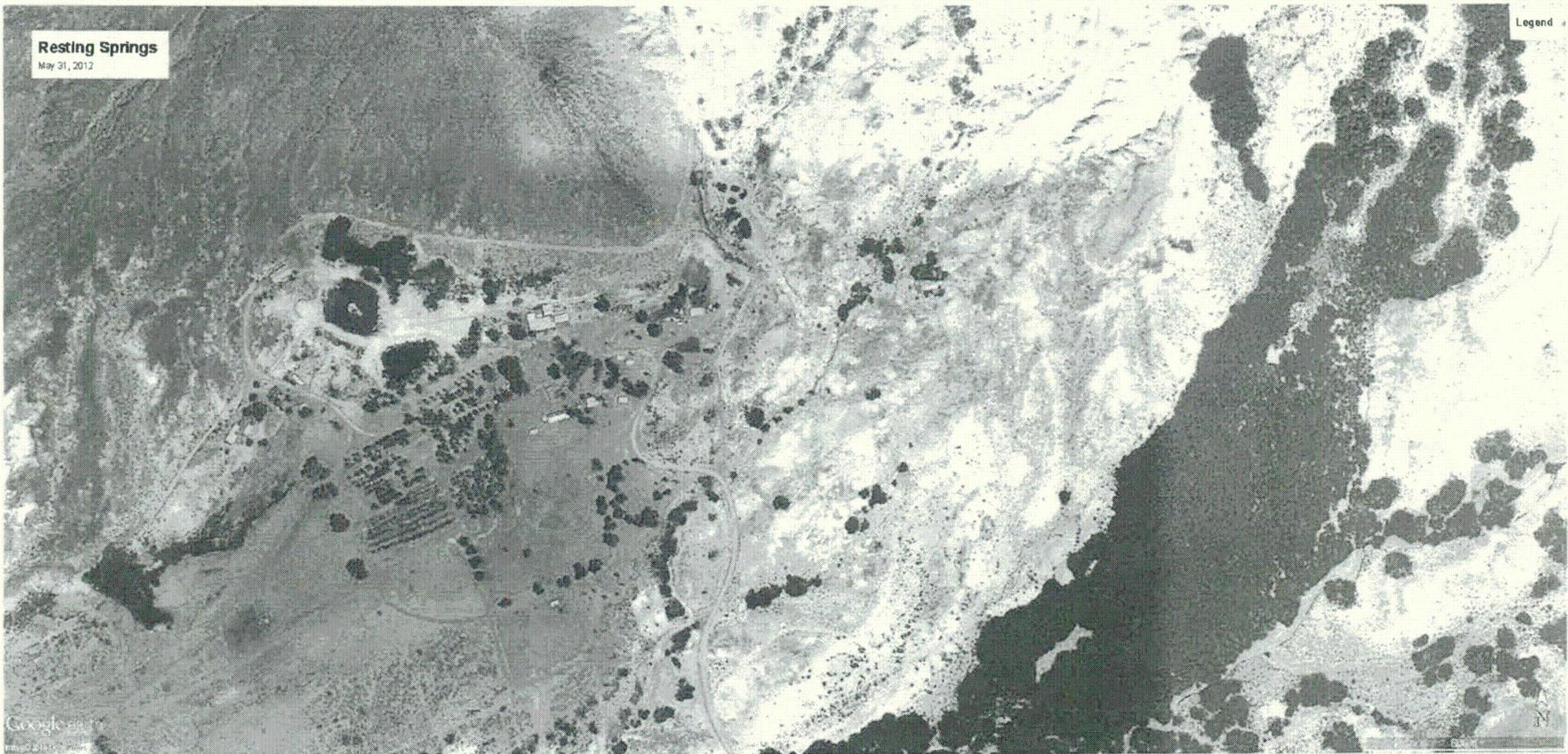
Google Earth

2000

Resting Springs

May 31, 2012

Legend



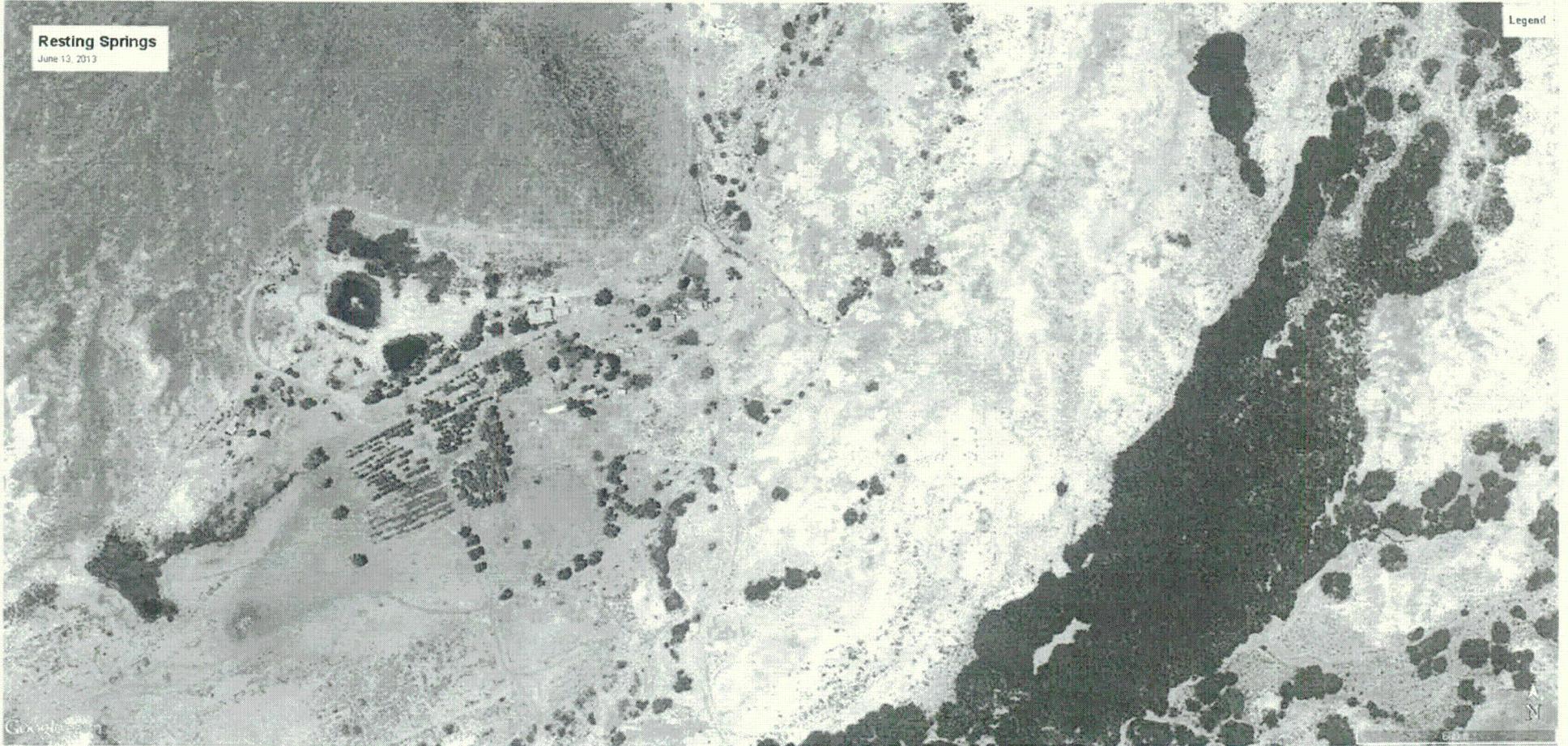
Google

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Resting Springs

June 13, 2013

Legend



SHOSHONE SPRING

Location: North end of the town of Shoshone, on the east slope of the Dublin Hills.

Directions: The spring is located at the north end of Shoshone in the low hills west of the Old State Highway 127.

Latitude: N35.98056 (NAD83)

Longitude: W116.27384

Elevation: 1,611 ft

Background: Historically, this spring was a primary source of water for native Americans and later on for white settlers in the region. The town of Shoshone was founded in 1910 and uses the spring as a water source, which it still uses to this day.

Description: The primary discharge point for the spring is in a discrete location, though there are several much smaller spring discharge points in the area. The water at the primary discharge point is captured and contained within spring boxes and the water is directed to distribution boxes. Most of the water is diverted to municipal town uses, including as a source of water for Shoshone's pool. Some of it flows overland as a source of water for ponds and wetlands within Shoshone. The water supports many trees in the area including athol and palm. This overland water and the water discharging from the pool are eventually recombined and directed through a concrete channel and a dug ditch eastward to the Amargosa River.

Based on a combination of flow measurements taken at various points within the system, it is estimated that greater than 250-gpm is discharging at the primary Shoshone Spring source. A flow of 185-gpm was measured in the concrete lined ditch directing water toward the Amargosa River, though much less water actually makes it to the River.

Water Quality Parameters: from discharge point. No odor noted. Note that on May 9, 2014, salinity was measured in lieu of TDS. Salinity concentration was 920 mg/L.

| Location ID | Date | Flow (gpm) | Temp (°C) | Spec Cond (µS/cm°C) | TDS (mg/L) | DO (mg/L) | pH |
|-----------------|-----------|------------|-----------|---------------------|------------|-----------|------|
| Shoshone Spring | 1/23/2011 | 250+ | 33.54 | 1,624 | 1056 | 3.75 | 7.79 |
| Shoshone Spring | 4/27/2011 | 250+ | -- | -- | -- | -- | -- |
| Shoshone Spring | 5/1/2012 | NM | 33.51 | 1,477 | 960 | 6.77 | 7.68 |
| Shoshone Spring | 1/29/2013 | NM | 33.31 | 1,847 | 1201 | 5.85 | 7.66 |
| Shoshone Spring | 5/2/2013 | NM | 33.47 | 1,601 | 1040 | 4.5 | 7.41 |
| Shoshone Spring | 5/9/2014 | 250+ | 32.3 | 2,088 | -- | 2.99 | 7.51 |

Use: The spring is currently used as the source of water for the town of Shoshone.

Access: The spring is on private property. Permission is needed to access the spring.

Client Name: Amargosa Conservancy

Project: Shoshone Spring



Photograph 1: *Concrete lined ditch conveying spring water toward the Amargosa River*



Photograph 2: *Spring boxes within the town of Shoshone*

Client Name: Amargosa Conservancy

Project: Shoshone Spring



Photograph 3: Water discharging from the spring fed Shoshone pool



Photograph 4: Spring box near Shoshone Spring source

SHOSHONE SPRING

Latitude: 35.9806 North Longitude: 116.2738 West Elevation: 1,611 feet
Location Description: Shoshone, California



Photo: 1

Date: January 2011

Shoshone spring source (one of several in the immediate area)



Photo: 2

Date: January 2011

Concrete lined ditch conveying water from Shoshone Spring toward the Amargosa River.

Shoshone Spring

September 28, 1995

Shoshone Spring

Old State Hwy 127

Google earth

Image U.S. Geological Survey

400 ft



Shoshone Spring

December 30, 2005

Shoshone Spring

Old State Hwy 121

Google earth

400 ft



Shoshone Spring

October 30, 2010

Shoshone Spring

Old State Hwy 127

Google earth

Image © 2014 DigitalGlobe

400 ft



Shoshone Spring

June 13, 2013

Shoshone Spring

Old State HWY 127

Google earth

400 ft



Client Name: Amargosa Conservancy

Project: Tecopa Hot Springs



Photograph 1: Spring discharge point on Nature Conservancy property in Tecopa



Photograph 2: Spring discharge point on Nature Conservancy property in Tecopa

TECOPA HOT SPRINGS

Location: Tecopa Hot Springs.

Directions: Several miles east of route 127 on Tecopa Hot Springs Road.

Latitude: N35.8789 (NAD83)

Longitude: W116.23812

Elevation: 1,332 ft

Background: This spring system encompasses the town of Tecopa Hot Springs. Historically, the spring was contained in two pools that produced approximately 225 gpm (Waring, 1915). The water temperature was noted to be about 107°F at that time. Now there are multiple outlets to the spring as people have directed the water to both public and private baths via the installation of wells. Runoff from the spring flows downhill into Tecopa Wetlands, located to the north and east of Tecopa Hot Springs.

Mendenhall (1909) wrote: *"There are two hot springs on the eastern edge of Resting Springs Dry Lake, about three miles southeast of Zabriskie. These springs yield about 200 gallons per minute of water which contains, according to qualitative determinations, sulphates of soda and magnesia, some borax, and some niter. In the fall of 1908 there was an old tent at the springs, which are occasionally used for bathing purposes. The temperature of the water is about 107 degrees."*

Description: Data for Tecopa Hot Springs was collected on property owned by The Amargosa Conservancy. This spring outlet is simply a pipe in the hillside below The Nature Conservancy trailer located on the property. The water from the spring flows downhill into the Tecopa wetlands.

Water Quality Parameters: taken from the water flowing from the pipe. No odor noted. Flow is measured using a bucket and a stopwatch. Note that on May 10, 2014, salinity was measured in lieu of TDS. The salinity concentration was 2,390 mg/L.

| Location ID | Date | Flow (gpm) | Temp (°C) | Spec Cond (mS/cm°C) | TDS (mg/L) | DO (mg/L) | pH |
|-------------------|------------|------------|-----------|---------------------|------------|-----------|------|
| Tecopa Hot Spring | 11/11/2010 | 6 | 40.76 | 4,306 | 2,799 | 0.84 | 8.61 |
| Tecopa Hot Spring | 9/21/2011 | 5.1 | 38.85 | 6,400 | 4,100 | 2.74 | 9.18 |
| Tecopa Hot Spring | 4/30/2012 | 4.9 | 41.2 | 3,525 | 2,311 | 3.54 | 8.96 |
| Tecopa Hot Spring | 1/29/2013 | 5.4 | 38.02 | 5,000 | 3,250 | 3.48 | 8.87 |
| Tecopa Hot Spring | 5/10/2014 | 5-10 | 40.6 | 2,390 | -- | 0.23 | 8.71 |

Use: The whole spring system is used for both public and private bath houses.

Access: Tecopa Hot Spring outlets are all on private property, though there are pay for access locations.

TECOPA HOT SPRING

Latitude: 35.8789 North Longitude: 116.2381 West Elevation: 1,332 feet
Location Description: Tecopa, California



Photo: 1

Date: November
2010

View of the spring
discharge pipe.
Note that this pipe
discharges only a
small fraction of the
overall flow that
makes up Tecopa
Hot Spring.



Photo: 2

Date: November
2010

View of the spring
discharge pipe.
Note that this pipe
discharges only a
small fraction of the
overall flow that
makes up Tecopa
Hot Spring.

Tecopa Hot Springs (meas. pt.)

June 4, 1994

Tecopa Hot Spring (meas. pt.)

Google earth

Image U.S. Geological Survey



100 ft

Tecopa Hot Springs (meas. pt.)

December 30, 2005

Tecopa Hot Spring (meas. pt.)



Tecopa Hot Springs (meas. pt.)

October 30, 2010

Tecopa Hot Spring (meas. pt.)

Google earth

Image © 2014 DigitalGlobe



100 ft

Tecopa Hot Springs (meas. pt.)

June 13, 2013

Tecopa Hot Spring (meas. pt.)

Google earth

100 ft



THOM SPRING

Location: South end of Tecopa Hills, just north of the town of Tecopa.

Directions: Follow Tecopa Hot Springs Road north out of Tecopa. Approximately ½ mile north of Tecopa is a dirt road leading up a small hill to the east. The spring is a ¼ mile drive up the dirt road. High clearance vehicles are not needed to access this spring.

Latitude: N35.85609 (NAD83)

Longitude: W116.22342

Elevation: 1,408 ft

Description: Flowing water emanates from the hillside beneath a large Athol tree. Flowing water was found emanating from the hillside. The actual point of discharge is obscured by the dense vegetation in the area. In general, the foliage around the spring is very dense and precludes an in-depth investigation of water flow. Further downstream, a group of cat-tails are growing out of a small pool of water. Water from this small pool runs overland for several hundred feet. The flow supports a population of small fish. Between April 2012 and January 2013, a small portion of vegetation was cleared out and several small hoses were pushed into the hillside. Spring water now emanates from the hoses. Under the Athol tree is a small pipe that was part of an old well that still has water in it.

The water emanating from the spring is cool, and at the most upstream point of observation was visually estimated to be flowing at 3-5 gpm. Adjacent to Thom spring is a piezometer constructed of 2-inch diameter PVC pipe. There was no water in the piezometer.

Water Quality Parameters: taken from the most upstream point. No odor noted. Water flow is estimated visually. Note that on May 5, 2014, salinity was measured in lieu of TDS. The salinity concentration was 940 mg/L.

| Location ID | Date | Flow (gpm) | Temp (°C) | Spec Cond (mS/cm°C) | TDS (mg/L) | DO (mg/L) | pH |
|-------------|------------|------------|-----------|---------------------|------------|-----------|------|
| Thom Spring | 11/11/2010 | 5 | 24.81 | 1.571 | 1,021 | 2.77 | 7.63 |
| Thom Spring | 4/30/2012 | ~2 | 24.9 | 1.478 | 960 | 3.66 | 6.79 |
| Thom Spring | 1/28/2013 | <5 | 28.63 | 1.819 | 1,182 | 2.8 | 7.73 |
| Thom Spring | 4/30/2013 | <5 | 27.96 | 1.601 | 1,040 | 1.83 | 7.2 |
| Thom Spring | 5/5/2014 | 5 | 27.7 | 1,965 | -- | 1.40 | 7.63 |

Use: The spring is not in use. Due to the dense vegetation, the degree to which the source of the spring has been modified by former users is unknown.

Access: The spring is not fenced and is on land administered by the Bureau of Land Management.

THOM SPRING

Latitude: 35.8561 North Longitude: 116.2234 West Elevation: 1,408 feet
Location Description: Tecopa, California



Photo: 1

Date: November
2010

View of the Athol tree above Thom Spring. The remains of the old well are beneath this tree.



Photo: 2

Date: November
2010

A view of the spring from the downstream end looking back toward the Athol tree.

THOM SPRING

Latitude: 35.8561 North

Longitude: 116.2234 West

Elevation: 1,408 feet

Location Description: Tecopa, California



Photo: 3

Date: April 2012

View of the spring looking to the East. The Athol tree is at the left, and the spring flows from center to the right of the picture.



Photo: 4

Date: January 2013

A view of the cleaned out section of the spring and the hoses pushed into the earth to convey the water.

THOM SPRING

Latitude: 35.8561 North Longitude: 116.2234 West Elevation: 1,408 feet
Location Description: Tecopa, California



Photo: 5

Date: January 2013

View of the spring looking south from the Athol tree.



Photo: 6

Date: January 2013

View of the original well structure under the Athol tree

Thom Spring

June 4, 1994

Thom Spring

Google earth

Image U.S. Geological Survey



500 ft

Thom Spring

December 30, 2005

Thom Spring

Google earth

500 ft



Thom Spring

June 5, 2009

Thom Spring

Google earth

Image USDA Farm Service Agency



500 ft

Thom Spring

June 13, 2013

Thom Spring

Google earth

500 ft

