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Lynda Teglia

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STATE OF NEVADA
1996 TAHOE BOND ACT

PROJECT AGREEMENT

Participant Douglas County Project Number 2001-023

Project Title: Logan Cr. Erosion Control Project

Period Covered By This Agreement: January 1, 2001 - Dec 31, 2002

Tax ID Number _____

Estimated Project Costs:

A. Estimated Project Cost (Design and Construction)	$609,103.00
B. Local Share of Project Cost (25% of A)	$152,275.75
C. State Share of Project Cost (75% of A)	$456,827.25
D. State Share of Administration costs (3% of A)	$ 18,273.09
E. Total State Grant (C plus D)	**$475,100.34**

Refer to A: Design and Construction Costs are estimated at $609,103.00

Refer to B: Douglas County is responsible for 25% of the ACTUAL costs of the design and construction of the project. This is estimated to be $152,275.75, however, the 25% will adjust to actual expenditures of the project design and construction. [Note: Expenditures above the approved grant amount require prior approval by the State to be eligible for reimbursement. Please refer to condition #11 under this agreement.]

Refer to C: The State is responsible for 75% of the ACTUAL costs of design and construction. This is estimated to be $456,827.25, however, the 75% will adjust to actual expenditures of the project design and construction.

Refer to D: Administrative costs – 3% of Project Cost, is estimated at $18,273.09. The County is not required to match any portion of this 3%. These administrative costs will adjust to actual expenditures of the project design and construction. The County will receive 3% of the total costs of the Project to aid in covering administrative costs of the GID and the County directly related to this project.

Project Scope (Description of Project) – Installation of Water Quality and Erosion control improvements including storm water treatment basins, water conveyance (storm drain piping and inlets, curb and gutter) slope stabilization and revegetation.

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TERMS AND CONDITIONS

The State of Nevada, represented by the Division of State Lands or it's representative from the Nevada Division of Conservation Districts (DIVISION), and Douglas County (GRANTEE), mutually agree to perform this Agreement with the terms, promises, conditions, plans, specifications, estimates, procedures, project proposals, maps and assurances attached hereto and hereby made a part hereof.

In addition, the following attachments are hereby incorporated into this agreement:

Exhibit A. Grant application
Exhibit B. Tahoe Bond Act regulations – LCB File No. R022-00, NAC 321.335-360.
Exhibit C. Tahoe Bond Act Revegetation Guidelines

1. In the event the GRANTEE does not make available to the DIVISION all necessary information to finalize the project agreement within (6) months from the beginning date of this Agreement; this Agreement is null and void.

2. The GRANTEE hereby promises, in consideration of the promises made by the DIVISION herein, to execute the project described above in accordance with the terms of the Agreement.

3. The Project shall be operated and maintained by the GRANTEE for at least 20 (twenty) years after Project completion. Failure to perform such maintenance shall require repayment of the grant amount for the pro-rate portion of the remaining life of the project not maintained.

4. Work performed prior to the period specified in the "Project Agreement" may be eligible for reimbursement through Tahoe Bond Act provided:

   a. The applicant provides documentation detailing the work performed;
   b. The applicant provides documentation that the work performed related directly towards project implementation;
   c. The work performed is considered eligible for reimbursement per Tahoe Bond Act regulations; and
   d. The total grant amount specified in the project agreement does not increase.

5. The DIVISION and the Nevada Tahoe Conservation District will be invited to attend all major project issue meetings.

6. The design phase of this project must include a cost/benefit comparison of sediment/infiltration basins vs. treatment vaults.

7. The DIVISION and the Nevada Tahoe Conservation District will be notified by the GRANTEE, and given the opportunity to review the Project design including revegetation and/or construction, at the completion of the following Project milestones:

   Project Initiation after grant award
   Completion of 25, 50, and 90 percent of the Project design
   Expenditure of 25, 50 and 75 percent of the Total Project Cost
   Final Design Prior to advertisement
   Project completion

8. The GRANTEE shall supply the DIVISION and the Nevada Conservation District with timely copies of all construction plans at 25%, 50%, 90% and the final bid package, Prior to advertisement of bids. The DIVISION shall receive any as-built drawings completed by the GRANTEE showing all facilities, revegetation, and structures constructed as part of the Project.

9. The GRANTEE must receive notice to proceed from the DIVISION prior to advertisement of bids and commencement of construction. All reimbursements to the GRANTEE from the DIVISION may be held until final plans are received, reviewed and notice to proceed is given by the DIVISION.

10. At least 75% of all hard or soft coverage, as defined by the Tahoe Regional Planning Agency Code of Ordinances, that is restored using State of Nevada funding and results in "banked coverage", will become the property of the State of NV unless otherwise agreed to by the State. The contact for State Lands is:

    Nevada Division of State Lands
    Jenny Scanland
    333 S. Carson Meadows Ste #44
    Carson City, NV 89701
    PH (775) 687-3903
    FAX (775) 687-4742

11. Requests for funds exceeding this grant amount or major changes in project scope, require an amendment to this agreement and must be approved by the State Lands Registrar. Requests for funds that exceed 25 (twenty-five) percent of the original grant amount will also require the review of the Tahoe Bond Act Technical Advisory Committee including the Nevada Tahoe Conservation District Board of Supervisors.

12. Grant payments are on a reimbursement basis only. Requests for reimbursements must utilize the "Outlay Report and Request for Reimbursement For Construction Program" provided by the DIVISION. All reimbursements must include supporting documentation, including, but not limited to, invoices, receipts details outlining the basis for the expenditures, and the signature of the official responsible for approving the expenditures. The DIVISION reserves the right to request any additional information, related to project expenses that the DIVISION determines is necessary to process a grant payment.

13. The DIVISION may audit project records or it's designate. All records must be retained a minimum of 3 (three) years after the completion of work on the Project. The DIVISION reserves the right to require that the records be kept for a longer period of time.

14. The GRANTEE is responsible for obtaining all permits, easements and other private and governmental agency approvals required for the Project prior to the commencement of construction.

15. To the fullest extent permitted by law, the GRANTEE agrees to indemnify, hold harmless and defend the State of Nevada, it's officers, employees, agents and invitees from and against all liabilities, claims, actions, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of any alleged negligent or willful acts or omissions of the GRANTEE, its officers, employees and agents.

16. The failure of either party to enforce any provision of the Agreement shall not be construed as a waiver of limitation of that party's right to subsequently enforce and compel strict compliance with every provision of this Agreement.

17. This Agreement may be modified or amended if the amendment is made in writing and is signed by both parties.

18. If any provision of this Agreement shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court finds that any provision of the Agreement is invalid or unenforceable, but that by limiting such provision it would become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.

19. The DIVISION may terminate this Agreement for reason of default by the GRANTEE. Any of the following events shall constitute default:

    a. Termination of the grant by reason or fault of the GRANTEE;
    b. Failure by the GRANTEE to observe any of the covenants, conditions, or warranties of this Agreement and its incorporated provisions;
    c. Failure by the GRANTEE to make progress on the project within the Period covered by this agreement;
    d. Unsatisfactory financial conditions of the GRANTEE which endanger the performance of the grant; and/or
    e. Delinquency by the GRANTEE in payments to contractors, except for those payments to contractors which are being contested in good faith by the GRANTEE.

20. If the Project is not completed, the GRANTEE is required to reimburse the DIVISION for funds expended for those portions of the Project that will not stand on their own, as determined by the DIVISION.

21. The DIVISION shall give notice to the GRANTEE if the GRANTEE is in default in the performance of any of the duties of the GRANTEE described in this agreement. The GRANTEE shall have 30 days from receipt of notice to remedy the default, and if the GRANTEE cannot remedy the default within such period of time, the DIVISION may terminate this agreement. The right of the DIVISION to terminate this agreement shall not impair any other rights or remedies at law or equity the DIVISION may have against the GRANTEE under this agreement or under the law. No waiver of any default by the DIVISION under this contract shall be held to be a waiver of any other subsequent default by the GRANTEE. All remedies afforded under this contract are cumulative; this is in addition to every other remedy provided therein or under the law.

22. The laws of the State of Nevada shall govern this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date entered below.

STATE OF NEVADA
Division of State Lands

By _____
(Name)

Administrator
(Title)

3/4/02
(Date)

GRANTEE
Douglas County, Nevada

By Daniel C. Holler
(Name)

County Manager
(Title)

2-22-02
(Date)

Tahoe Bond Act 2001-023 Logan Creek

<u>Exhibit A.</u> Grant application and all attachments 12/1/99.

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LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT

FILE COPY
DO NOT REMOVE

September 8, 1999

Doug Brewer, Project Coordinator
Tahoe Bond Act
Nevada Tahoe Conservation District
[illegible] Bay Road
South Lake Tahoe, CA 96158

Re: Project Submittal, Tahoe Bond Act

Dear Doug:

Enclosed is a Tahoe Bond Act Application for Logan Creek Estates General Improvement District. If you have any questions or you need any additional information, I can be reached at Kingsbury GID (775) 588-3548 or at my home (775) 586-1616.

Sincerely,

Debbie Burkett

Debbie Burkett
Project Manager

Enclosure

GRANT APPLICATION

A. Project Title Logan Creek Erosion Control Project

B. Project Location Logan Creek Estates near Glenbrook, Nevada

C. Brief Description Installation of Erosion Control improvements such as drop inlets, curb & gutter, sediment basins, retaining wall and rock rip-rap.

D. Applicant's Name, Address and Phone Number

Deborah G. Burkett For:
Logan Creek Estates GID
P.O. Box 596
Glenbrook, Nevada 89413

phone: 586-1616 fax: 588-3541 email

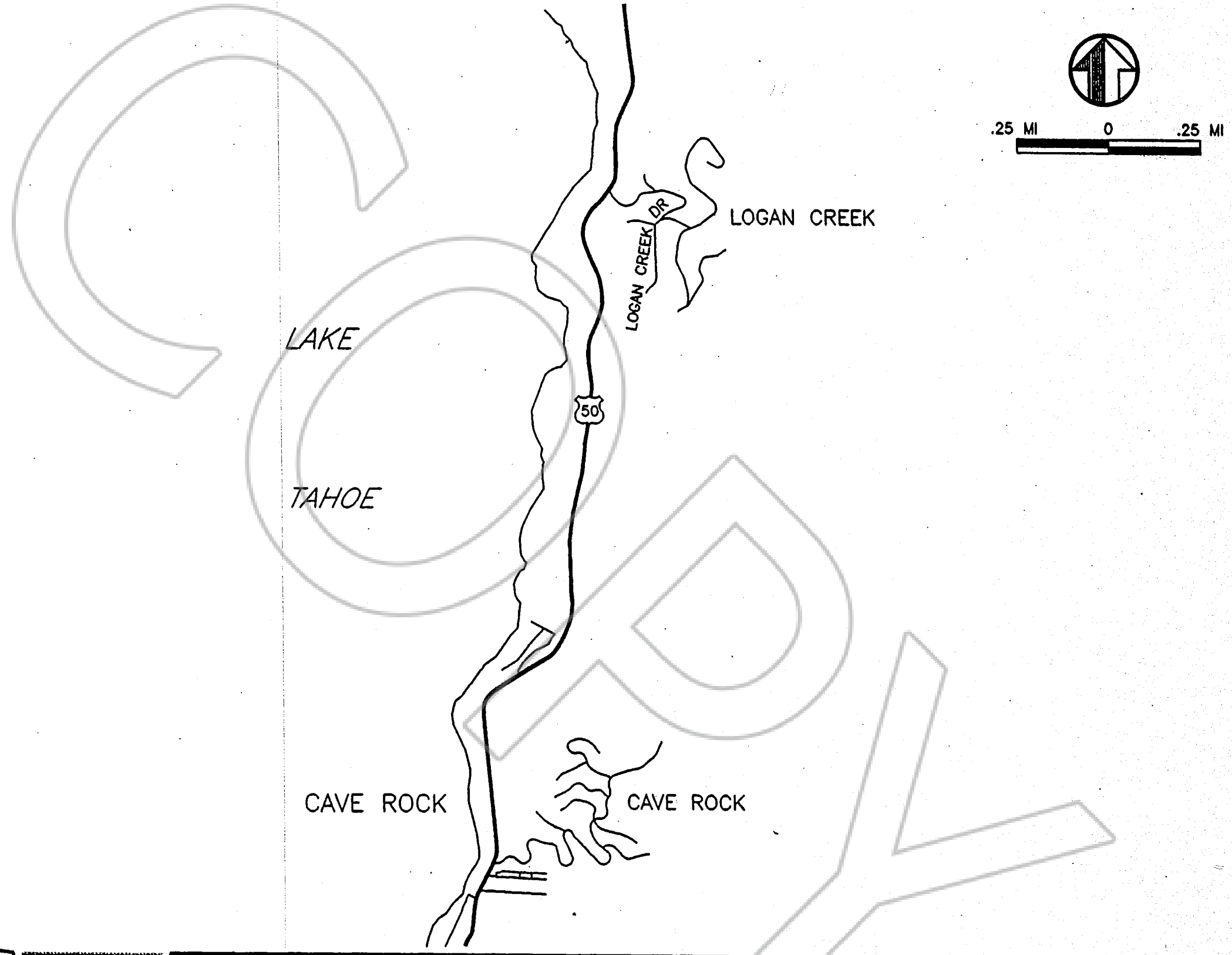
E. Total Project Cost: $609,103 (includes 3% Administrative Fee)
Tahoe Bond Act Grant Amount Requested: $456,827.

F. Owner of Property:
If others hold any outstanding property rights (additional owners, public/private easements, etc.), attach an explanation of how they will affect the project.

G. On behalf of the Logan Creek Estates GID, I request this Application be considered for financial assistance under the terms of the Tahoe Bond Act Grant program.

Deborah G. Burkett
(typed name)

Deborah G. Burkett Project Manager 9/7/99
Signature Title Date



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LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT

VICINITY MAP

SHEET
1 OF 1

United States Department of Agriculture
Forest Service
Lake Tahoe Basin Management Unit
870 Emerald Bay Road, #1
South Lake Tahoe, CA 96150
(530) 573-2600
(530) 541-4036 TDD

File Code: 1580

August 9, 1999

To: Lake Tahoe Erosion Control Grant Applicants

Subject: FY 1999 Lake Tahoe Erosion Control Grant

On August 5, 1999, a selection committee formed at the request of the Lake Tahoe Basin Management Unit, reviewed proposals submitted for consideration for FY 1999 Federal Lake Tahoe Erosion Control Grant Funds. This committee consisted of the following individuals:

Susan Norman, Lake Tahoe Basin Management Unit
Robert Erlich, California Tahoe Conservancy
Jim Lawrence, Nevada State Lands
Alan Miller, Lahontan Regional Water Quality Control Board
Larry Benoit, Tahoe Regional Planning Agency
Steve Harcourt, California Department of Forestry

A total of 8 projects were submitted, requesting a total of $2,432,596 for FY 1999 federal funding. While many worthwhile projects were submitted, obviously not all could be funded out of the $700,000 available in FY1999. Since $50,000 was taken out for Grant Program administration on the LTBMU, this actually left $650,000 available for projects. After considering a number of factors, outlined previously in our notification letter of March 8, 1999, the following projects were selected at the specified funding levels.

Kingsbury Village Erosion Control Project, Douglas County - $337,000

Logan Creek Estates General Improvement Project, Douglas County $70,000

Cascade Erosion Control Project, El Dorado County - $75,000

Rocky point Erosion Control Project, City of South Lake Tahoe - $168,000

If yours was one of the projects selected, please submit an application for Federal Assistance (SF424) to Sue Norman, the Grants Program Manager, By August 30, 1999. If for any reason you no longer wish to receive these funds, please let Sue know immediately so funds can be offered to another project.

If your project(s) was not selected at this time, we hope that you are successful in pursuing other sources of funding. We appreciate the effort that was put into all the proposals received. While it was difficult to choose, the committee feels the selected projects represent those that will provide the highest benefit to improving Lake Tahoe water quality, and are in the most need of federal matching funds at this time.

If you have any questions regarding this matter, please call Sue Norman, at (530) 573-2662.

Sincerely,

JUAN PALMA
Forest Supervisor

cc:
Sue Norman, LTBMU
Chris Knopp, LTBMU
Robert Erlich, CTC
Larry Benoit, TRPA
Jim Lawrence, Nevada State Lands
Steve Harcourt, CDF
Alan Miller, Lahontan RWQCB
Ron Roman, Douglas County
Robert Nunes, Douglas County
Ed McCarthy, Placer County
Jan Witter, Placer County
Janel Gifford, El Dorado County
Michael Stolz, El Dorado County
Kimble Corbridge, Washoe County
Jay Aldean, Washoe County
Chuck Taylor, City of South Lake Tahoe
Carol Drawbaugh, City of South Lake Tahoe
John Niesses, Region 5, USFS
Sandra Stone Region 5, USFS
Denise Maddalena, LTBMU

LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT
RESOLUTION 99-1

A resolution approving the application for State Bond Erosion Control Funds for the Logan Creek Estates Erosion Control Project

WHEREAS, the Logan Creek Estates General Improvement District is submitting an application to the Division of State Lands for financial assistance; and,

WHEREAS, the adopted procedures established by the Division of State Lands require that the applicant must certify by resolution the approval of the proposed project application, including all understandings and assurances contained therein and the availability of matching funds prior to submission of the application to the Division.

NOW, THEREFORE, IT IS RESOLVED that the proposed Logan Creek Estates Erosion Control Project is approved for implementation;

IT IS FURTHER RESOLVED that the Board of Trustees does hereby certify that they can finance 100% of their share of the project with funds pledged by the USFS Tahoe Basin Management Unit Erosion Funds, Nevada EPA 319 Funds and Douglas County.

IT IS FURTHER RESOLVED that Project Manager Debbie Burkett is hereby appointed as the agent of the Board of Trustees to conduct all negotiations and to execute and submit all documents including but not limited to applications, agreements and billing statements which may be necessary for the completion of the above project.

PASSED, AND ADOPTED this 12th day of September, 1999.

Those voting Aye: 5

Those voting Nay: 0

Those Abstaining: 0

Those Absent: 0

Chairman, Board of Trustees

ATTEST:

Secretary, Board of Trustees

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LOGAN CREEK
EROSION CONTROL PROJECT
LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT
PROJECT DESCRIPTION

I. BACKGROUND

During the month of June, 1999, Logan Creek Estates General Improvement District (LCGID) conducted a study of the erosion, sediment and drainage problems that existed within the boundaries of the District. This study identified specific sites and recommended solutions to the various problems. In January, 1997 and updated in January 1998, the Tahoe Regional Planning Agency published their report titled "Draft Environmental Improvement Program for the Lake Tahoe Region" (EIP). That program incorporated the various community plans as well as the 208 Water Quality Plan. The EIP also identified specific problem sites within the boundaries of LCGID.

Both the LCGID Study and the EIP identified problems such as Cut Slopes, Sediment Generation Sites, Possible Runoff Treatment Locations, Road Shoulder Problems, Unlined Ditches or Swales and General Drainage Problems. All of these projects within LCGID contribute runoff and sediment to the Logan Creek tributary area.

The LCGID Study and the EIP were compared and the duplicate project sites were identified. A list of project sites was then compiled to determine the work necessary within the LCGID Area. These project sites were them examined for specific problems and schematic design for each was completed. Based upon these schematic designs, opinions of probable costs were developed and summarized.

II. PROJECT SITES

1. East side of Logan Creek Drive, South of Michael Lane
2. West side of Logan Creek Drive, South of Michael Lane
3. South side of Michael Lane, West of Logan Creek Drive
4. South side of Michael Lane, East of Logan Creek Drive
5. North side of Michael Lane, between Logan Creek Drive and South Peak Drive
6. West side of North Peak Drive, North of Michael Lane

7. South side of Logan Creek Drive, between Logan Creek and Michael Lane

8. North side of Logan Creek Drive, between Logan Creek and Michael Lane

9. South side of Logan Creek Drive, between Logan Creek and Marken Road

10. North side of Logan Creek Drive, between Logan Creek and Marken Road

11. South side of Logan Creek Drive, between Marken Road and Highway 50

12. North side of Logan Creek Drive, between Marken Road and Highway 50

III. PROJECT SITES WITH CIP NEEDS

1. East side of Logan Creek Drive, South of Michael Lane

   * Lack of proper drainage adjacent to roadway
   * Slope stability and erosion problems
   * Sediment transported down roadway

2. West side of Logan Creek Drive, South of Michael Lane

   * Lack of proper drainage adjacent to roadway
   * Erosion problems

3. South side of Michael Lane, West of Logan Creek Drive

   * Slope stability and erosion problems

4. South side of Michael Lane, East of Logan Creek Drive

   * Lack of proper drainage adjacent to roadway
   * Slope stability and erosion problems
   * Sediment transported down roadway

5. North side of Michael Lane, between Logan Creek Drive and South Peak Drive

   * Lack of proper drainage adjacent to roadway
   * Erosion problems
   * Sediment transported down roadway to Logan Creek

6. West side of North Peak Drive, North of Michael Lane

* Unpaved road
* Lack of proper drainage adjacent to roadway
* Erosion problems
* Sediment transported down roadway to Logan Creek

7. South side of Logan Creek Drive, between Logan Creek and Michael Lane

* Lack of proper drainage adjacent to roadway
* Slope stability and erosion problems
* Sediment transported down roadway to Logan Creek

8. North side of Logan Creek Drive, between Logan Creek and Michael Lane

* Lack of proper drainage adjacent to roadway
* Erosion problems
* Sediment transported down roadway to Logan Creek

9. South side of Logan Creek Drive, between Logan Creek and Marken Road

* Lack of proper drainage adjacent to roadway
* Sediment transported down roadway to Logan Creek

10. North side of Logan Creek Drive, between Logan Creek and Marken Road

* Lack of proper drainage adjacent to roadway
* Slope stability and erosion problems
* Sediment transported down roadway to Logan Creek

11. South side of Logan Creek Drive, between Marken Road and Highway 50

* Lack of proper drainage adjacent to roadway
* Slope stability and erosion problems
* Sediment transported down roadway to Logan Creek

12. North side of Logan Creek Drive, between Marken Road and Highway 50

* Lack of proper drainage adjacent to roadway
* Sediment transported down roadway to Logan Creek

IV. INDIVIDUAL PROJECT SITE LOCATION PLAN

Attached to this application is a site location plan. This plan gives the individual sites that have been combined to make up this project. Heavy lines on the plan denote the location and approximate extent of the proposed improvements.

LOGAN CREEK
EROSION CONTROL PROJECT
LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT
PROJECT COSTS

I. OPINION OF PROBABLE COSTS

ITEM	QUANTITY	UNIT PRICE	TOTAL
1. Rock Lined Ditch	0 LF	$50.00	$0
2. CMP	925 LF	55.00	50,875
3. Drop Inlet	14 EA	2,200.00	30,800
4. AC Swale	550 LF	27.00	14,850
5. Sediment Basin	6 EA	3,000.00	18,000
6. Concrete C&G	6,320 LF	30.00	189,600
7. Retaining Wall	390 LF	150.00	58,500
8. Rock Rip-Rap	540 SY	75.00	40,500
9. Revegetation	7,850 SF	0.60	4,710
	CONSTRUCTION TOTAL		**$407,835**
	Mobilization (10%)		$40,784
	Contingency (10%)		$40,784
	Engineering/Admin. (25%)		$101,959
	PROJECT TOTAL		**$591,362**

II. SPREAD SHEET

Enclosed with this application is a spread sheet showing all project sites and the associated construction items, quantities, unit prices and total costs for each site. A summary of these costs is given above along with the additional support costs.

LOGAN CREEK EROSION CONTROL PROJECT
LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT

ENGINEER'S OPINION OF PROBABLE COST

JUNE 1999

P9908

SITES	ROCK LINED DITCH			CMP			DRAND	
	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (EA)	UNTAL $)
1 Logan Creek Drive (E. Side)			$0.00	75	$55.00	$4,125.00	1	8,225.00
2 Logan Creek Drive (W. Side)			$0.00	20	$55.00	$1,100.00	1	9,300.00
3 Michael Lane (S. Side)			$0.00	30	$55.00	$1,650.00	1	9,460.00
4 Michael Lane (S. Side)			$0.00	150	$55.00	$8,250.00	1	9,500.00
5 Michael Lane (N. Side)			$0.00			$0.00	1	2,700.00
6 North Peak Drive (W. Side)			$0.00			$0.00		4,850.00
7 Logan Creek Drive (S. Side)			$0.00	350	$55.00	$19,250.00	1	1,550.00
8 Logan Creek Drive (N. Side)			$0.00	60	$55.00	$3,300.00	1	2,000.00
9 Logan Creek Drive (S. Side)			$0.00	70	$55.00	$3,850.00	2	8,470.00
10 Logan Creek Drive (N. Side)			$0.00	50	$55.00	$2,750.00	1	9,850.00
11 Logan Creek Drive (S. Side)			$0.00	20	$55.00	$1,100.00	2	5,530.00
12 Logan Creek Drive (N. Side)			$0.00	100	$55.00	$5,500.00	2	6,400.00
TOTALS	0		$0.00	925		$50,875.00	14	7,835.00

INLET		ASPHALT CONCRETE SWALE			SEDIMENT BASIN			CONCRETE CURB & GUTTER			JA
PRICE ($)	TOTAL ($)	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (EA)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	(
2,200.00	$2,200.00			$0.00			$0.00	1,100	$30.00	$33,000.00	
2,200.00	$2,200.00			$0.00	1	$3,000.00	$3,000.00	1,100	$30.00	$33,000.00	
2,200.00	$2,200.00			$0.00	1	$3,000.00	$3,000.00	250	$30.00	$7,500.00	
2,200.00	$2,200.00			$0.00			$0.00	400	$30.00	$12,000.00	
2,200.00	$2,200.00			$0.00			$0.00	350	$30.00	$10,500.00	
	$0.00	550	$27.00	$14,850.00			$0.00			$0.00	
2,200.00	$2,200.00			$0.00			$0.00	400	$30.00	$12,000.00	
2,200.00	$2,200.00			$0.00			$0.00	550	$30.00	$16,500.00	
2,200.00	$4,400.00			$0.00	2	$3,000.00	$6,000.00	470	$30.00	$14,100.00	
2,200.00	$2,200.00			$0.00			$0.00	600	$30.00	$18,000.00	
2,200.00	$4,400.00			$0.00	2	$3,000.00	$6,000.00	550	$30.00	$16,500.00	
2,200.00	$4,400.00			$0.00			$0.00	550	$30.00	$16,500.00	
	$30,800.00	550		$14,850.00	6		$18,000.00	6,320		$189,600	

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RETAINING WALL			ROCK RIP-RAP			REVEGETATION			GRAND TOTAL
QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (SY)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (SF)	UNIT PRICE ($)	TOTAL ($)	($)
240	$150.00	$36,000.00	150	$75.00	$11,250.00	2,750	$0.60	$1,650.00	$88,225.00
		$0.00			$0.00			$0.00	$39,300.00
150	$150.00	$22,500.00	30	$75.00	$2,250.00	600	$0.60	$360.00	$39,460.00
		$0.00	90	$75.00	$6,750.00	500	$0.60	$300.00	$29,500.00
		$0.00			$0.00			$0.00	$12,700.00
		$0.00			$0.00			$0.00	$14,850.00
		$0.00	100	$75.00	$7,500.00	1,000	$0.60	$600.00	$41,550.00
		$0.00			$0.00			$0.00	$22,000.00
		$0.00			$0.00	200	$0.60	$120.00	$28,470.00
		$0.00	80	$75.00	$6,000.00	1,500	$0.60	$900.00	$29,850.00
		$0.00	90	$75.00	$6,750.00	1,300	$0.60	$780.00	$35,530.00
		$0.00			$0.00			$0.00	$26,400.00
390		$58,500.00	540		$40,500.00	7,850		$4,710.00	$407,835.00

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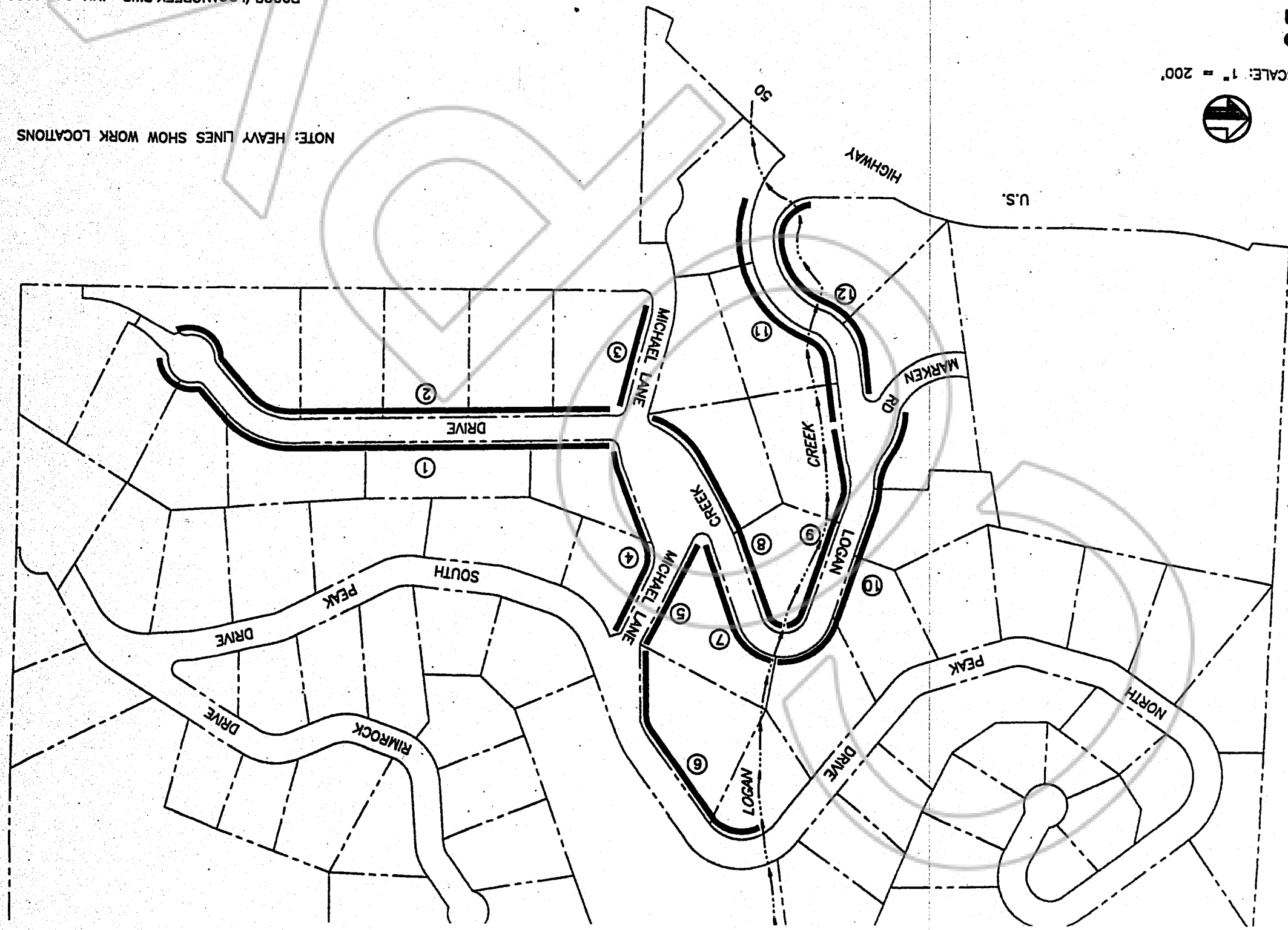
P990B/LOGANCREEK.DWG JUN 24, 1999

NOTE: HEAVY LINES SHOW WORK LOCATIONS

SCALE: 1" = 200'



LOGAN CREEK EROSION CONTROL PROJECT

LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT

SHEET 1 OF 1

QUESTION 12 PROJECT COST ESTIMATOR

Project Name: Logan Creek Erosion Control Project
Sponsor: Logan Creek Estates General Improvement District

Description of Work	Quantity	Unit	Unit Price	Amount	Erosion Reduction Efficiency	Erosion Before (POUNDS/YEAR)	Erosion After (POUNDS/YEAR)
Miscellaneous:							
Mobilization/Demobilization	Job	LS	5% of Construction	$17,212			
Traffic Control	Job	LS	2% of Construction	$6,885			
Erosion/Pollution Control	Job	LS	2.5% of Construction	$8,606			
Cut/Fill Slope:							
Retaining Wall (5')	390	LF	$147.00	$57,330	0.80	8,034	1,607
Rock Rip Rap (Heavy)	540	SY	$62.00	$33,480	0.90	10,012	1,001
Vegetative:							
Revegetation (Type A)	7,850	SF	$0.80	$6,280	0.80	12,560	2,512
Ditch:							
Rock Lined Ditch (2' x 3')	0	LF	$47.00	$0	0.90	0	0
A.C. Swale (3' Wide)	550	LF	$30.00	$16,500	1.00	52,800	0
Runoff Conveyance:							
Curb and Gutter, Concrete	6,320	LF	$22.00	$139,040	1.00	101,120	0
Corrugated Metal Pipe (CMP) 24"	925	LF	$51.00	$47,175	1.00	88,800	0
Sediment Treatment:							
Drop Inlet (3 x 3) w/ 2' Sump	14	EA	$2,010.00	$28,140	Trap Volume	30,240	0
Double Sed Trap (2 x 36" CMP)	6	EA	$2,716.00	$16,296	Trap Volume	50,892	0
(1) Subtotal Construction Cost				**$376,944**		**354,458**	**5,120**
(2) Administration	Job	LS	5% of Construction	**$18,847**			
(3) Engineering			25% of Construction	**$94,236**			
(4) Total Project Estimate (1+2+3)				**$490,027**			
(5) Annual Sediment or Erosion Reduction				**349,338 lbs**			
Benefit/Cost (Pounds/Dollar) (5/4)				**0.71 lbs/$**			

Note: Over the 20 year life of the project the Benefit/Cost increases to 14.2 lbs per dollar

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ASSURANCES

The applicant hereby assures and certifies that he will comply with the regulations, policies, guidelines and requirements of the Division of State Lands (the "Division") and the Nevada Tahoe Conservation District (the "District"). Also, the applicant gives assurance and certifies with respect to the grant that:

A. It possesses legal authority to apply for the grant, and to finance and construct the proposed facilities; that a resolution, motion statute authority or similar action has been duly adopted or passed as an official act of the applicant's governing body, authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

B. It will have sufficient funds available to meet the non-Bond Act share of the costs.

C. Sufficient funds will be available when construction is completed to assure effective operation and maintenance of the facility for the purposes constructed.

D. It will hold the Division and the District free and harmless for any claims or liabilities resulting during construction of or during the life the erosion control facilities.

E. It will provide and maintain competent and adequate engineering supervision and inspection at the construction site to insure that completed work conforms with the approved plans and specifications; that it will furnish progress reports and such other information as the grantor agency may require.

F. It will operate and maintain the work done in accordance with the minimum standards as may be required or prescribed by the applicable state and local agencies.

G. It will give the grantor agency's authorized representative access to and the right to examine all records, books, papers, or documents related to the grant.

H. It will cause work on the project to be commenced within a reasonable time after receipt of notification from the approving state agency that funds have been approved and that the project will be prosecuted to completion with reasonable diligence.

I. It will not dispose of or encumber its title or other interests in the site and facilities for 20 years without state approval.

J. It will comply with Title IV of the Civil Rights Act of 1964 (P. O. 88-352).

K. It will establish safeguards to prohibit employees from using their positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties.

L. It will comply with the provisions of the Hatch Act which limit the political activity of employees.

Name Deborah G. Burkett

Signature Deborah G. Burkett Date: 9/7/99

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RESOLUTIION

The Logan Creek Estates General Improvement District Board of Trustees will be signing the Resolutioon on Sunday, September 12, 1999. The Resolution will be faxed and mailed to Conservation District morning of Monday, September 13, 1999.

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Summary Ranking Checklist

Please rank your project using the following criteria:

1. Soil erosion, pounds per dollar

Range	Score
Over 25	5
20 to 24.9	4
15 to 19.9	3
10 to 14.9	2
5 to 9.9	1
0 to 4.9	0

Project score 2

2. Runoff Treatment, cubic feet per dollar

Range	Score
Over 5.0	4
2.5 to 5.0	3
1.5 to 2.49	2
0.5 to 1.49	1
0 to 0.49	0

Project score 0

3. Condition of Watershed (see Table A-1)

Priority	Score
1	12
2	9
3	6
4	3
5	0

Project score 3

4. Distance from SEZ or Tributary to project's watershed

Distance, miles	Score
0 to 0.25	5
0.26 to 0.5	4
0.51 to 0.75	3
0.76 to 1.0	2
Over 1.0	1

Project score 5

5. Distance from the project to the Lake

Distance, miles	Score
0 to 0.5	6
0.51 to 1.0	5
1.01 to 1.5	4
1.51 to 2.0	3
2.01 to 2.5	2
Over 2.5	1

Project score 5

6. Does the Project accomplish water quality goals on a sustained basis?

Yes	3
No	0

Project score 3

7. What is the Project matching funds level?

Matching Funds, %	Score
Over 45	3
35 to 44.9	2
25 to 34.9	1
25	0

Project score 3

Total Project Score 21

LOGAN CREEK EROSION CONTROL PROJECT
LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT

ENGINEER'S OPINION OF PROBABLE COST

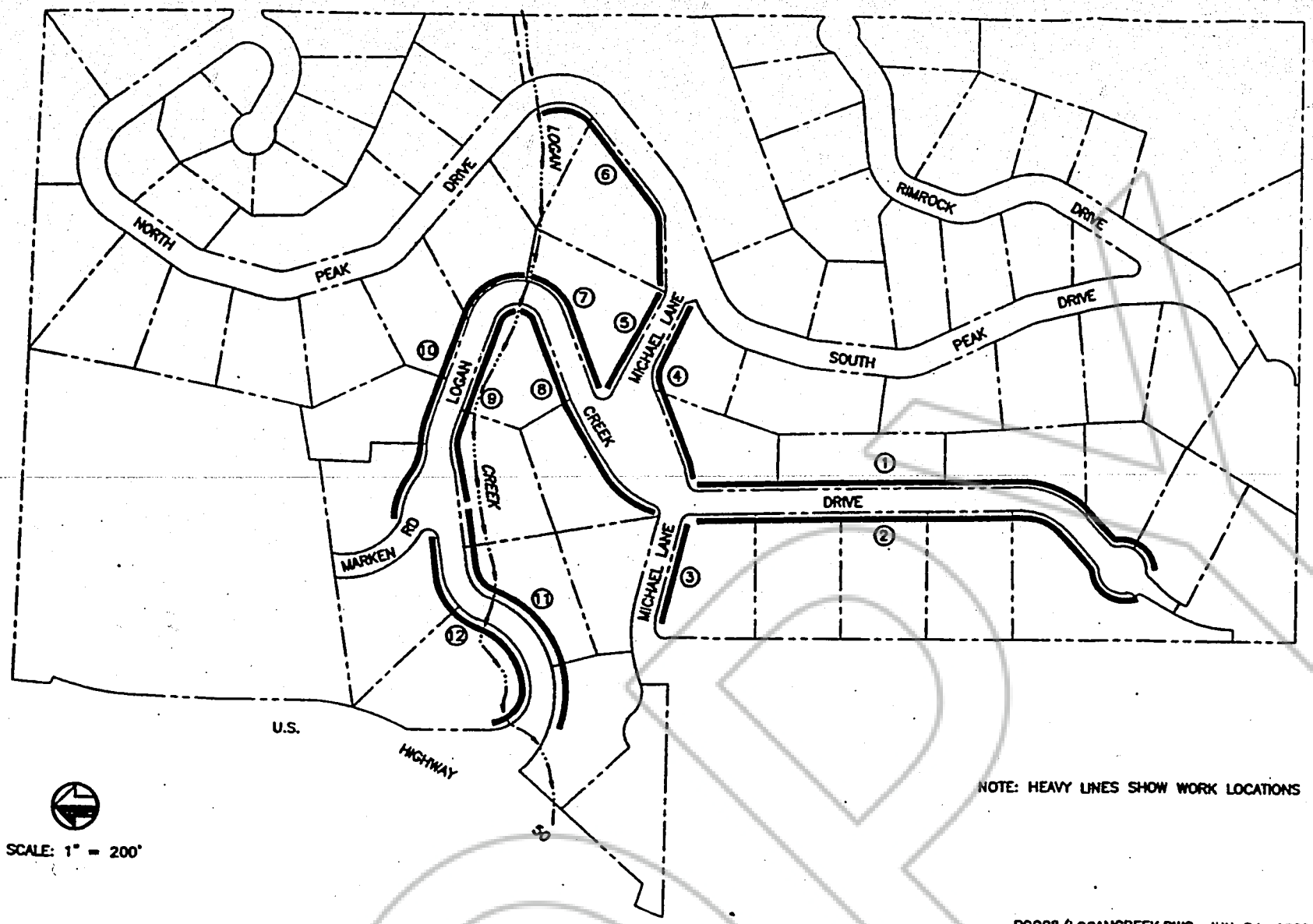
JUNE 1999

SITES	ROCK LINED DITCH			CMP			DROP INLET		
	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (EA)	UNIT PRICE ($)	TOTAL ($)
1 Logan Creek Drive (E. Side)			$0.00	75	$55.00	$4,125.00	1	$2,200.00	$2,200.00
2 Logan Creek Drive (W. Side)			$0.00	20	$55.00	$1,100.00	1	$2,200.00	$2,200.00
3 Michael Lane (S. Side)			$0.00	30	$55.00	$1,650.00	1	$2,200.00	$2,200.00
4 Michael Lane (S. Side)			$0.00	150	$55.00	$8,250.00	1	$2,200.00	$2,200.00
5 Michael Lane (N. Side)			$0.00			$0.00	1	$2,200.00	$2,200.00
6 North Peak Drive (W. Side)			$0.00			$0.00			$0.00
7 Logan Creek Drive (S. Side)			$0.00	350	$55.00	$19,250.00	1	$2,200.00	$2,200.00
8 Logan Creek Drive (N. Side)			$0.00	60	$55.00	$3,300.00	1	$2,200.00	$2,200.00
9 Logan Creek Drive (S. Side)			$0.00	70	$55.00	$3,850.00	2	$2,200.00	$4,400.00
10 Logan Creek Drive (N. Side)			$0.00	50	$55.00	$2,750.00	1	$2,200.00	$2,200.00
11 Logan Creek Drive (S. Side)			$0.00	20	$55.00	$1,100.00	2	$2,200.00	$4,400.00
12 Logan Creek Drive (N. Side)			$0.00	100	$55.00	$5,500.00	2	$2,200.00	$4,400.00
TOTALS	0		$0.00	925		$50,875.00	14		$30,800.00

ASPHALT CONCRETE SWALE			SEDIMENT BASIN			CONCRETE CURB & GUTTER			RETAINING WALL		
QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (EA)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (LF)	UNIT PRICE ($)	TOTAL ($)
		$0.00			$0.00	1,100	$30.00	$33,000.00	240	$150.00	$36,000.00
		$0.00	1	$3,000.00	$3,000.00	1,100	$30.00	$33,000.00			$0.00
		$0.00	1	$3,000.00	$3,000.00	250	$30.00	$7,500.00	150	$150.00	$22,500.00
		$0.00			$0.00	400	$30.00	$12,000.00			$0.00
		$0.00			$0.00	350	$30.00	$10,500.00			$0.00
550	$27.00	$14,850.00			$0.00			$0.00			$0.00
		$0.00			$0.00	400	$30.00	$12,000.00			$0.00
		$0.00			$0.00	550	$30.00	$16,500.00			$0.00
		$0.00	2	$3,000.00	$6,000.00	470	$30.00	$14,100.00			$0.00
		$0.00			$0.00	600	$30.00	$18,000.00			$0.00
		$0.00	2	$3,000.00	$6,000.00	550	$30.00	$16,500.00			$0.00
		$0.00			$0.00	550	$30.00	$16,500.00			$0.00
550		$14,850.00	6		$18,000.00	6,320		$189,600.00	390		$58,500.00

P9908

ROCK RIP-RAP			REVEGETATION			GRAND TOTAL
QUANTITY (SY)	UNIT PRICE ($)	TOTAL ($)	QUANTITY (SF)	UNIT PRICE ($)	TOTAL ($)	($)
150	$75.00	$11,250.00	2,750	$0.60	$1,650.00	$88,225.00
		$0.00			$0.00	$39,300.00
30	$75.00	$2,250.00	600	$0.60	$360.00	$39,460.00
90	$75.00	$6,750.00	500	$0.60	$300.00	$29,500.00
		$0.00			$0.00	$12,700.00
		$0.00			$0.00	$14,850.00
100	$75.00	$7,500.00	1,000	$0.60	$600.00	$41,550.00
		$0.00			$0.00	$22,000.00
		$0.00	200	$0.60	$120.00	$28,470.00
80	$75.00	$6,000.00	1,500	$0.60	$900.00	$29,850.00
90	$75.00	$6,750.00	1,300	$0.60	$780.00	$35,530.00
		$0.00			$0.00	$26,400.00
540		$40,500.00	7,850		$4,710.00	$407,835.00



NOTE: HEAVY LINES SHOW WORK LOCATIONS

SCALE: 1" = 200'

P9908/LOGANCREEK.DWG JUN 24, 1999

JWA

LOGAN CREEK EROSION CONTROL PROJECT

LOGAN CREEK ESTATES GENERAL IMPROVEMENT DISTRICT

SHEET 1 OF 1

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Tahoe Bond Act 2001-023 Logan Creek

<u>Exhibit B.</u> Tahoe Bond Act regulations – LCB File #R-222-97

3. Within 15 days after a proposal is forwarded, the director shall submit a copy of the proposal to each commissioner and, if directed by the chairman of the commission, arrange for an oral presentation before the commission by the person submitting the proposal.

4. The commission will do one of the following:

(a) Reject the proposal.

(b) Select a proposal for further consideration.

(c) Accept a proposal pursuant to any terms and conditions the commission considers appropriate.

(Added to NAC by Colorado River Comm'n, eff. 7-28-86; A by R219-99, 5-16-2000)

CONTROL OF EROSION AND RESTORATION OF NATURAL WATERCOURSES FOR LAKE TAHOE

NAC 321.300 Definitions. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) As used in NAC 321.300 to 321.365, inclusive, the words and terms defined in NAC 321.305 to 321.330, inclusive, have the meanings ascribed to them in those sections.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.305 "Committee" defined. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) "Committee" means the technical advisory committee established pursuant to section 7 of the "Cooperative Agreement" entered into by the division and the district on September 25, 1997.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.310 "District" defined. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) "District" means the Nevada-Tahoe Conservation District.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.315 "Division" defined. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) "Division" means the division of state lands of the department of conservation and natural resources.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.320 "Eligible county" defined. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) "Eligible county" includes only:

1. Carson City;
2. Douglas County; and
3. Washoe County.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.325 "Matching contribution" defined. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) "Matching contribution" means money or anything of value, including, without limitation, the use of personnel, materials or equipment of the applicant.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.330 "Project" defined. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) "Project" means a project for the control of erosion or the restoration of natural watercourses in the Lake Tahoe Basin.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.335 "Cooperative Agreement" adopted by reference. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995)

1. The "Cooperative Agreement" entered into by the division and the district on September 25, 1997, is hereby adopted by reference.

2. A copy of the "Cooperative Agreement" may be obtained without charge:

(a) In person, from the Division of State Lands, 333 West Nye Lane, Suite 118, Carson City, Nevada.

(b) By telephone, at (775) 687-4363 or (775) 687-4735.

(c) By mail, from the State Land Registrar, Division of State Lands, Capitol Complex, Carson

City, Nevada 89710.
(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98; A by R022-00, 5-4-2000)

NAC 321.340 Grants of money: Award; distribution; matching contributions. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995)

1. The state land registrar will award grants of money from the sale of general obligation bonds of this state issued pursuant to section 1 of chapter 361, Statutes of Nevada 1995, to the department of transportation and eligible counties pursuant to NAC 321.340 to 321.365, inclusive.

2. Such money must be distributed as follows:

(a) Not more than one-third of the money may be allocated to projects of the department of transportation.

(b) At least two-thirds of the money must be allocated to projects of eligible counties.

3. An applicant for a grant pursuant to NAC 321.340 to 321.365, inclusive, shall provide a matching contribution to the project of not less than 25 percent of the total projected cost of the project for which the grant is being requested by the applicant.

4. The state land registrar will not award a grant pursuant to NAC 321.340 to 321.365, inclusive, in an amount which exceeds 75 percent of the projected cost of the project.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98; A by R022-00, 5-4-2000)

NAC 321.345 Solicitation of applications; contents of application. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995)

1. The state land registrar will periodically solicit applications from eligible counties and the department of transportation for grants of money from the sale of general obligation bonds issued pursuant to section 1 of chapter 361, Statutes of Nevada 1995, and establish deadlines for the submission of those applications.

2. An application for such a grant must be submitted to the district and include, without limitation:

(a) A completed application on a form provided by the district;

(b) The amount of money requested for the project;

(c) The total projected cost of the project;

(d) A detailed description of the project;

(e) Proof of any title to land, lease or easement that is required for the carrying out of the project;

(f) A map of the location of the project;

(g) A statement regarding the conformity of the project to all applicable local and regional land use plans;

(h) A plan for the operation and maintenance of the project for a period of not less than 20 years, including, without limitation, the identity of the person who will operate the project and provide the maintenance; and

(i) An itemized list of the costs of the project in accordance with the descriptions of work and unit prices set forth in the "Question 12 Project Cost Estimator" which is hereby adopted by reference. A copy of the "Question 12 Project Cost Estimator" may be obtained without charge:

(1) In person, at the United States Department of Agriculture, Natural Resources Conservation Service Tahoe Field Office, 870 Emerald Bay Road, Suite 108, South Lake Tahoe, California.

(2) By telephone, at (530) 573-2761.

(3) By mail, at the United States Department of Agriculture, Natural Resources Conservation Service Field Office, P.O. Box 10529, South Lake Tahoe, California 96158.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98; A by R022-00, 5-4-2000)

NAC 321.350 Evaluation and prioritization of projects. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) The district shall:

1. Evaluate the feasibility of each project and its estimated costs and benefits pursuant to the criteria set forth in NAC 321.355. In its review of each project, the district shall use the technical advice of the committee.

2. Develop a preliminary list which ranks projects for which applications have been submitted in order of priority for each of the following categories:

(a) Projects of the department of transportation.

(b) Projects of eligible counties for the control of erosion.

(c) Projects of eligible counties for the restoration of natural watercourses.

3. Make the preliminary list of prioritized projects available for public review.

4. Conduct at least one public hearing regarding each preliminary list of prioritized projects. The district may revise each preliminary list after the public hearing.

5. Submit a final list of prioritized projects for each category of projects to the state land registrar with a written evaluation of each project which addresses the criteria set forth in NAC 321.355.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.355 Criteria for evaluating projects for award of grants. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) The district shall evaluate each project pursuant to the following criteria:

1. The benefit to the water quality of Lake Tahoe, including, without limitation, whether the project:

(a) Will address a significant problem relating to soil erosion or water quality or both soil erosion and water quality;

(b) Will result in a quantifiable improvement in water quality;

(c) Is listed as a priority project in the "Water Quality Management Plan for the Lake Tahoe Region" or the "Environmental Improvement Program" of the Tahoe Regional Planning Agency; and

(d) Will reduce significantly the amount of untreated runoff that is currently being deposited in Lake Tahoe.

2. The adequacy of the design of the project, including, without limitation, whether the proposed project:

(a) Uses proven, effective and cost effective techniques to address the control of soil erosion and untreated runoff;

(b) Restores and preserves vegetation and stream environmental zones to the maximum extent possible;

(c) Uses improvements that reflect aesthetic considerations; and

(d) Uses bioengineering.

3. The comprehensive approach of the project, including, without limitation, whether all identifiable aspects of the problem of soil erosion in the project area or the watershed are covered in the project.

4. The long-term viability of the project.

5. The cost effectiveness of the project, including, without limitation, the potential of the project to attract financing in addition to the grant.

6. The ability of the applicant to carry out the project in a timely manner.

7. The ability of the portion of the project that will be paid for with money from the grant to achieve benefits to water quality independently of the other components of the project.

8. The ability of the project to be used as a model for future projects, including, without limitation, whether the project:

(a) Uses biotechnology; and

(b) Combines proven and innovative approaches.

9. The amount of cooperation and support for the project from persons other than the applicant, including, without limitation:

(a) Federal, state and local governmental agencies; and

(b) Private landowners.

10. The amount of a matching contribution to the project that will be provided by the applicant which must equal at least 25 percent of the cost of the project.

11. The adequacy of the plan for maintenance of the project.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

NAC 321.360 Agreement between state land registrar and recipient of grant. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995) The state land registrar and the recipient of a grant shall enter into an agreement, which must require that the recipient shall:

1. Provide a matching contribution to the proposed project of not less than 25 percent of the cost of the project;

2. Operate and provide maintenance for the project for not less than 20 years after the project is completed; and

3. Obtain such easements for conservation as are necessary to carry out the project. The easements must be approved by the state land registrar. As used in this subsection, "easement for conservation" has the meaning ascribed to it in NRS 111.410.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98; A by R022-00, 5-4-2000)

NAC 321.365 Acceptable and unacceptable uses of grant. (NRS 548.360 and sec. 2 of ch. 361, Stats. of Nevada 1995)

1. Except as otherwise provided in subsection 2, the recipient of a grant pursuant to NAC 321.340 to 321.365, inclusive, may use the money from the grant to pay for:

(a) All expenses related directly to the project, including, without limitation, expenses related to the design and construction of the project; and

(b) The administrative costs of the project, not to exceed 3 percent of the total cost of the project.

2. The recipient of a grant pursuant to NAC 321.340 to 321.365, inclusive, may not use the money from the grant to pay for:

(a) Any planning activities which are not directly related to the design and engineering of the project;

(b) The purchase of new equipment;

(c) The paving of curbs or gutters, unless the paving of curbs or gutters is recommended by the committee to remedy erosion;

(d) The acquisition of land, unless such an acquisition is deemed by the state land registrar to be an integral component of the project;

(e) Any work required by a public agency as mitigation or as a condition of the approval of any other project; and

(f) Any component of the project that is deemed by the state land registrar to not benefit the public.

(Added to NAC by St. Land Registrar by R222-97, eff. 3-5-98)

Tahoe Bond Act 2001-023 Logan Creek

<u>Exhibit C.</u> Objectives and Guidelines for Revegetation Success under the Nevada Tahoe Bond Act.

Objectives and Guidelines for Revegetation Success Under the Nevada Tahoe Bond Act

May 14, 1999

Prepared by: Michael Hogan
For the Nevada Tahoe Bond Act Technical Advisory Committee

Objectives and Guidelines for Revegetation Success Under The Nevada Tahoe Bond Act

May 14, 1999

Prepared by: Michael Hogan

For the Nevada Tahoe Bond Act Technical Advisory Committee

Introduction

These objectives and guidelines are set forth as suggestions for the planning and implementation of successful revegetation and restoration projects that are assisted through funding from the Nevada Tahoe Bond Act of 1996. While these objectives and guidelines are aimed specifically at uplands projects, all of the objectives and most of the guidelines can be applied to riparian projects and all but Objective Seven can be applied to wetlands projects. This document is not intended to provide a specific formula from which to write project specifications. It is intended as a map or outline from which site and project-specific specifications can be developed. The components of these guidelines, if incorporated into revegetation specifications, should provide a complete plan capable of producing a project that can support a sustainable plant community, thereby reducing the risk of erosion as much as possible.

- **Objective One: Plan Preparation Should Include a Qualified Restoration Specialist[i] or Team**

  - Guideline 1A: Plans and specifications for a revegetation project should be developed by a revegetation specialist (or team of specialists) that is (are) capable of producing a complete revegetation and erosion control package that reflects the Objectives and Guidelines presented in this document.

  - Guideline 1B: Initial Planning Approach: The revegetation specialist or revegetation team should be included in the planning process from plan inception. Revegetation planners should work closely with the project engineers through the entire planning process in order to assure that the engineering and biological components of the projects are completely integrated. These guidelines suggest that in some instances, the engineering components of the project will support the vegetative component and therefore, the vegetation specialist would be part of the primary design team.

  - Guideline 1C: The revegetation specialist or primary member of the revegetation team should function as the revegetation inspector during project implementation.[ii]

- **Objective Two: The initial and potential project outcome should be clearly defined**

  - Guideline 2A: The outcome of the project should be envisioned and defined for at least two points in time:

    - at project completion

    - at some future time, ideally 3 to 5 years following project completion

  - Guideline 2B: When defining the project outcome, components such as physical appearance and physical and biological functioning should be carefully considered.

- **Objective Three: Site specificity is a critical planning consideration.**

  - Guideline 3: Each project must be considered as an individual and unique situation in both time and space. As the revegetation/erosion control plan is being developed, these unique aspects should be taken into consideration and dealt with accordingly. Although many of the individual components are covered in subsequent sections of these guidelines, these specific components would include at least:

    - Topography and related physical parameters
    - Geology, subsurface materials and parent material type
    - Soil parameters
      - *Nutrient and organic matter content*
      - *Texture, structure, water holding capacity and infiltration capacity*
      - *Compaction*
      - *Toxicity or contaminants*
    - Existing plant community and surrounding plant community
    - Actual and potential uses of the site and surrounding areas.

- **Objective Four: Topographical and geological features should be considered for each project.**

  - Guideline 4: Physical features must be considered and where appropriate, they must be ameliorated and /or planned for. These features include:

    - Existence of native topsoil[iii]
    - Slope angle or steepness

- ♦ Consolidation or stability of existing soil surface
- ♦ Outcropping of parent material or other rock surfaces
- ♦ Drainage patterns on site
- ♦ Drainage from off-site sources onto the project site
- ♦ Elevation
- ♦ Aspect

- These topics are discussed in greater detail in the endnotes.[iv]

- **Objective Five: Determine the soil properties[v]**

  - Guideline 5A: Pre-project soil sampling: Soil samples must be taken from the project site and from an adjoining native or well-vegetated reference site where possible in order to establish nutrient needs and nutrient status.

    - ♦ 5A-1: Soil samples must be taken by a qualified and trained individual using an approved method.[vi]

    - ♦ 5a-2: Soil samples must be analyzed by a soils laboratory using appropriate methods.[vii]

  - Guideline 5B: Soil amendment recommendations[viii] should be made based upon the soil samples and past research that has suggested appropriate levels of soil amendments required for successful revegetation. These recommendations must be made by a qualified individual. Further information can be obtained from the Nevada Tahoe Bond Act TAC or the Tahoe NRCS office (530) 541-1496.

  - Guideline 5C: Soil Preparation: Soil must be prepared so that the soil profile is free from compaction to approximately 12 inches wherever possible. [ix]

  - Guideline 5D: Application of soil amendments: soil amendments should be applied evenly over the soil surface and then incorporated into the top 0.5 to 2 inch layer, unless otherwise specified by the supplier. This can also be done by mechanical rake or hand methods (usually a hand rake).

  - Guideline 5E: Finished Ground Surface Shape: the finish surface should be left in an irregular shape. [x]

  - Guideline 5F: Minimize future disturbance wherever possible. [xi]

- 5F-1: Brush, logs, rocks and other natural materials can be placed strategically across the project to make traffic difficult or impossible. These materials can also add aesthetic appeal if place appropriately.

- 5F-2: In areas that have had high levels of recreational traffic, such as hikers, joggers or mountain bikers, a well defined trail can be created that will concentrate traffic. In that concentrated traffic area, appropriate BMPs can be implemented that can reduce erosion.

- **Objective Six: Use native plant materials whenever possible**[xii]

  - Guideline 6A: Native plant material should be used whenever possible. The plant list should be designed so that the *target* plant community reflects an appropriate local native plant community. The planted material should contain a mix of early colonizers, intermediate seral species and target 'climax' community members. [xiii]

  - Guideline 6B: Seed or cuttings should be taken at the appropriate time and should be collected from as close to the project site as possible. [xiv] Plant material that is to be used for seedlings/live plants may need to be collected well in advance of project construction, sometimes *as much as a year in advance*.

    - 6B-1: Non-local, commercially available native grass species may be appropriate as a foundation for the seed mix. [xv]

  - Guideline 6C: Seed or plant material collection should be supervised by a person knowledgeable about local native plant material collection.

  - Guideline 6D: A combination of seedlings and direct seeding should be used to provide the best combination of protection. [xvi]

  - Guideline 6E: Seedlings should be planted using an appropriate technique and a high-quality slow-release nutrient source. [xvii]

  - Guideline 6F: Plants should be planted at the appropriate time of year. The planting time should be specified in the planting plan. A contingency should be provided if the target planting window is not achieved. [xviii]

  - Guideline 6G: Environmental, ecological and physiological requirements of seed should be considered when preparing a seed planting specification. Typically, seeds may be raked into the soil surface to a depth of no more that 0.5 inches in order to keep seed material from moving off site. Planting specialists should be contacted for further information (see Comstock Seed and Western Botanical in 'Appendix One').

- **Objective Seven: A long lasting mulch material should be used.**

  - Guideline 7A: A native mulch such as pine needles or fir needles is preferred. [xix]

  - Guideline 7B: Certified weed free or native straw should be used for short-term stabilization only.[xx]

  - Guideline 7C: Wood chips may be used for temporary erosion control.[xxi]

  - Guideline 7D: Mulch material should be of a thickness that can both protect the soil surface and allow plant growth. The specific thickness of mulch cover will depend upon the type and consistency as well as the density of the mulch material. However, as a rule, most of the ground surface (>95%) should be covered. [xxii]

    - 7D-1: Pneumatic (mechanical blower) application is preferred over hand application of most mulch materials since pneumatic equipment allows better mulch-to-ground surface contact, thus providing superior erosion protection. However, hand application may be a practicable alternative in hard-to reach or very small areas.

  - Guideline 7E: Geotextile materials can be used as a covering over a native mulch material, but *should not be used as the primary mulch cover.*

    - 7E-1: Geotextiles should consist of biodegradable materials and should include no plastics or other so-called 'photo-degradable' materials.[xxiii]

    - 7E-2: Stapling of fabric should follow or exceed manufacturer suggestions. Care should be taken to allow complete contact between the fabric matrix and the soil surface. This is especially important on rocky surfaces.

  - Guideline 7F: An organic tackifier may be used on steeper slopes or in windy conditions or other situations where additional mulch stabilization is required.

- **Objective Eight: Maintenance Considerations**[xxiv]

  - Guideline 8A: Projects should be designed so that irrigation is not needed. However, if long-term drought threatens plant survival during the first two growing seasons, irrigation may be considered. However, irrigation should only be used to assist in plant establishment. [xxv]

- Guideline 8B: Plant replacement contingency should be included in case a significant portion of the planted seedlings die or are very unhealthy. [xxvi]

- **Objective Nine: Project monitoring should provide the project proponent with useful information.**

  - Guideline 8A: Short term monitoring should be designed to ascertain immediate conditions, short term survival and growth needs of the vegetation community. Soil movement should also be monitored. This information should feed back to the maintenance component.

  - Guideline 8B: Long-term monitoring should be anticipated. [xxvii]

Appendix One: Sources for Material and Information

The following list in no way implies preference or recommendation. However, all of the companies on this list have performed satisfactory work in the particular category in which they are listed. This list does not include all possible sources. Any persons or companies wishing to be included on future lists can contact the NRCS Office or Michael Hogan at IERS. For general questions also please contact the NRCS (530) 541-1496 or Michael Hogan (530) 525-1335.

Soil Testing:

- For information, contact NRCS Office.....(530) 541-1496
- Laboratory Analysis: Soil and Plant Lab; Laurie Littleford.....(408) 727-0330

Native plants

Collection:

- Comstock Seed Co.....(775) 746-3681

Nurseries:

- Cornflower Farms.....(916) 689-1015
- NDF Washoe Nursery.....(775) 849-0213

General/Info/Specs, etc.:

- Western Botanicals.....(775) 849-3223
- HLA; Jeanette Halderman .....(530) 550-9260
- California Native Plant Society, Tahoe Chapter.....(530) 525-4366

Seed

- Comstock Seed Co.....(775) 746-3681
- Pacific Coast Seed.....(925) 373-4417
- Conservaseed.....(916) 775-1646
- Hedgerow Farms.....(530) 662-4570

Compost

- Full Circle Compost.....(775) 782-5305
- Bentley Agrodynamics.....(775) 782-9309

Pine Needle Mulch

- South Shore: South Tahoe Refuse - Jeannie Lear.....(530) 541-0366
- Incline: Waste Not - Jessica Bayer.....(775) 831-8603
- Tahoe North/Truckee: ERL - Vince Nocito.....(530) 587-4235

▪ Appendix Two: Endnotes

[i] "Qualified" in this context in intended to mean: capable of producing a viable revegetation plan based upon these guidelines. A well-prepared plan that reflects the values and practices presented here will indicate to the plan review committee whether the individual or individuals are qualified.

[ii] The revegetation specialist will have the clearest idea of what the project should look like on the ground. Many projects are incorrectly implemented due to a simple misunderstanding between the project planners and the implementing personnel. If the revegetation specialist were utilized as a member of the inspection team, much of this potential misunderstanding would be circumvented.

[iii] If a native or developed topsoil material is present on site, accommodations should be made to remove, stockpile and re-apply this material to the final project. Reapplied topsoil is generally not sufficient to replace total nutrient needs for an entire project and so an additional nutrient source should also be considered, based upon the results of the soil tests.

[iv] The various subjects outlined in Guideline 4 include:

- Slope angle or steepness

The angle of the slope is generally a primary determiner of erosion potential. Often, oversteepened slopes require some sort of reworking to lower the angle.

- Consolidation or stability of existing soil surface

If the surface material is unconsolidated or otherwise unstable, greater erosion potential exists. If this is the case, a greater amount of effort may be required to stabilize the soil material.

- Outcropping of parent material or other rock surfaces

If parent material is close to the surface or is exposed, adequate rooting depth may not exist. This situation needs to be recognized and planned for.

- Drainage patterns on site

Surface and subsurface drainage patterns should be recognized and accounted for in the overall surface preparation plan.

- Drainage from off-site sources onto the project site

Drainage from off site sources can severely effect the soil stability of the project, causing rills, gullies, etc. This is an oft-overlooked component of project planning.

- Elevation

Different elevations are associated with different soil temperatures, precipitation levels and plant communities.

- Aspect

Aspect can have a great influence on solar input and therefore, evapotranspiration potential. This can have a large influence on the type of plants that will survive there.

[v] The soil is potentially the most important component of a revegetation project and process. If a soil does not contain adequate nutrients or if it is over-compacted or affected in some other way, plants will not be able to establish or maintain a foothold and will therefore not persist. Care must be taken to understand and ameliorate all sub-standard soil parameters.

[vi] Soil research conducted in the Lake Tahoe Basin has shown a correlation between certain nitrogen pools and successful revegetation efforts. Soils should be analyzed using the methodology outlined in this report so that the extensive data that has already been gathered can be used to define soil amendments that will be required on a specific project. This research is reported in Caltrans Report RTA53X461. This report should be available from John Haynes (916) 227-7109, The Tahoe NRCS Office (530) 541-1496 or the UC Davis Soils and Revegetation Group (530) 752-6514. The research and methodology have been developed by the UC Davis Soils and Revegetation Group. The research has been conducted and reported by Claassen and Hogan. As other research is conducted and evaluated, that research will be included as an additional evaluation method.

[vii] Soil samples can be analyzed by a qualified soil lab using specific testing methodology. This methodology is that which was used by Claassen and Hogan (Caltrans Report RTA53X461) in collecting data referenced previously. Using this methodology, meaningful analysis can be accomplished. The analysis protocol has been developed for wildland soils analysis and is additional to any agronomic tests that may be required. These tests will be available from Plant and Soil Laboratories, Laurie Littleford, (408) 727-0330. Other labs may be able to perform these tests. Inquiries should be made to the Nevada Tahoe Bond Act TAC or the Tahoe NRCS office (530) 541-1496.

[viii] Soil amendments should mimic the nutrient content and release characteristics of a native soil. Amendments will typically consist of stable compost and an appropriate slow release amendment or some other equivalent material that fulfills the requirements indicated in the soil tests.

[ix] Compaction can be ameliorated by mechanical means such as a tractor-operated sub-soil cultivator, a disc or other suitable method, or by hand, using a pick-mattock, pulaski or other hand tool. Soil does not need to be finely dispersed but must be in such a state that water can freely penetrate to a depth of at least 12 inches. Reducing compaction will reduce erosion by allowing infiltration into the soil profile. Additionally, compacted soils are less able to support a plant community due to the decrease in water holding capacity as well as the physical barrier to root penetration.

[x] Small surface irregularities can create pockets to trap or slow runoff. These irregularities can be created by a skillful equipment operator if careful explanation is provided. Irregularities can also be created by hand tools or even by carefully planned foot traffic. In some cases (probably not appropriate to the

Lake Tahoe Basin) cattle and sheep have been used to create micro-depressions and material incorporation. The overall idea is to reduce any continuous smooth surface so that surface flow velocity will be reduced.

[xi] Future potential traffic patterns across the project area should be identified and controlled. This includes intentional and random traffic by humans as well as animals. Canines, children at play and other pedestrians can have a large negative impact on the project area. Projects that have attempted to revegetate old roads or trails have been completely destroyed by continued, uncontrolled use after project completion.

[xii] Native plants offer several advantages over non-native materials. Native plants are well adapted to the local area, many native plants can often survive and possibly thrive with less water and nutrients than non-natives, and the use of natives, if collected locally, will not introduce weed seeds.

[xiii] The Tahoe Regional Planning Agency has developed an "Approved Plant List". The suggestions in these guidelines are more restrictive since we believe that native plants are preferable to non-native adapted species. However, much discussion is currently underway concerning plant material in general. If native plant material is not available, available, non-native material from the TRPA Approved Plant List may be used. Sources of native plants and native plant nurseries may be obtained from the Lake Tahoe Basin NRCS office at (530) 541-1496.

[xiv] Seed or cuttings should be taken from a range of plants and populations wherever possible in order to insure genetic diversity. As a general rule, material should be collected within 1500 ft in elevation and 50 linear miles distance from the project site. Plant material should not be collected from a different plant community type than the target community.

[xv] Species such as Elymus glaucus Stanislaus 5000 or Mokelumne Brome may be acceptable as a partial component of the seed mix but unless the project is an emergency stabilization project, these non-local materials should make up only a portion of the entire seed mix, not to exceed 25% except in unusual circumstances.

[xvi] Seedlings will provide initial and immediate soil protection and will provide a long-term seed bank/plant community source. Direct seeding provides a seed bank for longer-term plant establishment. The mix should consist of a combination of grass seed for quick, initial stabilization and forb and shrub seed for longer-term plant community establishment. It should be kept in mind that the use of native seed often requires a longer-term commitment to germination and growth of seeded material. Some species may not germinate for several years. This reality underscores the need for a stable, long-lasting mulch material.

[xvii] Some of that nutrient source should be placed in the bottom of the planting hole and separated from the root mass by a thin layer of soil. Some additional nutrient should be placed on the surface in a circular pattern outside the plants drip line. Specific amounts and placement will depend upon the size of the

seedling or plant. Planting holes should be flooded and allowed to drain down at least twice unless soil moisture is adequate to support the seedlings.

[xviii] There are varying professional opinions regarding the best time of year to plant. Generally, Fall is believed to be the ideal time to plant if natural rainfall follows in a reasonable time after planting. Spring plantings have also been successful. Mid-summer planting can be used if supplemental irrigation is provided for seedlings. The concept that must be considered is: If the soil surrounding young seedlings is allowed to dry down in the root zone, weakening and mortality is likely to occur. This concept should be provided for in any planting plan.

[xix] Native mulches, when used in the proper amount, can provide long term stabilization, decrease evaporation and ameliorate soil surface temperatures. Additionally, native mulches may contain local micro-flora and fauna as well as nutrients, especially if duff material is included. It is important to consider the source of materials, especially pine needles, when designing and planning for a project. Pine needles are typically available during the spring and early summer from a variety of sources. However, materials may need to be reserved or arranged for well in advance of a Fall project.

[xx] Straw may be associated with importation of non-local flora as well as noxious weed seeds. If straw is to be used, a locally collected native grass straw is preferred. If that is not available, a commercially available native grass straw may be used, if available (Conservaseed- (916) 775-1646). The useful life of straw mulch is 1-3 years, depending upon soil and other environmental conditions. Native plants tend to be slow to germinate and generally are slower growing than aggressive non-natives are. Given this reality, a long lasting mulch cover is a necessity.

[xxi] Wood chips have been shown to provide an effective mulch cover for erosion control. However, their effectiveness for plant regeneration has not yet been well established. Further work is being conducted by the Caltrans Erosion Control Lab. Wood chips are not, therefore, acceptable as the sole mulch material on revegetation projects at this time.

[xxii] The specific thickness of mulch cover will depend upon the type and consistency as well as the density of the mulch material. However, as a rule, most of the ground surface (>95%) should be covered. Thickness for pine needle mulch will range from 0.5 inches to 1.5 inches, depending on site parameters, the type of material used and application method.

[xxiii] Plastic materials present wildlife and aesthetic concerns. Materials such as coconut fabric (coir), jute and hemp are appropriate materials for restoration-based erosion control projects.

[xxiv] Maintenance can be a crucial component of the overall project. If a project is carefully planned and executed, maintenance should be minimized. However, if maintenance is required, it could determine the difference between successful establishment and marginal establishment.

[xxv] Irrigation can be used to assist plant community establishment but should be carefully planned and applied.

- ❖ Irrigation should be appropriate for the plant community and plant type. Design should be done by a qualified irrigation system designer and should be installed by trained personnel.
- ❖ Irrigation should be low-flow so that input rate does not drastically exceed infiltration rate. This type of design allows water to permeate to the root zone and beyond, which encourages a deeper root system and minimizes run-off.
- ❖ Irrigation should only be used to supplement natural precipitation during dry periods and then only as an aid to establishment. Permanent irrigation should only be used for landscape projects and never on revegetation or restoration projects. Excess irrigation will act to encourage non-native and/or wet-site plants that will die off after irrigation is removed.

[xxvi] This component must be written into the initial proposal and translated to the contract, especially if a maintenance component is to be included. Specific ratios should be determined by the revegetation specialist.

[xxvii] Currently, the Nevada Tahoe Bond Act TAC does not require ongoing monitoring. However, a minimum of as-built documentation and photo-point monitoring should be included as part of the project. This monitoring plan should include photo-point locations, the time of the year that the photos will be taken and the name of the person responsible for monitoring. Photos should be taken before the project begins, immediately after the project and once a year for three years. Post project photos should be taken at the same time each year, preferably in the early fall.