

SECTION 5

C

C

C

13

We are concerned that this may be in violation of:

-The Federal Water Pollution Control Act (Clean Water Act)

-Truckee's "Storm Water Management Program"

-Nevada County Local Agency Formation Commission

-Nevada County Resolution No. 92483

-California Streets & Highway Codes



MS

SECTION 6

C

C

C

11

**THREE INDEPENDENT ASSESSMENTS REPORTS HAVE
BEEN COMPLETED ON THE DRAINAGE, EROSION AND
DAMAGE OCCURING FROM I-80 TO THE GREEN POINT
SUBDIVISION**

**1. PROPOSED MONTANO RESTORATION WETLAND PLAN
BY INLAND ECOSYSTEMS, SEPTEMBER 2004**

**2. AN ASSESSMENT OF SURFACE WATER RUNOFF AND
EROSION ABOVE AND BELOW WEST REED AVENUE,
TRUCKEE, CA. BY INLAND ECOSYSTEMS, JULY 2006**

**3. TRUCKEE RIVER WATER SHED COUNCIL EROSION AND
WATER QUALITY REPORT & ASSESSMENT SUMMARY,
SEPTEMBER 16, 2016**

8

8

8

88

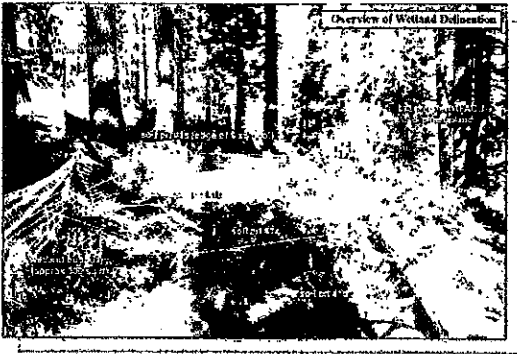
ATTACHMENT 2

**PROPOSED MONTANO RESTORATION
WETLAND PLAN**



24

Proposed Montano Property Wetland Restoration Plan



Prepared For
Scott Ferguson, P.E.
Lahontan Regional Water
Quality Control Board
2501 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150

 California Environmental Protection Agency
LAHONTAN REGIONAL
WATER QUALITY CONTROL BOARD

Prepared By
Glenn Merron, Ph. D.
Inland Ecosystems
1135 Terminal Way, Suite 204A
Reno, NV 89502



September 2004

73 46 6



INLAND ECOSYSTEMS
1135 Terminal Way, Suite 204A
Reno, NV. 89502
Phone: (775) 786-3223 Fax: (775) 786-3229
Email: gmerron@inlandecosystems.com

September 3, 2014

Mr. Scott C. Ferguson, P.E.
Chief, Truckee River Watershed Unit
Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Blvd
South Lake Tahoe, CA 96150

SUBJECT: Proposed Montano Property Site Restoration Plan

Dear Mr. Ferguson:

On behalf of the Truckee Donner Public Utility District (District) I have prepared a proposed Montano Property Site Restoration Plan for Lahontan Regional Water Quality Control Board (LRWQCB) review. The restoration plan describes measures to protect the seep-spring wetland from storm water and snow melt runoff, and ensure that existing drainages and subsurface seeps are allowed to flow uninterrupted downslope of the project site.

The District and I appreciate your continued involvement with this project site and we look forward to LRWQCB comments on the proposed site restoration plan. Please feel free to contact either Ed Taylor at (530) 582-3927 or myself at (775) 786-3223 should you require any additional information.

Sincerely,

Glenn S. Merron, Ph.D.

cc: Ed Taylor, Water Utility Manager
Neil Kaufman, Project Engineer

04 47

TABLE OF CONTENTS

| | | |
|-----|--|---|
| 1.0 | Report Background | 1 |
| 2.0 | Soil Test Pit Results | 2 |
| 3.0 | Test Pit Conclusions | 3 |
| 4.0 | Proposed Site Restoration Measures | 3 |

LIST OF FIGURES

- Figure 1.** Location of seep spring wetland within the Montano Property, Truckee, California.
- Figure 2.** Location of soil test pits, wetland areas, and apparent seep direction on the Montano Property.
- Figure 3.** Proposed stabilization of the cleared area within the Montano Property.
- Figure 4.** The proposed 2% graded driveway to allow water to flow down slope.
- Figure 5.** Modified joint trench detail near saturated area - Montano Property.
- Figure 6.** Proposed restoration measures for the Montano Property.

LIST OF PHOTOGRAPHS

- Photo 1.** The seep-spring wetland prior to temporary impact.
- Photo 2.** The seep-spring wetland after the initial temporary impact. The tree branch identified in both pictures were taken looking south toward Donner Lake from the newly excavated road.
- Photo 3.** The location of Test Pit 1 was approximately 10 feet east of the saturated area.
- Photo 4.** A close up of soil conditions within Test Pit 1 showing dry soil conditions.
- Photo 5.** The location of Test Pit 2 was approximately 25 feet east of the saturated area.
- Photo 6.** A close up of soil conditions within Test Pit 2 showing dry soil conditions.
- Photo 7.** The location of Test Pit 3 was approximately 40 feet east of the saturated area.
- Photo 8.** A close up of soil conditions within Test Pit 3 showing dry soil conditions.
- Photo 9.** The location of Test Pit 4 was approximately 20 feet east of the seep spring wetland area within a low depression.
- Photo 10.** A close up of soil conditions within Test Pit 4 showing dry soil conditions.
- Photo 11.** The location of Test Pit 5 was excavated adjacent to the saturated area.
- Photo 12.** A close up of soil conditions within Test Pit 5 revealed an approximately 2 foot wide layer of porous cobble where water seepage is apparent.
- Photo 13.** The location of Test Pit 6 was approximately 10 feet west of the saturated area.
- Photo 14.** A close up of soil conditions within Test Pit 6 revealed an approximately 2 foot wide layer of porous cobble where water seepage is apparent.
- Photo 15.** The location of Test Pit 7 was approximately 20 feet west of the saturated area.

1.0 REPORT BACKGROUND

The Truckee Donner Public Utility District (District) is installing a domestic water pipeline across the northern section of the Montano Property east of Donner Lake Road in Truckee (Figure 1). This alignment was chosen by the District as a preferred alternative to clearing approximately 625 feet of seep-spring wetland with several small, narrow spring channels located between West Reed Avenue and Pioneer Drive.

During the week of July 12, 2004 a seep-spring wetland located on the western side of the Montano property was impacted from the felling of trees and fallen slash while clearing the alignment (See Photos 1 and 2). Local residents including Jack and Emilie Kashtan informed Scott Ferguson of the Lahontan Regional Water Quality Control Board (LRWQCB) of the incident. The District Water Utility Manager, Ed Taylor, was then immediately informed of the incident by Scott Ferguson. A site visit was arranged with District staff and Glenn Merron of Inland Ecosystems on Friday July 16, 2004. A preliminary assessment of the site and the installation of erosion control measures were carried out by Inland Ecosystems during the weekend of July 17th (See Photo 2). Scott Ferguson inspected the site during the week of July 19th and discussed LRWQCB concerns over the wetland impact with Ed Taylor. A Technical Report in response to the wetland impact was prepared for the District by Inland Ecosystems and submitted to the LRWQCB on July 23, 2004.

The surface area of the wetland is approximately 300 square foot and is situated in the under story of a dry mixed conifer forest on a moderate slope north of Donner Lake. The hydrology of the wetland is supported by groundwater discharge in the form of a small seep-spring. No mapped or unmapped streams or drainage contours are connected to the wetland. The approximate 300 sq. ft. wetland includes a small pooled area approximately 6 ft. x 8 ft. in size, inundated to a depth of 8-12 inches.

Impacts to this seep-spring wetland were classified as temporary. No heavy equipment had entered the wetland and the soils were not disturbed. The roots, rhizomes, and stolons of the wetland plants are intact, and there are no apparent alterations to the hydrology of the spring. Remediation measures have been implemented by the District and no permanent disturbance to the wetland occurred. There is no foreign material or unnatural debris left in the wetland (See Photo 2).

In addition to the temporary seep-spring impact described above, an approximate 4 by 4 foot saturated area also developed approximately 90 feet west of the seep-spring wetland identified above (See Figure 2). This saturated area did not exist prior to ground disturbance. During a site visit with Scott Ferguson, Ed Taylor, Neil Kaufman (District Project Engineer), and Glenn Merron on August 17, 2004 an issue discussed was the potential hydrologic connection that this saturated area might have on the seep-spring wetland. The purpose of this letter report is to present the results of a soil pit survey to determine water movement and provide a proposed restoration plan for wetland protection and other cleared areas within the Montano property.

2.0 SOIL TEST PIT RESULTS

On August 14, 2004 seven soil pits were dug with a backhoe along the existing cleared area to determine the direction of subsurface water movement (See Figure 2). Test pit characteristics for each pit are presented below.

- **Test Pit 1 (Photographs 3 and 4)** – This soil pit located approximately 10 feet east of the saturated area was excavated to a depth of approximately 4 feet. No indication of saturation or hydric soils was evident. Soil characteristics included primarily sand, cobble, and boulders.
- **Test Pit 2 (Photographs 5 and 6)** – This soil pit located approximately 25 feet east of the saturated area was excavated to a depth of approximately 5 feet. No indication of saturation or hydric soils was evident. Soil characteristics included primarily sand, cobble, and boulders.
- **Test Pit 3 (Photographs 7 and 8)** – This soil pit located immediately north of the seep-spring wetland was excavated to a depth of approximately 3 feet. No indication of saturation or hydric soils was evident. Soil characteristics included primarily sand, cobble and boulders.
- **Test Pit 4 (Photographs 9 and 10)** – This soil pit located approximately 20 feet east of the seep-spring wetland in the low point of a broad drainage was excavated to a depth of approximately 3.5 feet. No indication of saturation or hydric soils was evident. Soil characteristics included primarily sand, cobble and boulders.
- **Test Pit 5 (Photographs 11 and 12)** – This soil pit located adjacent to the saturated area was excavated to a depth of approximately 5 feet. There was a clear strata of 4-6 inch cobble that was encountered approximately 2 feet below existing grade and approximately 2-3 feet wide. There was indication of saturation and water movement in a downslope direction.
- **Test Pit 6 (Photographs 13 and 14)** – This soil pit located approximately 5 feet south of the saturated area was excavated to a depth of approximately 4 feet. Once again, there was a clear strata of 4-6 inch cobble that was encountered approximately 2 feet below existing grade. There was indication of saturation and water movement in a downslope direction.
- **Test Pit 7 (Photograph 15)** – This soil pit located approximately 20 feet west of the saturated area was excavated to a depth of approximately 4 feet. Once again, there was a clear strata of 4-6 inch cobble that was encountered approximately 2 feet below existing grade. There was indication of saturation and water movement in a downslope (i.e. southerly) direction. This soil pit appeared to represent the approximate western boundary of the saturated area.

3.0 TEST PIT CONCLUSIONS

The purpose of the soil pit excavations was to determine if the small saturated area was hydrologically connected to the seep-spring wetland through subsurface movement. All test pits east of the saturated area were dry and there was no indication of water movement in an eastward direction or saturated soil conditions. Based on the results of the test pits there is no apparent indication of a west to east subsurface hydrologic connection between the saturated area and the seep-spring wetland to the east.

The small saturated seep "day lighted" as a result of clearing activities which exposed this subsurface water movement. Heavy equipment compaction of the ground also resulted in constricting the porous strata and leading to a ponded condition. The seep moves through a well defined strata of porous 4-6 inch cobble forming a layer approximately 2 feet deep that originates upslope of the cleared area and is approximately 20-25 feet wide (See Figure 2). The stratum is approximately 3-4 feet below natural grade. This water moves subsurface and is possibly hydrologically connected to a well-defined wetland approximately 90 feet upslope north of the cleared area (See Figure 2). This subsurface flow continues downslope where it is believed to commingle with existing drainages that flow to (and under) West Reed Avenue and ultimately into Donner Lake. This subsurface seep was not identified during the wetland delineation conducted for the Montano property and contained in the EIR prepared by the Town of Truckee for a proposed subdivision of the property.

4.0 PROPOSED SITE RESTORATION MEASURES

This section outlines proposed restoration measures to ensure wetland and water quality protection, and long term stormwater and erosion control.

- Approximately 450 feet of the existing access road will become a 12 foot wide paved driveway according to Town of Truckee standards.
- All stormwater runoff and spring snowmelt from the driveway will be conveyed away from the east and west boundaries of the seep-spring wetland by installing a rolled apron on the southern edge of the driveway and directing flow downslope into rock lined channels and dry wells for temporary containment (See Figure 3).
- The driveway will be sloped at a 2% grade to allow water to flow downslope (See Figure 4).
- The seep-spring wetland feature will be protected by placing 2 to 4 foot boulder armoring along the driveway embankment for approximately 60 feet (See Figure 3). The boulders would be keyed in to stabilize the slope and prevent indirect effects from future sloughing and sediment runoff. Boulders will be readily available (and stockpiled) as trenching progresses through the site.

- An Asphalt Composition (AC) dyke will be constructed on the south side of the driveway to prevent surface runoff from this section of the driveway to influence the wetland habitat (See Figure 3).
 - Within the vicinity of the saturated area cut off walls will be installed on either side of the porous rock formation to ensure that water movement is contained within this strata. The pipeline trench will be filled with 3/8-inch pea gravel and covered with filter fabric for approximately a 50-foot length to maintain porosity and downslope hydraulics (See Figure 5).
 - Upon completion of pipeline construction the upper cleared area for installing the pipeline will be seeded and mulched to stabilize the soils (See Figure 6).
 - The prominent drainage channel within the upper cleared area will be recontoured to allow uninhibited flow downslope. See Figure 6a.
 - On the lower cleared area, where a driveway is proposed, the prominent drainage will flow through a culvert under the driveway and energy dissipating measures (e.g., large boulders) will be placed below the outfall.
-

52
00

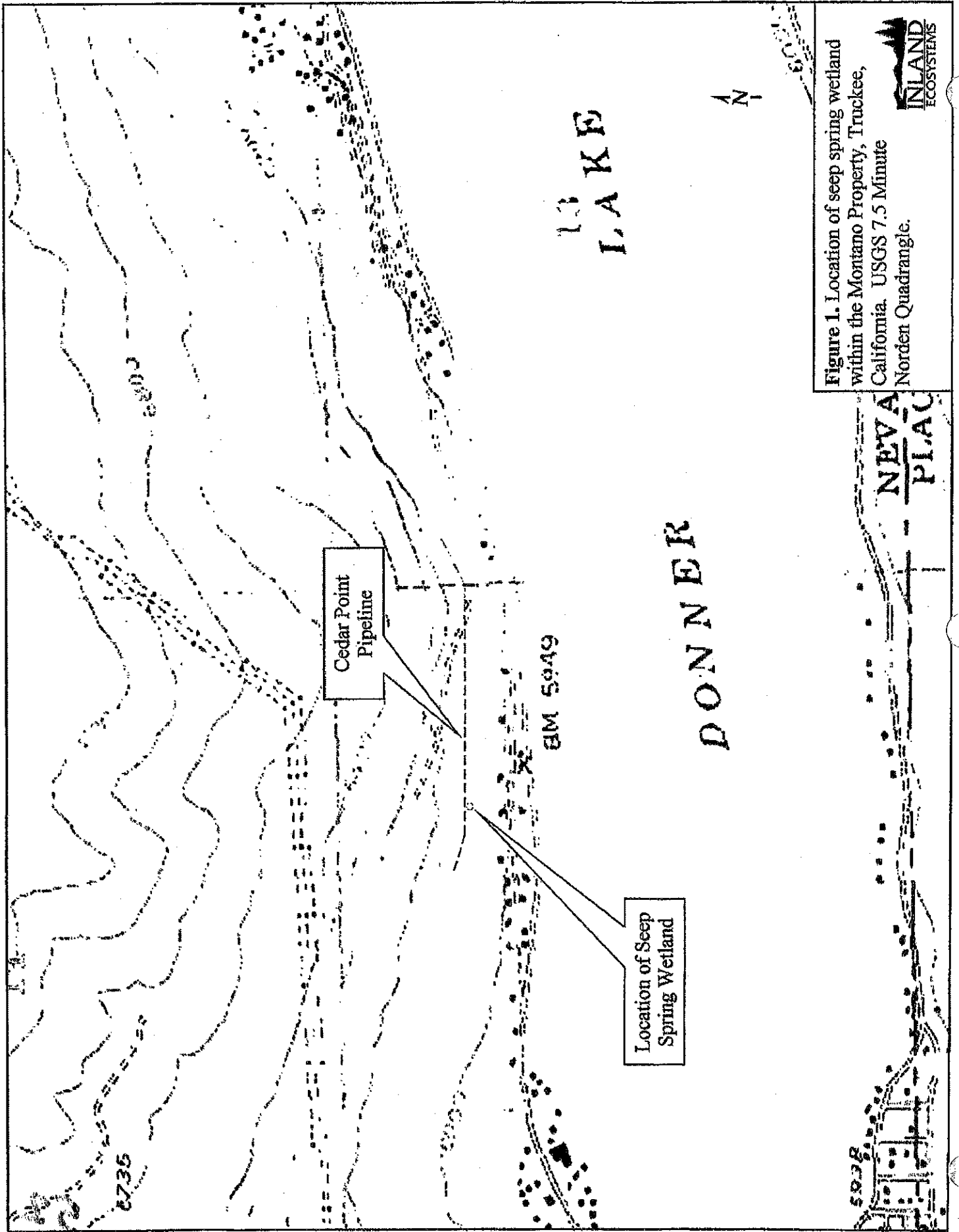


Figure 1. Location of seep spring wetland within the Montano Property, Truckee, California. USGS 7.5 Minute Norden Quadrangle.





Foot of Subsurface Seepage

Seep Spring Wetland

Apparent Seep Direction

Legend

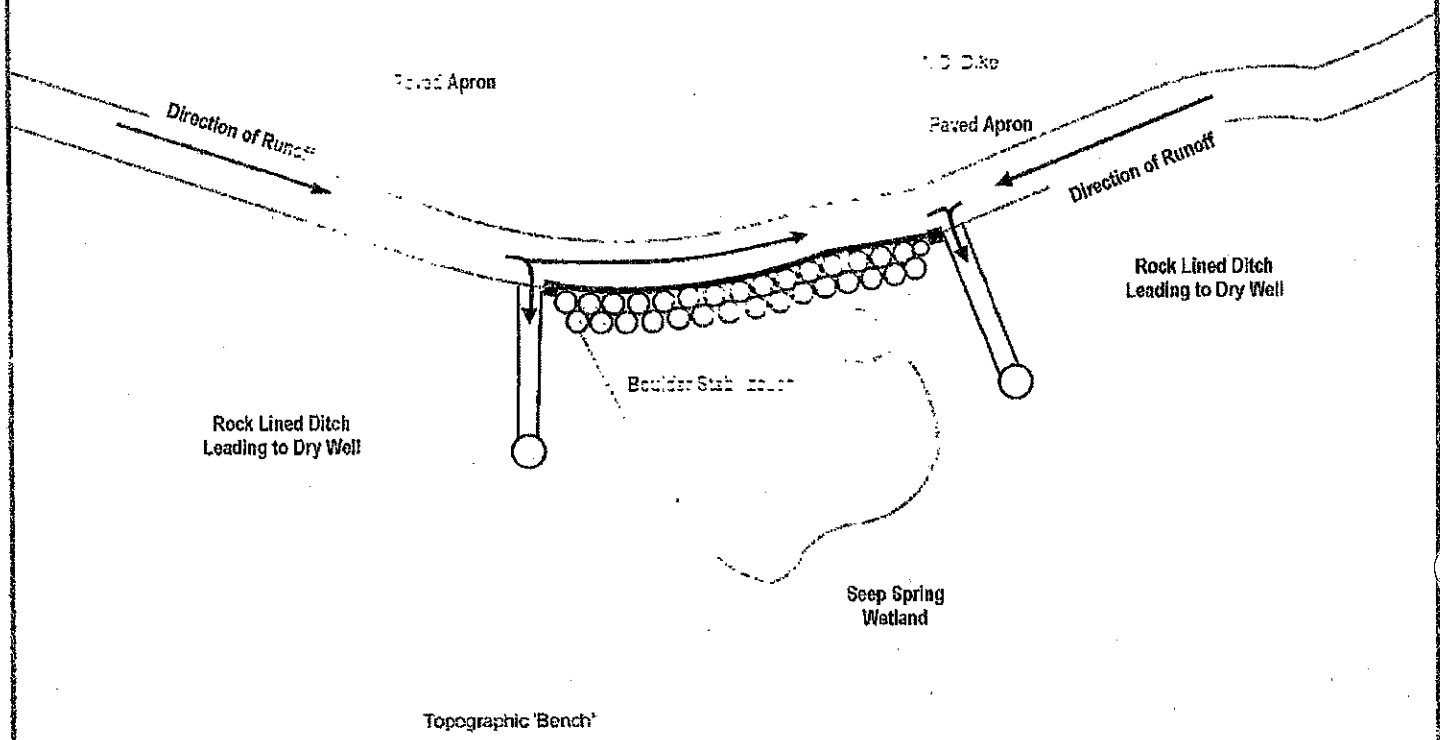
- Test Pits
- Wetland Delineation
- Soil Test Pits
- Seep-Spring Pond

TRUCKEE POWER & LIGHTING DISTRICT

WINNER

| | |
|-------------|----------|
| DATE | 1/11/01 |
| DRAWN BY | ... |
| CHECKED BY | ... |
| SCALE | AS SHOWN |
| PROJECT NO. | ... |

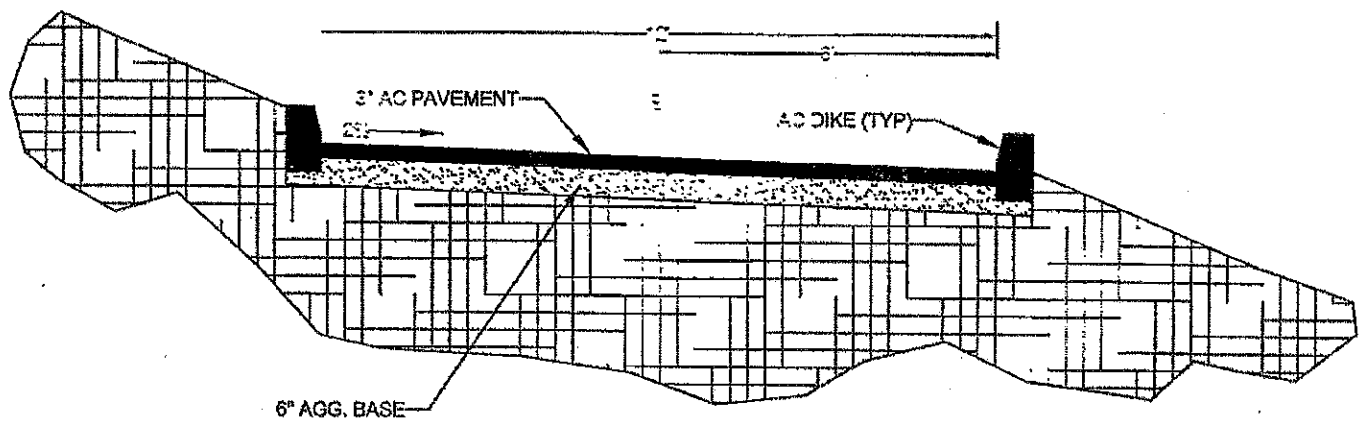
Figure 2 Location of soil test pits, wetland areas, and apparent seep direction on the Montano Property.




55

| | |
|---|---------------------------|
| TRUCKEE-DONNER PUBLIC UTILITY DISTRICT | |
| 1000 WEST 1ST STREET, CARSON CITY, NEVADA 89401 | |
| BY DONNER | PLACED BY SKETCHED |
| | DATE 2/20/2002 |
| SCALE 1" = 100' ± | PROJECT NO. 02-001-001 |
| WATER | |

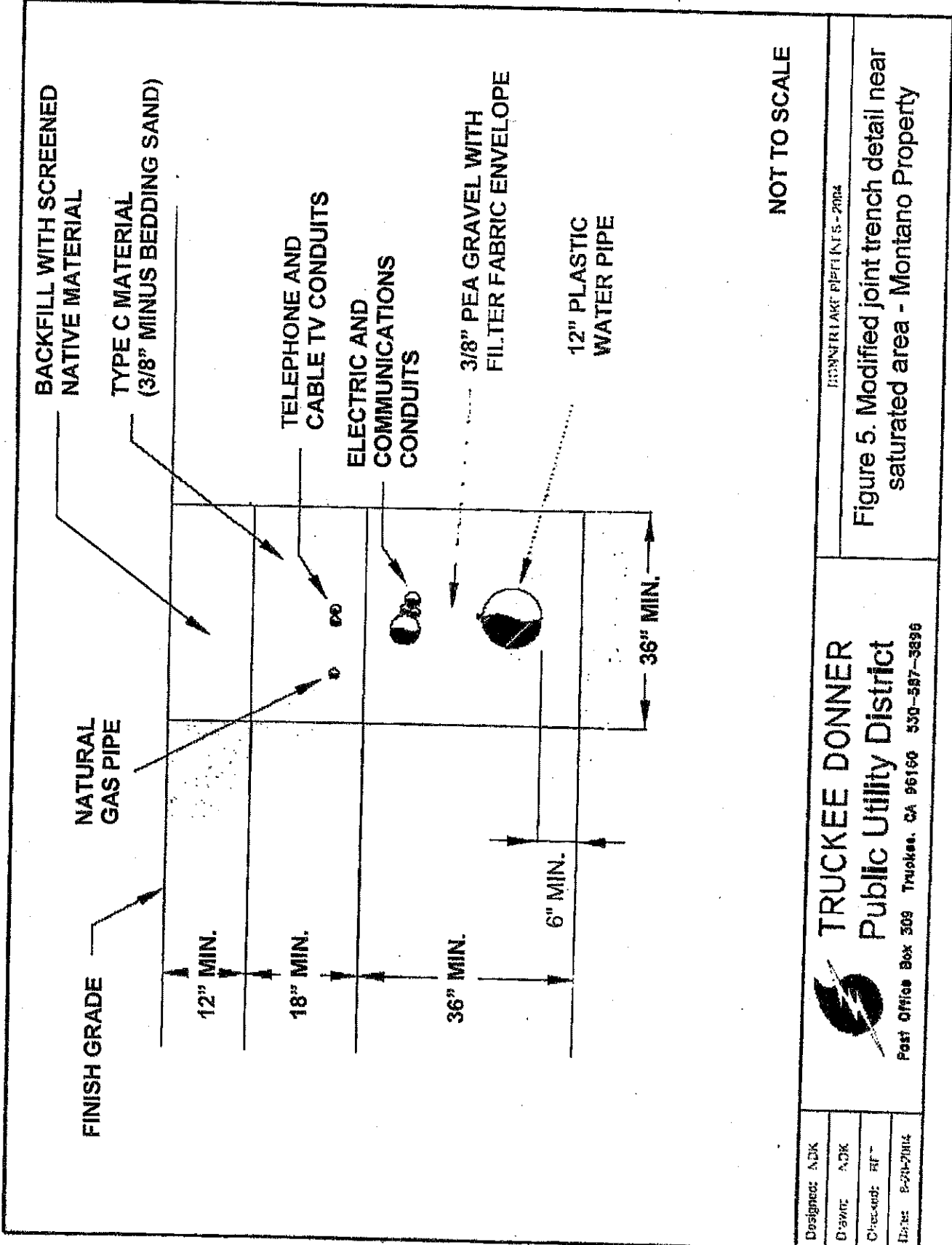
Figure 3 Proposed stabilization of the cleared area within the Montano Property.



| | | | | |
|--------------------------|--|---|-------------|--------------------|
| TECHNICAL SPECIFICATIONS | | Figure 4. The proposed 2% graded driveway to allow water to flow down slope. | DRAWING # | REVISED |
| | | | | 8-23-04 |
| | |  TRUCKEE DONNER Public Utility District | SCALE | |
| | | | DRAWN MC | APPROVED |
| | | | | <i>[Signature]</i> |

56

57



NOT TO SCALE

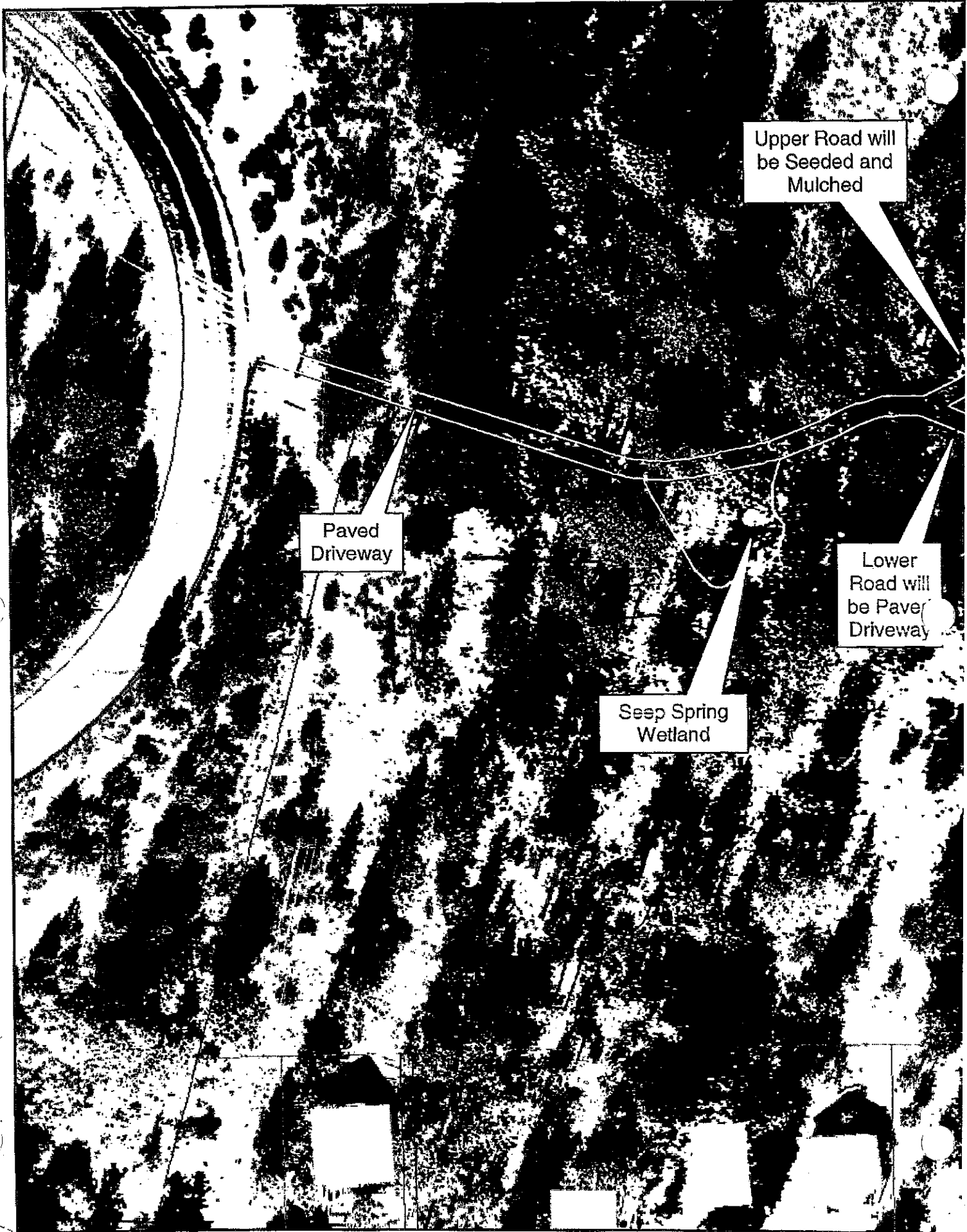
Designed: ADK
 Drawn: ADK
 Checked: RF
 Date: 8-24-2014

TRUCKEE DONNER
Public Utility District

Post Office Box 309 Truckee, CA 96160 530-587-3896

INTERLAKK PERMITS - 2014

Figure 5. Modified joint trench detail near saturated area - Montano Property



Upper Road will be Seeded and Mulched

Paved Driveway

Seep Spring Wetland

Lower Road will be Paved Driveway

WATERWAYS
Area 6. Proposed restoration measures for the Montana Property
MONTANA PUBLIC UTILITIES DISTRICT

Cover will be placed on Westside
Drainage Under
Paved Driveway

Proposed
Placement of
Montana
Residence

Eastern
Drainage to be
Shotcrete
Lined

69



Photo 1. The seep-spring wetland prior to temporary impact.



Photo 2. The seep-spring wetland after the initial temporary impact. The tree branch identified in both pictures were taken looking south toward Donner Lake from the newly excavated road.

ed

ATTACHMENT 3

**SURFACE WATER RUNOFF AND
EROSION**

C

C

C

TABLE OF CONTENTS

| | | |
|-----|--|----|
| 1.0 | INTRODUCTION | 1 |
| 2.0 | SITE INSPECTIONS AND PARTICIPANTS | 1 |
| 3.0 | RESULTS | 3 |
| 3.1 | Culvert Runoff From Above and Along Interstate 80 | 4 |
| 3.2 | Hillside Runoff and Drainage onto West Reed Avenue | 4 |
| 3.3 | Runoff onto Donner Pass Road | 4 |
| 4.0 | PROPOSED SOLUTIONS | 13 |
| 4.1 | Culvert Runoff From Above and Along Interstate 80 | 13 |
| 4.2 | Runoff onto West Reed Avenue | 14 |
| 4.3 | Runoff onto Donner Pass Road | 15 |
| 5.0 | TDPUD CEDAR POINT PIPELINE ALIGNMENT | 18 |
| 6.0 | STATE WATER QUALITY REGULATORY REQUIREMENTS | 18 |
| 8.0 | CONCLUSIONS | 22 |

List of Figures

Figure 1. Vicinity map of the north slope of Donner Lake above West Reed Avenue, Truckee, CA.

Figure 2. Donner Lake precipitation data for the period November 15, 2005 to May 1, 2006. Data from U.S. Geological Survey.

Figure 3. Greenpoint Springs proposed drainage measures.

1.0 INTRODUCTION

Inland Ecosystems was retained by the Truckee Donner Public Utility District (TDPUD) to assess surface water runoff conditions and erosion above West Reed Avenue in the Donner Lake watershed (See Figure 1). For several years' homeowners in the area have expressed their concerns, primarily in e-mail correspondences, to Caltrans, the Town of Truckee (Town), Lahontan Regional Water Quality Control Board (LRWQCB), and other stakeholders (recently the TDPUD) about the deterioration of drainage conveyances and erosion occurring on the hillside above West Reed Avenue. In February 2003, Ms. Emilie Kashtan sent a letter to Caltrans regarding erosion and water damage to properties on West Reed Avenue from runoff exiting culverts under eastbound I-80 (See Attachment 1). The hillside between I-80 and West Reed Avenue is steep and lies between elevations 6,000 and 6,250 feet (See Figure 1).

The TDPUD also experiences problems with runoff on West Reed Avenue undermining water and utility infrastructure. TDPUD staff has been called out on several occasions during substantial rain storms to sandbag utilities and clear clogged ditches and culverts. This assessment identifies areas that are contributing to drainage and erosion problems, and suggest remedial measures.

2.0 SITE INSPECTIONS AND PARTICIPANTS

Site inspections were conducted on seven specific occasions including December 23, 2005 (E. Kashtan, Neil Kaufman, and Glenn Merron); December 31, 2005 (N. Kaufman), May 29 (E. Kashtan and G. Merron), June 6 (G. Merron and James Merron), June 13, June 19, (Ed Taylor and G. Merron), and June 21, 2006 (G. Merron and Kevin Johnson).

The June 13, 2006 survey included:

- Dennis Jagoda (Caltrans)
- Pat Perkins (Town of Truckee)
- N. Kaufman (Truckee Donner Public Utility District)
- Foreman (Southwest Gas)
- E. Kashtan (Homeowner representative)
- Pat Taylor (Homeowner)
- G. Merron (Inland Ecosystems)

In addition to the above surveys approximately 20 e-mail correspondences regarding problematic drainage and erosion in the area were reviewed as background information. The e-mails originate from the Donner Lake Community Association and the Green Point Property Owners and were copied to Caltrans, the Town of Truckee, TDPUD, LRWQCB, and other stakeholders.

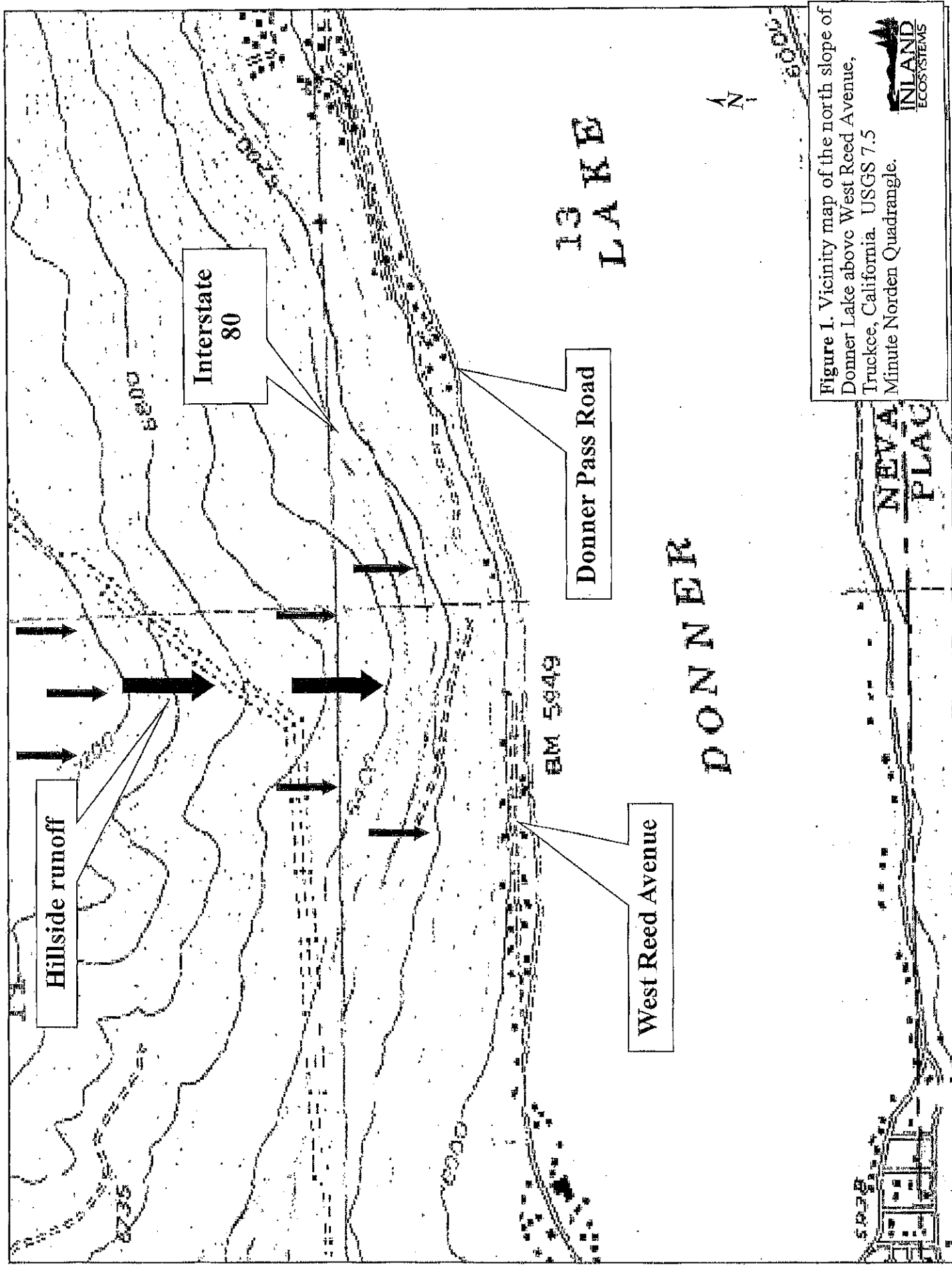


Figure 1. Vicinity map of the north slope of Donner Lake above West Reed Avenue, Truckee, California. USGS 7.5 Minute Norden Quadrangle.



3.0 RESULTS

Substantial rainfall events during the 2005/2006 storm season resulted in above average runoff conditions in the Donner Lake area. The December 30, 2005 to January 2, 2006 storm caused flooding and erosion along West Reed Avenue and Donner Pass Road. Almost 10 inches of rain fell in the Donner Lake watershed during this time period (See Figure 2). Precipitation in the form of rainfall during the month of December was greater than three times the average monthly level. The magnitude, frequency, and duration of precipitation events between November 15, 2005 and May 1, 2006 is provided in Figure 2 and includes rainfall and snowfall.

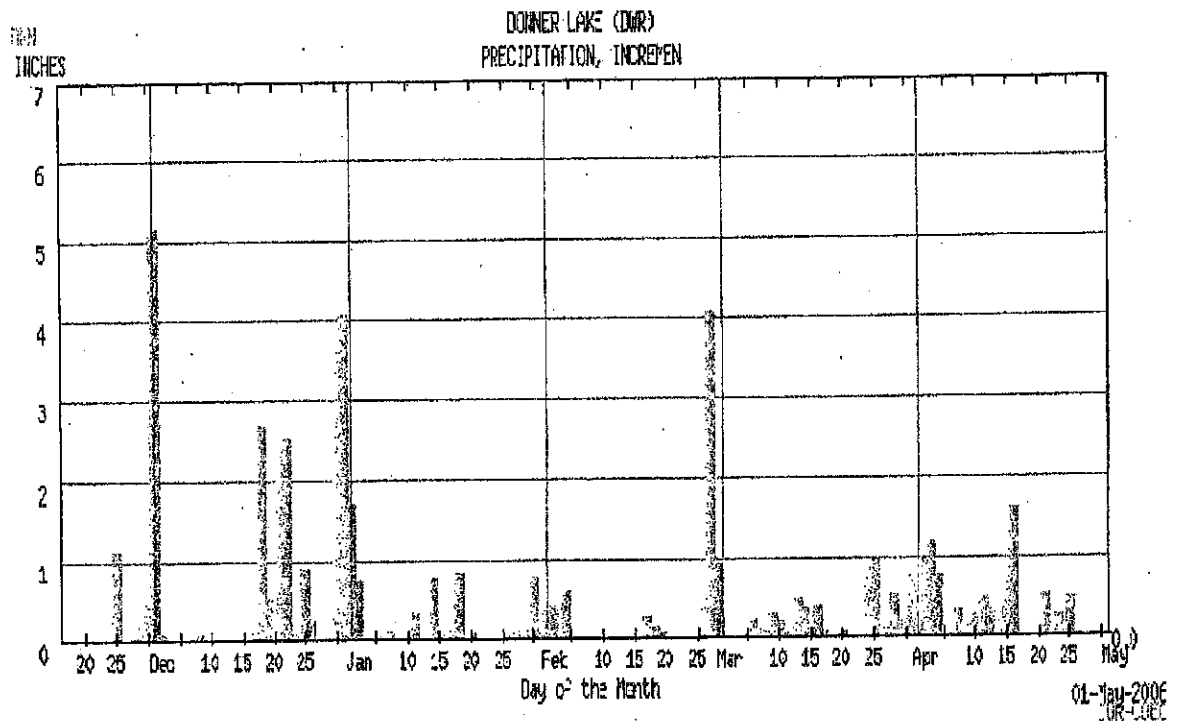


Figure 2. Donner Lake precipitation data for the period November 15, 2005 to May 1, 2006. Data from U.S. Geological Survey.

The following results on surface water runoff and erosion include the hillside below Interstate 80; West Reed Avenue; and a section of Donner Pass Road.

3.1 Culvert runoff from above and along Interstate 80

There are two specific culvert locations from I-80 which discharge runoff on the hillside above West Reed Avenue (See Figure 3). These two culverts convey runoff from above and along I-80. A review of the topographic contour lines in Figure 1 indicates that a substantial area of hillside runoff from above I-80 is conveyed through these culverts.

The culvert discharging from under I-80 on the east side of the hillside has been undercut by erosion (See Photos 1 and 2). Runoff is not contained in the culvert (See Photo 3). Several feet of sediment, cobble, and gravel from below and adjacent to the culvert is being transported downslope (See Photo 4) and contributing to drainage and erosion problems on West Reed Avenue. It would appear from the degree of undercutting that erosion has occurred at this culvert area for several years. This culvert was partially dislodged after a truck accident in 2003. Inland Ecosystems understands that Caltrans reconnected the culvert. However, proper conveyance of runoff is not occurring as evidenced by Photo 3.

The second Caltrans culvert discharges below I-80 onto the western end of the hillside above West Reed Avenue (See Figure 3). During the December 30, 2005 to January 2, 2006 storm event, the velocity of runoff exiting this culvert and continuing downslope resulted in erosion with sediment, gravel, and cobble being transported downslope (See Photos 5-8).

3.2 Hillside Runoff and Drainage onto West Reed Avenue

During substantial rainfall events such as the December 30, 2005 to January 2, 2006 storm, problems from hillside drainage and erosion occur along West Reed Avenue. During the May 29, 2006 survey, culverts on the north side of the road that should convey water under the road were clogged with sediment and cobble debris (See Photos 9 and 10). Hillside runoff observed on December 31, 2005 flowed over clogged culverts and across West Reed Avenue undermining water and gas utilities and washing out portions of the road (See Photos 11-13).

3.3 Runoff onto Donner Pass Road

Runoff from West Reed Avenue flows between residences in both natural and homeowner modified drainage ditches (See Photo 14). Homeowners channel runoff around their homes to avoid property damage. Much of the runoff is collected in a drainage ditch on the north shoulder of Donner Pass Road and conveyed to culverts under the road and into Donner Lake. There is a section of Donner Pass Road between the residences at 15214 and 15234 where runoff sheets across the road (E. Kashtan, pers. comm. 2006). Vehicles kick up both water and erosion debris (See Photo 15) that can impact homeowner garages.

4.2 Runoff onto West Reed Avenue

Inland Ecosystems understands that West Reed Avenue is classified by the Town as a "Publicly unmaintained road" which means that homeowners bear responsibility for activities such as snow removal and road maintenance. Based on a review of e-mails provided by Ms. E. Kashtan to Inland Ecosystems, there appears to be a difference of opinion between some homeowners and the Town regarding the ownership and responsibility for maintenance of West Reed Avenue.

As Inland Ecosystems understands, homeowners who approached the Town to repair the drainage problems on West Reed Avenue were advised to set up a Homeowners Assessment District and assume responsibility for the road (E. Kashtan, pers. comm. 2006). However, according to Ms. Kashtan, homeowners do not believe they are obligated to assume the responsibility for the current drainage and erosion problems on the hillside above the road. The issue of ownership and responsibility for road maintenance is outside the scope of work authorized for this report and will not be discussed further.

The Town did commission a study for West Reed Avenue drainage and paving improvements in 2002. The plans were developed by Shaw Engineering and depict major drainage conveyances including seven foot wide rock lined ditches (See Attachment 2). These plans should be revisited in light of proposed improvements along I-80.

Southwest Gas and the TDPUD conducted a joint trenching project on West Reed Avenue in 2002 to install water and gas lines. Water services to adjacent homes were installed by the TDPUD in 2004. Southwest Gas installed the majority of its service connections in 2002 with additional connections made in 2003 and 2004. Homeowners have claimed that at certain locations drainage ditches on the north side of the road that channel water into culverts leading under the road were filled in during construction activities.

Culverts that convey runoff under West Reed Avenue should be cleaned of sediment, cobble, and other debris before the 2006/2007 storm season. One culvert is buried, while others have become clogged and inhibit flow. Culvert outfalls on the south side of West Reed Avenue should be reinforced.

A homeowners meeting took place on July 2, 2006 to discuss the drainage and erosion issues above and on West Reed Avenue and Donner Pass Road. Inland Ecosystems spoke with Ms. Kashtan on July 3, 2006 and homeowners will be preparing letters to state and local agencies readdressing their concerns. Possibly the Town of Truckee, Southwest Gas, and the TDPUD could assist with drainage improvements by restoring ditches and culvert conveyances at those locations that require improvements before the next storm season. Figure 3 and Photos 17 and 18 identify locations where drainage ditches could be restored to direct runoff into existing culverts.

For the purpose of this report, Inland Ecosystems has assumed that long term road maintenance on West Reed Avenue would be the homeowners' responsibility. A homeowner organized road maintenance and snow removal program is in place for sections of Denton Avenue and Pioneer Drive. Inland Ecosystems spoke with Dr. Susan Lindstrom on June 16, 2006. Dr. Lindstrom is a resident of 14931 Denton Avenue and a participant in the homeowner run program. Homeowners in this program pay \$250 per year towards road maintenance and snow removal, and vote on what road repairs need to be completed. Over the past month drainage ditches have been cleared along stretches of Denton Avenue and Pioneer Drive and runoff has been directed to an existing drainage ditch that will allow more efficient drainage in future (See Photos 19 and 20). Homeowners meet and discuss what drainage and road maintenance projects need to be completed which depends on the intensity of storm events and degree of sediment and debris movement from the hillside above Denton Avenue.

4.3 Runoff onto Donner Pass Road

Flow conveyance should be reestablished along the section of the road near 15214 and 15224 Donner Pass Road by establishing a small ditch to direct water into a culvert on the west side of the 15234 property. This will alleviate water and sediment debris from sheeting onto the road surface where vehicle traffic splashes water and debris back onto driveways and garages.

5.0 TDPUD CEDAR POINT PIPELINE ALIGNMENT

In 2004 the TDPUD installed a water pipeline across the hillside above West Reed Avenue as part of the Cedar Point Pipeline Project (See Figure 3). Remedial measures were taken to restore water conveyance at two drainage crossing after construction was complete. However, due to the intensity of the runoff from the I-80 culverts in 2005/2006, the TDPUD will need to restore these conveyances and repair other associated erosion problems (See Photos 21 and 22). The TDPUD intends to restore the remaining area of the alignment this fall once installation of an electric line through an underground conduit is completed.

The TDPUD also installed a pipeline downslope from the Cedar Point alignment to West Reed Avenue in 2004 (See Photo 23). After pipeline installation this alignment was mulched with pine needles, and hay bales were placed at key locations to reduce runoff velocity (See Photo 24). A photograph of the site taken on June 21, 2006 demonstrates that restoration of the former construction area is occurring (See Photo 25). No evidence of substantial erosion is evident at the site.

A section of the TDPUD's alignment crossed the west end of Mr. Robert Montano's property located above West Reed Avenue (See Photo 26). The area depicted in Photo 22 is planned for asphalt paving and will be used as a driveway by Mr. Montano. Inland Ecosystems found no substantial evidence that the installation of the Cedar Point pipeline significantly accelerated erosion above West Reed Avenue (See Photo 27).

6.0 STATE WATER QUALITY REGULATORY REQUIREMENTS

The Truckee River and its tributaries are classified as a federal Clean Water Act 303(d) listed river for sediment pollution. The Lahontan Regional Water Quality Control Board (LRWQCB) establishes water quality standards and objectives that protect beneficial uses of waters of the state for people as well as wildlife.

On-going erosion from hillside runoff above West Reed Avenue is a concern for the LRWQCB. Sediment entering Donner Lake from erosion affects the waters beneficial uses. Inland Ecosystems contacted Mr. Alan Miller, Chief of the North Basin Regulatory Unit, LRWQCB, on June 15, 2006 as part of the research for this report. The LRWQCB informed Inland Ecosystems that Caltrans will be upgrading drainage systems and storm water pollution controls on I-80 to comply with the National Pollution Discharge Elimination System (NPDES) permit requirements for adequate drainage and off-highway erosion. Inland Ecosystems understands that preliminary design plans have been submitted to the LRWQCB for review.

7.0 CONCLUSION

Rainfall events during 2005/2006, particularly the December 30, 2005 to January 2, 2006 storm which dropped almost 10 inches of rain in the area, resulted in severe runoff conditions below two I-80 culverts above West Reed Avenue. The volume of water conveyed by the two culverts during substantial storm events results in high velocity flows causing hillside erosion and drainage problems downslope. According to homeowners the runoff in 2005/2006 created new channels with water flowing in areas not previously observed. There was no evidence that any homeowner altered runoff conditions at the I-80 culvert outflows.

Ms. E. Kashtan who represents several of the homeowners along West Reed Avenue and Donner Pass Road has contacted Caltrans about the erosion of the hillside below the two I-80 culverts and drainage problems on West Reed Avenue. During substantial storm events, erosion created by hillside runoff will continue to contribute to sediment and cobble movement downslope to West Reed Avenue and problems with drainage.

Homeowners feel that Caltrans is responsible for providing adequate drainage and erosion control below the two culvert outfalls above West Reed Avenue. During the June 13, 2006 site inspection, a homeowner claimed that there was a lawsuit brought against Caltrans around 1961 that required this agency to improve drainage conditions and place a culvert at 15324 Donner Pass Road (See Figure 3). Inland Ecosystems was not able to verify this apparent action.

In an e-mail sent to Ms. E. Kashtan from Caltrans, two improvement projects have been identified along the stretch of I-80 that lies north of Donner Lake. Improvement plans should consider the volume of runoff carried by only two culverts above West Reed Avenue. At the time of this report Inland Ecosystems had not heard back from Mr. Kiani, Caltrans Project Manager, on specific information for the two culverts above West Reed Avenue. During the June 13, 2006 site inspection the "east" culvert area was marked with spray paint and it appears that Caltrans is in the process of repairing this culvert.

Other factors that contribute to problems with drainage on West Reed Avenue and sections of Donner Pass Road include homeowner driveways that interrupt drainage conveyance by filling in ditches; drainage conveyances around homes that are not maintained; and the use of West Reed Avenue by heavy equipment during home building and/or maintenance. There are several sections of the road where the asphalt pavement has been damaged and/or completely removed.

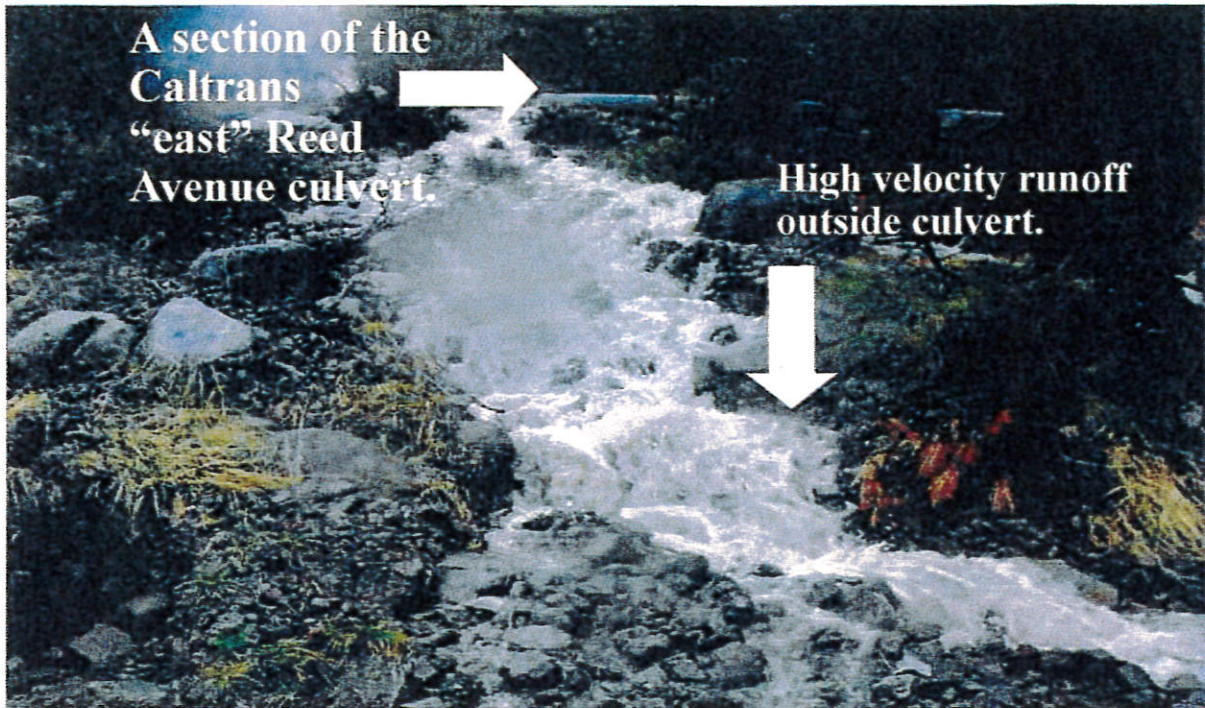
It is suggested that a collaborative plan involving Caltrans, the Town, TDPUD, and Southwest Gas be formulated and implemented to repair and/or restore culverts and drainage ditches from under I-80 to West Reed Avenue and downslope to Donner Pass Road before the 2006/2007 storm season. Long term road and drainage ditch maintenance on West Reed Avenue may be the responsibility of homeowners and, similar to the example provided in this report for homeowners along sections of Denton Avenue and Pioneer Drive.



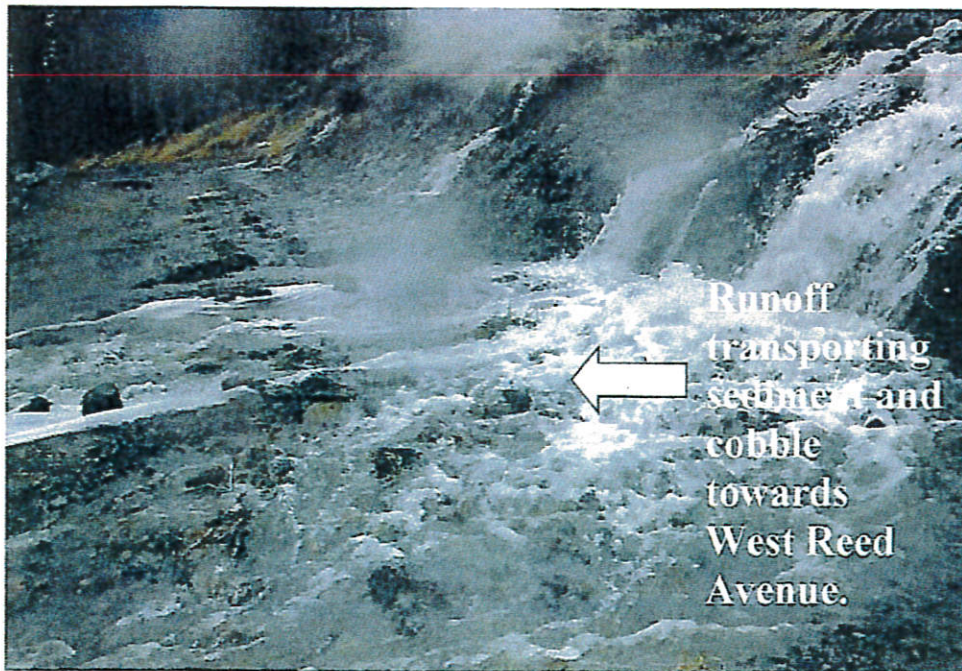
Photo 1. Looking upslope along at the Caltrans culvert on the east end of the hillside above West Reed Avenue. Photo taken June 6, 2006.



Photo 2. Looking downslope along the culvert where eroded material is being transported down the hillside above West Reed Avenue. Photo taken June 6, 2006.

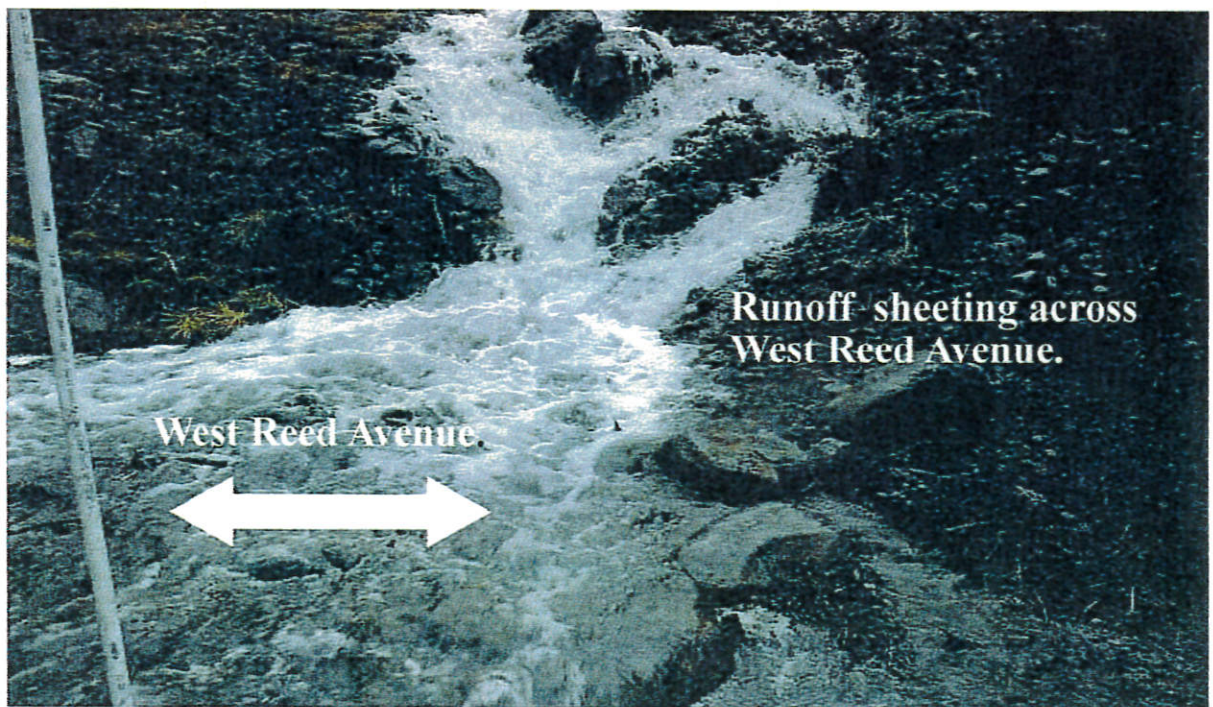


Photos 3 and 4. High velocity runoff outside Caltrans culvert and eroded material being transported downslope. Photo taken December 31, 2005.



Photos 5 and 6. Culvert runoff from I-80 flowing towards West Reed Avenue. Photos taken December 31, 2005.

73



Photos 7 and 8. Runoff discharging from culverts under I-80 moving downslope towards West Reed Avenue. Photos taken December 31, 2005.



Culverts are clogged and one is completely buried with sediment, cobble, and gravel from uphill erosion.

Photo 9. Culverts on the north shoulder of West Reed Avenue have been clogged by debris transported down the hillside. Photo taken May 29, 2006.



Photo 10. A culvert outfall on the south side of West Reed Avenue does not convey runoff effectively as debris clogs the inlet on the north side of the road. Photo taken May 29, 2006.



Photo 11.
Eroded water utilities on West Reed Avenue.



Photo 12.
Sheeting across West Reed Avenue



Photo 13.
Eroded water utilities on West Reed Avenue.

76



New
Drainage
Ditch.

Photo 14. A new drainage ditch below West Reed Avenue that was being dug on May 29, 2006 to convey runoff to Donner Pass Road.



Photo 15. Between the residences of 15214 and 15234 Donner Pass Road runoff was observed sheeting across the road during several of the 2005/2006 rain storms (E. Kashtan, pers. comm. 2006). Vehicles kick up both water and erosion debris that can impact garages.

77



Photo 17.

A drainage ditch should be established along the north shoulder of West Reed Ave. Photo taken May 29, 2006.



Photo 18.

Another proposed location for a ditch along the north shoulder of West Reed Ave. Photo taken May 29, 2006.



Erosion has occurred on the Cedar Point alignment from I-80 culvert runoff and needs to be repaired and restored.



This drainage channel eroded due to high velocity runoff

Photos 21 and 22. Areas along the Cedar Point Pipeline Alignment that require improvements. Photos taken May 29, 2006.

West Reed Avenue



Photo 23.
The TDPUD installed a water pipeline from the Cedar Point alignment downslope to West Reed Avenue in 2004. Photo taken August 2004.



Photo 24.
Erosion control measures were implemented on the site in September 2004 after the completion of construction. Photo taken October 2004.



Photo 25.
A photo of the construction area taken on June 21, 2006. No substantial erosion has occurred in this area of the hillside.

West Reed Avenue



Photo 23.
The TDPUD installed a water pipeline from the Cedar Point alignment downslope to West Reed Avenue in 2004. Photo taken August 2004.



Photo 24.
Erosion control measures were implemented on the site in September 2004 after the completion of construction. Photo taken October 2004.



Photo 25.
A photo of the construction area taken on June 21, 2006. No substantial erosion has occurred in this area of the hillside.



Photo 26. The west end of the TDPUD's Cedar Point pipeline alignment through the Robert Montano property that is planned for asphalt paving. Photo taken December 31, 2005.

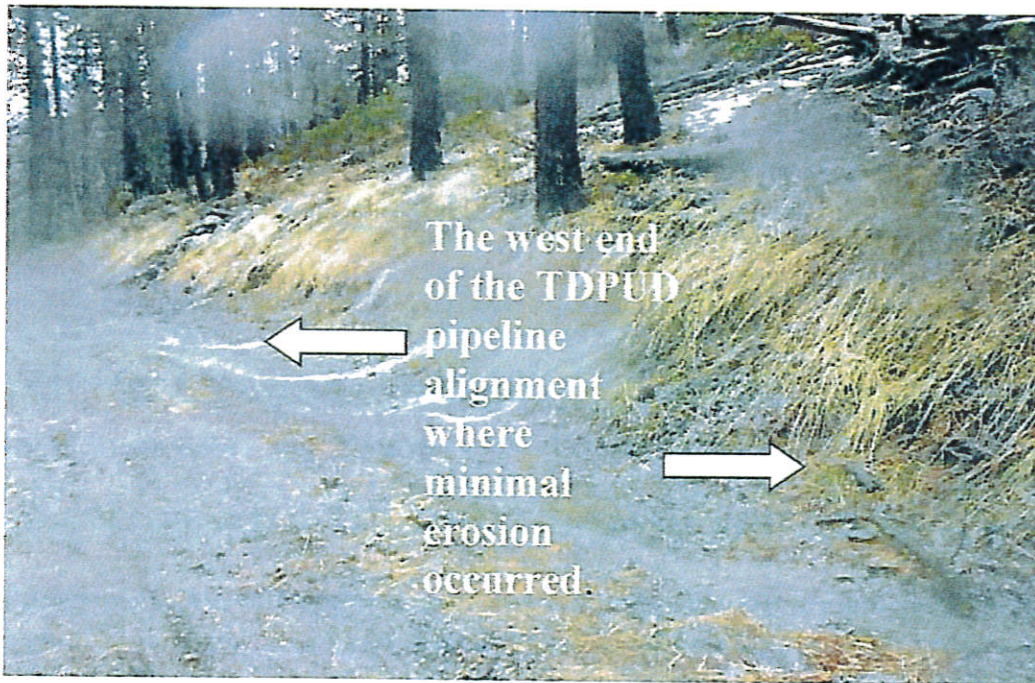
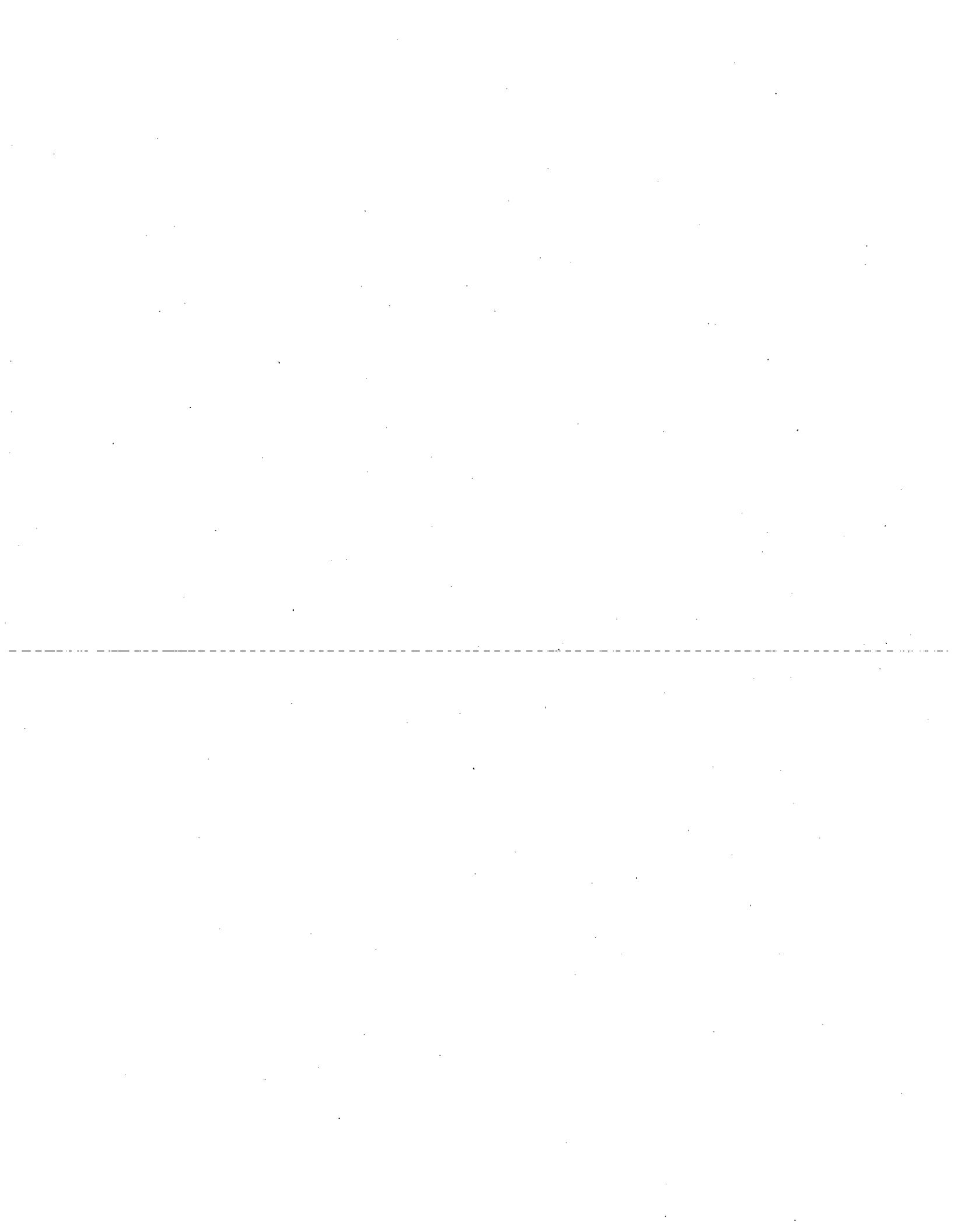


Photo 27. A section of the west end of the TDPUD's Cedar Point pipeline alignment. No substantial erosion is occurring along the alignment. Photo taken December 31, 2005.



ATTACHMENT 4
EROSION AND WATER QUALITY
REPORT



Erosion & Water Quality Report – West Reed Street, Truckee California

Assessment Summary:

In August of 2015, the Truckee River Watershed Council was contacted by Emily Kashton, a concerned homeowner with a residence located below West Reed Street in Truckee California. Ms. Kashton has expressed concern over the fact that there continues to be stormwater flow and erosion issues presumably caused by concentrated outflow in established culverts below Highway I 80 that are impacting both West Reed Avenue and the private residential structures located above and below West Reed Avenue. Ms. Kashton has also expressed concern that the existing culverts, roadways and stormwater infrastructure associated with West Reed Avenue have not been appropriately maintained or improved by the public agencies potentially responsible for conducting maintenance or improvements for an extended amount of time.

In September of 2015, staff from the Watershed Council met with Ms. Kashton on site and walked a portion of the area with her and her husband to gain perspective on some of the outstanding issues and concerns related to West Reed Avenue. Staff also trekked the area upland of West Reed Street to the terminus of the culvert outflow areas below Highway I80, observing and photographing some of the existing erosion issues, as well as some of the protection measures that have been established by CalTrans to help minimize erosion to downslope areas.

Observations from the site visit and from walking the site and upland areas are as follows:

- a) There are two separate culverts that cross underneath of Highway I 80 that drain stormwater runoff both from the east and west bound roadways as well as from areas upland of west bound I 80. Minimal erosion was observed at the terminus of either culvert; however there is a small defined channel approximately 50' below the eastern most culvert that likely carries stormwater runoff to a much larger channel that then flows south to a small culvert inlet crossing underneath of West Reed Avenue. The larger channel is mainly devoid of vegetation and has eroded to bedrock in some areas, likely greatly increasing the velocity of any stormwater flowing along or through this channel during large storm events, or during snowmelt conditions. A number of natural drainage channels were also observed during the site visit; however erosion or environmental degradation within these channels were either minimal or non-existent.

- b) Observations also included two separate areas where natural seep/springs are located above West Reed Avenue, but below Highway I80. These seeps/springs are contributing continuous water flow downslope to West Reed Street and to Donner Pass Road, located just north of Donner Lake. One of the seep/spring areas originates above Donner Lake Road and flows through a large culvert underneath of Donner Lake Road. The road grade and existing curvature of Donner Lake Road is such that the existing culvert does not capture or convey stormwater runoff flowing onto and from the roadway instead, stormwater exits the roadway just west of the culvert crossing onto a steep hillslope, causing increased erosion and hillslope failure and potentially impacting downslope properties including West Reed Avenue. When the flow from

the seeps/springs encounters West Reed Avenue, the lack of established infrastructure such as stormwater drainage ditches or appropriately sized culverts is causing the flow to overtop the roadway leading to increased damage and degradation of existing asphalt and paved surface areas.

- c) Additional areas along West Reed Avenue also lack appropriate infrastructure such as adequate stormwater drainage ditches, or appropriately sized culverts that are able to handle the flow or velocity of stormwater during large storm events or during snowmelt conditions. The lack of adequate or established infrastructure including adequate stormwater drainage ditches, undersized, clogged and/or unmaintained culverts along this roadway is likely causing flooding over the road surface and throughout downslope areas where numerous private property residences are located between West Reed Avenue and Donner Pass Road. In addition to the lack of stormwater infrastructure, private property residences have constructed paved driveway surfaces that convey stormwater directly to the West Reed Avenue, increasing the amount and velocity of stormwater runoff that is affecting parcels located downslope. Flooding and increased flow velocity across West Reed Street and downslope is also likely to impact and potentially cause harm to Donner Pass Road and to the water quality of Donner Lake.

The report compiled and the photo documentation noted on the following pages detail some of the issues discussed above and address specific areas where erosion and/or water quality problems have been identified and where potential improvements could be made to decrease the total volume and velocity of stormwater runoff while also minimizing the potential damage to both public and private properties that are impacted by the existing conditions and the current flow regime of stormwater and snowmelt that may flow from upland areas.

TRUCKEE RIVER WATERSHED COUNCIL

PO Box 8568 Truckee, CA 96162

530-550-8760

www.truckeeriverwc.org

Report Documentation: Water Quality/Erosion Issues

Date: September 16, 2015

Submitted by: Eben Swain

Reported to (Check all that apply):

Town of Truckee X

Placer County _____

Lahontan Regional Water Quality Control Board X

Other (list) CalTrans

Site Address/Location: West Reed Avenue & associated upland areas below Highway I 80, Truckee California.

Community Name: Donner Lake

Homeowner Name: *(If applicable)* Emily Kashton

Problem Description:

- a) High flow volumes stemming from below Highway I80 have caused channelization and erosion in areas above West Reed Avenue and have impacted and caused degradation to both public and private properties along areas downslope of I 80.
- b) Natural seeps/springs are present below I 80 and above West Reed Street that allow continuous water flow to downslope areas including West Reed Street where there is inadequate infrastructure present to adequately convey water flow to a central stormwater system resulting in overtopping of roadway and degradation to public and private properties located downslope of natural seeps/springs.
- c) Stormwater infrastructure along West Reed Avenue is inadequate or insufficient to handle large flow volumes from upland areas including the drainage system established below I 80. Specific issues identified include: undersized & unmaintained culverts, insufficient or non-existent stormwater drainage ditches and overtopping or flooding of local roadway.

Proposed Problem Solution:

- a) Enhance treatment of stormwater flowing from I 80 drainage culverts to better infiltrate stormwater at the source or to disperse stormwater flows more evenly across the hillside, rather than sending runoff to existing channel and over exposed bedrock areas where flows and velocity is likely to increase. May entail construction of large settling basin, or construction of a series of check dams along small incised channel that currently leads to larger, main channel.
- b) Construct and install infrastructure system that will adequately handle continuous flows from natural seeps/springs located upslope of West Reed Avenue. Appropriate construction items may include larger sized culverts crossing Reed Avenue and a regular maintenance schedule and/or installation of an established drainage channel conveying water to appropriate stormwater infrastructure system.
- c) Determine and recognize ownership and responsibility for maintenance and upkeep of West Reed Avenue. Once ownership is determined, seek funding to address infrastructure problems such as undersized, deteriorated and unmaintained culverts, roadways and stormwater drainage ditches. Develop solutions that will reduce impact on public and private property areas as well as on local natural resources such as Donner Lake. Once appropriate solutions have been implemented, put in place a clear maintenance plan and establish responsibility for following the maintenance plan and schedule.

AD 86

Has problem previously been reported?

Yes No Unknown

If yes, list contact name & entity Town of Truckee (multiple representatives); CalTrans (multiple representatives) California State Water Board (multiple representatives)

Date reported: Multiple times throughout past decade

Response from responsible agency/entity:

Response from the agencies where issue has been reported has varied from saying that the issue has been addressed, to denying responsibility of the issue to advising private property residents that they should consider forming an assessment district.

Photo documentation of problem/issue? (If yes, insert photos on next page)

Yes No Unknown

48 87

Photo Documentation (WQ Problems & Issues)

The following photos track the observed conditions and issues noted and discussed in the problem descriptions and solutions and as noted and discussed in the assessment summary. Photo documentation is shown from upslope to downslope, beginning just below Highway I 80



Terminus of culvert on west side of slope from east bound I80, does not drain into channel noted in photos below – flow is likely dispersed across landscape. Minimal erosion issues observed.



Terminus of culvert on east side of slope from east bound I 80. Good rock protection at terminus of culvert and minimal erosion issues noted, however flow from culvert likely eventually drains to channel noted in photos below.



Channalization across bedrock material from I80 - top third of slope – looking uphill.



Heavy channalization from flow downslope of I80 - looking downslope @ terminus of lower TDPUD access road.



Channel characteristics downslope of I80 across bedrock material - looking upslope @ terminus of lower TDPUD access road.



Increased channelization and incision downslope of I-80. Looking upslope from location of undersized culvert located on West Reed Avenue.



Hillslope failure & erosion just below culvert that is conveying water flow from natural seep/spring across of Donner Lake Road. No infrastructure in place to direct stormwater flow and minimize erosion.



Looking downslope in area in previous photo: below culvert that is conveying water flow from natural seep/spring across of Donner Lake Road. No infrastructure in place to direct stormwater flow and minimize erosion.



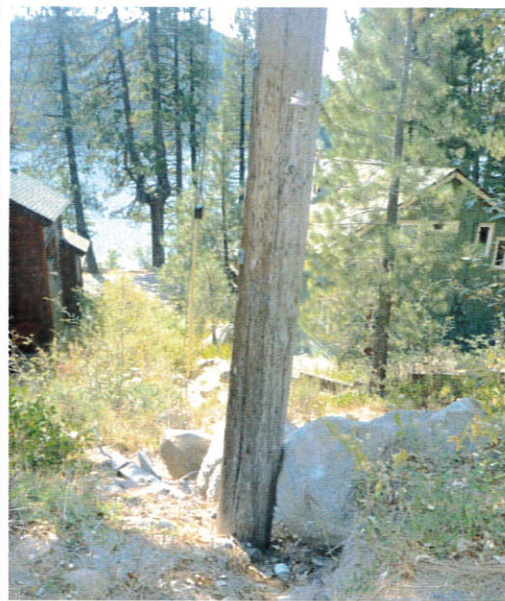
Natural seep below 15014 West Reed Avenue – no infrastructure in place to direct stormwater flow resulting in overtopping and flooding of roadway.



Deteriorated, undersized and unmaintained culvert crossing West Reed Avenue – inlet for flow from channel located below I 80 in photos 1-4 above.



Deteriorated, undersized and unmaintained culvert crossing West Reed Avenue - potential for flooding & compromising of utility lines



Utility pole across the street from culvert in previous photo - signs



Denuded hillslope on private property residence located upslope from West Reed Avenue – unprotected hillslope likely to contribute excess sedimentation to public and private properties downslope including Donner Lake.



Denuded hillslope on private property residence looking west along West Reed Avenue - unprotected hillslope and lack of stormwater drainage ditches likely to contribute excess sedimentation to public and private properties downslope including Donner Lake.

al
09