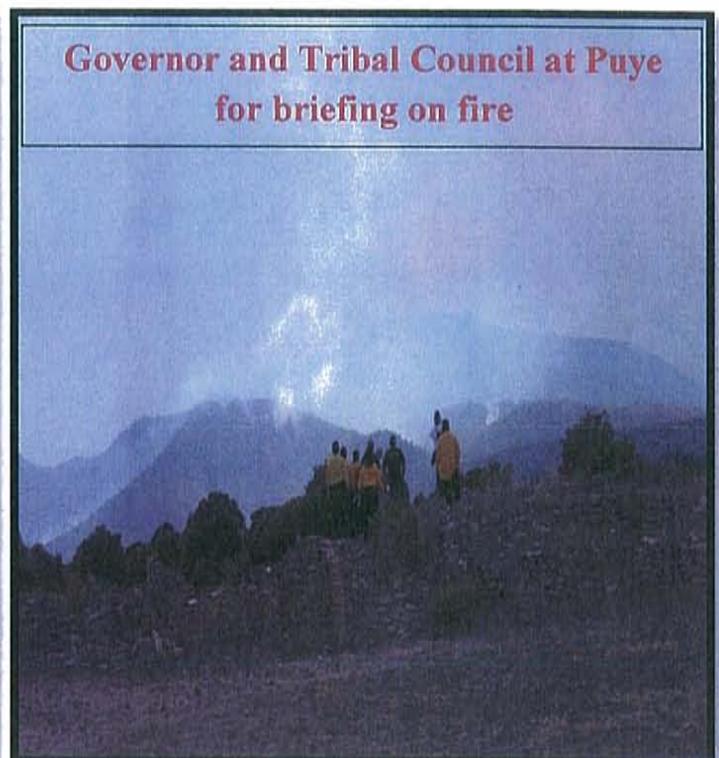
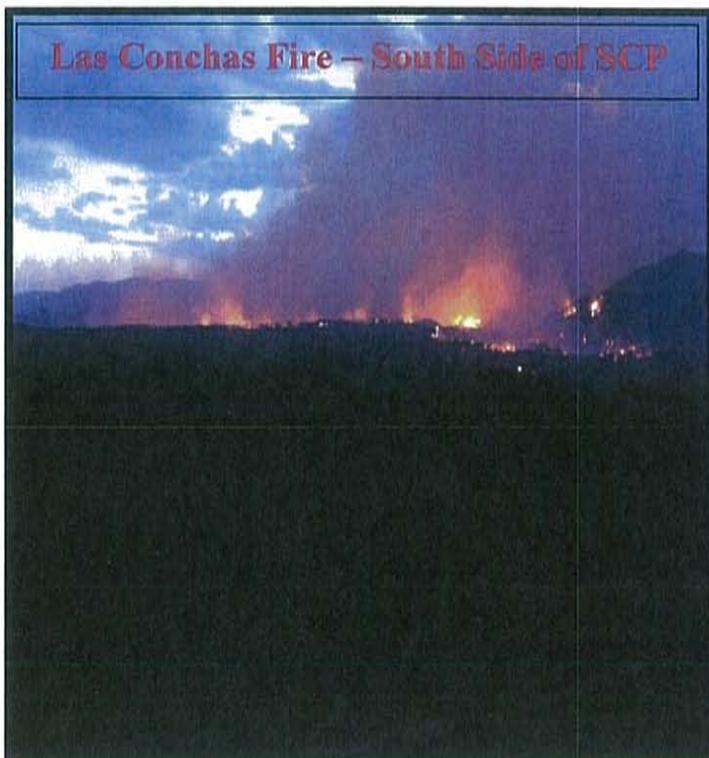


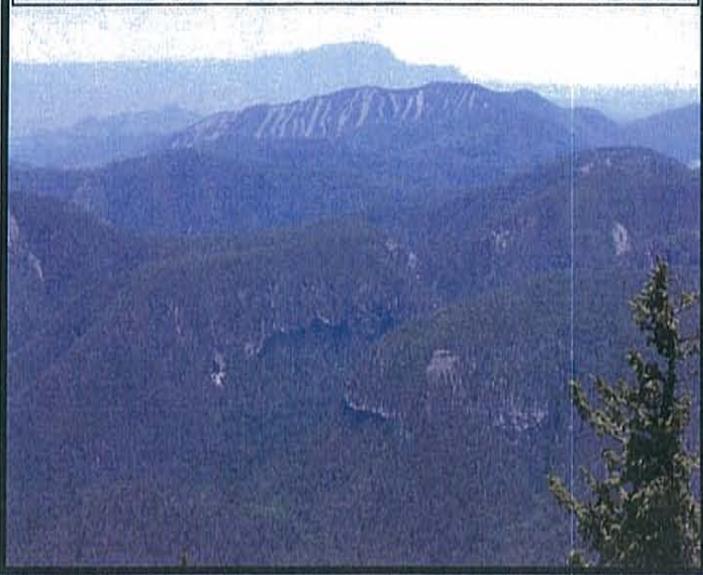


**Indian Affairs Las Conchas Fire  
Talking Points  
For  
Governor Walter E. Dasheno  
Prepared by: J. Michael Chavarria  
Forest Development and Restoration Manager  
Santa Clara Pueblo Forestry Department  
November 1, 2011**

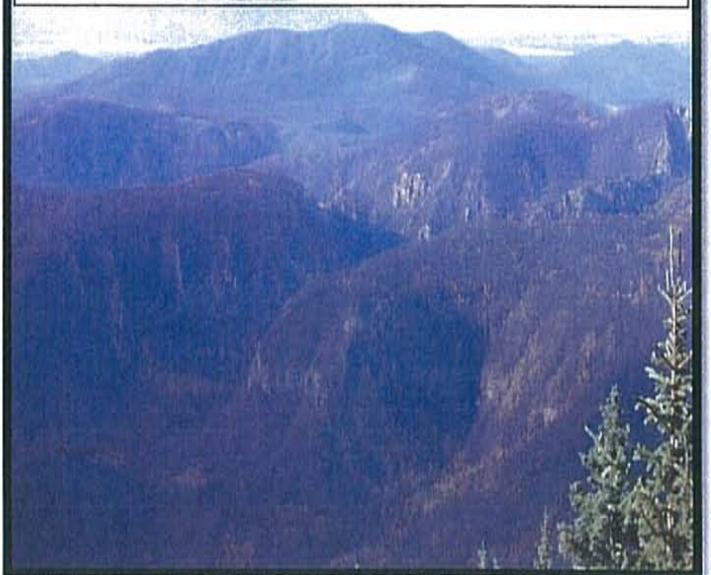
Santa Clara Pueblo has been drastically impacted by the Las Conchas Fire, the largest fire in New Mexico history. Roughly 17,000 acres of Santa Clara Pueblo's Spiritual Sanctuary has been impacted by the Las Conchas fire. Many of the Traditional Cultural Properties (TCPs) – (Live Sites) located within the 17,000 acres have been severely damaged and destroyed. The watershed and headwaters of the Santa Clara Creek have been altered and the quality of water has been degraded and has become impaired. Many of the culturally significant plants and herbs utilized for medicinal purposes have been devastated. The many wildlife species used for Traditional and Cultural purposes such as Mule Deer, Rocky Mountain Elk, Mountain Lions, Black Bears, Badgers, Rainbow Trout, Golden Eagles have been impacted with very little food to consume. The Las Conchas Fire has caused emotional, psychological and mental distress on all of the Santa Clara Pueblo Community members and has drastically altered the Pueblo's Traditional Way of Life.



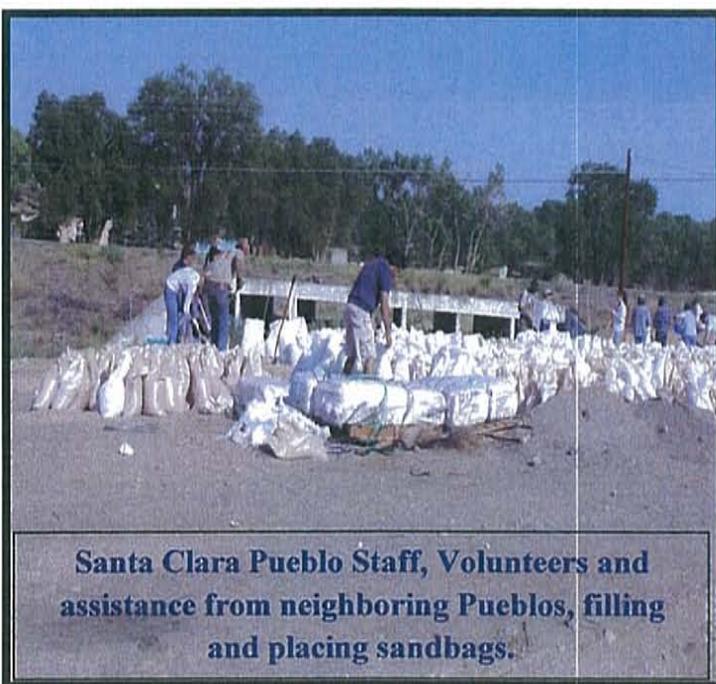
**Pre Fire Photo view is from Tsikumu Ping looking South towards the Pajarito Ski Basin**



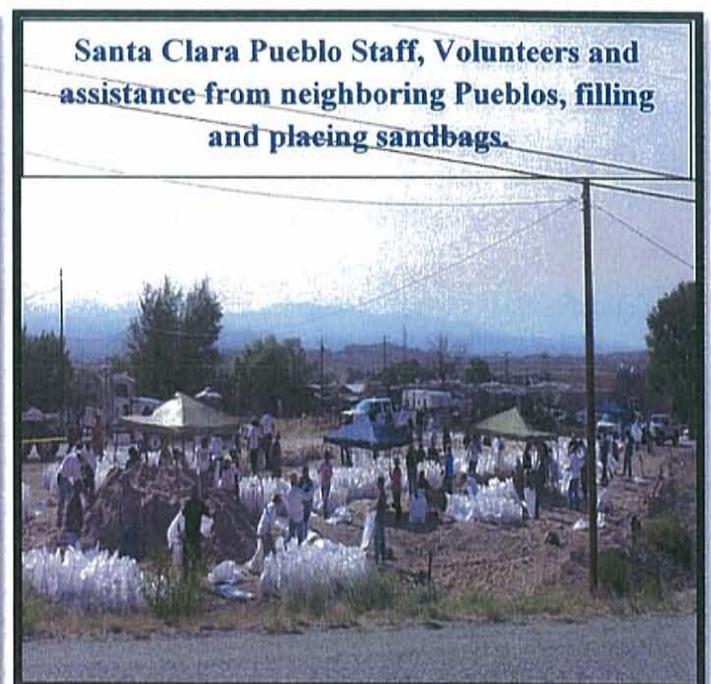
**Post Fire Photo view is from Tsikumu Ping looking South towards the Pajarito Ski Basin**



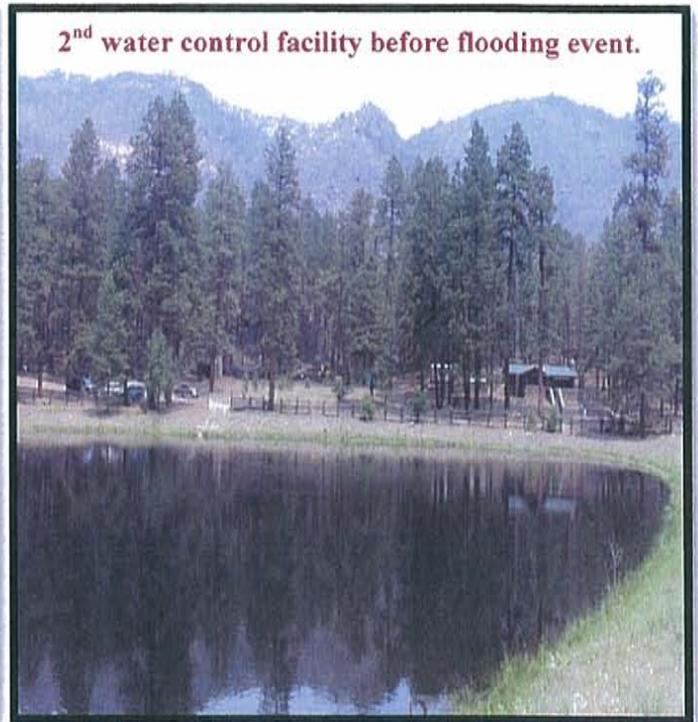
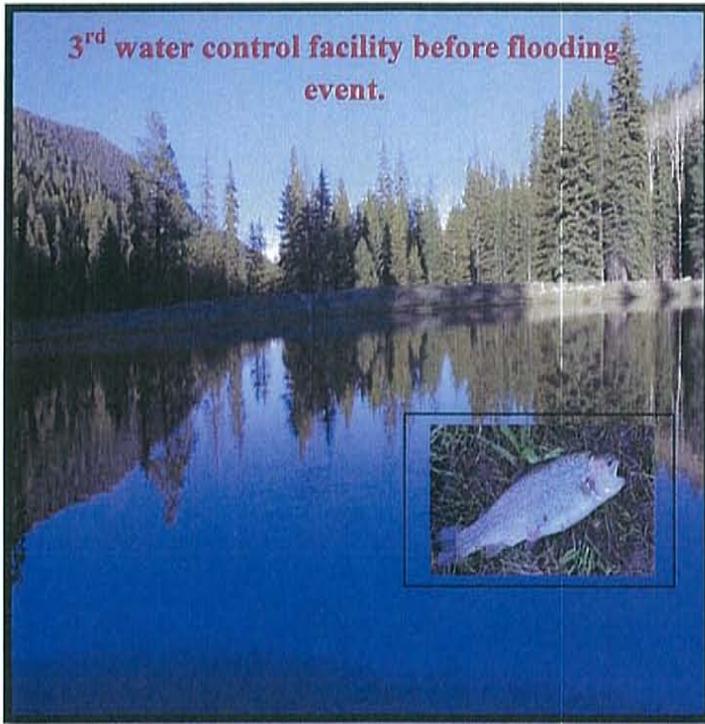
The Las Conchas Fire was one threat the Pueblo had to overcome. Now that the fire was been put out, the most important impacts are the devastating after effects the Pueblo is now facing in the form of flooding. The Las Conchas Fire severely destroyed and has caused the soil to be hydrophobic. The Pueblo has been actively engaged in implementing cost effective safety measures to eliminate immediate threats of significant damage to improved public and Pueblo property. The Pueblo through assistance and recommendations from the Army Corps of Engineers, the Pueblo has installed safety measures such as installing Jersey Barriers and sandbags, to protect the community from the immediate threat to lives, public health and safety for the community from the risk of flooding.



**Santa Clara Pueblo Staff, Volunteers and assistance from neighboring Pueblos, filling and placing sandbags.**



The Four water control facilities along the Santa Clara Canyon pose an immediate threat to lives, public health and safety. The four water control facilities are used for recreation, such as fishing, serve as wildlife habitat, used for water storage for irrigation, and used for actual consumption of water at the point of origin for Traditional and Cultural uses. The Pueblo has approved Water Quality Standards, approved by the EPA in 1995, and the Standards identify the various Designated Uses for each waterbody found on the Reservation which include the four water control facilities.

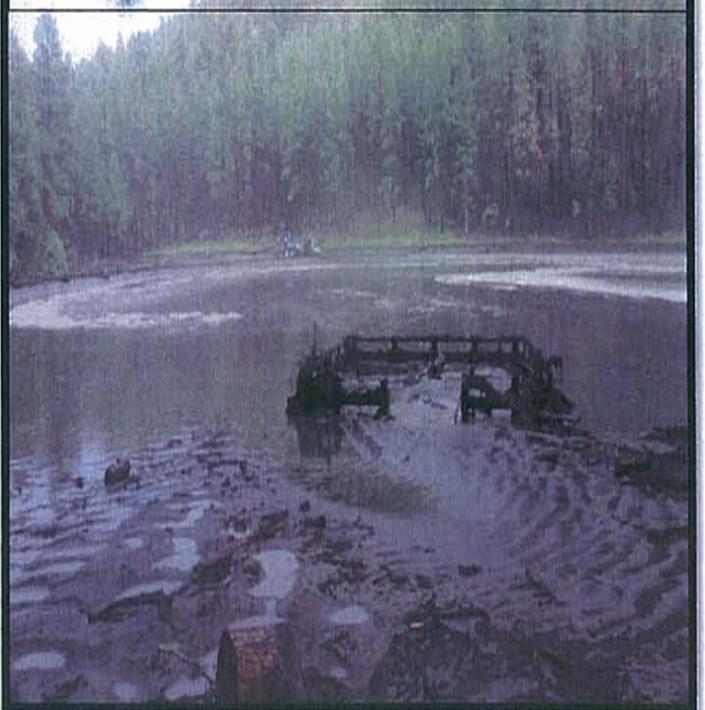


The Pueblo Forestry Staff, Public Works Department and Tribal Rangers had began the implementation of draining of the 1st water control facility utilizing two Trash Pumps, but were over powered by the forces of Mother Nature. Which was an estimated 1.3 tenths of an inch of rain event on August 21, 2011 that produced an estimated 1,700 cfs flood event. Currently the Four water control facilities are not adequately serving their purposes, because they are currently filled with sediment, wood debris, sand, mud, silt, boulders and gravel. (Working with FEMA on this issue - Debris Removal – Category A).

**Trash Pumps utilized to drain water control facilities**



**View of Trash Pumps after 8-21-11 Flood event**



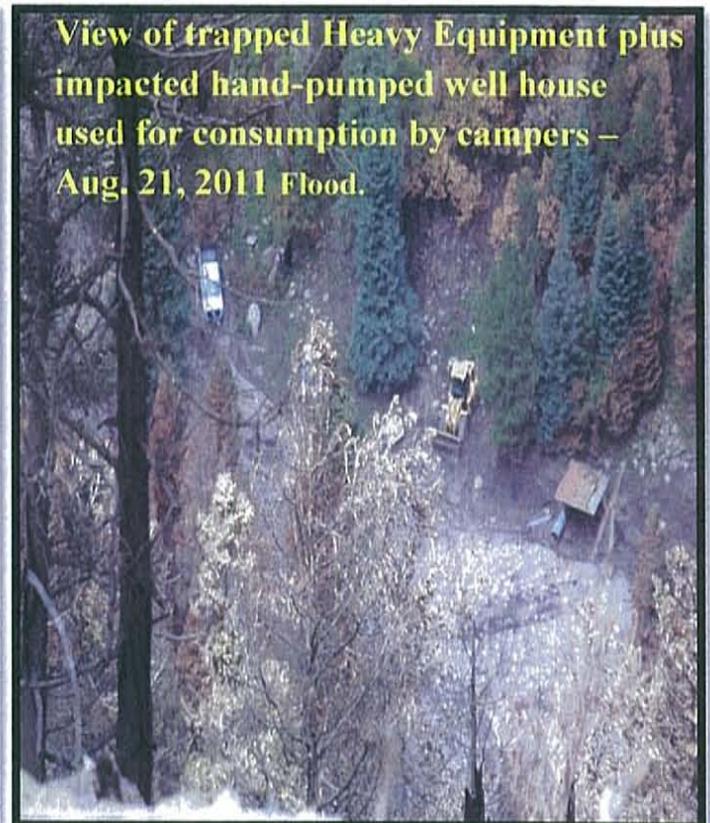
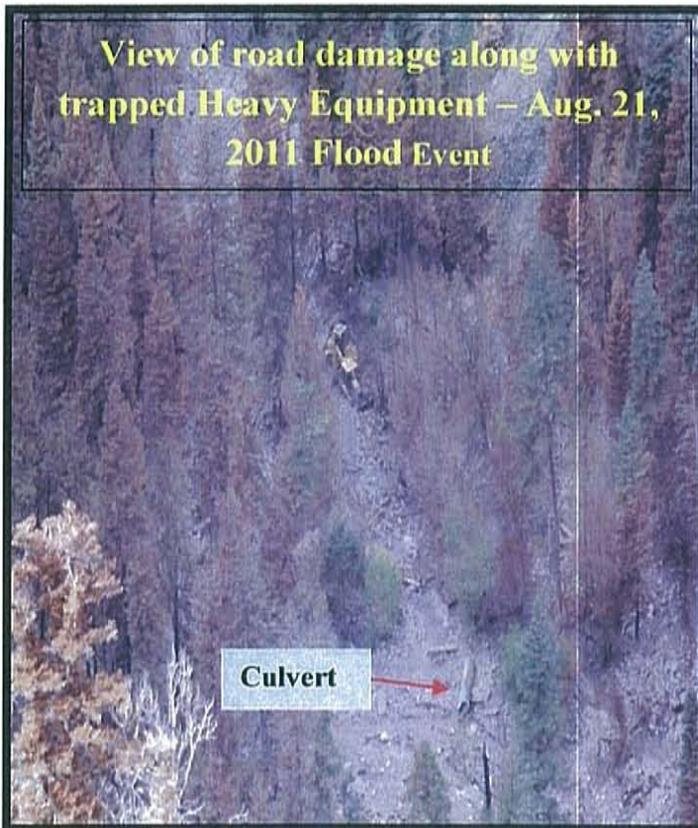
**Arial Photo of the 2<sup>nd</sup> water control facility after 8-21-11 flood event**



**On the ground assessment of the 2<sup>nd</sup> water control facility - full of sediment, woody debris, gravel, silt**



- The Pueblo experienced an estimated 1,700 cfs flood even on August 21, 2011 trapping four of the Heavy Equipment personnel in about 6 to 8 feet of water. The individuals were performing routine maintenance operations to the existing road when they were caught by the flood event.

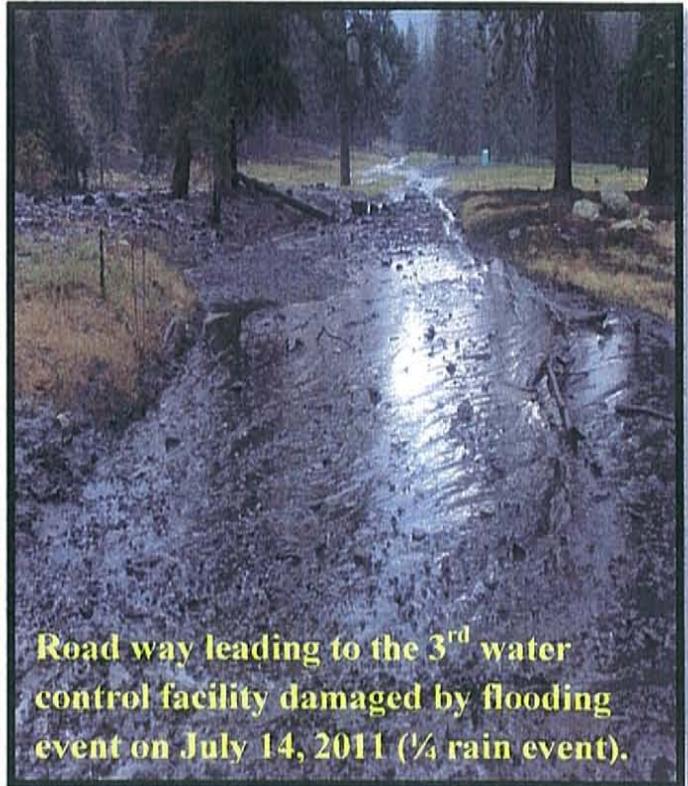


- Due to the Flooding events that the Pueblo has been experiencing, there is roughly 20.3 miles of road that has been damaged and destroyed. The Pueblo has recently completed a road project and the estimates to fix one mile of road equaled to roughly \$500,000 per mile to repair. Recent assessments have determined that the existing road may need to be abandoned and a new road may have to be created to reach the upper portions of the Santa Clara Canyon, which will escalate and inflate the cost of road construction.

**Road devastated by flood event.**



**Road way leading to the 3<sup>rd</sup> water control facility damaged by flooding event on July 14, 2011 (¼ rain event).**



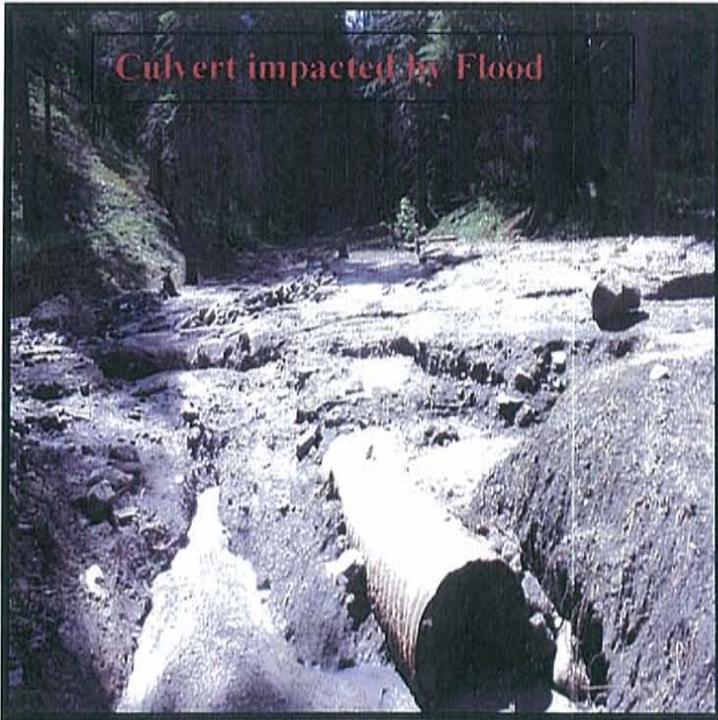
- Along with the damaged sustained to the roads there are roughly 40 culverts that have been impacted by the flooding events as well. The flooding events have altered the stream course and large amounts of floatable debris have clogged and ripped out many of the culverts.

**View of impacted Culvert from Aug. 21, 2011 Flood Event**

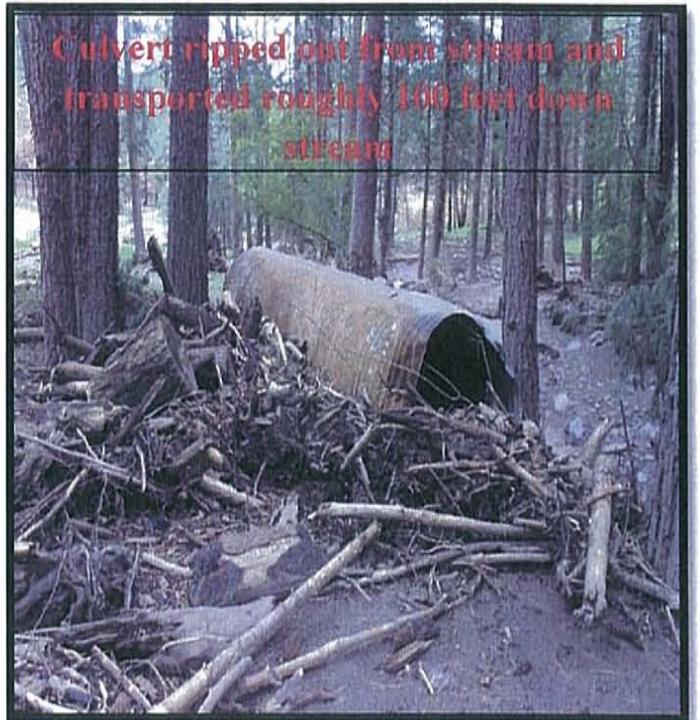


**An example of a culvert that is full of woody debris.**



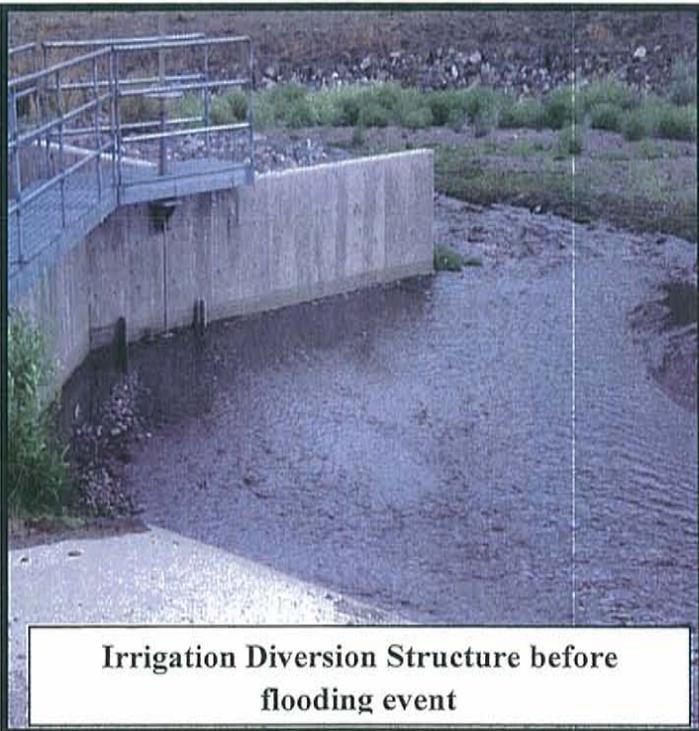


**Culvert impacted by Flood**

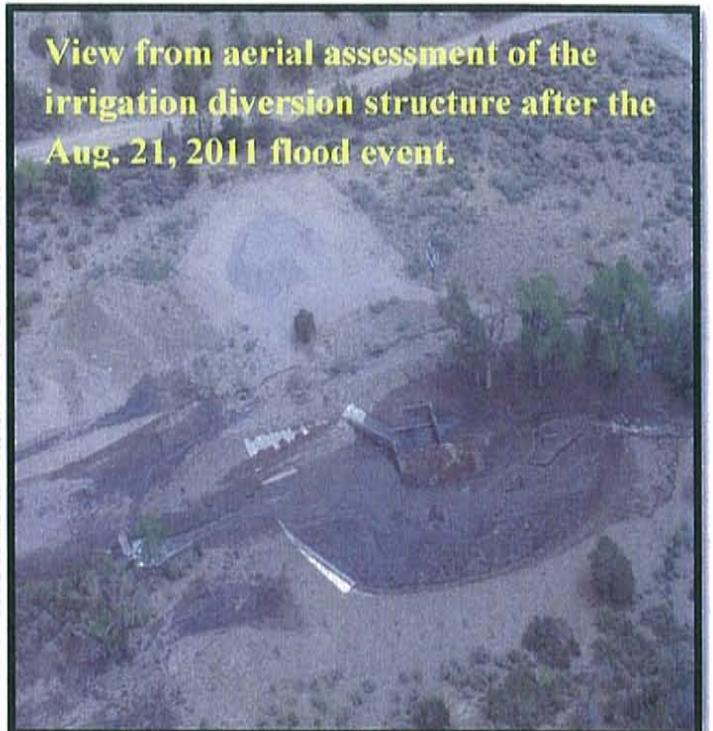


**Culvert ripped out from stream and transported roughly 100 feet down stream**

- The Pueblo constructed an irrigation diversion structure which has now been impacted by the flooding. The structure is currently full of sediment, woody debris, silt and gravel.



**Irrigation Diversion Structure before flooding event**



**View from aerial assessment of the irrigation diversion structure after the Aug. 21, 2011 flood event.**

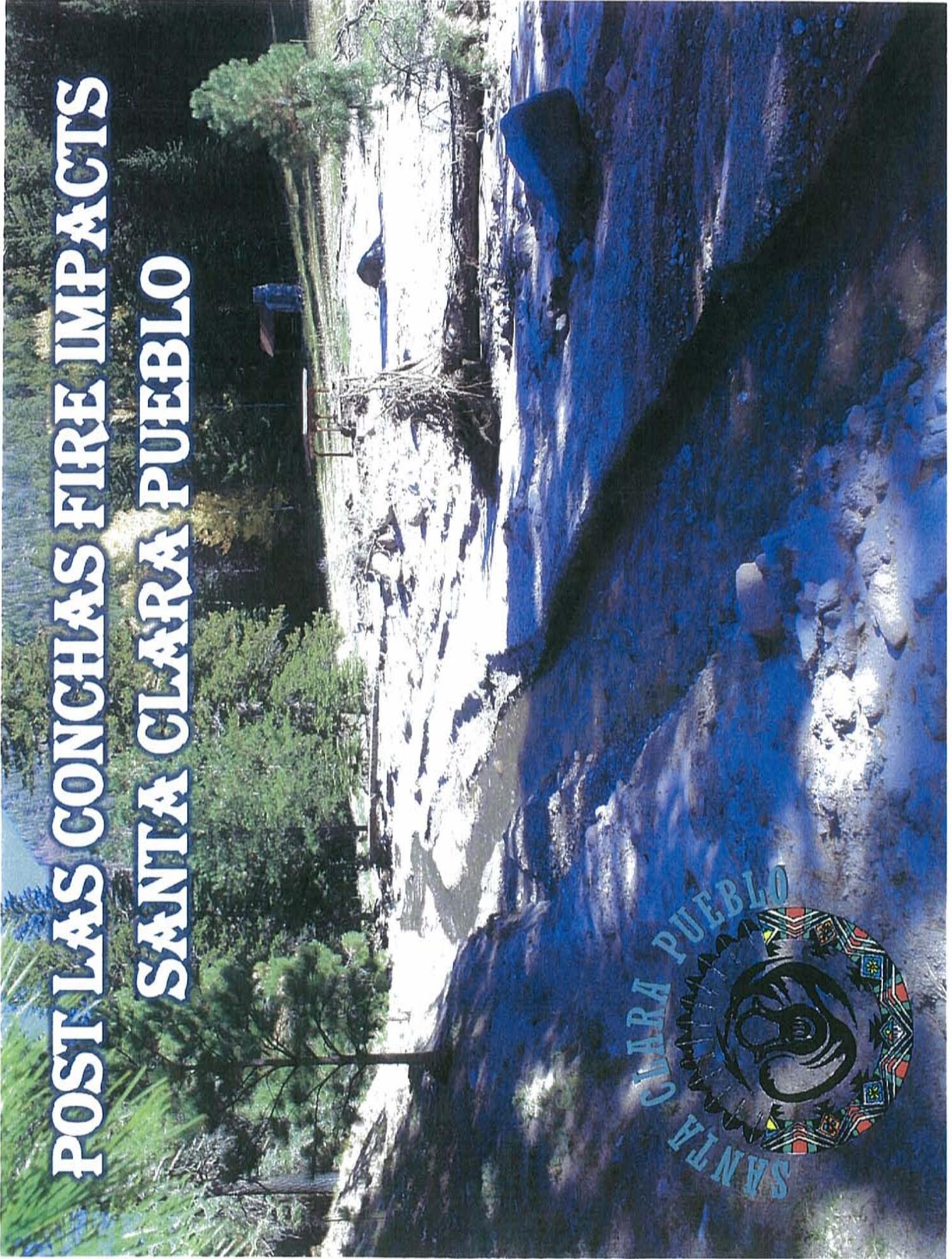
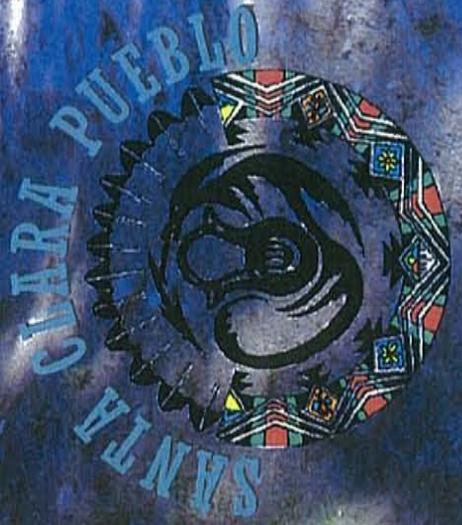
Santa Clara Pueblo has been actively pursuing and implementing measures to adequately protect the immediate threat to lives, public health, safety, and the immediate threats of significant damage to public and private properties by implementing measures that have been recommended by the USACOE.

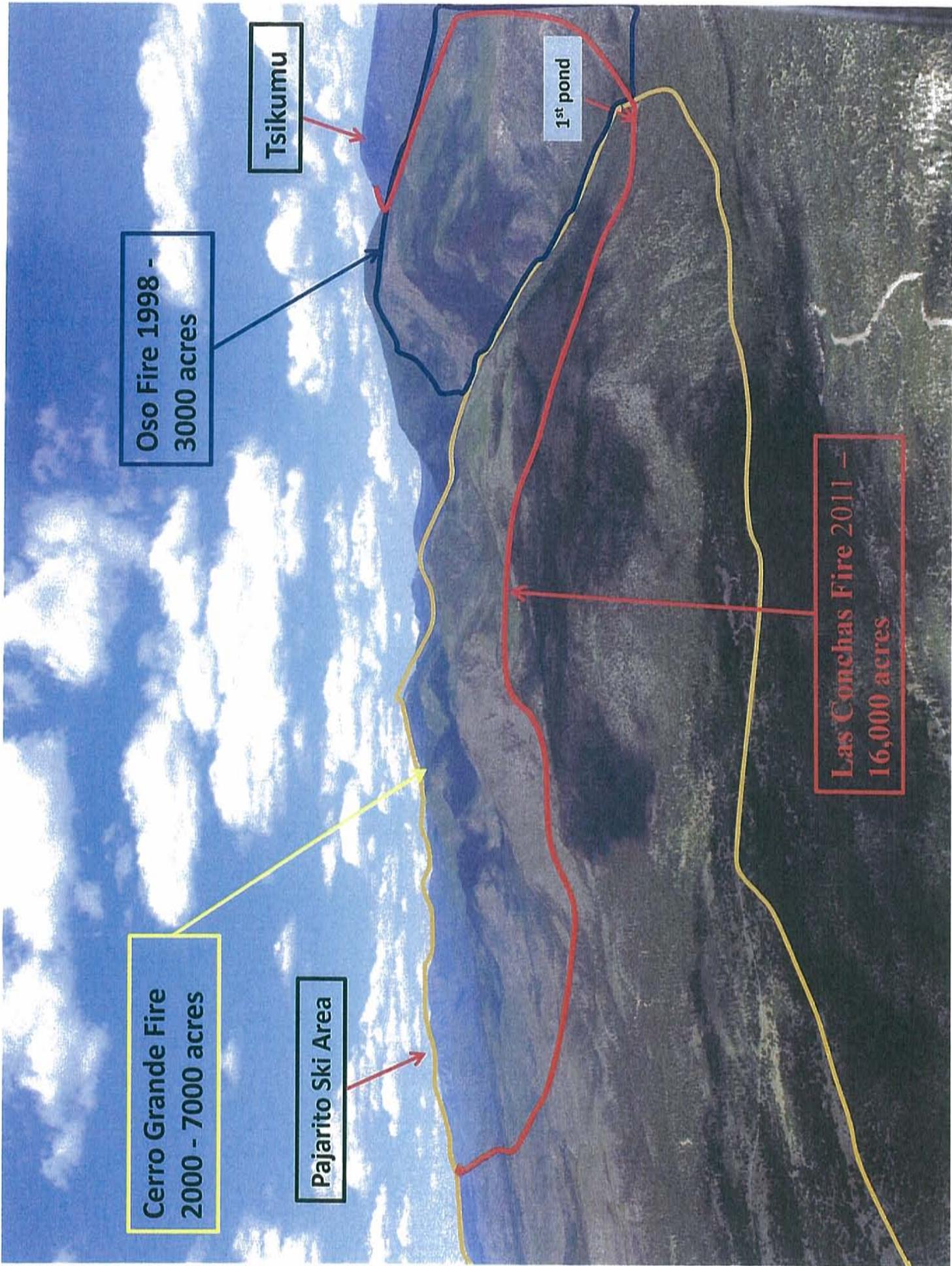
Attached you will also find several documents that maybe useful information:

- The recent updated “Fire Altered Hydrology for Santa Clara Canyon” prepared by Tamara Massong, Supervisory Hydrologist, U.S. Army Corps of Engineers, Albuquerque District.
- Model of 10% chance of a 10 year flood event, also produced by the USACOE.

Should you require any other information please contact Governor Walter E. Dasheno at (505)753-7330 or email [governor@santaclarapueblo.org](mailto:governor@santaclarapueblo.org) or myself J. Michael Chavarria at (505)753-7326 ext: 1293 or email [mjchavarria@santaclarapueblo.org](mailto:mjchavarria@santaclarapueblo.org).

# POST LAS CONCHAS FIRE IMPACTS SANTA CLARA PUEBLO





Oso Fire 1998 -  
3000 acres

Tsikumu

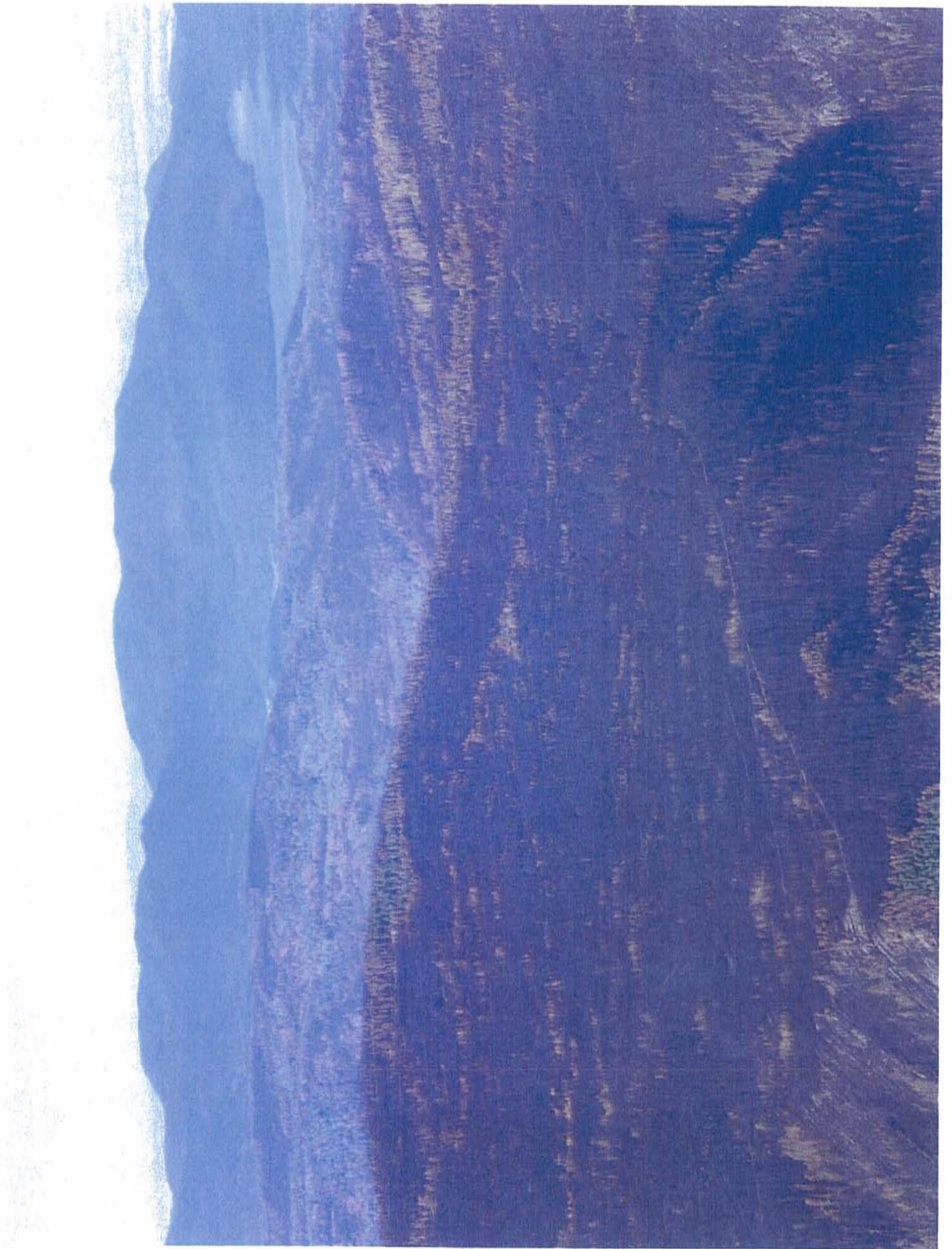
1<sup>st</sup> pond

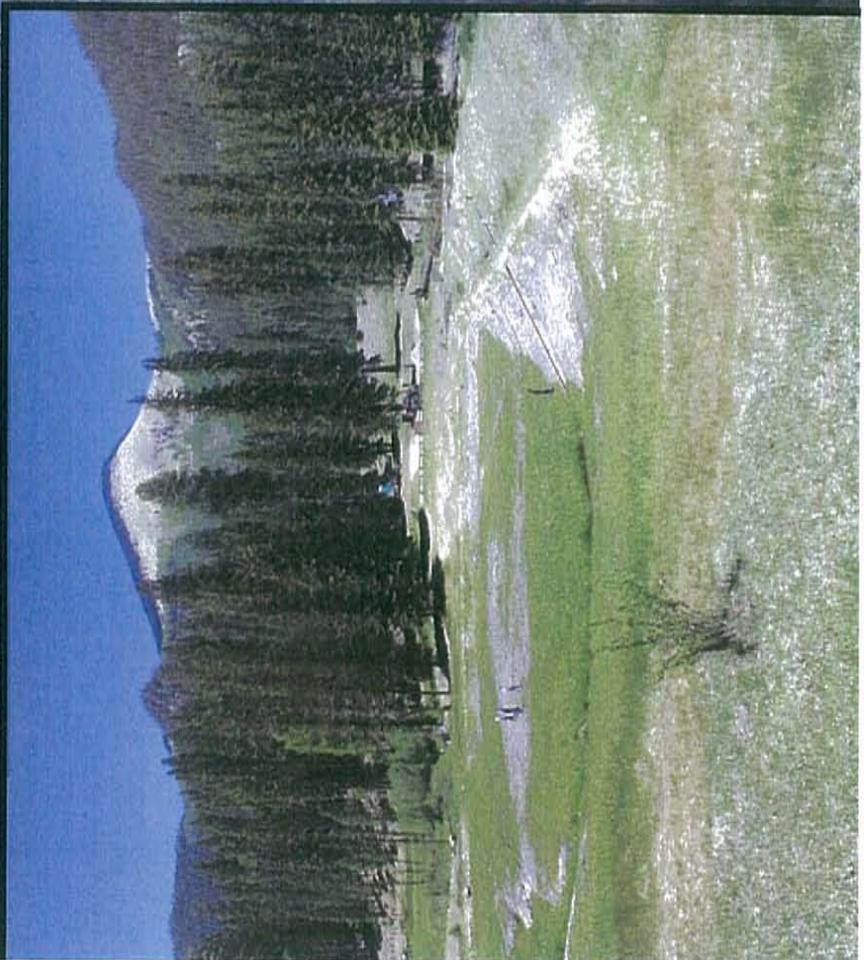
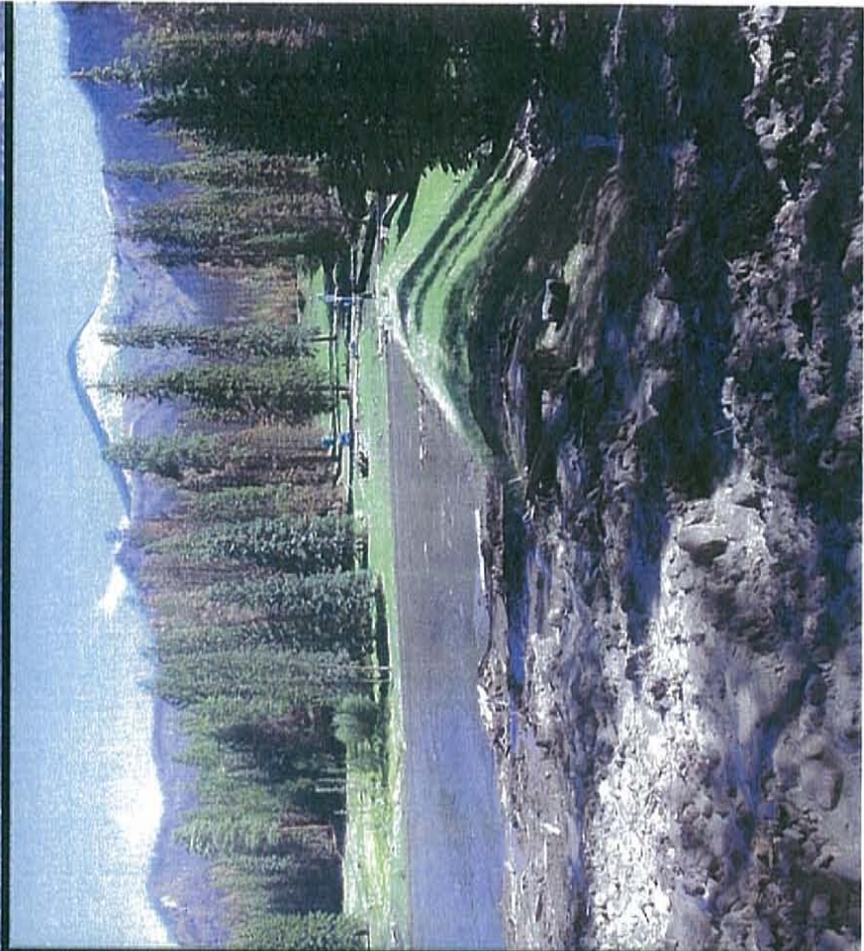
Las Conchas Fire 2011 -  
16,000 acres

Cerro Grande Fire  
2000 - 7000 acres

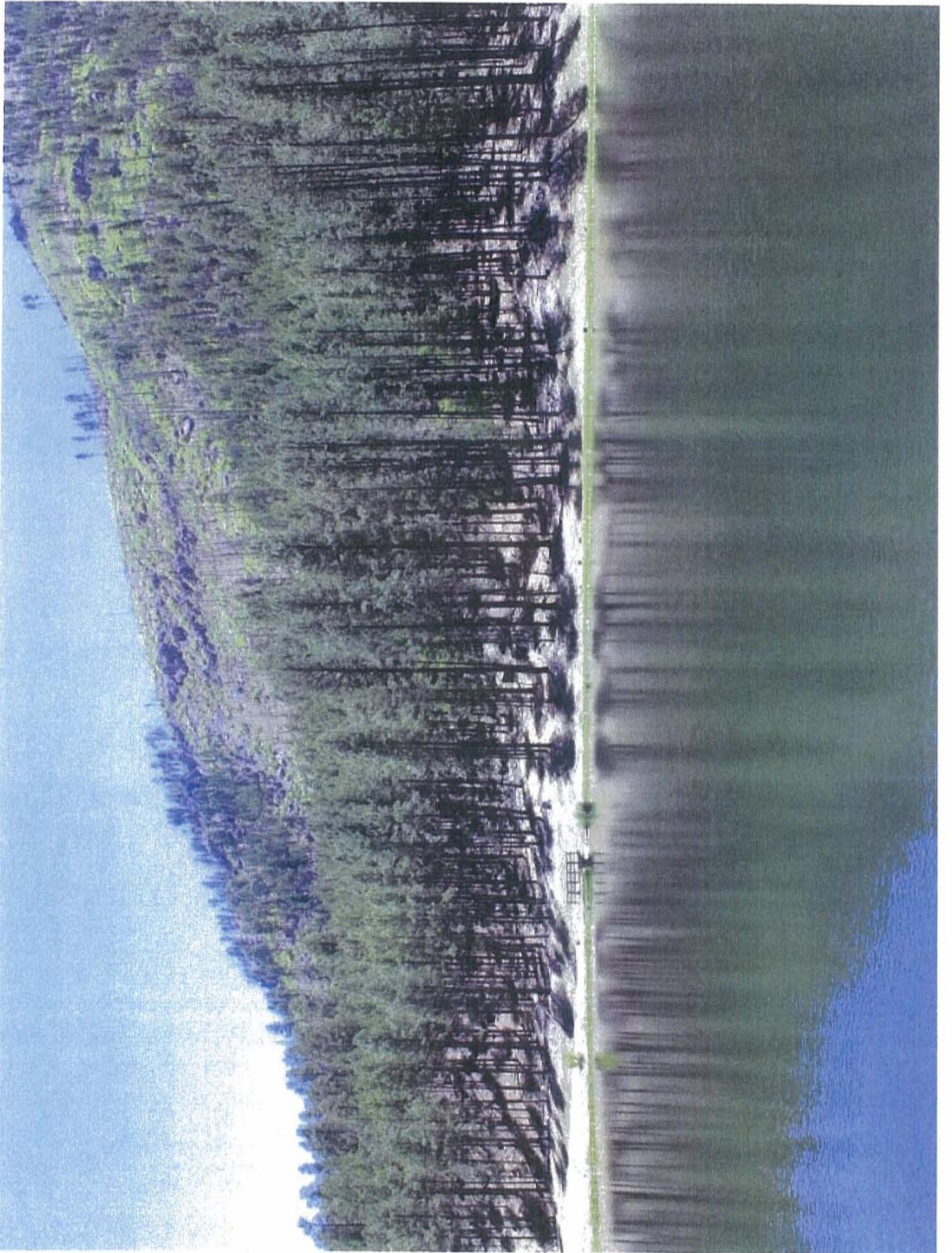
Pajarito Ski Area



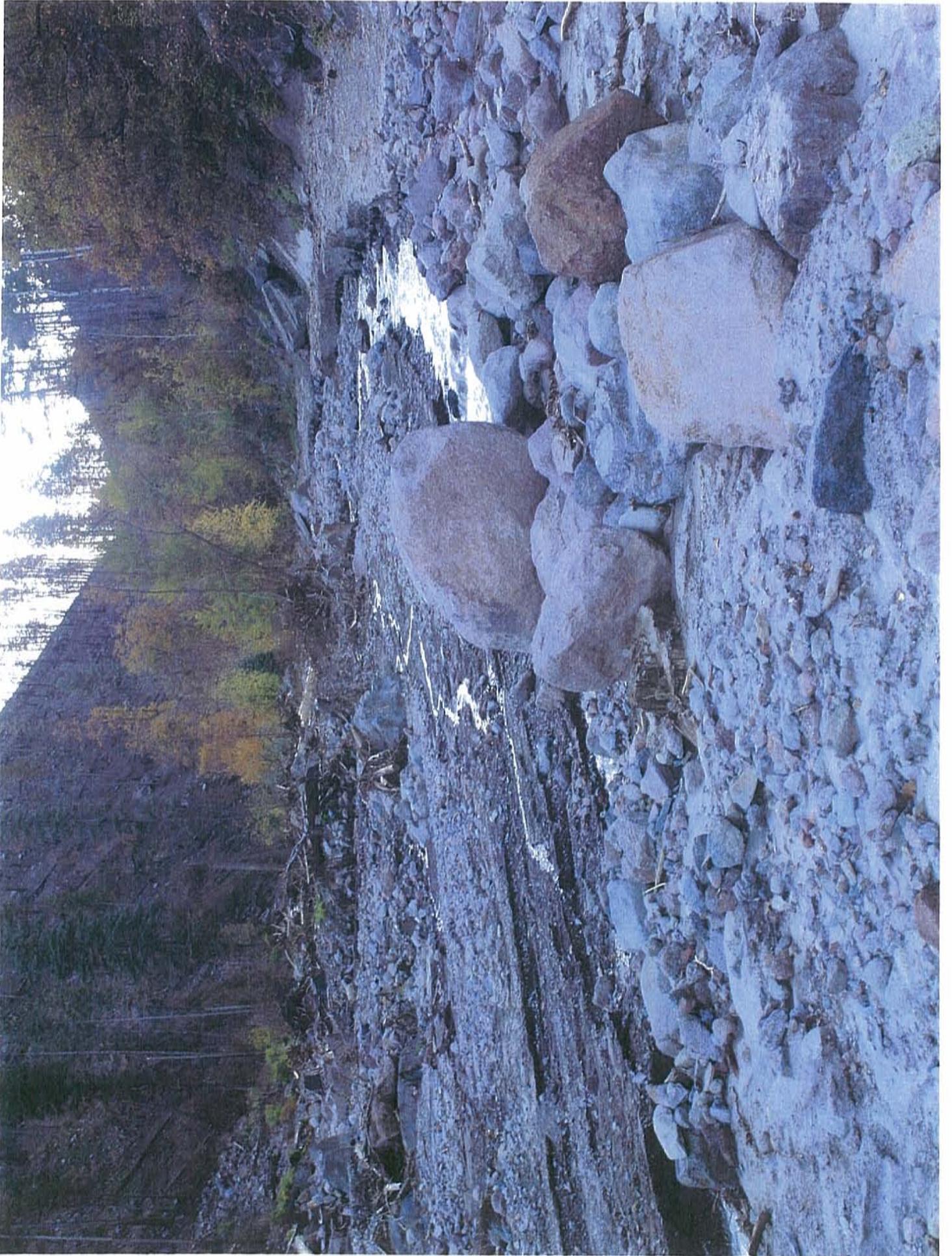


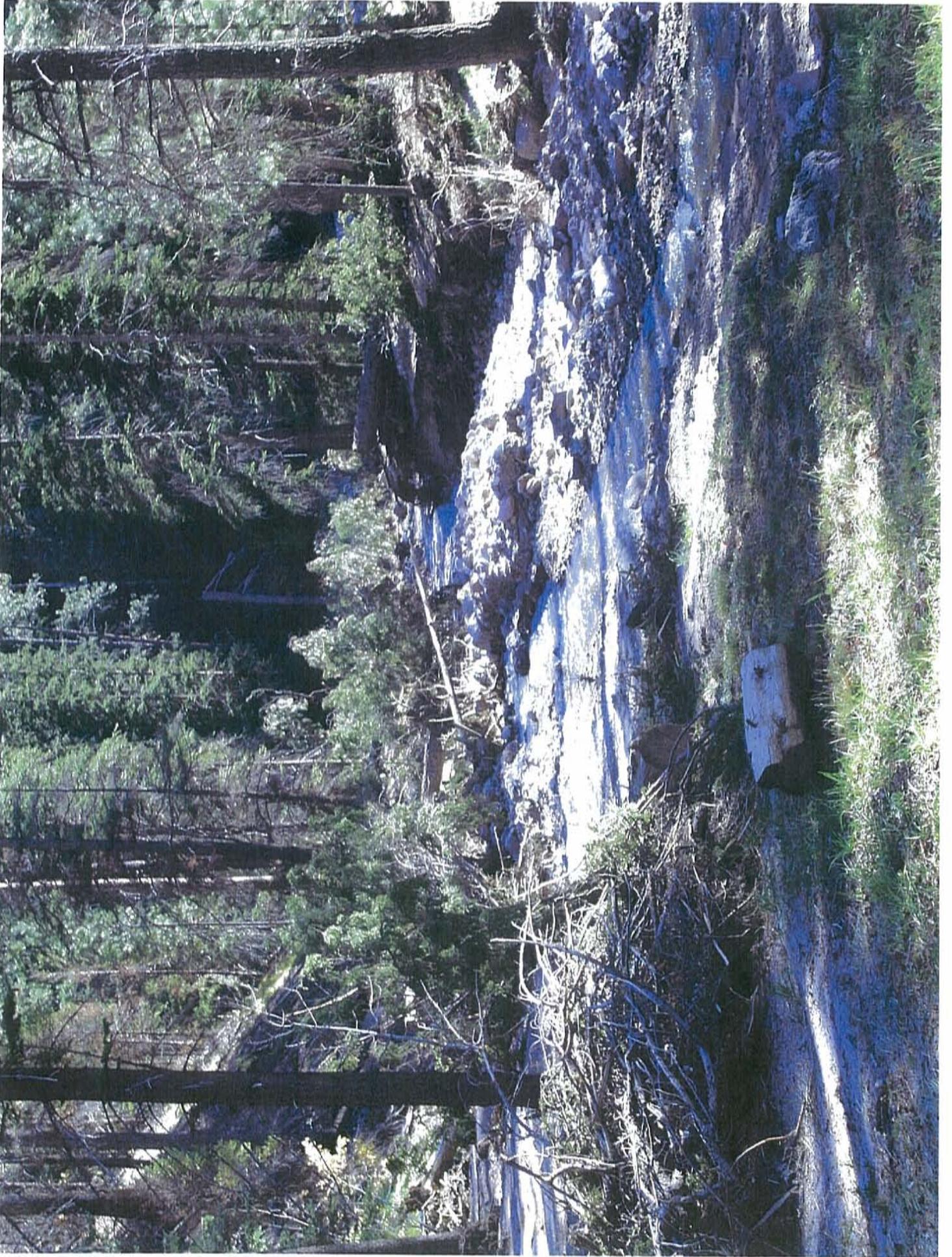






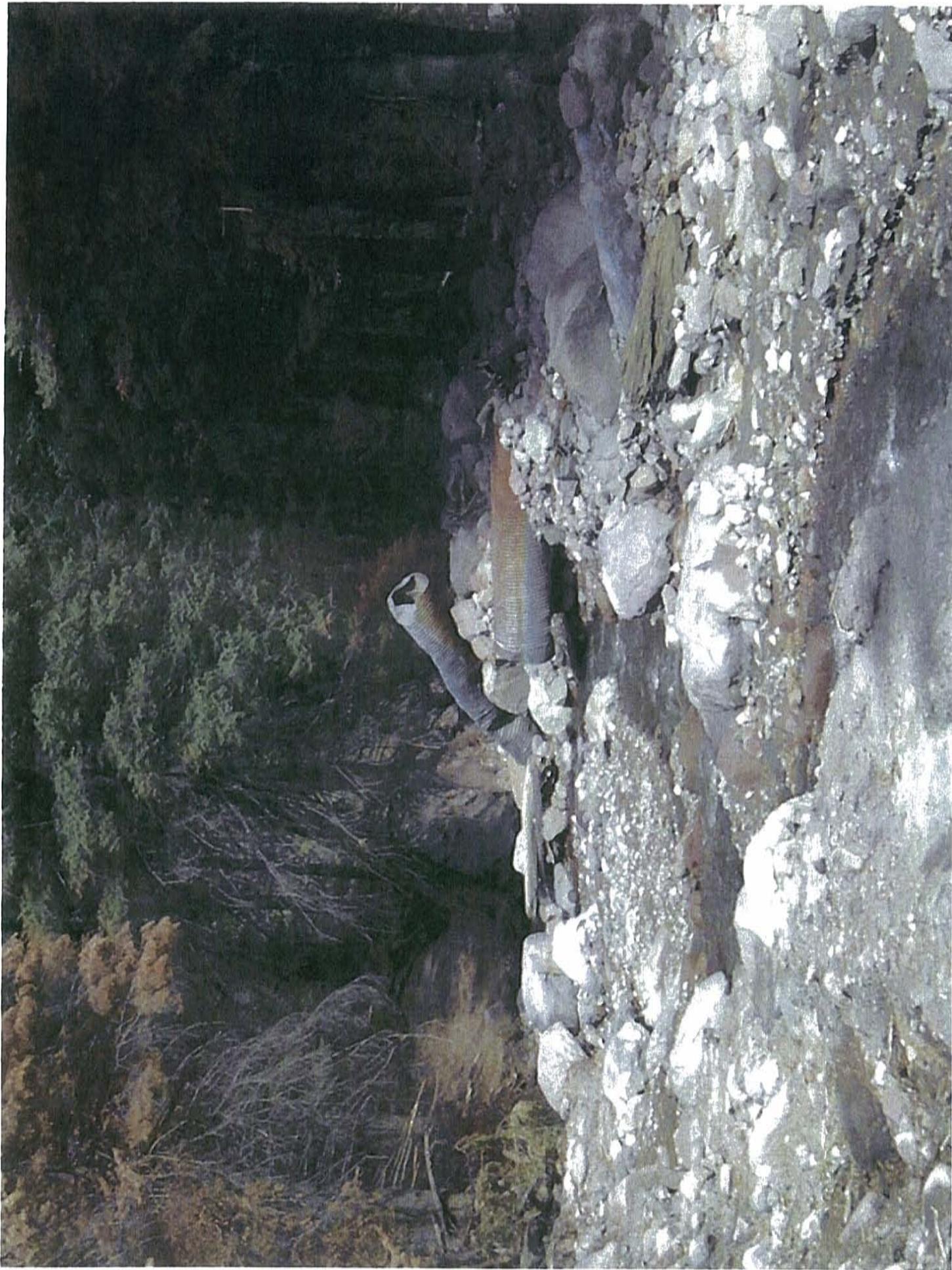




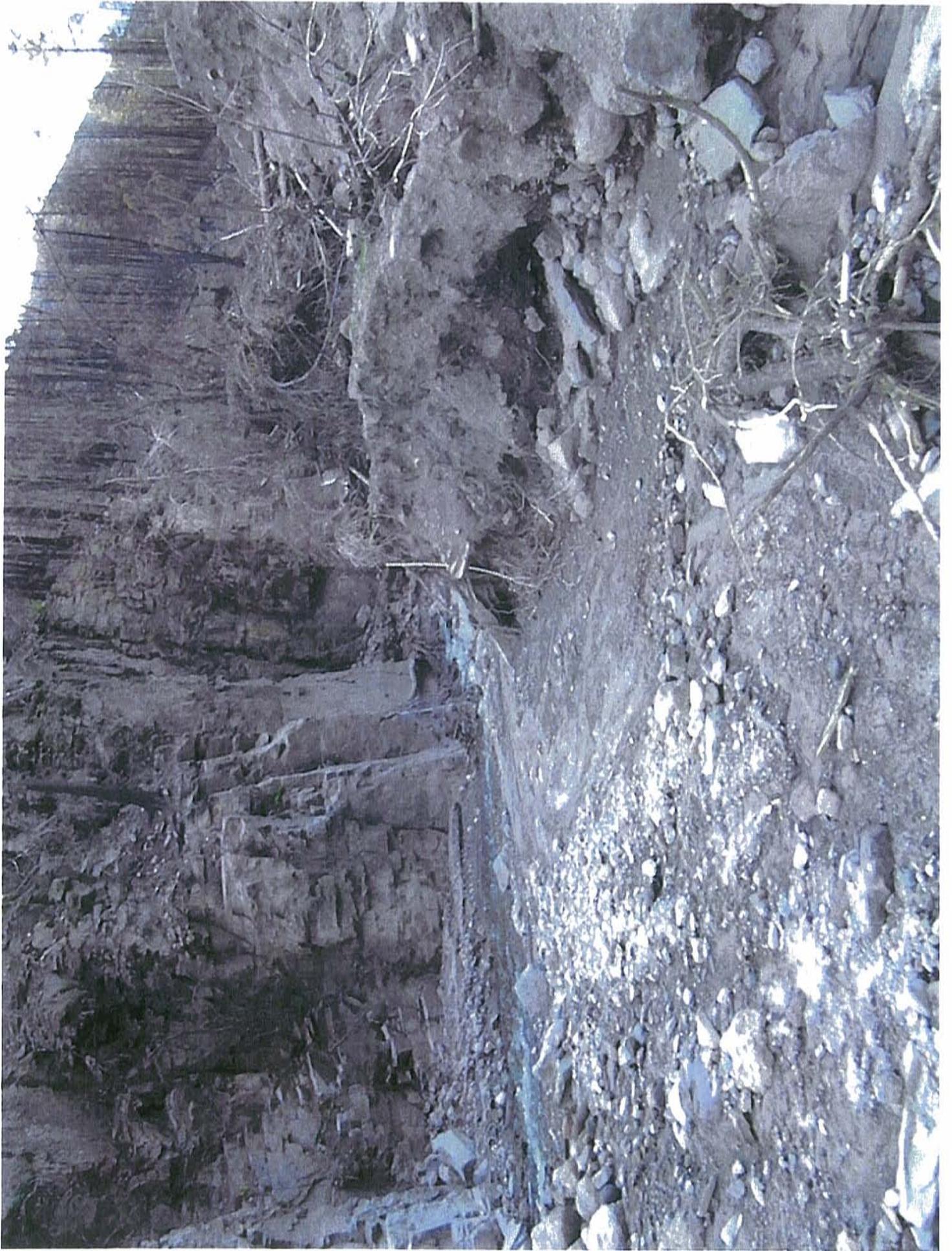


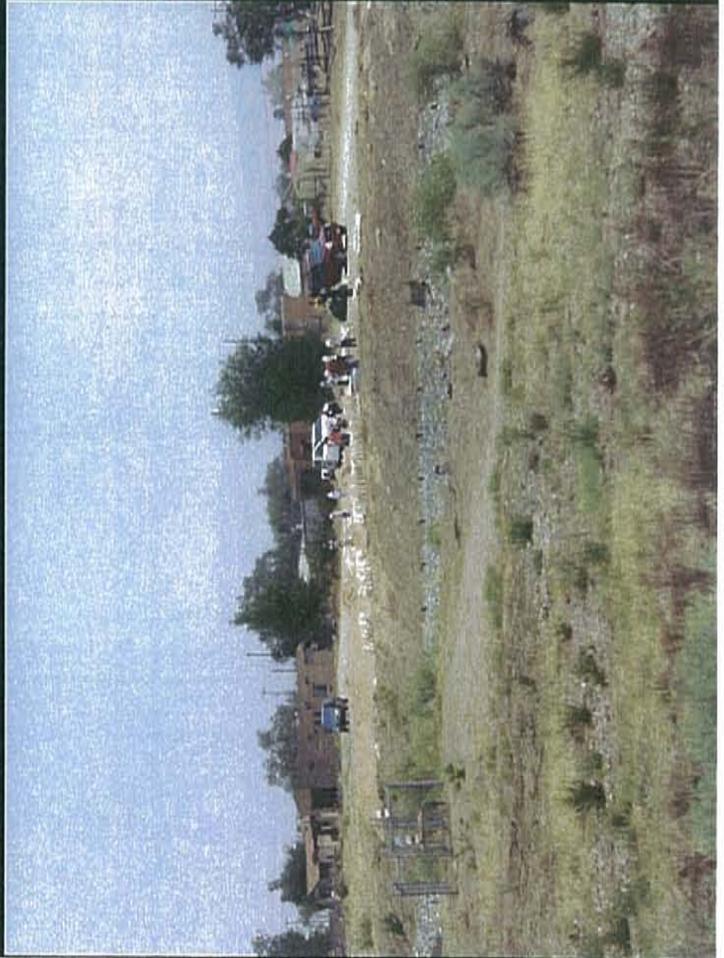
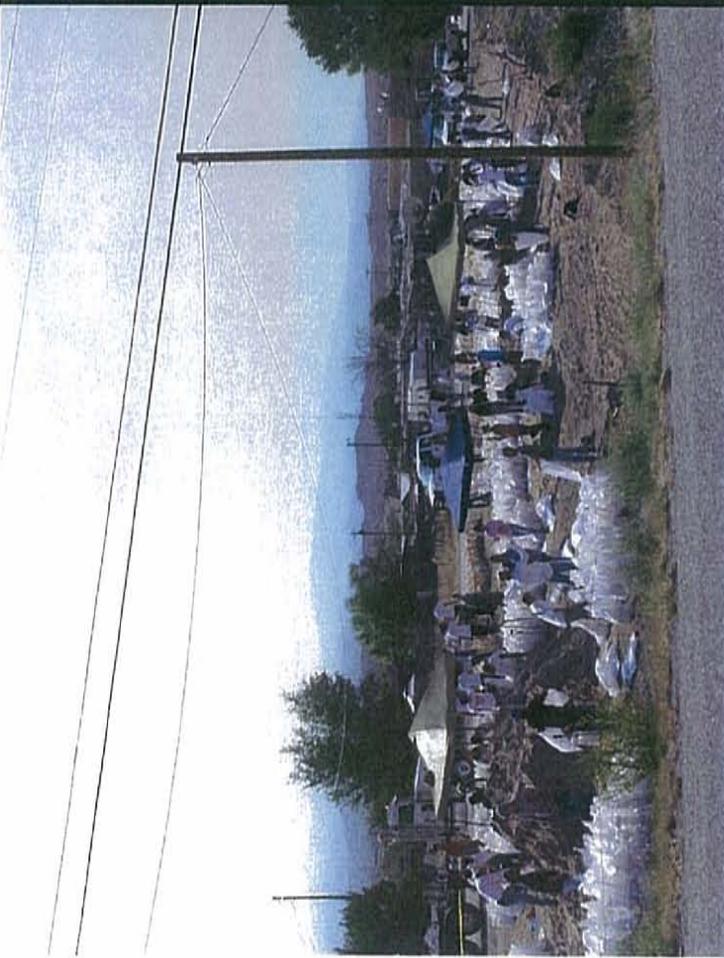








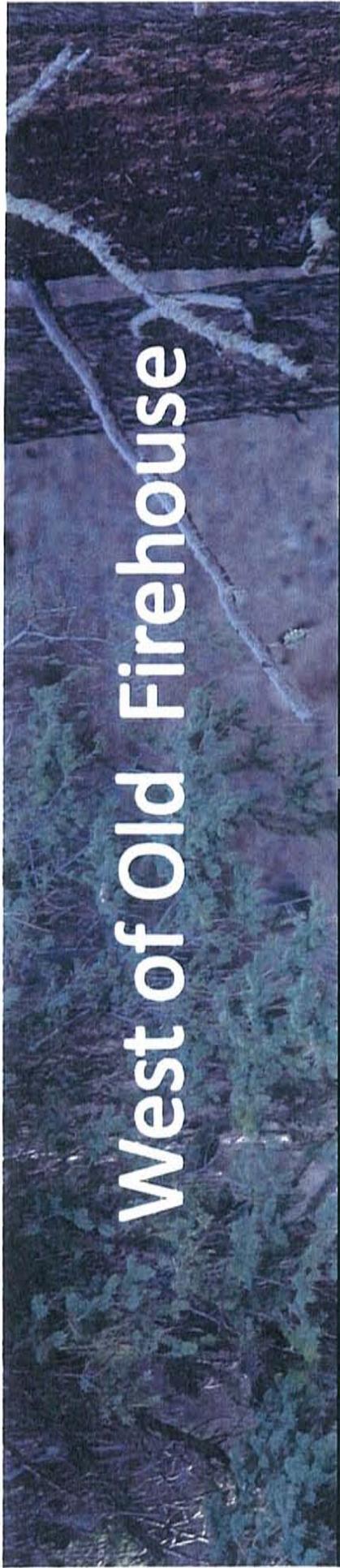




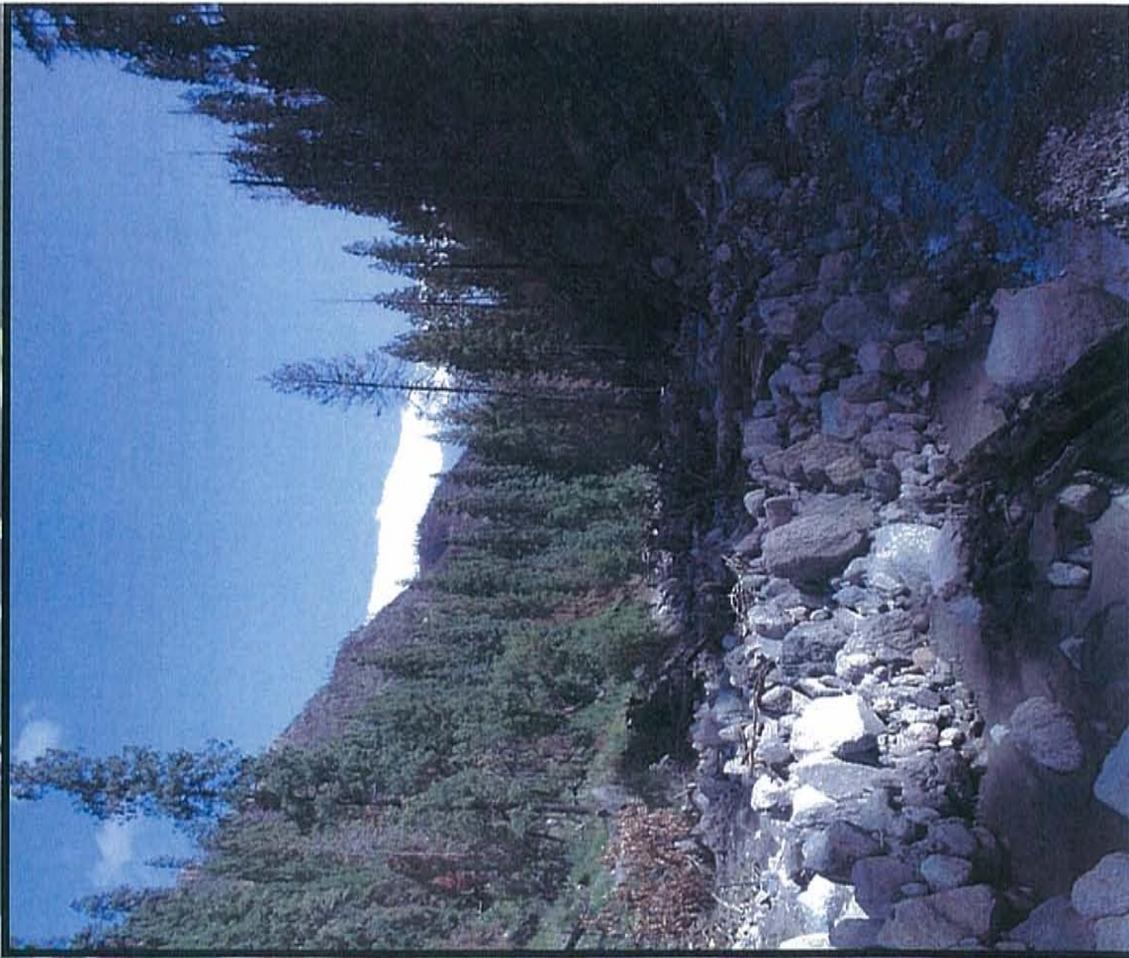




# West of Old Firehouse



# Cattle Guard Location



Site 11



## Fire Altered Hydrology for Santa Clara Creek

Prepared by Tamara Massong  
 Supervisory Hydrologist  
 U.S. Army Corps of Engineers  
 Albuquerque District

### Methods:

- Used existing calibrated model, (HEC-HMS model) for Santa Clara Creek. Original model based on historic flow data from the Santa Clara Creek gage and precipitation frequency rainfall information (NOAA Atlas 14).
- Infiltration parameters in the existing model were updated to include reduced infiltration due to the fire. The area affected by the burn was estimated per each individual sub-basin in the model. And the severity of the burn was included. So the initial infiltration was reduced by both the amount of the sub-basin's area that was burned, and then was again reduced by the severity of the burn. If the burn was intense (all trees burned, only stumps remaining) the infiltration was set to zero. If the burn was moderate (trees still standing, destroyed crowns, and notable ash layer), the infiltration in the affected area was reduced by 50%. If the burn was low intensity (most trees still alive and green, only had fire on the ground, some ash layer over ground, under ash layer are still some organics in the soil), the infiltration was reduced by 20% in the affected areas.
- In the affected sub-basins, the basin lag or "time-to-peak" (peak of hydrograph/runoff) by reduced by 25%.
- In unaffected sub-basins, no parameters were altered.
- Initial Fire boundary was from 4 July 2011. The fire severity was estimated from a flight over the watershed on 08 July 2011. Additional ground inspections were also conducted on 08 July 2011.

### Results

This is a slightly refined approach to the fire hydrology scenario, and should be updated based on improved burn severity information, when that is available. The fire-flow results are **only valid for the first 2-3 months after the fire**. The reduced infiltration assumptions will change as the ash is washed away and the hydrophobic soil conditions end.

**Table 1:** Flow Results Summary (cubic feet per second, cfs)

		50% chance (2-yr)	10% chance (10-yr)	1% chance (100-yr)
Dam on Sawyer Creek	Pre-fire	95	940	1,882
	Post-fire	210	1,250	2,350
Santa Clara at Sawyer Confluence	Pre-fire	314	1,908	5,030
	Post-fire	2,650	8,500	20,475
Santa Clara at Dip Crossing (u/s Pueblo)	Pre-fire	300	1,900	5,000
	Post-fire	2,650	8,500	20,300
Santa Clara at Rio Grande (Outlet)	Pre-fire	350	2,260	5,640
	Post-fire	3,100	8,900	21,450

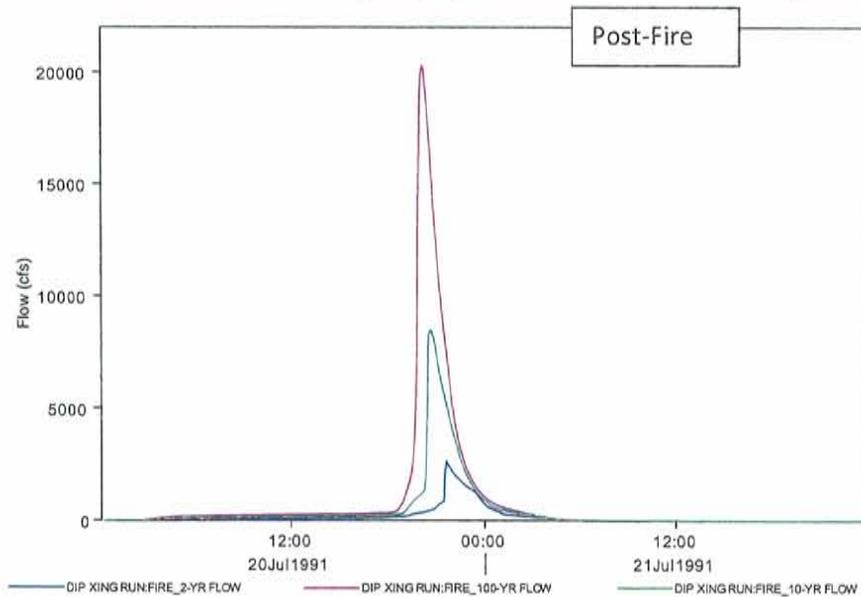
**Table 2:** All Post-Fire flow results (cfs).

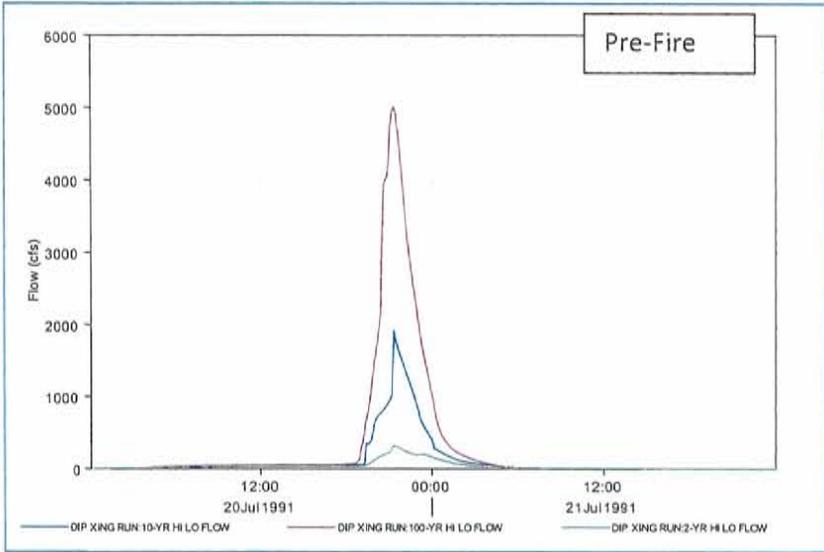
	50% chance (2-yr)	20% chance (5-yr)	10% chance (10-yr)	4% chance (25-yr)	2% chance (50yr)	1% chance (100-yr)	0.5% chance (200-yr)	0.2% chance (500-yr)
Dam on Sawyer Creek	210	840	1,250	1,700	2,050	2,350	2,700	3,175
Santa Clara at Sawyer Confluence	2,650	5,500	8,500	13,000	16,600	20,475	24,600	31,100
Santa Clara at Dip Crossing (u/s Pueblo)	2,650	5,500	8,500	12,900	16,500	20,300	24,400	30,800
Santa Clara at Rio Grande (Outlet)	3,100	6,300	8,900	13,600	17,300	21,450	25,800	32,500

**Table 3:** Summary of rainfall data (average rainfall from NOAA Atlas 14) for the Santa Clara Creek watershed.

Percent Chance Flood	Return Interval	24-hr Rain Total Low Elevation (in)	24-hr Rain Total High Elevation (in)
50%	2-yr	1.58	2.03
20%	5-yr	1.97	2.54
10%	10-yr	2.29	2.95
4%	25-yr	2.72	3.51
2%	50-yr	3.06	3.94
1%	100-yr	3.40	4.39
0.5%	200-yr	3.76	4.86
0.2%	500-yr	4.25	5.50

**Figure 1:** Estimated Post Flood Hydrographs on Santa Clara Creek at Dip Crossing (upstream of Pueblo)





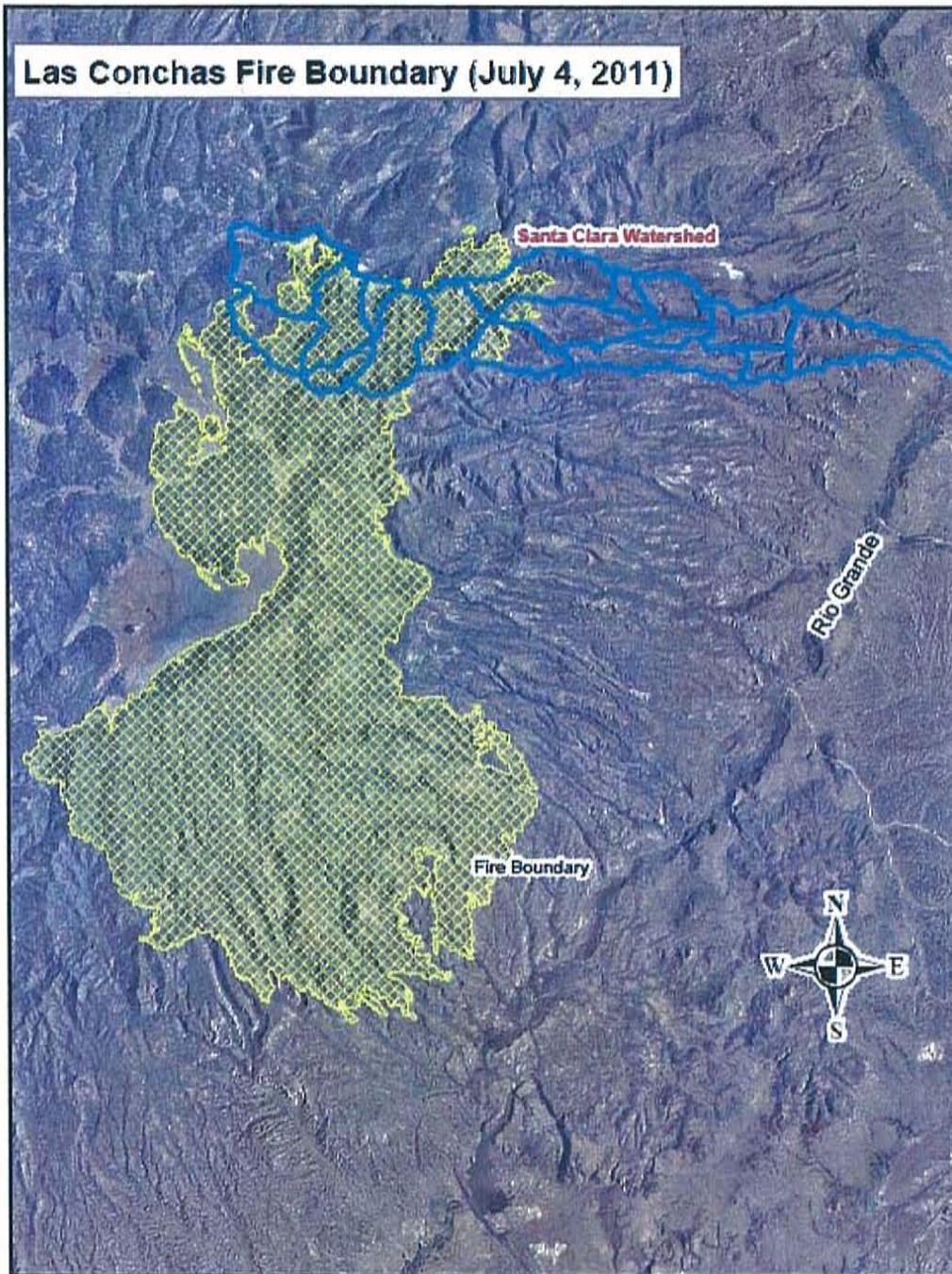


Figure 2: Fire boundary and Santa Clara Creek.

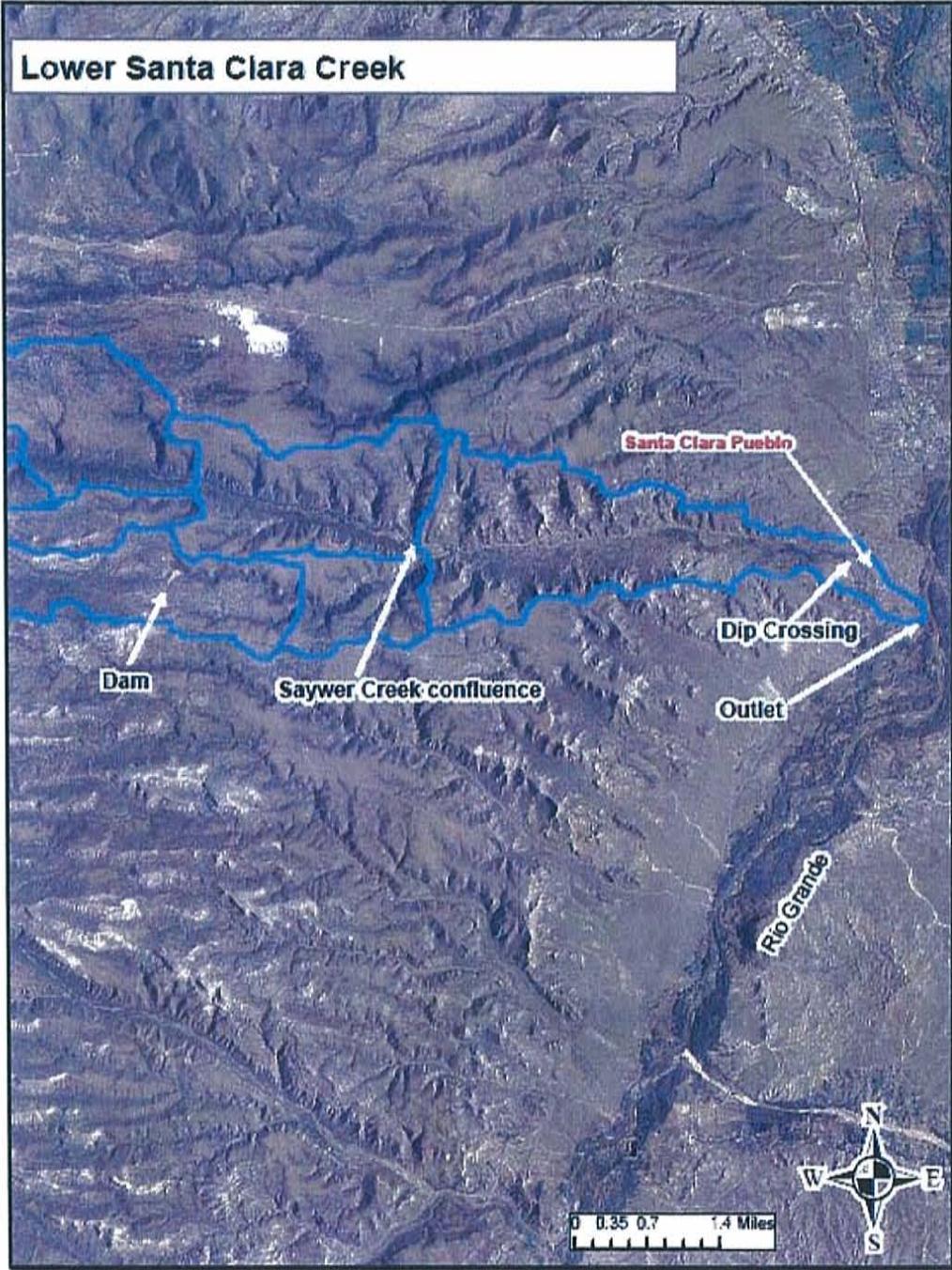


Figure 3: Location map for lower Santa Clara Creek.

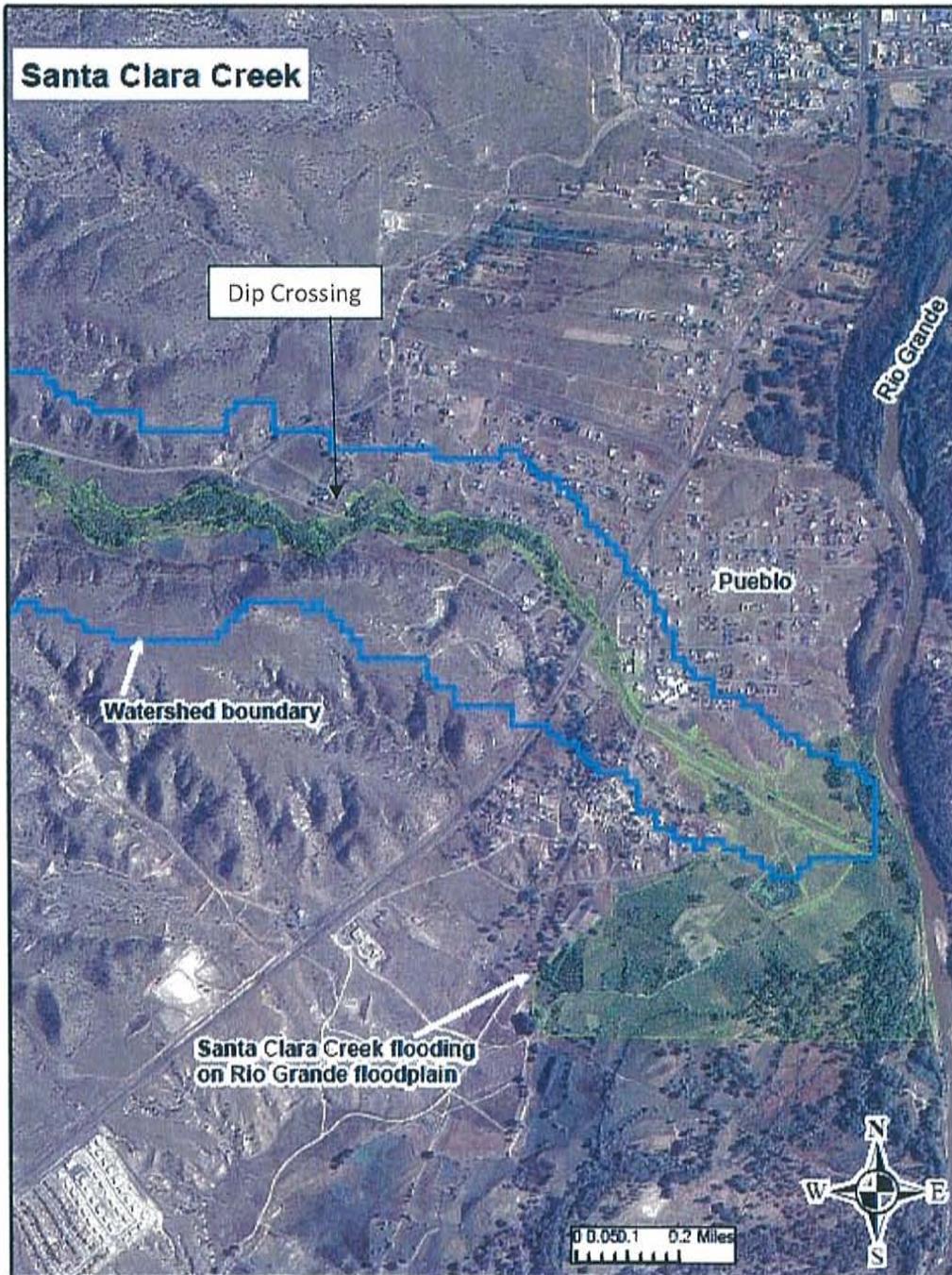


Figure 4: 100 year floodplains under non-fire scenario (~5,000 cfs).

