

SOLICITATION DOCUMENTS & SPECIFICATIONS

FOR

**BURKE CREEK RABE MEADOW RIPARIAN
RESTORATION PROJECT
STATELINE
DOUGLAS COUNTY, NEVADA
EIP #01.01.01.0180**

BY

**NEVADA TAHOE CONSERVATION DISTRICT
400 DORLA COURT
ZEPHYR COVE, NEVADA 89448**

(775) 586-1610

**SOLICITATION DOCUMENTS & SPECIFICATIONS
FOR
BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT
STATELINE, DOUGLAS COUNTY, NEVADA**

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NOTICE TO CONTRACTORS

1. Sealed proposals will be received in the Office of the Nevada Tahoe Conservation District at 400 Dorla Court, Zephyr Cove, Nevada, or via e-mail to mkelly@ntcd.org until **3:00 P.M. on May 6, 2024** for the **“BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA”**. Such sealed proposals will be opened publicly and virtually at 4:00 P.M. the same day in the NTC D Conference Room, in the NTC D Office Building at 400 Dorla Court, Zephyr Cove, Nevada. An online meeting link will be posted on ntcd.org 24 hours prior to the bid opening. The Nevada Tahoe Conservation District Board of Supervisors will consider award of the contract at a subsequently regularly scheduled meeting in May 2024.
2. To assure consideration, all proposals shall be made on the blank form of proposal attached to these Specifications and shall be enclosed and sealed in an envelope which is addressed to the Nevada Tahoe Conservation District 400 Dorla Court, Zephyr Cove, Nevada, and marked, **“BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA”** or attached to an e-mail with the subject: “Burke Creek Rabe Meadow Riparian Restoration Project.”
3. No proposal will be considered unless accompanied by a cashier’s check, certified check, or bid bond in an amount equal to five percent (5%) of the bid, made payable to Nevada Tahoe Conservation District as provided for in the General Conditions. If e-mail is used for proposal submission, a copy of the check or bid bond could be submitted electronically. The Engineer’s estimate of cost for this project is between \$1,350,000 and \$1,650,000.
4. Project Contract Documents may be viewed or obtained at no cost at Nevada Tahoe Conservation District at 400 Dorla Court, Zephyr Cove, Nevada 89448, (775) 586-1610.
5. Project Contract Documents may be obtained electronically at no cost at Nevada Tahoe Conservation District’s website <http://ntcd.org>.
6. Following receipt of written notification of contract award, the contractor shall execute and return the Agreement with in ten (10) calendar days. The contract work shall commence upon receiving the NOTICE TO PROCEED. The Notice to Proceed will be issued by the NTC D after execution of the contract.
7. Contracts to work under this proposal will obligate the contractors and subcontractors not to discriminate in employment practices pursuant to Section 338.125 NRS. If the contract sum is \$100,000 or more, the Contractor must pay the prevailing wage rates pursuant to NRS Chapter 338, copies of which may be obtained at the Office of the Nevada State Labor Commission.
8. The Contractor shall visit the project site and familiarize himself with the scope of the Project PRIOR TO SUBMITTING A BID. If the Contractor finds any errors, omissions, or discrepancies in the plans or specifications, he shall notify the Engineer immediately.
9. No grading may be performed outside the period between October 15 and May 1 without written permission from the TRPA.
10. The Nevada Tahoe Conservation District reserves the right to accept the lowest responsible bid for the project, to reject any or all bids, or to waive any informalities or irregularities in the bid process. Bids must remain valid for a period of 30 days following the bid opening. Award of the bid is subject to the availability of funds.

SCOPE OF WORK

1. **WORK UNDER THIS CONTRACT:** includes but is not limited to, all material, labor, tools, expendable equipment, utility and transportation service, traffic control, signage, and all other incidental items necessary to perform and complete, in a workmanlike manner, the work described within and required for:
 - Construction special technical provisions as prepared by NTCD.
 - Construction of improvements– including, but not limited to:
 1. Install all temporary best management practices and dewatering equipment as required by permitting agencies.
 2. Remove trees and perform clearing and grubbing.
 3. Construct 315 linear feet of new channel and in channel structures.
 4. Fill Kahle Ditch and grade site to design elevations.
 5. Partially fill Jennings Pond and grade site to design elevations
 6. Raise a portion of Lam Watah Trail.
 7. Replace metal culverts at Nevada Beach Campground Road.
 8. Revegetate the site per plan.
 9. Perform traffic control.
 10. Haul any extra material to an approved disposal site.
 11. Repair all existing site improvements damaged during the course of the work.
 12. Provide job cleanup at all sites to the satisfaction of NTCD.
2. **CONFORM WITH THE FOLLOWING SCHEDULE:** Work shall begin within sixty (60) calendar days from the date of the Notice to Proceed. Work must be completed by October 15, 2024 unless written approval from TRPA is provided to NTCD by the Contractor. Work must be completed between May 1 and October 15 unless written approval from TRPA is provided to NTCD by the Contractor. If the construction schedule cannot be completed within the scheduled time due to circumstances beyond the Contractor’s control, the construction schedule can be extended through a revised schedule established at the discretion of Nevada Tahoe Conservation District and retention shall be held until construction work is completed.
3. **PERMITS AND LICENSES:** NTCD has obtained necessary TRPA, USACE, NDEP, and US Forest Service Permits and the permits are included in these bid documents. Contractor shall obtain any other permits and licenses required to complete this work. The Contractor shall procure and maintain, at his expense, all licenses, insurance policies, etc. as may be necessary to comply with Federal, State or local laws in the performance of the work, unless noted otherwise in the Special Technical Provisions.
4. **UTILITIES:** There are known utilities in the project site and general locations of existing known utilities are shown on the plans. However, it is the contractor’s responsibility to verify the utility locations and contact the engineer if any discrepancies are found between the plans and what is verified in the field. Coordinate with the Engineer and utilize call before you dig, underground services prior to any work on site.
5. **BID IRREGULARITIES:** The NTCD reserves the right to reject any or all bids and to withhold award for up to thirty (30) days. If there are minor irregularities or informalities in any bid or in the bidding process, the NTCD reserves the right to waive provisions of the specifications relating to said minor irregularities of informalities.

INSTRUCTIONS TO BIDDERS

Proposals, to be entitled for consideration, must be made in accordance with the following instructions:

1. Proposals shall be made on the form provided therefore in these Solicitation Documents, and all applicable blank spaces in the form shall be filled; numbers for item bid shall be stated both in writing and in figures; the signatures of all persons shall be in longhand; and the completed form shall be without interlineation, alteration or erasure. The form shall be enclosed and sealed in an envelope which is to be marked **“BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA”**, and it shall be addressed to the Nevada Tahoe Conservation District 400 Dorla Court, Zephyr Cove, Nevada 89448. Sealed proposals will be received in the Office of the Nevada Tahoe Conservation District at 400 Dorla Court, Zephyr Cove, Nevada, or via e-mail to mkelly@ntcd.org until **3:00 P.M. on May 6, 2024**.
2. No proposal will be considered unless accompanied by cashier's check, certified check, or bid bond in an amount equal to five percent (5%) of the bid, made payable to the Nevada Tahoe Conservation District as provided in the General Conditions. The Engineer's estimate of cost for this project is between \$1,350,000 and \$1,650,000.
3. Proposals shall not contain any recapitulation of the work to be done. No oral, telegraphic or telephonic proposals or modifications will be considered.
4. Bids will be accepted only on the complete project as outlined in the Scope of Work. No partial bids will be accepted.
5. Bidder shall visit the site and know all requirements of work within these specifications to his/her satisfaction before submitting a bid. **An optional pre-bid meeting will be held at 10:00 A.M. on April 30th, 2024 at the Lam Watah Trailhead located at 193 Kahle Drive, Stateline, NV 89449.**
6. Should a bidder find discrepancies in, or omissions from, the drawings or documents, or should he be in doubt as to their meaning, he should at once notify NTCD, who will send a written instruction to all bidders. Neither NTCD nor the Engineer will be responsible for any oral instructions.
7. Any written instructions, bulletins or drawings issued to bidders by NTCD or Engineer during the course of bidding shall be covered in the proposal, and in closing a contract, they will become a part thereof.
8. The Agreement Form attached hereto will be used in executing a contract for this work.
9. Following receipt of written notification of contract award, the contractor shall execute and return the Agreement within ten (10) calendar days. The Notice to Proceed will be issued by NTCD after execution of the contract, and confirm the date by which work under the contract must commence. Work shall be completed by October 15, 2024.
10. Should the Contractor fail or refuse to complete the work within the stipulated time, including any authorized extensions of time, there shall be deducted from the monies due him, not as a penalty but as liquidated damages, FIVE HUNDRED DOLLARS (\$500.00) for each day required to complete the work in addition to the period of time hereinbefore set forth.
11. A Labor & Material Payment Bond and a Performance & Completion Bond, each in an amount equal to one hundred percent (100%) of the total contract sum, shall be provided by the successful contractor in accordance with the forms as shown on Pages L-1 through L-2 and PB-1 through PB-2 herein. Said bonds shall be in favor of "Nevada Tahoe Conservation District, a political subdivision of the State of Nevada".
12. Bidders attention is directed to the Insurance Specifications attached as Exhibit "A". The successful bidder shall be required to comply with such provisions.

13. NTCD reserves the right to reject any or all bids and to withhold award for up to thirty (30) days. If there are minor irregularities or informalities in any bid or in the bidding process, NTCD reserves the right to waive provisions of the Specifications relating to said minor irregularities or informalities.
14. Contracts for work under this proposal will obligate the Contractor and subcontractors not to discriminate in employment practices pursuant to NRS 338.125. Further, in the event the contract sum is \$100,000 or more, the Contractor must pay the prevailing wage rates pursuant to NRS Chapter 338, copies of which are available at the office of the Nevada State Labor Commission.
15. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their Power of Attorney.
16. Award of the contract will be made to the best value bidder as determined by the NTCD in compliance with the bid documents and which, in the NTCD's sole judgment, best meet the NTCD's needs.
17. Pursuant NRS 338.143 a person or firm who files a notice of protest regarding the award of a public works contract is required to post with NTCD a security in the form of; a bond, or certificate of deposit containing an acknowledgement by a qualified financial institution that a sum of money has been received. The security shall be equal to the lesser of twenty five percent of the value of the protester's bid or \$250,000. The security is required to be posted at the time of the filing of the written notice of protest.
18. The bidder's attention is directed to NRS 338.147. All bidders who would like to claim preferential bidder status should read the "Preferential Bidder Status" form and submit required documents with the Bid Proposal and Schedule. **A copy of a valid Nevada State Contractor's Board, Interim Certificate of Eligibility shall be submitted with the bid proposal.** It is the intent of NTCD to enact the provisions of NRS 338 in regards to preferential bidder status only in the event that a 5% preference is utilized in the determination of the low bidder.
19. Each Contractor, subcontractor and other person who provides labor, equipment, materials, supplies or services for the public work must comply with the requirements of all applicable state and local laws, including without limitation, any applicable licensing requirements and requirements for the payment of sales and use taxed on equipment, materials and supplies provided for the public work.

BID PROPOSAL

NEVADA TAHOE CONSERVATION DISTRICT
400 Dorla Court
Zephyr Cove, Nevada 89448

Gentlemen:

I (we) hereby submit my (our) proposal for the **“BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA”**.

In compliance with your published Notice to Contractors, the undersigned as bidder declares that he has carefully examined the location of the proposed work and the Plans and Specifications therefore, together with addenda numbered _____ through _____, and I (we) propose and agree that if this proposal is accepted, I (we) will contract with the Nevada Tahoe Conservation District (NTCD) to provide all necessary labor, machinery, tools, apparatus, and other means of construction, and do all the work and furnish all the materials required to complete construction of the project, in a satisfactory manner at the prices stated in the bid proposal.

Construction shall be in strict conformity with the 100% Design Plans, Special Technical Provisions, Specifications, and contract documents prepared therefore, which hereby are made a part of this proposal.

The bidder proposes and agrees to contract with NTCD to furnish and perform all of the described work, including subsidiary obligations as defined in said contract documents and specifications and to complete the work in the manner and within the time limits set forth in the Contract Documents.

The bidder understands that the following quantities are approximate, only being given as a basis for the comparison of Proposals; and that NTCD does not expressly or by implication agree that the actual amount of work will correspond therewith but reserves the right to increase or decrease the amount of work as may be deemed necessary or advisable by the Engineer.

BID SCHEDULE

BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT

BASE BID: All required equipment, personnel, sweeping, traffic control, public notification, and signage for the complete project shall be part of the unit prices. All items not covered by in the Plans, Special Provisions, and Special Technical Specifications but are necessary for completion of the project are incidentals to the listed Bid Items.

Item No.	Item Description	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	LS	1		
2	Staging and Storage Areas	LS	1		
3	Gravel Construction Entrance	EA	3		
4	Filter Fence	LF	4,790		
5	Construction Limit Fencing	LF	6,350		
6	Fiber Rolls, As Directed	LF	700		
7	Dewatering/Diversion	LS	1		
8	Pedestrian Detours, Escorts, and Signage	LS	1		
9	Cultural Monitor Coordination	LS	1		
10	Clearing and Grubbing	SF	115,600		
11	Salvage Sod, Stage, and Maintain	SF	32,000		
12	Tree Removal and Stockpile	EA	48		
13	Remove Milled Lumber in Ditch	LF	150		
14	Remove Wire Fence at Nevada Beach	LF	470		
15	Remove Barbed Wire Fence	LF	2,330		
16	Remove Abandoned Utilities and Mobile Home Connections	EA	42		
17	Campground Culvert Replacement	LS	1		
18	Aspen Restoration Area Grading and Protection	LS	1		
19	Floodplain and Channel Earthwork	CY	3,350		

Item No.	Item Description	Unit	Quantity	Unit Price	Amount
20	Water Quality Basin	LS	1		
21	Sod Blanket Channel	LF	315		
22	Buried Log Grade Controls	EA	5		
23	Pond Earthwork and Floodplain Excavation	CY	2,440		
24	Lam Watah Trail Raising	CY	650		
25	Remove Rock Lined Ditch	LF	270		
26	Decomission Trails	LF	290		
27	Pond Treatment	SF	15,300		
28	Sod Seed Treatment	SF	124,000		
29	Place Salvaged Sod	SF	32,000		
30	Willow Transplant	EA	70		
31	Slope Treatment	SF	10,200		
32	As-Directed Log Placement for Enhanced Floodplain Roughness Treatment	LF	400		
33	Upland Treatment	SF	15,000		
34	Temporary Irrigation	LS	1		
35	Relocate Wooden Fence	LF	160		

BASE BID TOTAL (in numerals) _____

BASE BID TOTAL (in words) _____

BID SUMMARY

BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT

TOTAL BID: \$ _____

The unit prices above shall be the basis of determining the amount paid for the completed project including any increased or decreased quantities authorized by the Engineer.

If the undersigned be notified of the acceptance of his proposal, he agrees to execute the Agreement within ten (10) calendar days for the work covered in his proposal for the above stated prices as full compensation for furnishing all materials and labor, and doing all of the work, in strict accordance with the contract documents, to the satisfaction of the Engineer.

The undersigned further agrees to commence the work within the time stated in the Notice to Proceed and to complete the work specified within the time stated in the Agreement.

The undersigned states that he has a thorough understanding of the conditions embodied in the contract documents and specifications.

Name of Firm _____

By _____

Address _____

Phone _____

Fax _____

Email _____

Nevada Contractor's License
No. _____

Date _____

WITNESS

PREFERENTIAL BIDDER STATUS

NRS 338.147 and NRS 338.1389 provides that a contractor who has been found to be a responsible contractor and who provides proof to, and receives an Interim Certificate of Eligibility from, the Nevada State Contractor's Board that certifies the payment of:

- (1) The sales and use taxes imposed pursuant to Chapter 372, 374 and 377 of NRS on materials used for construction in the State of Nevada of not less than \$5,000 for each consecutive 12-month period for 60 months immediately preceding the submission of his bid;
- (2) The motor vehicle privilege tax imposed pursuant to Chapter 371 of NRS on the vehicles used in the operation of the general contractor's business in the State of Nevada of not less than \$5,000 for each consecutive 12-month period for 60 months immediately preceding the submission of his bid; or
- (3) Any combination of such sales and use taxes and motor vehicle privilege tax, or
- (4) Acquired, by inheritance, gift, or transfer through a stock option plan for employees, all the assets and liabilities of a viable, operating construction firm that possesses a:
 - a) License as a general contractor pursuant to the provisions of Chapter 624 of the NRS; and
 - b) Interim Certificate of Eligibility to receive a preference in bidding on public works

shall be deemed to have submitted a better bid than a competing contractor who has been certified to have made payment of those taxes if the amount of his bid is not more than 5% higher than the amount bid by the competing contractor.

Contractors who desire to claim this preference, must submit to NTCB with the bid, a copy of a valid Nevada State Contractor's Board Interim Certificate of Eligibility and the Preferential Bidder Status Affidavit provided on the following page.

PREFERENTIAL BIDDER STATUS
AFFIDAVIT

I, _____, on behalf of the Prime Contractor, _____
_____, swear and affirm that in order to be in compliance with NRS 338 and be eligible to receive a preference in bidding on **BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA**, certify that the following requirement will be adhered to, documented and attained on completion of the contract. Upon submission of this affidavit on behalf of _____, I recognize and accept that failure to comply with any requirements is a material breach of the contract and entitles the Awarding Body to damages. In addition the Contractor may lose its certification for a preference in bidding for 5 years and/or its ability to bid on any contracts for public works for one year pursuant to NRS 338:

1. The Contractor shall ensure at least 50 percent of the workers possess a Nevada driver's license or identification card;
2. The Contractor shall ensure all of the non-apportioned vehicles primarily used on this project are registered in Nevada;
3. The Contractor shall ensure at least 25 percent of the materials used on this project are purchased in Nevada and;
4. The Contractor shall ensure payroll records related to this project are maintained and available within the State of Nevada.

By: _____

Title: _____

Signature: _____

Date: _____

Signed and sworn to (or affirmed) before me on this _____ day of _____, 20____, by _____ (name of person making statement).

Notary Signature STAMP AND SEAL

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____
_____, as Principal, and _____

(legal description and address of Surety)

authorized to do business of Surety in the State of Nevada, as Surety, are held and firmly bound unto Nevada Tahoe Conservation District, as NTCD, in the sum of _____ Dollars (\$_____), (which is not less than 5% of the contract price) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, and administrators, successors, and assigns.

Signed this ____ day of _____, 2024.

The conditions of the above obligation is such that whereas the Principal has submitted to NTCD, a certain bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing for the **“BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA”**.

Now, therefore, if said bid shall be rejected, or in the alternative, if said bid shall be accepted and the Principal shall execute and deliver a Contract in the form of contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his Faithful Performance of said Contract, and a Bond for the payment of all persons performing labor or furnishing materials in connection therewith, and shall provide and comply with the insurance requirements, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

Otherwise, the same shall remain in force and effect, and the sum herein specified paid over to the NTCD, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the NTCD may accept such bid; and said Surety does hereby waive notice of such extension.

In Witness whereof, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their officers, the day and year first set forth above.

Principal

Seal:

Signature

Surety

Seal:

Signature

BID BOND (continued)

On this _____ day of _____, 2024, personally appeared before me, a Notary Public,
_____, who acknowledged to me that he/she was the Principal
authorized to sign the foregoing Bid Bond.

NOTARY PUBLIC

On this _____ day of _____, 2024, personally appeared before me, a Notary Public,
_____, who acknowledged to me that he/she was the Surety authorized
to sign the foregoing Bid Bond.

NOTARY PUBLIC

Surety's Licensed Nevada Agent:

Company Name

Address

Telephone

By: _____
(Note: Signature to be Notarized)

Type: _____

Bond No. _____

Subscribed and sworn to before me this _____ day of _____, 2024.

Notary Public

GENERAL CONTRACTOR

(Firm Name)

(Nevada Contractors License #)

(Name of Officer) is authorized to bid and to enter into this Contract for the above listed firm.

The firm is: (check one)

____ a corporation ____ a partnership ____ sole proprietorship

Principal Officers:

Name	Title	Signature
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Owners Not Listed Above:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

I _____ (Name of Officer) certify that the above lists includes all officers, owners and financial partners of the above mentioned firm corporate structures to the best of my knowledge.

Signature and Title of Officer

FIVE PERCENT LIST OF RESPONSIBLE TRADES

PURSUANT TO NRS 338 PRIME CONTRACTORS MUST LIST THE WORK THEY INTEND ON COMPLETING THAT MEETS THE REQUIREMENTS OF 5% ON THIS FORM

List below the name, address and contractor's license number for each company by trade who will provide labor or a portion of the work on this project for which the company will be paid an amount exceeding five percent (5%) of the prime contractor's total bid. (Attach additional sheets if necessary.)

Trade (type of work)	Name/Address	License No.
1. _____	_____ _____ _____	_____
2. _____	_____ _____ _____	_____
3. _____	_____ _____ _____	_____
4. _____	_____ _____ _____	_____
5. _____	_____ _____	_____

Note: Within 2 hours after bid opening, the bidders who submitted the three lowest bids must submit a list of the name and contractor's license number of each contractor who will provide labor or a portion of the work on the project for which he will be paid an amount exceeding one percent (1%) of the contractor's total bid or \$50,000, whichever is greater. A bidder who fails to submit the lists as required herein within the time prescribed herein shall be deemed not responsive. The bidder is hereby notified that the prime contractor must include his name on the list required by NRS 338.141(3) if he is to perform any of the work that is required to be listed. The prime contractor's bid will be deemed not responsive for failure to comply with this statutory requirement.

A bidder whose bid is accepted may not substitute subcontractors named in the bid or listed within 2 hours after bid opening, except as provided in NRS 338.141

TWO HOUR ONE PERCENT LIST OF RESPONSIBLE TRADES

PURSUANT TO NRS 338 PRIME CONTRACTORS MUST LIST THE WORK THEY INTEND ON COMPLETING THAT MEETS THE REQUIREMENTS OF 1% ON THIS FORM

List below the name, address and contractor's license number for each company by trade who will provide labor or a portion of the work on this project for which the company will be paid an amount exceeding one percent (1%) of the prime contractor's total bid. (Attach additional sheets if necessary.)

Trade (type of work)	Name/Address	License No.
1. _____	_____ _____ _____	_____
2. _____	_____ _____ _____	_____
3. _____	_____ _____ _____	_____
4. _____	_____ _____ _____	_____
5. _____	_____ _____	_____

Note: Within 2 hours after bid opening, the bidders who submitted the three lowest bids must submit a list of the name and contractor's license number of each contractor who will provide labor or a portion of the work on the project for which he will be paid an amount exceeding one percent (1%) of the prime contractor's total bid or \$50,000, whichever is greater. A bidder who fails to submit the lists as required herein within the time prescribed herein shall be deemed not responsive. The bidder is hereby notified that the prime contractor must include his name on the list required by NRS 338.141(3) if he is to perform any of the work that is required to be listed. The prime contractor's bid will be deemed not responsive for failure to comply with this statutory requirement.

A bidder whose bid is accepted may not substitute subcontractors named in the bid or listed within 2 hours after bid opening, except as provided in NRS 338.141.

Nevada Tahoe Conservation District, FAX (775) 586-1612

**CERTIFICATION OF BIDDER, PROPOSED CONTRACTOR OR
SUBCONTRACTOR REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY OR VOLUNTARY EXCLUSION**

The undersigned bidder, proposed contractor or subcontractor certifies, to the best of his knowledge and belief, that:

1. Neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this contract by any Federal department, agency or program.
2. Neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in public works contracts by the Nevada Labor Commissioner.
3. Where either the bidder or subcontractor is unable to certify to any of the above statements, the bidder or subcontractor shall attach an explanation as to why a certification cannot be submitted.

Name of Bidder, Proposed Contractor or Subcontractor

Name and Title of Authorized Representative

Signature

Date

**CERTIFICATION OF BIDDER REGARDING PENALTIES FOR
NONCOMPLIANCE WITH NEVADA PREVAILING WAGE REQUIREMENTS**

The undersigned bidder, proposed contractor or subcontractor certifies that:

1. This contract is for a public work as set forth in Nevada Revised Statutes Chapter 338.
2. A contractor engaged on public works shall forfeit, as a penalty to the public body on behalf of which the contract has been made and awarded to the contractor, not less than \$20 nor more than \$50 for each calendar day or portion thereof that each workman employed on the public work:
 - a) Is paid less than the designated rate for any work done under the contract, by the contractor or any subcontractor under him;
 - b) Is not reported accurately to the public body awarding the contract as required pursuant to NRS 338.070.
3. If a penalty is imposed pursuant to this section, the costs of the proceeding, including investigative costs and attorney's fees, may be recovered by the Labor Commissioner.

Name of Bidder

Name and Title of Authorized Representative

Signature

Date

QUALIFICATION OF BIDDER CERTIFICATE

The undersigned bidder, proposed contractor or subcontractor certifies, that they are qualified to do the Burke Creek Hwy 50 Crossing and Realignment Project Phase 1 and associated revegetation as described in Section 102 CONTRACTOR QUALIFICATIONS of the Special Technical Provisions and submitted all qualification as stated in 102.01 Description together with the bid document.

Contractor Qualifications _____

Name of Bidder, Proposed Contractor or Subcontractor

Name and Title of Authorized Representative

Signature

Date

AGREEMENT FORM

THIS AGREEMENT, made and entered into this _____ day of _____, 2024, by and between the NEVADA TAHOE CONSERVATION DISTRICT, a political subdivision of the State of Nevada, acting through its Board of Supervisors, hereinafter called the "NTCD" and _____ General Contractor, Nevada State License No. _____, hereinafter called the "Contractor".

W I T N E S E T H :

That the NTCD and the Contractor, for the consideration hereinafter named, agree as follows:

Article 1. Scope of Work. The Contractor shall furnish all of the materials and perform all of the work described in the Plans and Specifications entitled "**BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA**", prepared by the Nevada Tahoe Conservation District, and shall do everything required by this Agreement and the Specifications.

Article 2. Time of Completion. The work to be performed under this Agreement shall be completed within one hundred sixty-five (165) working days from the date that the Contractor is issued the Notice to Proceed.

The date specified in the Notice to Proceed shall be the effective date of this Agreement.

Should the Contractor fail or refuse to complete the work within the stipulated time, including any authorized extensions of time, there shall be deducted from the monies due him, not as a penalty, but as liquidated damages, FIVE HUNDRED DOLLARS and NO CENTS (\$500.00) for each work day required to complete the work in addition to the period of time hereinbefore set forth.

In the event that the NTCD has failed to appropriate or budget funds for the purposes specified in this agreement, or that NTCD has been required (in its sole judgment) to amend previous appropriations or budgeted amounts to eliminate or reduce funding for the purposes in this agreement, this agreement shall be terminated without penalty, charge or sanction. (NRS 244.320)

Article 3. Contract Time Extensions. All claims for extensions of time shall be made in writing to the Engineer within seven (7) calendar days after the beginning of the delay; otherwise, they will be disallowed.

If the Contractor is delayed at any time in the progress of the work by any act or neglect of the NTCD or the Engineer, or by any employee of either, or by any separate contractor disputes, fire, unusual weather conditions, unusual delay in transportation, or by unavoidable casualties, the contract time may be extended by change order for such reasonable time as the NTCD may determine.

It is further expressly understood and agreed that the Contractor shall not be entitled to any damages or compensation, or be reimbursed for any losses, on account of any delay resulting from any of the aforesaid causes or any other cause regardless of whether the delay is foreseeable or not, except that the NTCD agrees to compensate the Contractor for any damage resulting from any affirmative, willful act in bad faith performed by the NTCD or its employees which unreasonably interferes with the Contractor's ability to perform the work.

An extension of contract time for a delay will be allowed only in the case that a normal working day is lost. A normal working day is defined as any day, except weekends and holidays, during which the Contractor can work for at least four hours. Delays will not be allowed for non-working days (e.g., weekends and holidays). Claims by the Contractor for delays will not be allowed on account of failure to furnish information, until 14 days after a request for information is submitted by the Contractor, and then not unless such claim is reasonable.

Extensions of contract time shall not be allowed for the following types of delays:

1. Delays which could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor.
2. Delays in the execution of parts of the work, which may in themselves be unavoidable, but do not prevent or delay prosecution of other parts of the work, or the completion of the whole work within the time specified.

3. Delays arising from interruptions occurring during the prosecution of the work on account of reasonable interference of other contractors employed by the NTCD, which do not prevent the completion of the whole work within the contract time.

Article 4. Progress Payments. If acceptable progress has been made, the NTCD shall, once each month, make an estimate of the total amount of work completed to date and the monetary value thereof and make a partial payment on the Contract.

The NTCD shall retain ten percent (10%) of such estimated value of the work done as part security for the fulfillment of the Contract and shall pay monthly to the Contractor, while carrying on the work the balance not retained, after deducting there from all previous payments.

The amount withheld as provided herein shall be retained for a period of thirty (30) days from the date of the Notice of Completion.

NTCD shall pay to Contractor, at the end of each quarter this Agreement is in effect, interest for the quarter on the amount withheld at a rate to be determined by NTCD in accordance with State law. If the amount due the Contractor pursuant to this provision for any quarter is less than Five Hundred Dollars (\$500.00), the NTCD may withhold the interest until: (1) the end of a subsequent quarter after which the amount of interest due is Five Hundred Dollars (\$500.00) or more; (2) the end of the fourth consecutive quarter for which no interest has been paid to the Contractor; or (3) final payment is due under the Agreement or State law; whichever occurs first. Contractor shall pay the subcontractors progress payments and pay interest on amounts retained from said progress payments in accordance with the provisions of State law.

Article 5. Acceptance and Final Payment. As soon as practical, following the completion of the work, the Contractor shall make a request by letter to the NTCD for a final inspection and acceptance of the work; if, in the NTCD's opinion, all provisions of the Construction Specifications and Agreement have been satisfied, the NTCD will cause a Notice of Completion to be filed with the Douglas County Recorder.

At the expiration of thirty (30) days following the filing of the Notice of Completion or use or occupancy of the public work by the NTCD, final payment shall be made as follows:

After deducting all previous payments from the total value of the work, the remaining balance shall be paid unless any of the following conditions exist to allow withholding of payment: (a) claims, liens or outstanding debt have been filed against the Contractor or against the work because of Contractor or its agents; (b) claims or demands by NTCD including those involving: disputes about the Contract, Contractor or subcontractor compliance with applicable codes and laws, the work, time or liquidated damages; (c) amounts required by law to be retained by the NTCD. Contractor shall submit proof satisfactory to the NTCD that all payrolls, materials, bills, and other indebtedness relating to the work performed, have been paid before final payment is made.

Article 6. The Contract Sum. The NTCD shall pay the Contractor, as full compensation for furnishing all materials and labor and doing all the work in strict accordance with the Construction Specifications and to the satisfaction of the Engineer the amount set forth in the contract documents. This sum is to be paid in the manner and under the conditions here in before specified.

Article 7. Performance and Payment Bonds. The Contractor agrees that he will, before this contract becomes effective, furnish the NTCD a Performance and Completion Bond and a Labor and Material Payment Bond, furnished by a company or companies acceptable to the NTCD, each in an amount equal to one hundred percent (100%) of the total contract sum. The Performance and Completion Bond shall be conditioned upon the Contractor's full and faithful performance of the contract in accordance with the plans, specifications and conditions of the contract in accordance with the Contract Documents and this Agreement and further conditioned upon the guarantee of said work for a period of one (1) year from the date the work is completed and accepted by NTCD. The Labor and Material Payment Bond is solely for the protection of claimants supplying labor or materials to the contractor to whom the contract was awarded and shall be conditioned upon the Contractor's obligation to pay for all materials and labor provided on the work. (See NRS 339.025)

Article 8. The Contract Documents. The following is an enumeration of all of the Contract Documents making up the Agreement (also herein and throughout the Contract Documents referred to as Contract), which are by this reference hereby incorporated into this Agreement and they are as fully a part of the Agreement as if hereto attached or herein repeated:

- Notice to Contractors
- Scope of Work

- Instructions to Bidders
- Bid Proposal
- Bid Schedule
- Bid Summary
- Preferential Bidder Status
- Bid Bond
- General Contractor Information Form
- Five Percent List of Responsible Trades
- Two Hour One Percent List of Responsible Trades
- Affidavit of Non-Collusion
- Certification of Bidder, Proposed Contractor or Subcontractor Regarding Debarment, Suspension, Ineligibility or Voluntary Exclusion
- Certification of Bidder Regarding Penalties for Noncompliance with Nevada Prevailing Wage Requirements
- Agreement Form
- Labor & Material Payment Bond
- Performance and Completion Bond
- Hazard Communication Program Contractor Communication Form
- Special Technical Provisions for **Burke Creek Rabe Meadow Riparian Restoration Project**
- Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14), current edition
- Exhibit A - Public Works Construction/Indemnification and Insurance Specifications
- Exhibit B – Prevailing Wage Rates for Northern Nevada Rural Counties
- Exhibit C – Special Technical Provisions for Burke Creek Rabe Meadow Riparian Restoration Project
- Exhibit D – US Forest Service Decision Memorandum and Specialist Reports
- Exhibit E – Other Project Permits
- Addenda
- Change Orders
- Construction Change Directives
- Any amendments made hereto

In the event of any conflict between any of the Contract Documents, this contract shall be governed in accordance with the following order:

- a) This Agreement
- b) Special Technical Provisions
- c) Standard Specifications
- d) Drawings
- e) General Provisions

Article 9. Nondiscrimination. In accordance with NRS 338.125, in connection with the performance of work under this Agreement, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, sexual orientation or age, including, without limitation, with regard to employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including, without limitation, apprenticeship. The Contractor further agrees to insert this provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials. Any violation of this article constitutes a material breach of the Contract.

Article 10. Veteran’s Preference. As provided in NRS 338.130, Contractor agrees as follows:

1. When persons are employed in the performance of this contract or in the construction of this public work, employment preference will be given, the qualifications of the applicants otherwise being equal:

(a) First: To persons who:

- (1) Have been honorably discharged from the Army, Navy, Air Force, Marine Corps or Coast Guard of the United States, a reserve component thereof or the National Guard; and
- (2) Are citizens of the State of Nevada.

(b) Second: To other citizens of the State of Nevada.

NOTICE TO CONTRACTORS:

If the provisions of NRS 338.130 (dealing with Preferential Employment in Construction of Public Works) are not complied with by the contractor engaged on the public work, THE CONTRACT IS VOID, and any failure or refusal to comply with any of the provisions of this section renders any such contract void. All boards, commissions, officers, agents and employees having the power to enter into contracts for the expenditure of public money on public works such as this contract shall file in the Office of the Labor Commissioner the names and addresses of all contractors holding contracts with the public body, and upon the letting of new contracts, the names and addresses of such new contractors must likewise be filed with the Labor Commissioner. Upon the demand of the Labor Commissioner, contractor shall furnish a list of the names and addresses of all subcontractors employed by the contractor engaged on a public work. Subject to the exceptions contained in NRS 338.130, no money may be paid out of the treasury of NTCD to any person employed on any work mentioned in this section unless there has been compliance with the provisions of this section. Any contractor engaged on a public work or any other person who violates any of the provisions of this section is guilty of a misdemeanor.

Article 11. Prevailing Wage Rates. In the event that the Contract sum as listed above exceeds One Hundred Thousand Dollars (\$100,000.00) or more due to a change order, Contractor agrees that it shall pay the prevailing wage rates in effect at the time of the bid to the persons who are entitled to such wages as determined by the regulations of the labor commissioner. This applies to the entire contract period. Further, and in accordance with NRS 338.060, Contractor shall forfeit as a penalty to the NTCD, Twenty to Fifty Dollars (\$20.00 - \$50.00) for each worker employed for each calendar day or portion thereof that such worker is paid less than the designated rate for any work done under the Agreement by him or any subcontractor under him. The exact amount of the penalty is determined by the labor commissioner's regulations. In addition, Contractor shall keep accurate records showing the name, occupation and actual per diem wages and benefits paid to each worker employed by him in connection with this project. The records shall be open to inspection by the NTCD, its officers and agents at all reasonable hours. No provision of this Contract shall be construed to excuse any duty either Party has under the prevailing wage laws of Nevada. (NRS 338.010 et.seq.)

Article 12. Indemnification/Insurance. NTCD has established specific indemnification and insurance requirements for agreements/contracts with contractors to help assure that reasonable insurance coverage is maintained. Indemnification and hold harmless clauses are intended to assure that contractors accept and are able to pay for the loss of liability related to their activities. Exhibit A, pages 1-5, is included by reference. All conditions and requirements identified in this exhibit shall apply to any work completed under this Agreement.

Article 13. Alternative Dispute Resolution. NRS 338.150 requires that a method of alternate dispute resolution be utilized to resolve any disputes that arise between the public body and the contractor engaged on a public work before initiation of a judicial action. The parties agree to submit any dispute that arises under this contract to a mutually agreeable alternative dispute resolution method prior to the initiation of a judicial proceeding. In addition, it is further agreed that neither party is entitled to an award of attorney's fees from the opposing party as a result of the outcome of an alternative dispute resolution method or a judicial proceeding even if the party is considered to be a prevailing party.

Article 14. Termination. In addition to the other provisions of this Agreement, NTCD has the right to terminate the Agreement without cause at any time upon giving the Contractor seven (7) days notice in writing. In the event the Agreement is terminated by NTCD in accordance with this provision, NTCD agrees to pay Contractor for all work satisfactorily completed and for materials installed prior to the date of termination.

Article 15. Laws and Compliance with Laws. This Contract is governed by and shall be interpreted under the laws of the State of Nevada. The Contractor and his agents including subcontractors, employees and persons who provide labor, equipment, materials, supplies or services for the work shall comply with the requirements of all applicable state and local laws, including, without limitation, any applicable licensing requirements and the requirements for the payment of sales and use taxes on equipment, materials and supplies provided for the work. In addition, the parties to this contract agree and stipulate that the venue for any dispute arising under this Agreement will be in a court of competent jurisdiction in Washoe County, Nevada.

LABOR AND MATERIAL PAYMENT BOND
FOR PUBLIC WORKS REQUIRED PURSUANT TO NRS CHAPTER 339

KNOW ALL MEN BY THESE PRESENTS: That _____
(Name and Address [or legal description] of Contractor)
as Principal, hereinafter called "Principal", and _____

(Legal Designation and Address of Surety)

authorized to do business of surety in the State of Nevada, as Surety, hereinafter called "Surety", are held and firmly bound unto the NEVADA TAHOE CONSERVATION DISTRICT, a political subdivision of the State of Nevada, as Obligee, hereinafter called "NTCD", for the use and benefit of claimants supplying labor or materials to the Principal or to any of the Principal's subcontractors in the prosecution of the work provided for in the Contract referred to below in the amount of _____ Dollars (\$ _____) said sum being 100% of the contract amount payable by the NTCD under the terms of the Contract referred to below, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____, entered into contract with NTCD for **"BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA"** which contract and its plans and specifications are attached hereto and by reference made a part hereof, as if fully and completely set out in full herein, and is hereinafter referred to as the "Contract".

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, and shall save and hold harmless and indemnify NTCD from and against any and all claims and demands of liens for work performed and materials supplied, then this obligation shall be void; otherwise it shall remain in full force and effect.

THIS BOND is executed for the purpose of complying with the laws of the State of Nevada as contained in Chapter 339 of Nevada Revised Statutes and all acts amendatory thereof and supplemental thereto, and this Bond shall inure to the benefit of any and all persons who perform labor upon or furnish materials to be used in or furnish appliances, teams or power contributing to the work described in said contract, in accordance with provisions of Chapter 339 of Nevada Revised Statutes.

Any suit or action brought on this bond shall be maintained in accordance with provisions as set forth in Chapter 339 of NRS, and all acts amendatory thereof and supplemental to.

IN WITNESS WHEREOF, the above bounden Principal and the above bounden Surety have hereunto set their hands and seal, this _____ day of _____, ____.

PRINCIPAL: _____

By: _____

(Note: Signature to be notarized)

Type: _____

Title: _____

State of Nevada Contractor's License #

Subscribed and sworn to before me this
_____ day of _____, ____.

Notary Public

Surety:

Name of Surety

By: _____

(Note: Signature to be Notarized)

Type: _____

Attorney-in-Fact

Amount of Bond Premium (to be filled in by the Surety Company):

\$ _____

Subscribed and sworn before me this _____ day of _____, ____.

Notary Public

Surety's Licensed Nevada Agent:

Company Name

Address

Telephone

By: _____

(Note: Signature to be Notarized)

Type: _____

Bond No. _____

Subscribed and sworn to before me this _____ day of _____, ____.

Notary Public

PERFORMANCE AND COMPLETION BOND
FOR PUBLIC WORKS REQUIRED PURSUANT TO NRS CHAPTER 339

KNOW ALL MEN BY THESE PRESENTS: That _____

(Name and Address [or legal description] of Contractor)

As Principal, hereinafter called "Principal", and _____

(Legal Designation and Address of Surety)

authorized to do business of surety in the State of Nevada, as Surety, hereinafter called "Surety", are held and firmly bound unto the NEVADA TAHOE CONSERVATION DISTRICT, a political subdivision of the State of Nevada, as Obligee, hereinafter called "NTCD", in the amount of _____ Dollars (\$ _____) said sum being 100% of the contract amount payable by the NTCD under the terms of the Contract referred to below, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____, entered into contract with NTCD for **"BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA"** which contract and its plans and specifications are attached hereto and by reference made a part hereof, as if fully and completely set out in full herein, and is hereinafter referred to as the "Contract"; and

WHEREAS, said Principal is required by the Nevada Revised Statutes 339.025, and all acts amendatory thereof and supplemental thereto, to furnish a bond in connection with said Contract guaranteeing the faithful performance thereof; and

WHEREAS, the Principal under the terms of the Contract agrees to replace and/or repair without cost to the NTCD any damage or imperfections due to faulty labor or materials incorporated in said work, including the landscaping, for a period of one (1) year, from and after the date of completion and acceptance by NTCD of the work contracted to be performed.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, if Principal shall well and truly perform and complete in all its parts of the work described in said Contract within the time and in the manner therein specified and shall, for a period of one (1) year from the date of the work contracted to be performed is completed and accepted by NTCD, replace and repair any and all defects arising in said work, whether resulting from defective material or workmanship, and shall also observe, perform, fulfill, and keep all and every covenant and agreement in said Contract on the part of the Principal to be kept, performed and complied with within the time and manner therein specified and shall truly and fully comply with all guarantees required in said Contract, then this obligation shall become null and void, otherwise it shall remain in full force and effect.

And the said Surety, for value received, hereby stipulates and agrees, if requested to do so by the NTCD, to perform and fully complete the work mentioned and described in said Contract, pursuant to the terms, conditions and covenants thereof, if for any cause, said Principal fails or neglects to so perform and fully complete said work; the said Surety further agrees to commence said work to full completion within twenty (20) days after notice thereof from the NTCD, and to fully complete the same with all due diligence and in accordance with the plans and specifications.

Further, Surety for value received, hereby stipulates and agrees that no prepayment or delay in payment and no change, extension, addition or alteration of the work or any provision of the Contract or in the plans, profiles, detailed drawings, specifications, and no extension of time and no forbearance on the part of the NTCD shall operate to release or exonerate the Surety upon this bond, and consent thereto without notice to or consent by Surety is hereby given, and Surety hereby waives provisions of any law relating thereto. It is expressly agreed and understood that this bond is made and executed contemporaneously with the Contract above mentioned, and in consideration of the covenants and agreements therein made and entered into on the part of the NTCD; and that the due execution and delivery hereof is condition precedent to liability on the part of the NTCD, on said above mentioned Contract. It is further understood and agreed that this bond is

made in compliance with NRS 339.025 and all acts amendatory thereof and supplemental thereto; and that all benefits therein set forth inure to the benefits of the NTCD.

IN WITNESS WHEREOF, the above bounden Principal and the above bounden Surety have hereunto set their hands and seal, this _____ day of _____, ____.

PRINCIPAL: _____

By: _____

(Note: Signature to be Notarized)

Type: _____

Title: _____

State of Nevada Contractor's License #

Subscribed and sworn to before me this
_____ day of _____, ____.

Notary Public

Surety:

Name of Surety

By: _____

(Note: Signature to be Notarized)

Type: _____

Attorney-in-Fact

Amount of Bond Premium (to be filled in by the Surety Company):

\$ _____

Subscribed and sworn before me this _____ day of _____, ____.

Notary Public

Surety's Licensed Nevada Agent:

Company Name

Address

Telephone

By: _____

(Note: Signature to be Notarized)

Type: _____

Bond No. _____

Subscribed and sworn to before me this _____ day of _____, ____.

Notary Public

***** SAMPLE *****
NEVADA TAHOE CONSERVATION DISTRICT

HAZARD COMMUNICATION PROGRAM
CONTRACTOR COMMUNICATION FORM

To meet the requirements of the OSHA Hazard Communication Standard, information regarding the hazards of chemicals or compounds brought to the project site must be exchanged between the Department and the Contractor. This form is designed to satisfy those communication requirements.

Project Name/Location: **“BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT,
STATELINE, DOUGLAS COUNTY, NEVADA”**

Contractor: _____

Subcontractor: _____

Nature of work to be completed: _____

Effective date: Start of construction through the Notice of Acceptance.

<u>Chemical Used or Stored at Project in Work Area</u>	<u>Required Precautions</u>	<u>Emergency Actions</u>
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All chemical (compounds) containers must be labeled with the name of the chemical and the hazards of that chemical. Detailed information regarding the hazards and protective measures for all chemicals found at this project can be found in the “MATERIAL SAFETY DATA SHEETS” for those chemicals and are collected in a binder labeled “NTCD HAZARD COMMUNICATION” located in the office of the Nevada Tahoe Conservation District.

The Contractor is responsible to ensure that their employees and the employees of any subcontractor are informed of the information provided here.

Before contract work can begin, the Contractor must provide the Department with complete “MATERIAL SAFETY DATA SHEETS” for all chemicals brought to the work area by the Contractor. All containers must be labeled with chemical name and hazard information.

Examples, but not a complete list, of chemicals requiring “MATERIAL SAFETY DATA SHEETS”: Painting materials, drywall compounds, concrete hardener, caulking, ceramic tile bedding, vinyl tile adhesive, cleaning compounds, etc.

CONTRACTOR SIGNATURE

DATE

Exhibit A

CONSTRUCTION/INDEMNIFICATION AND INSURANCE SPECIFICATIONS FOR BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT, STATELINE, DOUGLAS COUNTY, NEVADA

INTRODUCTION

NTCD has established specific indemnification, insurance, and safety requirements for public works construction contracts to help assure that reasonable insurance coverage is purchased and safe working conditions are maintained. Indemnification and hold harmless clauses are intended to assure that CONTRACTOR accepts and is able to pay for the loss or liability related to its activities.

BIDDERS' ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW. IT IS HIGHLY RECOMMENDED THAT BIDDERS CONFER WITH THEIR RESPECTIVE INSURANCE CARRIERS OR BROKERS TO DETERMINE IN ADVANCE OF BID SUBMISSION THE AVAILABILITY OF INSURANCE CERTIFICATES AND ENDORSEMENTS AS PRESCRIBED AND PROVIDED HEREIN. IF ANY APPARENT LOW BIDDER FAILS TO COMPLY STRICTLY WITH THE INSURANCE REQUIREMENTS, THAT BIDDER MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

INDEMNIFICATION AGREEMENT

CONTRACTOR agrees to hold harmless, indemnify, and defend NTCD, its officers, agents, employees, and volunteers from any loss or liability, financial or otherwise resulting from any claim, demand, suit, action, or cause of action based on bodily injury including death or property damage, including damage to CONTRACTOR'S property or injury to CONTRACTOR'S employee, caused by any action, either direct or passive, the omission, failure to act, or negligence on the part of CONTRACTOR, its employees, agents, representatives, or Subcontractors arising out of the performance of work under this Agreement by CONTRACTOR, or by others under the direction or supervision of CONTRACTOR.

CONTRACTOR must either defend NTCD or, upon determination that the work performed by CONTRACTOR was negligent in any manner or that CONTRACTOR failed to perform any duty set forth in this Agreement, pay NTCD'S costs related to the investigation and defense of any claim, demand, action, or cause of action.

If NTCD's personnel are involved in defending such actions, CONTRACTOR shall reimburse NTCD for the time spent by such personnel at the actual cost incurred by NTCD for such services.

In determining the nature of the claim against NTCD, the incident underlying the claim shall determine the nature of the claim, notwithstanding the form of the allegations against NTCD.

GENERAL REQUIREMENTS

CONTRACTOR shall purchase Industrial Insurance, General Liability, Automobile Liability, Property Insurance and Professional Insurance as described below. The cost of such insurance shall be included in the CONTRACTOR'S bid.

INDUSTRIAL INSURANCE

It is understood and agreed that there shall be no Industrial Insurance coverage provided for CONTRACTOR or any Subcontractor by NTCD. CONTRACTOR agrees, as a precondition to the performance of any work under this Agreement and as a precondition to any obligation of the NTCD to make any payment under this Agreement to provide NTCD with a certificate issued by an insurer in accordance with NRS 616B.627 and with certificates of an insurer showing coverage pursuant to NRS 617.210 for CONTRACTOR and all subcontractors.

If CONTRACTOR or Subcontractor is unlicensed and is a sole proprietor, coverage for the sole proprietor must be purchased and evidence of coverage must appear on the Certificate of Insurance. Such requirement may be waived for a sole proprietor who does not use the services of any employees, subcontractors, or independent contractors and completes an Affirmation of Compliance pursuant to NRS 616B.627(2).

It is further understood and agreed by and between NTCD and CONTRACTOR that CONTRACTOR shall procure, pay for, and maintain the above mentioned industrial insurance coverage at CONTRACTOR'S sole cost and expense.

Should CONTRACTOR be self-funded for Industrial Insurance, CONTRACTOR shall so notify NTCD in writing prior to the signing of this Agreement. NTCD reserves the right to approve said retentions, and may request additional documentation, financial or otherwise, for review prior to the signing of this Agreement.

MINIMUM LIMITS OF INSURANCE

CONTRACTOR shall maintain limits no less than:

1. General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, the general aggregate limit shall be increased to equal twice the required occurrence limit or revised to apply separately to each project or location.
2. Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury and property damage covering "Any Auto". No aggregate limits may apply.
3. Professional Errors and Omissions as required by Risk Manager, \$0.

The General Contractor shall provide, at its sole cost and expense, maintaining during the entire term of this Agreement, a policy of commercial general liability insurance naming BEACH CLUB DEVELOPMENT, LLC, TAHOE BEACH CLUB, and NEVADA TAHOE CONSERVATION DISTRICT as an additional insured covering the premises (including the land, equipment, controls and other facilities) insuring against the risks of death, bodily injury, property damage and personal injury liability arising out of or in connection with the use of the roads on the Premises, including roads used for traffic diversion purposes in connection with the Project, for the purposes authorized by this Agreement. Such insurance shall provide not less than the following limits: One Million Dollars (\$1,000,000.00) with respect to bodily injury or death to any one person; Two Million Dollars (\$2,000,000.00) with respect to bodily injury or death arising out of any one (1) occurrence; and One Million Dollars (\$1,000,000.00) with respect to property damage or other loss arising out of any one (1) occurrence. The insurance required under this Agreement shall (a) be issued by insurance companies authorized to do business in the State of Nevada, with classification of at least A and a financial rating of XI or better as rated in the most current issue of "Best's Key Rating Guide," and (b) contain an endorsement requiring thirty (30) days' written notice from the insurance company to all additional insureds before cancellation or change in the coverage, scope, or amount of the policy.

DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions must be declared to and approved by the NTCD. NTCD reserves the right to request additional documentation, financial or otherwise, prior to giving its approval of the deductibles and self-insured retention and prior to executing the underlying agreement. Any changes to the deductibles or self-insured retentions made during the term of this Agreement or during the term of any policy, must be approved by the NTCD prior to the change taking effect.

OTHER INSURANCE PROVISIONS

The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverages

- a. NTCD, its officers, agents, employees, and volunteers are to be included as insureds as respects damages and defense arising from: activities performed by or on behalf of CONTRACTOR, including the insured's general supervision of CONTRACTOR; products and completed operations of CONTRACTOR; premises owned, occupied, or used by CONTRACTOR; or automobiles owned, leased, hired, or borrowed by the CONTRACTOR. The coverage shall contain no special limitations on the scope of protection afforded to the additional insureds nor shall the rights of the additional insureds be affected by the insured's duties after an accident or loss.
- b. CONTRACTOR'S insurance coverage shall be primary insurance as respects NTCD, its officers, agents, employees, and volunteers. Any insurance or self-insurance maintained by NTCD, its officers, employees, or volunteers shall be excess of CONTRACTOR'S insurance and shall not contribute with it in any way.
- c. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to NTCD, its officers, agents, employees, or volunteers.
- d. CONTRACTOR'S insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- e. CONTRACTOR'S insurance shall issue a Waiver of Subrogation endorsement.

2. Property Coverages

CONTRACTOR shall provide builders risk insurance on an "All Risk" basis on a policy form satisfactory to NTCD. The limit of coverage will be the amount necessary to cover the bid value of any structures in the Contract or other value determined by NTCD. CONTRACTOR shall provide boiler and machinery insurance coverage or other forms of property insurance as appropriate for the project. If the project is in a flood plain, NTCD reserves the right to require flood coverage at CONTRACTOR'S expense. Losses paid under any property insurance policy or policies shall be paid directly to NTCD by the insurer(s).

3. All Coverages

Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled, or non-renewed by either CONTRACTOR or by the insurer, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to NTCD except for nonpayment of premium.

ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers with a Best's rating of no less than A-: VII. NTCD, with the approval of the Risk Manager, may accept coverage with carriers having lower Best's ratings upon review of financial information concerning CONTRACTOR and insurance carrier. NTCD reserves the right to require that CONTRACTOR'S insurer be a licensed and admitted insurer in the State of Nevada, or on the Insurance Commissioner's approved but not admitted list.

VERIFICATION OF COVERAGE

CONTRACTOR shall furnish NTCD with certificates of insurance and with original endorsements affecting coverage required by this exhibit. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be addressed to the NTCD and be received and approved by NTCD before work commences. NTCD reserves the right to require complete certified copies of all required insurance policies at any time.

SUBCONTRACTORS

CONTRACTOR shall include all Subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each Subcontractor. All coverages for Subcontractors shall be subject to all of the requirements stated herein.

MISCELLANEOUS CONDITIONS

1. CONTRACTOR shall be responsible for and remedy all damage or loss to any property, including property of NTCD, caused in whole or in part by CONTRACTOR, any Subcontractor, or anyone employed, directed, or supervised by CONTRACTOR.
2. Nothing herein contained shall be construed as limiting in any way the extent to which CONTRACTOR may be held responsible for payment of damages to persons or property resulting from its operations or the operations of any Subcontractors under it.
3. In addition to any other remedies NTCD may have if CONTRACTOR fails to provide or maintain any insurance policies or policy endorsements to the extent and within the time herein required, NTCD may, at its sole option:
 - a. Purchase such insurance to cover any risk for which NTCD may be liable through the operations of CONTRACTOR under this Agreement and deduct or retain the amount of the premiums for such insurance from any sums due under the Agreement;
 - b. Order CONTRACTOR to stop work under this Agreement and/or withhold any payments which become due CONTRACTOR here under until CONTRACTOR demonstrates compliance with the requirements hereof; or,
 - c. Terminate the Agreement.

SAFETY PROGRAM

CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work.

CONTRACTOR shall take all necessary precautions for the safety of, and shall provide all necessary protection to prevent damage, injury, or loss to:

1. All employees on the work site and all other persons who may be affected thereby.
2. All the work, materials, and equipment to be incorporated therein, whether in storage on or off the site.
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

CONTRACTOR shall comply with all applicable laws, ordinances, rules, regulations, and others of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by existing conditions and progress on the work, all necessary safeguards for safety and protection, including posting danger signs, other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent utilities. CONTRACTOR shall comply with OSHA'S Hazard Communication Standards.

CONTRACTOR shall designate a responsible member of its organization at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR'S superintendent unless otherwise designated in writing by CONTRACTOR to the Owner and the Engineer.

Exhibit B

2024 PREVAILING WAGE RATES For DOUGLAS COUNTY

**Shall be
Obtained at**

<https://labor.nv.gov/uploadedFiles/labornvgov/content/PrevailingWage/Northern%20Nevada%20Rural%20Region%2009.18.2024.pdf>

By Contractor for utilization

Hard copies or questions call the Nevada Labor Commission @ 775-687-6409

DATE OF DETERMINATION: October 1, 2023

**APPLICABLE FOR PUBLIC WORKS PROJECTS BID/AWARDED OCTOBER 1, 2023
THROUGH SEPTEMBER 30, 2024***

*Pursuant to NAC 338.040(3), "After a contract has been awarded, the prevailing rates of wages in effect at the time of the opening of bids remain in effect for the duration of the project."

As Amendments/Addenda are made to the wage rates, such will be posted to sites of the respective counties. Please review regularly for any amendments posted or contact our offices directly for further assistance with any amendments to the rates.

Exhibit C

SPECIAL TECHNICAL PROVISIONS

SPECIAL TECHNICAL PROVISIONS

FOR

BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT

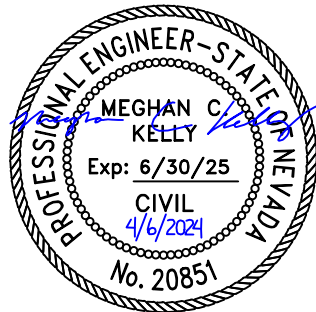
NEVADA TAHOE CONSERVATION DISTRICT

DOUGLAS COUNTY, NEVADA

FOR USE WITH:

Standard Specifications, as referred to in these Special Technical Provisions, are the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14),” current edition. These Special Technical Provisions are supplemental to the Standard Specifications.

PREPARED BY:



Nevada Tahoe Conservation District
400 Dorla Court
Box 915
Zephyr Cove, NV 89448

Meghan Kelly, P.E.
NV P.E. #: 20851

Date: April 2024

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SECTION 100 – GENERAL

101.01 Description

The work described herein shall conform to the Contract Documents, Project Plans, Standard Specifications, these Special Technical Provisions, and Project Permits. Standard Specifications, as referred to in these Special Technical Provisions, are the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14)

<https://highways.dot.gov/sites/fhwa.dot.gov/files/docs/federal-lands/specs/12851/fp14.pdf>.

These Special Technical Provisions are supplemental to the Standard Specifications. In case of conflict between the Standard Specifications and these Special Technical Provisions, the Special Technical Provisions shall govern, take precedence over, and be used in lieu of such conflicting portions.

SECTION 102 – CONTRACTOR QUALIFICATIONS

102.01 Description

In addition to any bidder qualifications noted elsewhere in the Contract Documents, Project Plans, Standard Specifications, and these Special Technical Provisions, each bidder shall attach sufficient documentation to the bid forms to clearly demonstrate his/her ability to meet the minimum experience qualifications stated in this section. The following items shall be included in the bid submittal:

1. Project descriptions of similar projects to the Burke Creek Rabe Meadow Riparian Restoration Project, including:
 - a. Location of project
 - b. Dates project was initiated and completed by the Contractor
 - c. Description of size of restoration
 - d. Total contract costs
 - e. Client/agency contact in responsible charge (owner of the work)
2. Other references demonstrating Contractor qualifications on similar projects. These references shall only include regulatory, funding and/or local agency representatives or licensed Professional Engineers working on similar projects within the Lake Tahoe Basin.
3. Contractor's license number, classification, & status.

The above items shall clearly demonstrate the Contractor's qualifications to perform the work associated with the Burke Creek Rabe Meadow Riparian Restoration Project and past similar experience on other projects. The experience to be demonstrated above is required to meet the following minimum requirements:

- A. The Contractor and his/her designated Foreman is required to have successfully performed a minimum of two (2) projects, within the past ten (10) years, which included work components of a similar scope and nature (within a US Army Corps of Engineer regulated wetland area or a TRPA Stream Environment Zone) as to that which is indicated herein consisting of minimum project total costs of \$1,000,000 and contract times exceeding 15 days.
- B. The Contractor is required to have successfully performed and completed a minimum of one (1) project, within the past five (5) years, which required dewatering or diversion components similar in scope and nature as to that which is indicated herein.

Failure of the Contractor to submit the information required or to demonstrate experience as required in this section shall warrant the Contractor's bid submittal incomplete. The determination of whether the Contractor meets the qualifications is at the sole discretion of the Nevada Tahoe Conservation District.

102.02 Measurement and Payment

There will be no compensation for providing required bid documents and support materials for a complete bid package for this project. Incomplete bid packages or bid packages received after the submittal deadline will not be considered.

SECTION 110 – ORDER OF WORK

110.01 Description

The construction of this project shall conform to the Contract Documents, Plans, Standard Specifications, and these Special Technical Provisions. Prior to commencing work, the Contractor shall submit to the Engineer a sequence and schedule of work for review and acceptance in accordance with the Standard Specifications and these Special Technical Provisions. The schedule shall include all work necessary for a full and complete project as shown on the 100% Design Plans and described in these Special Technical Provisions.

The project requires coordination with several different public entities (US Forest Service, Lake Tahoe Basin Management Unit, the Nevada Division of Environmental Protection (NDEP), the Nevada Tahoe Conservation District, and the Tahoe Regional Planning Agency). The Nevada Tahoe Conservation District will assist the contractor in coordinating with all entities, public and private. The Contractor shall be solely responsible for coordinating with all contractors working in the area whether listed in these Special Technical Provisions or not. Contractors working in the area may include, but are not limited to, utility contractors and general contractors at the Tahoe Beach Club, utility contractors and general contractors at Kahle Drive for the Kahle Drive Complete Street Project. The Contractor must also coordinate with the concessionaire at Nevada Beach when using the access through the Nevada Beach Campground and the Tahoe Beach Club when using the access through the Tahoe Beach Club. The contractor must also coordinate with the Douglas County Lake Tahoe Sewer Authority to maintain access to the Sewer Pump Station at Nevada Beach for the duration of construction. Pertinent contacts will be provided by NTCD prior to construction.

The order of work shall be as follows:

1. Verification of all underground utilities within the project area.
2. Coordination with NTCD for wildlife surveys and tree removal.
3. Securing staging areas and installation of all necessary temporary erosion control measures.
4. Construction of all temporary erosion control measures as shown on the project plans and as approved by the Engineer and NDEP.
5. Installation of Temporary Traffic Control Measures, if necessary.
6. Coordination with NTCD and USFS for fish rescue and fish exclusion net installation.
7. Site clearing and grubbing and tree removal.
8. Installation of all dewatering/diversion elements as necessary.
9. Construction of project as shown on the project plans beginning with Action 1 and proceeding with the construction of Actions as shown on sheet C1.0 and as described in these Special Technical Provisions. If the Contractor wants to alter the sequence for construction shown on C1.0, he/she must obtain approval from the Engineer.

10. Restoration of entire project site:
 - a. Restoration/revegetation of all disturbed areas.
 - b. Removal of all dewatering equipment.
 - c. Road sweeping.
 - d. Restoration of staging, access, and dewatering areas as needed.
 - e. Removal of temporary BMPs with approval of Engineer.
11. Pre-Final site walk with the Engineer, Contractor, US Forest Service, TRPA, and NDEP.
 - a. Development of project punchlist (by Engineer).
12. Completion of punchlist items.
13. Final site walk with Engineer and Contractor.

The Contractor may submit a revised order of work to the Engineer for review and approval. In the event the Engineer does not accept the Contractor's proposed order of work, the above order of work shall hold for the contract.

The Contractor will be responsible for meeting all the requirements of all the regulations and requirements set forth by the US Forest Service, NDEP, and TRPA. In the event fines are levied by any of these agencies, the Contractor shall be solely responsible for all costs associated with these fines. In the event the project receives a stop work order by any entity, the Contractor will not be granted any additional working days. The working days during which no work is performed will be counted as contract working days, even though the Contractor is unable to work due to the stop work order.

The Contractor shall submit a construction schedule in accordance with the provisions of this section, these Special Technical Provisions and the Standard Specifications for review and approval by the Engineer.

110.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with all work involved in provisions of this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; no additional compensation will be allowed.

SECTION 120 – PROJECT PERMITS

120.01 Description

This project is located within Douglas County, Nevada and the Lake Tahoe Basin and is on US Forest Service, LTBMU lands and private property associated with the Tahoe Beach Club. The lands are regulated by the US Forest Service, the Tahoe Regional Planning Agency (TRPA), Douglas County, and NDEP. Furthermore, the project is constructing improvements in a US Army Corps of Engineers jurisdictional wetland, which requires the issuance of a nationwide permit from the US Army Corps of Engineers.

The plans and specifications outline the expected permit requirements as their development occurred under agency review. The contractor will be responsible for all permit requirements upon receipt of the permits for the project and no additional compensation shall be allowed for. The project permit(s) will have specific requirements covering work to be performed under this contract. The Contractor shall meet the permit(s) requirements for grading season restrictions, stormwater discharges, Best

Management Practices (BMPs), selection of staging and storage areas, dewatering and diversion practices, revegetation and restoration requirements, and all other agency approval conditions. The Contractor shall note that the project is located in sensitive lands (TRPA Stream Environment Zone and US Army Corp of Engineers Wetlands) and thus require special care during construction. The contractor shall also take special note of the US Forest Service Resource Protection Measures document located in Appendix B of these Special Technical Provisions.

The Contractor shall maintain a copy of all permit(s) at the construction site and shall make the permit(s) available to operating personnel during construction activities; also upon request these permit(s) must be made available for public inspection. NTCD will provide all permits to the Contractor.

The Contractor shall maintain a set of stamped plans and special provisions at the construction site and shall make them available to operating personnel during construction activities; also upon request, plans and special provisions must be made available for public inspection.

It shall be the Contractor's responsibility to completely inform him or herself of the conditions of all Project Permit(s) and conduct construction operations accordingly. Any requested change to an agency's permit conditions of approval, proposed by the Contractor, shall be submitted to the Engineer for transmittal to USACE, NDEP, or USFS, or other agency for their approval. The Contractor shall also be responsible for adhering to the requirements of the project permits relating to this project. Should conflicts arise between the Standard Specifications and the project permits, the project permits shall supersede the Standard Specifications.

The **Contractor is responsible for coordinating the pre-construction meeting with NTCD, USFS, TRPA and NDEP** to allow for review of the project site and determination of the adequacy of temporary erosion control measures and BMPs deployed by the Contractor. The Contractor shall follow the requests of the reviewing environmental agencies as necessary to bring the construction site temporary erosion control devices and BMPs into compliance with the permit(s) requirements, regulations, and other provisions of these Special Technical Provisions, and the Project Permits. The Contractor shall maintain all temporary erosion control devices and BMPs until all work is complete and the project site is stabilized per acceptance of the Engineer and all relevant agencies in review of the project site at the "Final Walk Through". The Contractor can remove temporary erosion control devices and BMPs only upon approval by the Engineer, NDEP, TRPA, and the USFS to do such. Attention is directed to the revegetation requirements found elsewhere in these Special Technical Provisions.

The Contractor shall comply with all noxious weed requirements per the United States Forest Service (USFS) and other regulatory agencies. These requirements include but are not limited to the following:

- All areas in the Project area will be surveyed for weeds and treated prior to ground-breaking by USFS crews. The Contractor must schedule a walk through to go over the weed-infested areas and prepare a plan for avoidance or washing equipment and tools prior to beginning work.
- All tools, equipment and vehicles used for project implementation are required to be weed-free.
- All tools, equipment and vehicles will be cleaned of all attached mud, dirt, and plant parts. This will be done at a vehicle washing station or steam cleaning facility (power or high pressure cleaning) before the equipment and vehicles enter the project area, and before vehicles enter the Lake Tahoe Basin (if they originate from outside the Basin).
- All soil, fill, gravel, rock, mulch, seed, organic matter or other imported materials are required to be weed-free. Use onsite soils, gravel, rock, or organic matter when possible. Otherwise, obtain materials from pits, quarries, nurseries, and other sources that are certified or have been

determined to be weed-free by the noxious weed coordinator of the USFS Lake Tahoe Basin Management Unit.

- Minimize the amount of ground and vegetation disturbance in the construction areas. Reestablish vegetation on all disturbed bare ground to minimize weed establishment and infestation.
- Use weed-free mulches, and seed sources. Salvage topsoil from project area for use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent non-native such as *Phleum pretense* (cultivated timothy), *Dactylis glomerata* (orchard grass), or *Lolium* spp. (ryegrass) will not be used. This requirement is consistent with the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining “the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems.” Seed mixes will be provided by NTCD.
- Staging areas for equipment, materials, or crews shall not be sited in weed infested areas. See Biological Evaluation of Botanical Species Figure “Invasive Plant Occurrences” for additional information.

The project is located within a sensitive land capability class area (1b SEZ) as classified by the TRPA. Therefore, the Contractor will be required to use extreme caution in all activities associated with the project. The Contractor will be required to meet all of the requirements shown on the Plans, as described in the Project Permit(s) and these Special Technical Provisions. The Contractor is restricted from parking equipment, and storing materials within the Project limits, except as shown on the Plans or as directed by the Engineer. Soil and other materials shall not be stored, stockpiled, or otherwise placed within areas or on a surface that is not designated for such treatment on the drawings. Refueling of equipment will not be allowed within the floodplain project work areas or other SEZ areas.

The Contractor is further required to only use “low impact equipment” for this project. No equipment having a ground pressure that will disturb and/or compact the ground (generally ground pressures less than 25 psi) will be allowed off paved areas or designated existing trails under any circumstance. All equipment on the project site, (off paved areas or designated truck haul routes), shall meet this low pressure requirement. TRPA prefers the use of “rubber track” equipment as low impact equipment and the Contractor is encouraged to use “rubber track” equipment in sensitive land capability areas. The Contractor shall provide detailed information, (manufacturer’s data brochure, or other product specific materials), to the Engineer for review and acceptance prior to any equipment being mobilized to the project site and placed in the work.

The Contractor shall meet all of the requirements of the project permits as issued by the permitting agencies, and any provisions for rights-of-entries issued by the US Forest Service or the Tahoe Beach Club. The following project permits and agreements may be found as appendices to the Contract Documents:

- US Army Corp of Engineers – *NWP#27*
- US Army Corp of Engineers – 404
- Nevada Division of Environmental Protection – 401
- Categorical Exclusion from US Forest Service and associated Resource Protection Measures

- Tahoe Beach Club Right of Entry and Memorandum of Understanding

120.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SECTION 130 – MOBILIZATION & DEMOBILIZATION

130.01 Mobilization

This item shall consist of mobilization of the Contractor's forces which shall include obtaining all bonds, insurance, and permits; purchasing, transportation, setup, staging and storage of equipment and materials; establishing a field office at the project site; plus furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work as shown on the Project Plans, and specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer. Mobilization shall also include but not be limited to the following items:

- Provide on-site sanitary facilities;
- Post all Occupational Safety and Health Administration (OSHA) required notices;
- Post all prevailing wage requirements;
- Prepare and transmit all submittals as noted on the Plans, and as specified in the Contract Documents, Standard Specifications, and these Special Technical Provisions;
- Wash and clean all tools and equipment prior bringing on site, as specified in the Project Permits, Contract Documents, Standard Specifications, these Special Technical Provisions, and as required by the US Forest Service.

130.02 Demobilization

Demobilization shall consist of the removal of all materials, equipment, signage, temporary pollution control materials, trash, debris, and all other items imported to or generated on-site as a result of the work completed by the Contractor and his/her operations. Furthermore, demobilization shall include cleaning the existing drainage inlets, pipes, and culverts within the project boundary that were affected by any of the contractor's activities. Furthermore, demobilization shall include repairing all pavements, walkways, infrastructure, signage, landscape, trails, or other public or private facilities damaged by construction activities to their pre-construction conditions using comparable materials as accepted and directed by the Engineer. All disturbed areas shall be returned, as nearly as possible, to the lines and grades which existed prior to construction except where modified as part of the work so designated on the Plans. Attention is directed to Appendix B Resource Protection Measures.

At the conclusion of work, final acceptance of the Project improvements must be in the form of a written "Notice of Completion."

130.03 Project Sign

Mobilization shall include erection of one project sign to be provided by NTCD. The project sign shall be constructed in accordance with details provided within the Project Plans, and located as directed by the Engineer. The project sign shall be erected within five (5) working days of initial mobilization. Maintenance of the project sign is the Contractor's responsibility until the sign is removed by the Contractor at the end of the construction contract. For this project, one (1) project sign will be erected.

130.04 Record Drawings

The Contractor shall keep accurate records on a set of project black line prints (22 inches x 34 inches) of all additions and deletions to the work and of all changes in location, elevation, and character of the work not otherwise shown or noted on the Project Plans. NTCD will furnish up to six (6) sets of full size black line prints for use at no cost to the Contractor.

Record drawings plans shall be provided to the Engineer for acceptance within one (1) calendar month after project completion as defined by the Engineer. Release of retention monies will not occur prior to submittal and acceptance of the final record drawings, which shall be a comprehensive set of Record Drawings detailing all aspects of the Project. Two (2) sets of full sized (22x34) hard copy record drawings shall be provided with changes to the original Contract work shown in red color, including revision clouds. All redline changes and details to be shown on the record drawings shall include, but not be limited to, difference in quantities of the original plans vs. actual installation (as appropriate), modifications to the location and elevations of public utility and storm drainage facilities, any utility relocations, any signage or traffic control devices, and any other modifications, additions or adjustments to any other facilities not shown or as modified on the Project Plans.

Record drawings plans shall be signed and dated by the Contractor or the sub-contractor that actually constructed the facility. In addition, company names of the Contractor and sub-contractors shall be added to the Title Sheet of the record drawings. Should the Contractor not provide this information to the Engineer in the time specified in this section, or to the acceptance of the Engineer (record drawings do not note all changes to the project) the Engineer will not accept the record drawings, retention shall not be released on the project, the record plans will be returned to the Contractor and the Contractor shall resubmit the record drawings to meet the requirements of this section to the acceptance of the Engineer.

130.05 Measurement and Payment

"Mobilization and Demobilization," as described above shall be considered one bid item. Erection of project sign, as described above shall be considered as included with Mobilization and Demobilization and no additional compensation shall be allowed for. Record Drawings, as described above shall be considered as included with Mobilization and Demobilization and no additional compensation shall be allowed for. Mobilization and Demobilization shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for Mobilization and Demobilization shall include full compensation for mobilizing the Contractor's forces which shall include but not be limited to: bonds, insurance, permits, record drawings, purchasing, transporting equipment, setup, temporary power source and installation, project signs, establishment of a field office, sanitation facilities, and furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work; including full compensation for operations required to demobilize the Contractor's forces which shall include but not be limited to: the removal of all equipment, materials, debris, project signs, field office, sanitation

facilities, temporary BMPs, tree protection fencing, and project clean-up; for the contract lump sum price bid, as shown on the Plans, in accordance with the Contract Documents, Standard Specifications, these Special Technical Provisions, project permit(s), and to the satisfaction of the Engineer.

Partial payments paid for Mobilization and Demobilization shall be made as follows:

- When 5% of the total original contract amount is earned from other bid items, 50% of the amount bid for mobilization/demobilization will be paid.
- When 10% of the total original contract amount is earned from other bid items, 100% of the amount bid for mobilization will be paid.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 140 – STAGING AND STORAGE

140.01 Staging and Storage Areas

The staging and storage areas as identified on the Project Plans are allowed for use by the Contractor in accordance with the Contract Documents, Project Permit(s), Standard Specifications, and these Special Technical Provisions. These staging/storage areas are owned by the US Forest Service and are considered public lands and shall be maintained at all times in a clean and safe environment, including any provisions for rights-of-entries issued by the US Forest Service or US Department of Agriculture. The Contractor's use of the designated staging/storage areas shall be limited to and/or controlled by the restrictions as noted on the Project Plans, Project Permits, and elsewhere in these Special Technical Provisions.

If the Contractor wishes to make use of additional areas, for staging/storage activities, not identified on the Plans, it will be the Contractor's sole responsibility to secure use of these areas with agreements with the individual property owners; and file a copy of said authorization with the Engineer. The Contractor shall further be responsible for establishing all necessary and required temporary erosion control protections. The Contractor will be responsible for bearing all costs with securing these areas, and all efforts associated with the approvals, setup, maintenance, decommissioning and restoration, with no additional compensation allowed for. The Contractor shall be responsible for appropriate security and safety measures at all staging/storage areas to protect property and the public.

Set-up, use, and restoration of all staging/storage areas requires the Contractor to protect all existing facilities, equipment, vegetation, and surface features (such as, but not limited to, fences, posts, signs, boulders, landscaping, slopes, etc.) in place. Special care will need to be given to some cultural sites that will be flagged in the field prior to construction. Should the Contractor's operations damage any of these items the Contractor shall replace, in kind, the damaged or destroyed item. The damage or destruction of any item will be determined by the Engineer during the course of construction or at the final punchlist development. In the event the Contractor needs to relocate any item (boulder, fence, etc.) the Contractor shall replace the item to its original location. If the relocated item is damaged, as determined by the Engineer, the Contractor will be required to replace the damaged item with an in-kind replacement. No additional compensation will be allowed for any relocation, or replacement of damaged items, this will be at the sole cost to the Contractor.

The Contractor shall not proceed with any construction until truck haul routes and temporary haul roads have been identified and accepted to the satisfaction of the Engineer, NTCD and the US Forest Service. **The Contractor shall submit a electronic and hard copy of a proposed truck haul route plan, along with the proposed project construction schedule and traffic control plan, to the Engineer for review and acceptance at least seven (7) calendar days prior to the scheduled Pre-Construction Meeting.** Any days lost due to the lack of an accepted truck haul plan will be charged against the Contractor's allowable work days. The Contractor's truck haul route plan shall include, but not be limited to, the following:

- Proposed construction zone;
- Proposed storage areas;
- Location of flaggers (to control truck access, where applicable);
- Construction phasing (including phasing of intersection construction and detours, if any); and,
- Proposed truck route (including the location of other construction projects which impact, or may be impacted by, the proposed haul route.)

All staging/storage areas shall comply with the US Forest Service's and TRPA's requirements for BMPs while storing or stockpiling materials. The Contractor shall be responsible for locating staging/storage areas and will need to install all temporary erosion controls and BMPs and maintain them at all times during construction and until project closeout. The limits of the staging/storage areas shall be reviewed and accepted by the Engineer, NTCD, and the US Forest Service prior to use.

At the completion of the work or when no longer required for use, all construction staging/storage areas shall be cleared of all equipment, tools, materials, trash, debris, etc to produce a clean area and returned, as nearly as possible, to the lines and grades which existed prior to construction.

The restored staging/storage areas, if areas exist as an unpaved condition, shall be treated with the final Revegetation Treatment Type as shown on the Plans (if any areas for Staging/Storage are used and not shown on the Revegetation Plans, the Contractor shall treat the area with Revegetation Treatment Type as directed by the Engineer) and as described in these Special Technical Provisions. For storage and staging areas in paved areas, the areas shall be swept clean and returned to the existing condition, prior to use. The Engineer will inspect the paved areas, and if damage has occurred, whether by fault of the contractor's operations or not, the contractor will be required to make remedial action, including complete pavement restoration. No additional compensation shall be allowed for any remedial restoration work of paved areas, including complete replacement of the pavement areas.

140.02 Measurement and Payment

"Staging and Storage Areas" shall be measured on a lump sum basis, accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for "Staging and Storage Areas" shall include set-up of all staging and storage areas and installation of any applicable temporary erosion control measures and BMPs (except where otherwise paid for) and furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work; including full compensation for operations required to remove and dispose of all materials, clean-up, and restore the site to its pre-construction condition, and re-pave and stripe the parking area as shown on Plans; for the contract lump sum price bid, as shown on the Plans, in accordance with the Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and to the satisfaction of the Engineer.

The schedule for payment for Staging and Storage shall be in direct proportion to the percentage of work completed; i.e. if 20% of the project is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for Staging and Storage. Measurement of the percentage of work completed shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for any of the Staging, Storage and Access bid items. The Engineer reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 145 – SUBMITTALS

145.01 General

Where required by the Contract Documents, project permit(s), Project Plans, Standard Specifications, elsewhere in these Special Technical Provisions, and/or as indicted herein, the Contractor shall provide submittals, and furnish shop drawings and material certifications to the Engineer for review and acceptance. The required number of submittals, shop drawings and certificates shall be delivered within the specified time frames, including a transmittal letter in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions. The transmittal letter at a minimum shall include the following information:

- A. Submittal number and item description
- B. Scheduled date of submittal
- C. Specification section/item number
- D. Supplier and/or manufacturer, plus contact information
- E. Contractor or sub-contractor name and point of contact information

Submittals may be submitted electronically or as a hard copy. Electronic submittals are preferred.

145.02 Submittals Required

The following items require a submittal, shop drawing, and/or material certification for review and acceptance by the Engineer (this list may not be complete; it is the Contractors responsibility to review and be knowledgeable with all portions of the project permits, Plans, Contract Documents, Standard Specifications, and these Special Technical Provisions for any additional requirements):

- Construction Schedule
- Traffic Control Plan, and Truck Haul Routes
- Equipment list for all equipment to be used, including the following minimum information:
 - Manufacturer and Model
 - Ground pressure rating (in psi)
 - Certification for washing/steam cleaning, including date
- Filter fence, sediment coir logs, and other BMP materials
- Construction limit fence
- Engineered fabrics
- Aggregates and rock used in the work

- Aggregate base (AB), imported fill, engineered fill, and bedding materials
- Material testing reports and other data necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for use of any native soils, imported soils and aggregates requiring density testing
- Weed-free certification certificates for any imported materials to be used in the project
- Asphalt mix design and other bituminous materials used in the work (if applicable, see section 140 of these Special Provisions).
- Loose aggregate samples as specified in Section 200 “Gravel, Cobble, Rock, Boulder & Other Aggregates”
- Revegetation items as specified in Section 260 “Revegetation”
- Record Drawings

Engineer will review all submittals within seven (7) days of receipt.

145.03 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SECTION 150 – PEDESTRIAN DETOURS, ESCORTS, AND SIGNAGE

150.01 Plan

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to complete and maintain pedestrian movements and detours in accordance with the Plans, Contract Documents, Standard Specifications and these Special Technical Provisions, and as directed by the Engineer during the life of the Contract. All plans shall conform to the latest editions of the Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14).

The Contractor shall submit a proposed pedestrian detour, escort, and signage plan, along with the proposed project construction schedule and staging area plan, to the Engineer for review and comments at least seven (7) calendar days prior to the scheduled Pre-Construction Meeting.

- The Contractor's pedestrian detours, escorts and signage plans shall include, but not be limited to, the following:
 - Designated construction site pedestrian detour supervisor name and contact information
 - Proposed construction zone and existing speed limits
 - All construction signage and locations
 - Construction phasing (including proposed trail closures and detours)
 - Special events scheduling
 - Detours
 - Accommodations for pedestrians and bicycles
 - Equipment conflict reduction strategies
 - Intersection control strategy

The Engineer and US Forest Service personnel will provide written comments and/or corrections to the pedestrian detour, escort, and signage plan. If necessary, the Contractor and Engineer will meet to consider the comments and/or corrections to the plan prior to the preconstruction conference to resolve any issue relative to the plan. Upon resolution of all issues or acceptance of the plan as submitted, the Engineer shall accept the plan in writing.

Acceptance by the Engineer of the submitted pedestrian detour, escort, and signage plan shall in no way relieve the Contractor of the responsibility for safety requirements. Acceptance of the pedestrian detour, escort, and signage plan by the Engineer indicates that the plans generally appear to conform to the contract requirements. Such acceptance shall in no way be construed as confirmation of the technical accuracy or adequacy of the contents of the plans and shall not relieve the Contractor of the obligation to institute pedestrian safety measures in full compliance with contract requirements, and which function safely and correctly, and are in conformance with applicable statutes, ordinances, and regulations. If during construction, revisions to the accepted plans are necessary for safety or accommodation to traffic, the Engineer may require such revisions.

150.02 Measurement and Payment

“Pedestrian Detour, Escort, and Signage” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for “Pedestrian Detour, Escort, and Signage” shall include full compensation for preparation and submittal of a Pedestrian Detour, Escort, and Signage plan, and for furnishing all labor, materials, tools, equipment, and incidentals to perform all the work involved in provisions of this section, including but not limited to temporary construction signs, flagging, flasher units, barricades, lights, and electrical power and all incidentals and materials necessary to provide these items for the duration of construction.

The schedule for payment for “Pedestrian Detour, Escort, and Signage” shall be in direct proportion to the percentage of work completed; i.e. if 20% of the project is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for Pedestrian Detour, Escort, and Signage. Measurement of the percentage of work completed per each phase shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for any of the Pedestrian Detour, Escort, and Signage bid items. The Engineer reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 155 – CONSTRUCTION STAKING

155.01 Description

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to complete construction staking in accordance with the Standard Plans and Specifications and these Special Technical Provisions.

NTCD shall furnish one set of stakes and/or marks to establish lines and grades required for the completion of the work as shown on the Plans and as specified in the Standard Specifications and these Special Technical Provisions. The Contractor is responsible for notifying the Engineer at least seven (7) days in advance of when staking is needed. The Contractor will be responsible for any and all additional construction staking necessary for the full and complete construction of the Project. The Contractor shall be solely responsible for maintenance and protection of the survey stakes or marks. Contractor's construction staking will be verified by the Engineer, at the Engineer's discretion.

NTCD shall furnish labor and surveying equipment necessary for staking the Project including the following:

- Control points,
- Limits of grading and grade breaks,
- Stream alignments and offsets, and
- In stream structure locations and offsets.

The contractor shall provide any survey in excess of the aforementioned items.

All stakes and survey markers will be conspicuously marked with flagging tape or paint. The Contractor shall inform the Subcontractors and employees of the importance of the preservation of all survey markers. The Contractor shall be responsible for protecting and maintaining all stakes from destruction. In the event that one or more of the stakes are damaged or destroyed, the Contractor will replace the stakes at the expense of the Contractor.

The Contractor's surveyor will be provided with the northing, easting, and elevation of the control points existing in the field as shown on the Project Plans. Additionally, the Contractor's surveyor will be provided with an electronic copy (ASCI Format) of the control points depicted on the Project Plans to develop the construction staking as stated in these Special Technical Provisions.

If the Contractor's surveyor wishes to develop a different work plan it shall be the Contractor's responsibility to develop such a work plan and present to the Project Engineer for approval.

155.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with all work involved in provisions of this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, should be incidental to the other construction items; no additional compensation will be allowed.

SECTION 160 – TEMPORARY EROSION CONTROL

160.01 General

This work shall consist of temporary erosion control measures, devices, and BMPs that may be shown on the Project Plans, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, or as directed by the Engineer during the life of the contract. Temporary erosion control measures will also be required at staging/storage areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and

air pollution within the limits of the project and to minimize damage to the work, adjacent properties and Lake Tahoe, streams, or other bodies of water.

The Contractor shall submit any proposed revisions to the applicable Project Plan sheets for Temporary Erosion Control and the Dewatering and/or Diversion operations. No work shall be started until applicable plan sheets, schedules and methods of operation for temporary pollution control are reviewed and accepted by the Engineer, NTCD, and the USFS. The Contractor is reminded that the project is located within the Lake Tahoe Basin and all pollution control measures and clean-up procedures must satisfy the requirements of TRPA, USFS, NDEP and the permit(s) issued for the project. During the course of project construction, the Contractor shall cooperate with the Engineer, USFS, NDEP, TRPA, and other regulatory officials and take immediate action as directed to protect water bodies and sensitive areas, and provide for erosion or other pollution control.

Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as stated within this section and the National Best Management Practices for Water Quality Management on National Forest System Lands (Volume 1, National Core BMP Technical Guide FS-990a, 2012) and the Resource Protection Measures in Appendix B.

As Directed Placement

Due to the nature of the project and expected field direction from the Engineer, USFS, and permitting agencies, the Contractor shall make provisions to furnish all labor, tools, materials, and equipment as necessary to furnish and place additional temporary erosion control devices in the work (i.e. beyond or in addition to what is designated on the Project Plans) as directed by the Engineer, in conformance with the Contract Documents, Project Permits, Standard Specifications, and these Special Technical Provisions. Installation, maintenance, removal, and disposal of any additional as directed temporary erosion control device shall be considered as included in the applicable “as directed” bid item unit price, and no additional compensation will be allowed. The installation and location of any as directed temporary erosion control device shall only occur as determined and marked in the field by the Engineer.

The intent of the as directed temporary erosion control device bid items, is to provide the Engineer and Contractor with a means and allowance for additional temporary erosion control devices to be incorporated in the work where modifications to the construction sequence, changing field conditions, temporary stockpiles, and other potential minor unknowns can be adequately addressed in order to maintain compliance with the Project permits.

The Contractor will not be compensated for the installation of any additional “as directed” temporary erosion control devices without prior direction and acceptance of the Engineer.

Temporary Soil Stabilization

The Contractor shall install temporary soil stabilization materials for water pollution control in all disturbed work areas that are considered inactive (i.e. excess of 14 days) or before forecast storm events. Should any temporary erosion control of this nature be required elsewhere as directed by the Engineer and/or regulatory agencies, the Contractor shall install within 48 hours of notification. Where applicable and upon acceptance of the Engineer, the Contractor shall furnish and apply/install temporary mulch, temporary hydraulic mulch, temporary erosion control blankets, or temporary covers in conformance with the Standard Specifications and these Special Provisions. Materials and construction methods shall comply with the Standard Specifications and these Special Provisions.

The Contractor shall maintain a temporary cover on all stockpiles at all times. Whenever a temporary cover is removed to perform other work, the temporary cover shall be replaced and secured within one (1) hour of stopping work.

Compensation for the requirements of this section, not otherwise provided for in a specified bid item, shall be considered included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

160.02 Gravel Construction Access

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices.

Work under this item shall consist of clearing and grubbing, excavation, furnishing and placing reinforcement mat, furnishing and placing rock at each entrance/exit access road, maintenance (i.e. removal of large quantities of captured sediment, and/or placement of additional rock during course of construction), removal, disposal of excess materials, and restoration of disturbed area.

Fabric to be used for the reinforcement mat shall be manufactured from polyester, nylon, or polypropylene material, or any combination thereof. Fabric shall be manufactured from virgin, or recycled or a combination of virgin and recycled, polymer materials. No virgin or recycled materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The fabric shall be a non-woven, needle-punched fabric. The fabric shall be permeable, not act as a wicking agent, and shall conform to the following:

Test	Test Method	Requirement
Weight, grams per square meter	D 3776	135 min.
Grab Tensile Strength, Newton, (25 millimeter grip, in each direction)	D 4623	0.40 min.
Elongation at Break, percent	D 4632	30 min.
Toughness, kilonewtons (percent elongation x grab tensile strength)		26 min.
Permittivity, 1/sec.	D 4491	0.5 min.
Ultraviolet Resistance, percent strength retention	D 4355	70 min.

Rocks shall be angular to sub-angular in shape and shall conform to the material quality requirements in Section 200.07, Riprap, of the Standard Specifications for resistance to wear, absorption, apparent specific gravity, and durability. Rocks used for the gravel construction entrance/exit shall conform to the following sizes:

Square Screen Size	Percent Passing
6 inches	100
3 inches	0-20

Each gravel construction entrance/exit shall be of adequate size to prevent the tracking of sediment and materials onto any paved public right-of-way. At a minimum the size of each gravel construction entrance/exit shall be as shown on the Project Plans.

While the gravel construction entrance/exit is in use, pavement shall be cleaned and sediment removed at least once a day and as often as necessary when directed by the Engineer. Soil and sediment or other extraneous material tracked onto existing pavement shall not be allowed to enter any existing or proposed drainage facilities.

In the event the Contractor's operations are causing excessive tracking of materials the Engineer may direct the Contractor to replace the gravel construction entrance/exit, expand the size (area – length and/or width) of the gravel construction entrance/exit, and/or expand the depth of the gravel construction entrance/exit. In the event this is required, the Contractor will not be entitled to any additional payment.

When no longer required as shown on the Project Plans or as determined by the Engineer, each gravel construction entrance/exit shall become the property of the Contractor and be removed and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions. Under no circumstance shall any of the materials used for gravel construction entrance/exit be re-used on the project. All areas disturbed by the placement and use of each gravel construction entrance/exit shall be graded and restored to its pre-existing condition, including any provisions for revegetation found elsewhere in these Special Technical Provisions.

Gravel construction entrance/exit is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

160.03 Construction Limit Fence. Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this BMP as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices.

The Contractor shall perform all construction activities that are outside the road right-of-way within the construction limits (and/or grading limits) as shown on the Project Plans and staked by the Contractor's surveyor, and as delineated with construction limit fence installed by the Contractor. Where directed by the Engineer and/or shown on the plans, construction limit fence shall be placed around individual trees or groups of trees that are to remain, in accordance with the Tree Protection and Construction Limit Fence depicted on the project plans.

The area within which the Contractor will be allowed to conduct his/her construction operations will be the area within the limits of the construction limit fencing and/or grading limits as shown on the Project Plans. Where located within the immediate vicinity of any trees (or dripline), the width of the work area will be reduced in order to protect the trees. The Contractor shall review each such location to determine what equipment can be used to install the improvements at these locations or if hand work will be necessary. The costs associated with working within these reduced widths shall be included in the unit price bid for the applicable item of work with no additional compensation therefore.

Contractor's attention is directed to the applicable bid item descriptions in these Special Technical Provisions regarding the type of equipment that can be used in construction on sensitive land areas.

Where tree protection fencing cannot be placed at the dripline of the tree, as determined by the Engineer in coordination with TRPA, wood batten (as shown on the Project Plans) with bottom set approximately 3 feet above ground surface shall be strapped to the tree trunk (space between wood batten shall be no more than 6"). The unit price bid for construction limit and tree protection fence shall also apply to this condition (i.e. linear foot measurement of tree circumference where wood batten is attached). Construction limit and tree protection fencing shall be inspected daily and repaired, secured, and/or replaced as necessary to maintain and preserve its intended purpose. All construction limit and tree protection fencing shall remain in place during any construction activities unless directed by the Engineer. Tree protection and construction limit fencing is considered a temporary erosion control measure or BMP.

A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

160.04 Filter Fence. Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices.

Filter (silt) fence shall be manufactured from polyester or polypropylene material. The fabric shall be woven and shall conform to the following:

Test	Test Method	Requirement
Grab Tensile Strength, Newton, (25 millimeter grip, in each direction)	4623	400 min.
Elongation at Break, percent	4632	20 min.
Apparent Opening Size, Micrometers (um)	D 4751	850 min.
Coefficient of Permeability, cm/sec.	D 4491	0.01 min.
Ultraviolet Resistance, percent strength retention	D 4355	90 min.

- Filter fence fabric shall be handled and placed in accordance with the manufacturer's recommendations. The fabric shall be aligned and placed in a wrinkle-free manner.
- When joints are necessary, filter fence fabric shall be spliced together only at a support post, with a minimum twelve (12) inches overlap and securely sealed or stitched. See manufacturer's recommendations. Should the filter fence fabric be damaged, the torn or punctured section shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement.
- Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer if less than ten (10) feet and driven securely into the ground (minimum of 1 foot). The posts and fence shall be angled ten (10) degrees off vertical up-slope for stability.
- A trench shall be excavated approximately four (4) inches wide and six (6) inches deep along the line of posts and upslope from the barrier in accordance with manufacturer's recommendations.
- A wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire mesh shall

extend into the trench a minimum of two (2) inches and shall not extend more than three (3) feet above the original ground surface.

- The filter fence fabric shall be installed on the upslope side of the wire mesh fence and shall be stapled, wired, or tied to the wire fence and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than three (3) feet above the original ground surface.
- Filter fence fabric shall not be stapled to existing trees.
- The trench shall be backfilled and the soil compacted over the filter fence fabric.
- For installations on slopes less than 20%, slope lengths of 200 feet or less and around drainage inlets, the Contractor has the option to use fiber rolls in lieu of filter fence.
- Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Filter fence shall remain in place for the complete duration of the project (all Phases of work) as necessary to conform to the Project Permit(s). All filter fence shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project, and is expected to be in good condition at the time the Notice of Completion is issued. Repair and or replacement of any damaged filter fence, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the project or as directed by the Engineer, TRPA and NDEP, all filter fence shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions.

Fiber log (sediment roll) shall not be used in place of filter fence without prior acceptance and written consent of the Engineer. Filter fencing is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

160.05 Fiber Roll (Sediment Log). Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA and USFS Best Management Practices. **The Contractor shall submit a material specification for the fiber roll, for acceptance of the Engineer, prior to placement in the work.**

Fiber rolls will be certified weed free logs that consist of drainage filter made of curled aspen wood excelsior or coir and rolled into a cylindrical shape with a consistent width of fibers evenly distributed throughout the cylinder. Logs will be encased in 100% natural fiber biodegradable netting (no photodegradable or plastic materials). Weed free certification must be provided.

Fiber rolls with a diameter of 8 to 10 inches shall have a density of at least 1.1 lb/ft, and sediment logs with a diameter of 12-inches shall have a density of at least 3 lb/ft. Its basic purpose is to provide a flexible, lightweight, porous sediment control device demonstrating the ability to conform to terrain details, dissipate water velocity, and capture loose sediment. All fiber rolls shall be properly staked in place, except where its use is intended to be short term (daily operations) or reposition of the fiber roll

will occur on a regular basis (i.e. active construction areas, trenching operations and windrows, temporary or active stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) as determined by the Engineer. In such instances where a fiber roll is not staked, it shall be weighted or secured in place using a sufficient number of gravel bags to control the flow of storm water and capture sediment.

The Contractor shall furnish, install, maintain, and remove when no longer required, all fiber rolls per the Manufacturer's directions, as shown on the Project Plans and as directed by the Engineer (where applicable to each Phase of the work), including but not limited to the following general requirements:

- Prior to fiber roll installation; the Contractor shall excavate a concave trench along the contour line, three (3) inches to five (5) inches deep. Soil excavated from the trench shall be placed on the uphill or flow side of the roll to prevent water from undercutting the roll.
- The Contractor shall place the fiber roll in the trench and stake on both sides of the fiber roll within eight (8) inches of each end and then at a maximum spacing of four (4) feet, using one (1) by two (2) inch stakes.
- When more than one fiber roll is placed in a row or check dam, the fiber rolls shall be overlapped in a horizontal configuration to provide a tight joint.

Fiber roll shall remain in place, where directed by the Engineer, for the complete duration of the project (all Phases of work) as necessary to conform to the Project Permit(s). All sediment logs shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project. Repair and or replacement of any damaged sediment log, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the revegetation "maintenance and bonding period" or where accepted to occur at an earlier date as directed by the Engineer, TRPA and NDEP, all sediment log shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions.

Any sediment logs required or used in the work on a short term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

Fiber rolls are considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

160.06 Watering/Dust Control

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to provide construction water for the control of dust generated by the Contractors activities as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and USFS and TRPA Best Management Practices.

The Contractor shall be responsible for dust control throughout all phases of construction. All federal, state, regional and local ordinances regarding dust control shall be complied with. The responsibility of obtaining the regulations and requirements and full compliance with such ordinances is solely that of the Contractor.

No chemical additives shall be permitted for any watering/dust controls operations.

If the Contractor desires to use water from Burke Creek during construction, water must be pumped and used in accordance with any rules, regulations, and procedures as established by the US Forest Service. Water drafting sites should be located in areas that will avoid adverse effects to stream flows and depletion of pool habitat. If instream flows or water drafting sites are not sufficient due to a lack of water, water would be obtained from local municipal water hydrants. Water drafting sites will be reviewed by a hydrologist or fisheries biologist every two weeks during low flow periods and determinations made regarding adequate minimum flows. If flows are not adequate for instream needs, drafting will be discontinued. Use screening devices for water drafting pumps (Fire suppression activities are exempt during initial attack). Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats. The following criteria should be used to avoid impacts:

- Drafting operations should be restricted to one hour after sunrise to one hour before sunset to avoid the use of lights that attract fish.
- Pumping rate shall not exceed 350 gallons per minute.
- The pumping rate shall not exceed ten percent of stream flow (estimated by pump operators) to ensure adequate downstream flow to support aquatic species.
- Drafting should occur in streams and pools with deep and flowing water; not streams with low flows and isolated pools.
- Pumping operations shall not result in obvious upstream or downstream pools.
- Each pumping operation shall use screens. The screen face should be oriented parallel to flow for best screening performance.

160.07 Sweeping

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to sweep all paved areas within the project site, and streets adjacent to the project site, and dispose of the swept materials in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and USFS and TRPA Best Management Practices. Tracking of sediment onto public streets shall be minimized by a combination of road sweeping and use of gravel construction entrance/exit areas designated on the Plans during soil hauling operations, during equipment transporting from one work area to another, and as necessary to keep the streets and other paved areas clear of soil and debris. Tracking control applies to streets within the project area as well streets adjacent to the project area that have the potential to be impacted by tracking from the Contractor's operations.

Affected streets shall be swept a minimum of three times daily (e.g. mid-morning, mid-afternoon, and at the end of the day) during soil hauling operations, during equipment transporting from one work area to another, and as necessary to keep the streets clear of soil and debris. The swept material shall be disposed of in accordance with the standard specifications, project permits and these Special Technical Provisions.

Sweeping is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

160.08 Maintenance

The Contractor shall maintain all temporary erosion control measures, devices, and/or BMPs placed in the work, for the duration of the project. Maintenance includes all Manufacture's recommendations, and includes but is not limited to the following:

- Damage to any temporary erosion control devices and/or BMPs during the course of the project shall be repaired by the Contractor immediately upon discovery and at his expense.
- Temporary erosion control devices and/or BMPs shall be inspected routinely and immediately after each rainfall event and at least daily during prolonged rainfall events. Any required repairs shall be made immediately.
- Construction limit and tree protection fencing shall be inspected daily and repaired, secured, and/or replaced as necessary to maintain and preserve its intended purpose.
- All signage as required for the project shall be routinely inspected and repaired or replaced upon discovery of damage, vandalism, and/or missing parts.
- Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
- Should a sediment log decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the sediment log shall be replaced promptly.
- Any single or group of gravel bag(s) shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.
- Any stakes and/or rope used to secure a sediment log in place shall be routinely inspected and repaired as necessary if found to be loose or ineffective.
- Sediment deposits and other debris shall be removed when they reach approximately one-half the height of the sediment barrier (or as recommended by the Manufacture) and disposed of in a manner acceptable to the Engineer, USFS, NDEP, and TRPA.
- Any sediment deposits remaining in place after the temporary erosion control measure and/or BMPs is no longer required shall be removed and disposed of in a manner acceptable to the Engineer, USFS, NDEP, and TRPA.

160.09 Measurement and Payment.

"Filter Fence" shall be measured on a per linear foot basis along the top of the fence line, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The linear foot price for "Filter Fence" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the filter fence, including but not limited to, excavation, staking, burying, maintenance, and off-haul and disposal of excess materials, for a complete job in place to the lines and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

"Construction Limit Fence" shall be measured on a per linear foot basis along the top of the fence line, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The linear foot price for "Construction Limit Fence" shall include furnishing all labor, materials,

tools, equipment, and incidentals and for doing all the work involved in installing the construction limit fence, including but not limited to, installing stakes and fence, maintenance, and off-haul and disposal of excess materials, for a complete job in place to the lines and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

“Fiber Roll, As Directed” shall only be installed at the direction of the Engineer and shall be measured on a per linear foot basis along fiber rolls, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The linear foot price for “Fiber Roll, As Directed” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the fiber rolls, including but not limited to, communication with the Engineer, excavation of trench, installing stakes and rolls, maintenance, and off-haul and disposal of excess materials, for a complete job in place to the lines and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

“Gravel Construction Entrance” shall be measured on a per each basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The per each price for “Gravel Construction Entrance” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the gravel construction access, including but not limited to, installing stakes and fence, maintenance, and off-haul and disposal of excess materials, for a complete job in place to the lines and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, such as sweeping and dust control, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 165 – DEWATERING AND/OR DIVERSION

165.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials as necessary to dewater, divert and/or bypass any groundwater or surface waters and to maintain a reasonably dry excavation or general work area for the proper installation, construction, curing, grow-in, maintenance, and completion of any improvements and utility relocates, including revegetation/restoration activities, for a complete job in place as shown on the Project Plans, described in the Special Technical Provisions, the Appendix A “Dewatering and Diversion Plan, and Standard Specifications, or as directed by the Engineer.

Dewatering and/or Diversion operations as stated herein, or as directed by the Engineer, are required to be performed at any time and on a continual basis, for the duration of the project and any ensuing maintenance period, as necessary to install, construct, complete and maintain all project improvements.

In general, the Contractor should expect/anticipate that groundwater may be encountered at any time the existing ground is disturbed within the project area, as a majority of the project site is located within a TRPA delineated SEZ (land capability SEZ 1b) shown on the Project Plans.

The Contractors attention is directed to the “Dewatering and Diversion Plan” (Appendix A). All dewatering and/or diversion operations and activities shall be in complete compliance with the Project Plans, Project Permits, the Standard Specifications, these Special Technical Provisions, and other applicable regulatory agency requirements.

The Contractor shall be responsible for the final design, installation, operation, maintenance and removal of any dewatering and/or diversion systems as required for completion of the contract work. The Project Plan sheets and Dewatering and Diversion Plan as provided as part of the Contract Documents provide a basis for, show, and describe dewatering scenarios and minimum requirements. **The Contractor shall accept the provided Preliminary Dewatering and Diversion Plan provided in the Plans and Appendix A or submit their own detailed Dewatering and Diversion Plan (including all necessary diagrams/ exhibits) to the Engineer for review and acceptance (by the Engineer, USFS, and NDEP) prior to commencement of any construction activities that may require dewatering and/or diversion operations.** The proposed Dewatering and Diversion Plan shall be prepared by a licensed Engineer in the state of Nevada, or qualified licensed Contractor (at discretion of the Engineer) that specializes in dewatering, filtration, pumping, and liquid handling operations. Information required to be submitted shall included but is not limited to the following:

- Any Sub-Contractor information and proof of experience
- Qualified operator of the system and equipment
- Access routes, pads, spill containment devices, and locations for equipment
- Sources for power supply and pump operation
- Dewatering/diversion system design performance measures for volume and pumping rates
- Pump equipment description, performance measures and manufacture’s data sheets
- Intake and discharge locations, methods, and materials
- Disposal methods and any proposed treatment practices
- Provisions to provide back-up equipment and/or stage on-site
- Emergency plan to accommodate high flow flood events

If the Contractor plans to conduct any dewatering and/or diversion operations, he/she shall contact the Engineer for authorization, prior to starting the work at a given location. In the event the Contractor initiates dewatering and/or diversion operations without prior authorization of the Engineer, no payment for that work will be made.

165.02 Dewatering and/or Diversion for Channel Construction

Dewatering and/or diversion operations as necessary for, including but not limited to, the construction of the proposed creek channel, partial filling of Jennings Pond, floodplains, in stream structures, and grading operations shall be as shown on the accepted Contractor’s Dewatering and Diversion Plan, and in conformance with the Project Plans, and these Special Technical Provisions. Discharge of all captured and/or diverted waters shall be in conformance with all project permit regulations.

The excavation and general work area shall be sufficiently dry to allow for the proper construction of the channel, floodplain, pond, and associated structures, as shown on the Project Plans and described in these Special Technical Provisions. The location and depth of sumps and/or well points for pumping of ground water or surface water is at the discretion of the Contractor, but shall be reviewed and accepted by the Engineer prior to initiating the work involved. The dewatering operations shall also be sufficient

to produce a stable sub-grade within the excavation or general work area as necessary for access of equipment and personnel to complete the work.

The Dewatering and Diversion operations shall adequately protect the work area(s) from creek flows, prevent erosion and discharge of sediment or pollutants, and divert “bypass” creek flows to designated stable discharge points downstream. Fish screens shall be installed as indicated on the Project Plans and described in the Dewatering and Diversion Plan. In the event there is a storm event which increases the flow of the creek beyond what can be handled by the Contractor’s established creek diversion “by-pass” operations, the Contractor shall make provisions for and have equipment (i.e. pumps, piping, gravel bags, plastic sheeting, temporary dams, etc.) on standby to either provide additional pumping capacity to handle the additional flow, or provide for a complete gravity flow by-pass system. In addition, the Contractor shall make all provisions to provide adequate protection of the active work area(s), avoid flooding and inundation of excavation(s), divert runoff to stabilized downstream areas away from any active work site(s), and reduce and/or prevent erosion and discharge of sediment or other pollutants.

165.03 Dirt Bag Device. Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices. **The Contractor shall submit a material specification for the ‘Dirtbag’ device, for acceptance of the Engineer, prior to placement in the work.**

Use of any ‘Dirtbag’ or other similar sediment control filter bag device used in coordination with pumping of sediment laden waters for discharge shall be as shown on the Project Plans and details and conform to the provisions of the Project Permits. The ‘Dirtbag’ shall be a commercially manufactured nonwoven geotextile fabric bag (polypropylene or equivalent) intended for such use, with a minimum grab tensile strength of 200 psi in any principal direction (ASTM D4632), and permittivity of 0.05 sec (ASTM D4491). For project area soils (source of sediment in waters) with more than 15% by weight passing a No. 200 sieve the fabric shall have an apparent opening size between 50 and 140, and for project area soils (source of sediment in waters) with less than 15% by weight passing a No. 200 sieve the fabric shall have an apparent opening size between 20 and 50. The geotextile fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide an expected usable life comparable to the anticipated construction period; ultraviolet stability shall exceed 70% after 500 hours of exposure (ASTM D4355). The ‘Dirtbag’ device shall have a fill spout large enough to accommodate a pump four (4) inch discharge hose and attachment straps to secure the hose in place. The ‘Dirtbag’ device shall be sized to accommodate the applicable flow rates and prohibit release of the target effluent. Location of any ‘Dirtbag’ device requires acceptance of the Engineer, equipment access for removal and off-site disposal, and the area shall be stable to prevent erosion. Placement of drain rock, fabric, or other suitable substance to create a stable discharge site is the responsibility of the Contractor. Any ‘Dirtbag’ device shall be fitted with straps strong enough for lifting and the device removed from the Project site and properly disposed of; **cutting open the device and leaving the captured sediment/fines in place is prohibited.** Removal and off-site disposal may be facilitated by placing the ‘Dirtbag’ device on pallets, crates, trailer, or some other small mobile device to dismiss the need for lifting the ‘Dirtbag’ device by straps.

165.04 Measurement and Payment

The “Dewatering/Diversion” bid item shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. Payment for “Dewatering/

Diversion” shall be made at the lump sum price bid, with no additional compensation therefore. The “Dewatering/Diversion” bid item shall be paid in full if any dewatering operations are required and performed as part of the project work, as directed and accepted by the Engineer. No additional compensation will be allowed for if excess ground water or higher than expected creek flows are encountered and dewatering operations beyond what was anticipated by the Contractor is required for proper construction of the project improvements. All dewatering necessary for the proper installation, construction, and maintenance of the project improvements, including revegetation/restoration activities shall be included in this bid item(s).

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 170 – CLEARING AND GRUBBING AND TREE REMOVAL

170.01 Description

This section covers the construction methods involved in all clearing and grubbing, and tree removal operations as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. Work under this item shall consist of furnishing all labor, tools, equipment, and materials as necessary to perform operations, including but not limited to, clearing and grubbing, topsoil salvage, tree removal, stump removal, and disposal of waste and other miscellaneous debris in accordance with the Project Plans, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer.

170.02 Clearing and Grubbing

Clearing and grubbing shall consist of removing all objectionable and unacceptable natural or artificial materials from within the construction area project limits, and disposal of said material off the job site, in order to construct the project in a proper manner, in accordance with the Project Plans, Project Permits, Standard Specifications, these Special Technical Provisions, as directed by the Engineer, and other applicable Local, Regional, State, and Federal requirements. This work includes but is not limited to any earthen material, organic growth, willow and alder clumps, trees and stumps (less than 6-inches diameter at breast height – DBH will be measured at 4.5-ft above the existing ground surface on uphill side of tree), man-made deposits, industrial waste, sludge or landfill, and other materials as designated by the Engineer. Existing structures, to be preserved, shall be protected and restored upon completion of the work.

Clearing and grubbing shall extend to the outer limits of excavation and fill slope lines, except where slopes are to be rounded in which case the areas shall extend to the outside limits of slope rounding. Within the limits of clearing, all stumps and roots 1-1/2 inches in diameter or larger, buried logs, and all other objectionable material shall be removed up to three (3) feet below the existing ground surface or subgrade, whichever is deeper. All existing vegetation, outside the areas to be cleared and grubbed, shall be protected from injury or damage resulting from the Contractor's operations. For typical protection of trees and other vegetation, see the Project Plans.

No live trees or downed logs or wood (equal to or greater than 6-inches diameter) shall be removed from the project site that are not identified and marked by the Engineer. In the event the Contractor removes any live trees or downed logs or wood (equal to or greater than 6-inches diameter) not marked

by the Engineer, the Contractor shall be solely responsible for any and all fines and/or penalties levied to the Contractor, Engineer, or USFS in association with the removal.

For the purposes of this Project, willow and alder clump vegetation shall not be considered singular trees as part of the tree removal bid item work. Any willow/alder material shall be removed and disposed of within the project limits/areas of disturbance (clearing and grubbing limits as shown on the Project Plans), unless specifically directed to be protected in place of as part of the work. Any removal and disposal of existing willow/alder vegetation shall be considered as part of the clearing and grubbing efforts, and no additional compensation shall be allowed for.

Topsoil, Sod, and Organic Materials

During clearing and grubbing, the Contractor shall salvage and stockpile topsoil and sod for reuse in the project area in accordance with Section 260, "Revegetation," of these Special Technical Provisions.

Harvest sod from the footprint of the restoration area as shown on the plans and as staked in the field. Do not stockpile more than 30 calendar days.

Use a low weight bearing equipment ASV-POSI TRACK SKID STEER with a front-end bucket (front end loader or tractor with bucket) to salvage and transport sod and minimize damage to native vegetation remaining in place along temporary maintenance access road.

Salvaged sod shall consist of cohesive, contiguous material of sedges (*Carex spp.*) and Baltic rush (*Juncus balticus*), and other wetland and mesic meadow species, as shown on the plans and as staked in the field by the Engineer. Remove in as large a unit as practicable, resulting in clean, vertical edges. Sod shall be scalped from the original ground surface to a depth of no less than eight (8) inches, as measured from the root crown. Do not stack. If stored, sod shall be placed with roots down and edges snugly adjoining adjacent sections in a shaded facility for a maximum time of one month; minimize storage and handling. Maintain as a viable growth media and do not let material dry out during handling and storage (water a minimum of two times per day). Re-plant concurrent with channel construction to the greatest extent possible and as directed by the Engineer.

Material that cannot be moved in a contiguous manner shall be salvaged, stockpiled, and re-applied as organic matter as directed by the Engineer.

Topsoil shall not be stockpiled for a period greater than two (2) weeks or greater than three (3) feet in height unless accepted by the Engineer. Topsoil shall be re-applied within the project area in accordance with Section 260, "Revegetation," of these Special Technical Provisions. All suitable organic materials removed during the clearing and grubbing operation including, but not limited to, pine needles, leaves, duff, trees smaller than six (6) inches DBH, stumps, and suitable roots shall be stockpiled and used for revegetation/restoration treatments. The Contractor shall make allowances for chipping larger organic materials such as trees, suitable roots, branches, and stumps so that these materials can be used for project revegetation/restoration efforts.

The Contractor shall not stockpile any vegetation or other debris generated as a result of the clearing and grubbing or tree removal operations that is not suitable for use in revegetation efforts. All unsuitable vegetation or other debris shall be removed from the job site by the end of each working day.

170.03 Tree Removal

Work under these bid items shall consist of furnishing all labor, tools, equipment and materials necessary for the removal of trees equal to or larger than 6-inches in diameter, measured at an elevation of 4.5-feet above the prevailing existing ground surface on uphill side of tree (a.k.a diameter at breast height - DBH). Trees equal to or larger than 6-inches DBH to be removed are schematically shown on the Project Plans and will be conspicuously marked in the field by the Engineer and FS forester (**no tree shall be removed unless marked in the field**). Tree removal shall include the removal of associated stumps and roots necessary for a complete removal of the tree and its appurtenances, and backfilling the remaining hole with native material, as directed by the Engineer.

The quantity (contract value) of trees to be removed, as shown on the Project Plans, may be more or less than the contract amount, as determined by the Engineer. Final quantities may fluctuate based on field conditions and actual construction staking, layout, and grading limits at the time of construction. All trees necessary for removal, as determined by the Engineer and TRPA staff forester, will be identified and conspicuously marked in the field for removal.

Prior to timber removal operations all associated temporary erosion control measures and BMPs, and traffic control must be in place, in accordance with the Project Permit(s), Standard Specifications and these Special Technical Specifications.

Trees shall be felled to minimize disturbance to surrounding facilities, structures, vegetation and traffic flow on roadways. The Contractor shall make all efforts to minimize any damage to trees and/or root

The Contractor shall set aside specific materials (trees, stumps, slash, etc.) onsite for use and placement in the work and/or revegetation treatments. All such materials, and quantities, will be clearly identified and marked by the Engineer prior to the start of clearing and grubbing, and tree removal operations. Contractor is responsible for complete site cleanup, including slash disposal. No slash may be stored or burned on site. All wood products must be removed from the site prior to resale.

No trees (equal to or greater than 6-inches diameter) shall be removed from the project site that are not identified and marked by the Engineer. In the event the Contractor removes any trees (equal to or greater than 6-inches diameter) not marked by the Engineer, the Contractor shall be solely responsible for any and all fines and/or penalties levied to the Contractor, Engineer, or the US Forest Service in association with the removal.

170.04 Stump Removal

Work under this item shall be considered part of the clearing and grubbing work and shall consist of furnishing all labor, tools, equipment and materials necessary for the removal and disposal of stumps depicted on the project plans, or as directed by the Engineer. Stump removal as described herein will only consist of stumps to be removed that are not directly associated with the removal of a tree (as defined herein - tree removal bid items and prices include the cost of removing the associated stump).

Trees and stumps designated for removal shall be removed to at least two (2) feet below finished grade. Ground trees and stumps intended for use as wood chip mulch shall conform to the requirements of these Special Technical Provisions. Trees and stumps not suited as wood chip mulch or for use in project improvements shall be removed and appropriately disposed of outside the project limits. The Engineer and Revegetation Specialist will determine which trees and stumps are suited for use as wood chip mulch and for use in project improvements. The Contractor shall schedule an inspection of stumps and

trees with the Engineer, at least 10 days prior to the Contractor scheduling wood chipping operations, for a determination of what can be used as mulch.

Compensation for the removal of trees and stumps less than six (6) inch diameter and stumps greater than six (6) inch diameter, as necessary for construction of the various items of work as staked by the Engineer, shall be included in the clearing and grubbing bid item and no additional compensation shall be made therefore.

170.05 Work Outside of Stated Limits

The Contractor shall not, and no payment will be made to the Contractor, for clearing and grubbing outside the stated limits as shown on the Project Plans, or as described in these Special Technical Provisions, unless such work is authorized by the Engineer.

170.06 Protection of Plants

Trees and plants that are not to be removed shall be fully protected from injury by the Contractor at his/her expense. Trees shall be removed in such a manner as not to injure standing trees, plants, and improvements which are to be preserved. The Contractor shall remove tree branches under the direction of the Engineer, in such a manner that the tree will present a balanced appearance.

Scars resulting from the removal of branches shall be treated with a heavy coat of a tree sealant accepted by the Engineer and Revegetation Specialist. Construction limit fence shall be installed around all trees to be protected near excavation limits at the dripline of the tree as shown on the Project Plans. If large roots of protected trees are encountered during excavation activities, work shall cease in this area and the Engineer shall be notified. Work shall commence as directed by the Engineer.

170.07 Aspen Restoration Area Grading and Protection

Aspen areas called out to be protected on plans shall be fully protected from injury by the Contractor at his/her expense. To grade within this area, work may be limited to small equipment or hand work. Area shall be fenced and protected during all clearing and grubbing operations. Construction limit fence shall be installed around all trees to be protected near excavation limits at the dripline of the tree as shown on the Project Plans. If large roots of protected trees are encountered during excavation activities, work shall cease in this area and the Engineer shall be notified. Work shall commence as directed by the Engineer.

170.08 Removal and Disposal of Materials

All materials scheduled or specified for removal and disposal shall be removed and hauled from the site at the Contractor's expense, unless otherwise specified, and disposed of outside of the Lake Tahoe Basin in accordance with TRPA ordinances. The construction area shall be left with a neat and finished appearance.

170.09 Measurement and Payment

"Clearing and Grubbing" (including trees under 6-inch DBH) shall be measured on a per square foot basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The per square foot price for "Clearing and Grubbing" (including trees under 6-inch DBH) shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the clearing and grubbing of the project site as shown on the plans and as specified in the Project Plans, Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer including the removal and disposal of all the resulting

materials from the Tahoe Basin. The per square foot area is based on the disturbance area shown on the plans. If the Contractor disturbs additional area without the approval of the Engineer, no additional payment is allowable for this bid item.

“Tree Removal and Stockpile” shall be measured on a per each basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The per each price for “Tree Removal and Stockpile” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing all trees as marked and stockpiling the trees as necessary for the construction of in stream structures shown on the plans and as specified in the Project Plans, Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, including the removal and disposal of all the materials not to be used in the project from the Tahoe Basin.

“Salvage Sod, Stage, and Maintain” shall be measured on a per square foot, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The per each price for “Salvage Sod, Stage, and Maintain” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing the sod as marked by the Engineer and stockpiling and maintaining the sod per Section 260 of these Special Technical Provisions and as necessary for use in the Water’s edge revegetation treatment and as specified in the Project Plans, Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer.

“Aspen Restoration Area Grading and Protection” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The lump sum price for “Aspen Restoration Area Grading and Protection” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in protecting the aspen area as marked on the plans and in the field and as specified in the Project Plans, Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 175 – REMOVAL OF EXISTING MICELLANEOUS ITEMS

175.01 General. Work under this section shall conform to the project permits, Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, and USFS Best Management Practices.

175.02 Remove Milled Lumber in Ditch

Work under this section shall include removal and disposal of milled lumber and other trash or unnatural materials in the Kahle ditch prior to grading and backfilling the area as required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. Natural woody debris and logs that are embedded into the creek banks shall remain in place unless active grading is required in the area.

Any materials removed in conformance with this provision shall become the property of the Contractor and shall be removed and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Provisions.

175.03 Remove Wire Fence at Nevada Beach

Work under this section shall include removal and disposal of the existing wire fence located between the Tahoe Beach Club and Nevada Beach as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer.

Any materials removed in conformance with this provision shall become the property of the Contractor and shall be removed and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Provisions.

175.04 Remove Barbed Wire Fence at Nevada Beach

Work under this section shall include removal and disposal of the barbed wire fencing located between the Tahoe Beach Club and USFS lands required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer.

Any materials removed in conformance with this provision shall become the property of the Contractor and shall be removed and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Provisions.

175.05 Remove Abandoned Utilities and Mobile Home Connections

Work under this section shall include removal and disposal of abandoned utilities and mobile home connections on the Tahoe Beach Club property adjacent to the Kahle Ditch. Utilities to be removed are only those visible on the surface or encountered during the excavation required to complete the grading on the Project Plans. Removal of these utilities may extend as far as five (5) feet below grade and they should be completely removed as required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer.

Any materials removed in conformance with this provision shall become the property of the Contractor and shall be removed and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Provisions.

175.06 Remove Rock Lined Ditch

Work under this section shall include removal of the existing rock lined ditch adjacent to Jennings Pond and the Lam Watah Trail prior to grading as required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. Attention is directed to Section 180 of these Special Technical Provisions as a cultural monitor will have to be on site for this work. The rock may be preserved and used in other elements of the project with approval from the engineer or buried in the filled Jennings Pond.

175.07 Decommission Trails

Work under this section shall include decommissioning of the existing trails adjacent to Jennings Pond and the Lam Watah Trail, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. Attention is directed to Section 180 of these Special Technical Provisions as a cultural monitor will have to be on site for this work.

Decommissioning the trail will involve ripping the soil to 6 inches depth and then adding revegetation seed mix as directed by engineer. After seed mix is applied, mulch must also be applied per the Section 260 of these specifications. Finally, cut trees and branches should be scatted to create a rough surface that is not easily traversable by foot.

175.08 Measurement and Payment

Payment for “Remove Milled Lumber in Ditch” shall be measured on per linear foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract linear foot price for “Remove Existing Lumber in Ditch” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to removing debris, water quality control measures, and off-haul and disposal of excess materials, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Payment for “Remove Wire Fence at Nevada Beach” shall be measured on per linear foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract linear foot price for “Remove Wire Fence at Nevada Beach” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to removing debris, personal protection equipment, and off-haul and disposal of excess materials, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Payment for “Remove Barbed Wire Fence” shall be measured on per linear foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract linear foot price for “Remove Barbed Wire Fence” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to removing debris, personal protection equipment, and off-haul and disposal of excess materials, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Payment for “Remove Abandoned Utilities and Mobile Home Connections” shall be measured on per each basis, as visible above grade, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract per each price for “Remove Abandoned Utilities and Mobile Home Connections” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to removing debris, water quality control measures, and off-haul and disposal of excess materials, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Payment for “Remove Rock Lined Ditch” shall be measured on per linear foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract linear foot price for “Remove Rock Lined Ditch” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to removing debris, water quality control measures, and off-haul and disposal of excess materials, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Payment for “Decommission Trails” shall be measured on per linear foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract lump sum price for “Decommission Trails” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to removing debris, water quality control measures, and off-haul and disposal of excess materials, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 180 – CULTURAL MONITOR COORDINATION

180.01 General. Work under this section shall conform to the project permits, Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, and USFS Resource Protection Measures. Project permits require a cultural monitor to be on site for any excavation work or rock removal work in the vicinity of Jennings Pond.

180.02 Cultural Monitor Coordination

The Contractor shall coordinate with the Engineer on a project schedule no less than 10 days in advance so that a cultural monitor may be notified to be onsite. The cultural monitor must be present and on site for any excavation near Jennings Pond, any trail decommissioning, and any rock-lined ditch removal. The Contractor shall assure that the cultural monitor has full access to the work site to conduct any monitoring activities. The Contractor shall alter work or stop work upon requests from the cultural monitor or engineer. Work alterations may include but are not limited to hand digging, soil sifting, use of construction water, and requested design or grading changes.

180.03 Measurement and Payment

Payment for “Cultural Monitor Coordination” shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract lump sum price for “Cultural Monitor Coordination” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including but not limited to notification of schedule, allowing access to work site, and slowing, stopping, or altering work, for a complete job in place as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

SECTION 200 – GRAVEL, COBBLE, ROCK, BOULDER & OTHER AGGREGATES

200.01 General. Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to furnish and place gravel, cobble, rock, sand aggregate, and other aggregates in the work, including but not limited to, channel bed material, pond bed material, in stream structures, basin spillway, aggregate base courses, bedding and backfill, and general rip-rap as indicated on the Project Plans, described in these Special Technical Provisions, and directed by the Engineer, in conformance with the Contract Documents, Project Permits, Standard Specifications, and these Special Technical Provisions.

The limits of loose aggregate and aggregate base course placement as indicated on the Project Plans are approximate, and the exact limits of placement shall be determined in the field by the Engineer. All aggregates used in the work for aggregate base courses, bedding and backfill, and general rip-rap shall be in strict conformance with the Standard Specifications, and other applicable provisions found elsewhere in these Special Technical Provisions.

All gravel, cobble, rock, sand aggregate, and other loose aggregate used in the work for proposed creek channel, pond bed, in stream structures, and all other areas requiring said materials shall be in conformance with these Special Technical Provisions, and other applicable provisions of the Standard Specifications. **All gravel, cobble, rock, sand aggregate, and other loose aggregate used in the work for proposed creek channel, pond, and in stream structures, including imported and reused rock, shall be thoroughly washed outside of the confines of the proposed stream, pond, and floodplain in a location approved by the engineer so that each material runs clear when water is applied.**

All stone, aggregate materials, and soils imported to the site shall be from a certified “Weed Free” source approved by the US Forest Service - LTBMU. Certified Weed Free Sources can be provided by the Engineer upon request.

All loading, transport, temporary stockpiling, on-site hauling, excavation, preparation of sub-grade, placement, embedment, backfill, compaction, clean-up, and off-haul and disposal of excess materials needed to install all gravel, cobble, rock, boulder, sand aggregate, and other aggregates where incorporated in the work shall be considered as included in the applicable bid item unit price, and no additional compensation will be allowed.

All aggregate materials generated on-site and meeting the quality requirements as stated in Section 200, “Gravel, Cobble, Rock, Boulder & Other Aggregates” of these Special Technical Provisions may be incorporated in the work upon acceptance of the Engineer prior to placement; any such material that is rejected for placement in the work shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Provisions, and the Standard Specifications. Use of said aggregate material in the work shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

200.02 Submittals

The Contractor shall submit certificate(s) and other material testing data as necessary to validate the source of the gravel, cobble, rock, sand aggregate, and other aggregate materials and its conformance with the Standard Specifications and these Special Technical Provisions. Include all applicable test results for specific gravity, resistance to degradation, absorption, durability index, and soundness (as described

elsewhere in these Special Technical Provisions). Samples of loose stone aggregates shall be submitted to the Engineer a minimum of ten (10) working days prior to large-scale delivery to the project site or placement in the work, for review and acceptance of color and material.

All aggregate materials generated on site shall be reviewed and accepted by the Engineer, prior to placement in the work. Visual evaluation of the source, samples, suitable certificates and material testing data sheets, and service records may be used to determine the acceptability of any aggregate materials imported or generated on-site. The Engineer reserves the right to reject said materials.

200.03 Quality Requirements for Loose Stone Aggregates.

The Contractor shall use stone (i.e. gravel, cobble, rock, etc.) that is sound and durable against disintegration under conditions to be met in handling and placing, and is hard and tenacious and otherwise of a suitable quality to ensure permanency in the specified kind of work. All applicable stone materials shall meet the requirements stated herein and conform to the following test requirements.

	<u>Requirement</u>	<u>Test Method</u>
Apparent specific gravity, minimum	2.5	ASTM C-127-59
Abrasion, maximum percent	45	ASTM C-535-65
Freeze-thaw loss, maximum percent After 12 cycles	10	AASHTO 103 Procedure A

Stone shall be of such shape to form a stable protection structure for the required section or feature. Flat or elongated shapes will not be accepted unless the thickness of the individual pieces is at least 1/3 of the length. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not readily disintegrate from the action of air, water, or the typical conditions experienced during handling and placing. All aggregate material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings.

Stone materials shall be of a native nature to the Tahoe Basin (i.e. of similar color and texture to that generally found within the Tahoe Basin and in particular the project area Stateline, Nevada and vicinity). All creek channel gravel used in the proposed stream channel shall be smooth and rounded in shape as noted above and of a natural earth tone color/hue that blends with the surrounding environment (or generally described as “round and brown”).

200.04 Sand Requirements and Standards

Sand shall be medium to coarse sand and shall be free of organic debris and other deleterious substances. The sand shall have a minimum specific gravity of 2.5 and shall be sub-rounded to rounded. Volcanic cinder material shall not be acceptable. Samples of the proposed sand shall be submitted to the Engineer for approval 10 days prior to placement. No sand finer than 75µm is allowable. The mineral materials required for the “sand” as designated on the Project Plans for inclusion in the proposed creek channel work shall generally meet the following gradation requirements (per ASTM C136):

Sieve Size	Percent passing by weight
3/8”	100
#4 (4.75mm)	75.0 (max)
#8 (2.36mm)	50.0 (max)

#30 (0.6mm)	5.0 (max)
#100 (0.15mm)	2.5 (max)
#200 (75µm)	2.0 (max)

200.05 Well Graded Gravel Mixture Requirements and Standards

Well Graded Gravel Mixture shall be “round and brown” as described in Section 200.03 and conform to the gradation requirements below:

Size	Percent finer than by Weight
3”	100
2”	70-90
3/8”	35-70
0.15 inches	0-35

Where identified on the Project Plans, the well graded gravel mixture shall be a well graded blend of the sizes as indicated, uniformly and evenly distributed by weight. Material shall be washed and it is recommended that gradation and washing is completed off site.

200.06 Channel and Pond Bed Material

Channel Bed Material shall be a mix of 50 percent of the Well Graded Gravel Mixture in Section 200.05 and 50 percent of the Sand in Section 200.04.

200.07 Crushed Aggregate for Base or Surface Course.

Use crushed aggregate meeting the requirements of tables 200.07-1 and 200.07-2. The crushed aggregate shall be used for the raised Lam Watah Trail Surface and should be sourced to match the existing surface of the trail in color and from a certified weed free supplier. Grading C shown in table 200.01-1 shall be used on the raised Lam Watah Trail surface.

At least 50 percent, by weight, of the aggregate retained on the No.4 sieve is to have one fractured face. Naturally fractured faces may be included in the 50-percent requirement.

The Engineer may approve other gradations if they are similar to those specified Grade aggregate from coarse to fine within the gradation band.

Table 200.07-1-Crushed and screened aggregate grading requirements for base or surface courses.

Sieve	Percent Passing			
	Grading A	Grading B	Grading C	Grading D
1"				
¾"	100	100		
½"	50-90	70-100		

3/8"			100	100
No.4	30-65	45-75	60-85	70-90
No.8	25-55	30-60	35-70	45-70
No.30		15-40		20-40
No.200	6-12	6-20	5-20	5-20

Table 200.07-2.-Crushed Aggregate Quality Requirements

Description	AASHTO Test Method	Requirement
Percent Wear	T 96	40 Max.
Durability Index, Coarse and Fine	T 211	35 Min.
Liquid Limit	T 89	35 Max.
Plasticity Index	T 91	2-11

200.09 Placement

The placement of any sand, well graded gravel mixture, or rock strictly by dumping shall not be permitted. Hand and/or mechanical adjustments/ placement of the stone materials are expected in order to meet the requirements stated herein.

All stone products shall be placed to follow the lines and grades shown on the Project Plans. Prevent the contamination of stone features, channel bed material, and other designated rock fills by soil and other earthen materials during excavation, placement, and/or backfill. All stone features shall be blended with adjacent rock areas and grades, by tapering margins, mixing rock color, and keying into and around existing bedrock, rock, soils, and vegetation. The Engineer will direct the Contractor in placement of well graded gravel mixture for construction of designated stone features and proposed creek channel and filled pond, to attain a natural appearance and complete job in place as shown on the Project Plans and described in these Special Technical Provisions. Exact elevations and horizontal locations of the stone materials and features as shown on the Project Plans may be slightly adjusted in the field by the Engineer, with no additional compensation allowed for.

All channel and pond bed material shall be placed in the locations as shown on the Project Plans in such a manner to produce a relatively uniform graded mass. Place material to thicknesses shown on the Project Plans and uniformly distribute stone and sand materials to produce the required gradation of rock and wheel-roll into place (or compact by other methods) to create a firm and stable structure, and meet finished grade as shown on the Project Plans. Placement of channel and pond bed material shall be conducted in a manner as not to produce a downstream turbidity or other pollutant discharge in violation of the project permit(s) or other water quality standards.

The segregation of mixed stone materials may occur during transport, dumping, on-site hauling, etc. The Contractor shall distribute all stone materials to produce the required gradation of rock. Routine control

of gradation will be by visual inspection.

200.10 RipRap. In addition to the requirements of Section 705 of the Standard Specifications, riprap stone shall be of such shape to form a stable protection structure for the required section. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not disintegrate from the action of air, water, or the conditions experienced during handling and placing. Stone shall additionally be of native nature to the Tahoe Basin, of similar color and texture to that found within the Tahoe Basin and in particular the project area, and samples shall be provided to the Engineer for review and approval for use, prior to placement of any stone. All material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings. Visual evaluation of the source, suitable tests and service records may be used to determine the acceptability of the stone. Routine control of gradation will be by visual inspection.

200.11 Measurement and Payment. Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for the materials in this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, should be incidental to the other construction items; no additional compensation will be allowed.

SECTION 205 –EARTHWORK

205.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for stream and floodplain excavations, pond and microtopography construction, Lam Watah subgrade, local borrow native soils, import of fill material, salvage topsoil, imported topsoil, existing sub-grade scarification and preparation, rough grading, compaction, finish grading, loading, transport, onsite hauling, off-site hauling, temporary stockpile, off-site stockpile, processing/conditioning, screening, placement, and disposal/salvage of unsuitable or surplus materials, for all the contract work items involved or delineated as excavation, earthwork, or grading as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Provisions. All excavations, fill, earthwork, and associated grading shall be made true to the lines and grades as shown on the Project Plans, staked by the Engineer, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits.

Attention is directed to Section 704.06, “Unclassified Borrow”, of the Standard Specifications.

Because of the nature of the project, careful excavation, backfill, and grading are mandatory. The proposed contours, representative cross sections, and applicable typical cross section as shown on the Project Plans represent the intended shape of the land but the Contractor shall take into account that the proposed channel, in stream structures, floodplain grading areas, ditch and pond backfill, slopes, grade breaks, etc., shall be constructed and graded to natural shapes that transition smoothly to adjacent features and grades. As part of the scope of this item of work, the Contractor shall work under the direction of the Engineer to create a natural-looking finished grade surface. The Contractor may be directed in the field to make minor modifications to the depth of cuts, heights of fills, angle of slopes, and other contour grading to achieve a natural appearance, and the desired functioning of the system and proposed improvements. Additionally, the Contractor may be field directed, by the Engineer, to slightly modify the alignment or elevation of the proposed improvements to account for variations in

substrate or topography, and true field conditions present at the time of construction. Compensation for these potential directives and minor field modifications, as noted above, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

All finished areas with cut and/or fill slopes shall be graded as indicated on the Project Plans, staked in the field, and directed by the Engineer. The Contractor shall employ excavation and/or placement methods that does not disturb or damage other work. Areas that are shown to not have any excavation or grading shall be protected and remain undisturbed to protect the existing soil profile and vegetation cover.

Cobbles and boulders may be encountered during grading and could be incorporated in the ditch or pond fill if needed. If these oversize particles conform to the description of Rock or Channel Bed Materials as described in Section 200 of these Special Technical Provisions, they should be set aside for other applications on the project site as accepted and allowed per direction of the Engineer.

During the course of the project (all phases) any damage to previously installed and accepted work including but not limited to any creek channel, in stream structures, pond fill, raised trail, and floodplain areas shall be repaired/replaced at the Contractor's expense. Furthermore, the Contractor shall protect all previously installed revegetation treatments and irrigation equipment; and repair/replace all areas that are damaged as a result of the Contractors operations. The Contractor shall reshape, grade, and re-compact (where applicable) any areas subjected to displacement from vehicular traffic. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

205.02 Miscellaneous and Temporary Grading and Excavation

Work under this item shall consist of providing all labor, tools, materials, and equipment necessary to perform minor excavation, temporary excavation and finish grading as directed by the Engineer. Miscellaneous and temporary excavation and grading includes excavation, grading, fill, compaction, and disposal of excess materials as necessary to construct the project improvements, maintain prevailing grades, and create drainage swales to ensure correct flow paths and positive drainage is maintained within the finished project site. In addition, miscellaneous grading and excavation shall include finish/contour grading within the project area to create natural shapes that transition smoothly to adjacent features, grades and slopes and generally provide for a natural appearance, in accordance with the Project Plans, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer. All such miscellaneous excavation and grading, including detailed finish grading as directed by the Engineer in the field to produce a natural finish, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

205.03 Creek, Floodplain, and Microtopography Grading

Clearing and grubbing, excavation, sub-grade scarification and preparation, rough grading, fill, compaction, finish grading, and disposal/salvage of unsuitable or surplus materials within the designated areas of the stream and floodplain shall produce a finished surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Provisions.

The Contractor is only permitted to use "low impact equipment" within the floodplain/SEZ areas for completion of this work. The Contractor's attention is directed to Section 120, "Project Permits."

Any fill materials used in the work shall be in conformance with the Standard Specifications, these Special Technical Provisions, and at a minimum shall not exceed optimum moisture content, and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements.

Following completion of the excavation and rough grading work within the floodplain grading areas, and prior to placement of any topsoil, the Engineer will inspect the work site subgrade (using a soil probe or penetrometer) for any areas of excessive compaction. Upon discovery the Engineer will mark the limits of all areas, and the Contractor shall loosen/decompact the areas in accordance with the applicable provisions of Section 260, "Revegetation" of these Special Technical Provisions.

Placement of topsoil and revegetation treatments shall be as specified elsewhere in these Special Technical Provisions, or as directed by the Engineer.

205.04 Local Borrow (Native Fill)

Selected material and other local borrow native earthen material encountered and/or generated on-site in excavation within the project limits may be used as backfill where shown on the Plans for backfill of existing ditch and Jennings Pond and/or as specified for the raising of Lam Watah trail where shown on the Project Plans, as specified in the Special Technical Provisions, the Standard Specifications, or as directed by the Engineer.

All fill materials used in the work shall be in conformance with the Standard Specifications, these Special Technical Specifications, and at a minimum shall not exceed optimum moisture content and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. **Any native, local borrow, or imported borrow soils used for backfill shall be accepted by the Engineer prior to placement.** It is expected that all excess excavated native material from the Burke Creek and Kahle Ditch restoration section and associated water quality basin shall be used as backfill for Jennings Pond. Any screening operations and processing of soils as required for conformance with this section shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed. Stockpiling of soils and screening operations should occur at a staging area with appropriate BMPs installed such as the staging area at the NE corner of Kahle Drive and US-50. Additionally, the Contractor is expected to use native fill stored from a previous project in Rabe Meadow located at a USFS parcel on Sewer Plan Road, approximately 1 mile from the site.

Local borrow (topsoil, and underlying native earthen soils) generated on-site in excavation within the project limits may be placed in the fill only in locations as specified on the Project Plans and described in these Special Technical Provisions. Topsoil excavated and properly salvaged within the grading limits may be considered as a select material or local borrow only for the purpose of placement in areas to be planted or revegetated as specified elsewhere in these Special Technical Provisions, or as directed by the Engineer.

The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any local borrow native fill requiring density testing. The Contractor is hereby advised that some of the on-site soils may be saturated and will require drying prior to placement in order to achieve the specified degree of compaction.

205.05 Import

Importing of earthwork fill material, if necessary or required to meet the grades and elevations shown on the plans, shall be considered included in the Contractor's bid for the various items of work involved and no additional compensation will be made, therefore. The Contractor shall notify the Engineer of the borrow site location at least 72 hours in advance and provide an adequate sample size (~ 0.5 cubic foot) so the Engineer can verify the suitability of the material. All imported materials shall be proposed by the Contractor in writing in accordance with the submittal requirements of these Special Provisions and the Standard Specifications. The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any imported material requiring density testing. Furthermore all imported materials must come from certified weed free sources.

205.06 Low Permeable Fill

Soils used as Low Permeable Channel Fill within the Lam Watah Trail will consist of imported soil that meets the following requirements:

Percent Passing

Sieve Size	(by dry weight)
¾"	70-100
No. 40	50-100
No. 200	> 40
Plasticity Index	15 min.

The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of the low permeable channel fill selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any fill material requiring density testing. Any proposed native or import low permeable channel fill that deviates from the criteria stated herein, shall have written acceptance from the Engineer and geotechnical engineer prior to import or placement in the work.

205.07 Pond Fill for Subgrade Preparation

Fill within Jennings Pond to achieve the subgrade indicated in the proposed pond profile shall produce a finished subgrade surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Provisions, and as directed by the Engineer. Placement of pond bed material and associated finish grading, and revegetation treatments shall be as specified elsewhere in these Special Technical Provisions, or as directed by the Engineer.

Earthen materials used for native fill and import fill shall be in conformance with the requirements stated herein. Placement, layering, compaction, and locations of the fill materials to create a distinct soil profile to produce a finished grade surface shall be as shown on the Project Plans, described herein, and as directed by the Engineer.

Execution of Work

Prior to the placement of fill materials the exposed pond sub-grade should be cleared of excessively loose or disturbed soil and stone materials, large woody debris, vegetation, organic matter, and other waste materials (i.e. clearing and grubbing). No fill should be placed on frozen ground; and placement of fill on or in standing water will not be allowed. If soft, wet, or pumping subgrade soils are present, the

required minimum level of compaction for the initial fill lift shall be eighty-five percent (85%) of the soil's maximum dry density as determined in accordance with ASTM D 1557. Construction traffic on soft, wet, or pumping subgrade soils shall be reduced to a minimum. The intent of the reduction is to limit the amount of construction traffic that could lead to further deterioration and destabilization of the exposed subgrade and to build a more stable pad upon which to place subsequent fill lifts.

Fills shall be placed in loose lifts not to exceed eight (8) inches and shall be compacted to not less than ninety percent (90%) of the soil's maximum dry density as determined in accordance with ASTM D 1557. Pumping or deflection within fill lifts is acceptable as long as the required level of compaction is being met and does not preclude achieving adequate density in subsequent lifts. No frozen fill should be placed. Placement and compaction of the channel fills should be accomplished under full-time observation from the Engineer. Testing of compaction will be conducted throughout the process. Fill shall be benched into existing pond sidewalls where sidewall slopes exceed 4:1 (V:H).

Materials

Soils used as Native Fill should consist of native materials generated during construction operations following associated clearing and grubbing and sod or topsoil salvage. Native fill generated on site should be relatively free (i.e. less than 5 percent) of organics. Import fill, if required or desired for use, shall be free of organics and other perishable material and meet the requirements as noted below. For placement in the work, all native fill or import shall be free of construction debris and shall meet the following requirements:

Channel Fill Requirements	
Sieve Size	Percent Passing (by dry weight)
6"	100
4"	90 - 100
¾"	70-100
No. 40	10-85
No. 200	8-45
Liquid Limit	60 max.
Plasticity Index	30 max.

The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of import fill selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any fill material requiring density testing. Any proposed import fill that deviates from the criteria stated herein, shall have written acceptance from the Engineer prior to import or placement in the work. All import fill must be certified weed free.

The Contractor is hereby advised that some of the on-site soils may be saturated and will require drying prior to placement in order to achieve the specified degree of compaction.

205.07 Topsoil Placement

Placement of salvaged topsoil to the required thickness, including any associated finish grading and compaction, shall produce a finished surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Provisions. The salvaged topsoil shall be placed to blend with the adjacent project improvements and floodplain/slope areas to create a generally smooth, natural appearance (including minor variations) as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Provisions.

Prior to any topsoil placement the underlying subgrade shall be left rough as directed by the Engineer. Topsoil shall be placed to uniform depths as indicated on the Project Plans.

Following completion of excavations, fill, grading, compaction, placement of aggregates, and construction of all proposed improvements as shown on the Project Plans as required prior to placement of any topsoil, the Contractor shall schedule for a site inspection by the Engineer (minimum of 4 working days notice required) in order to inspect the subject work area for conformance with the contract documents, plans, and specifications. **Placement of topsoil shall not commence until the Engineer has inspected and accepted the subject work area.** In addition, the base soils will be inspected (using a soil probe or penetrometer) for any areas of excessive compaction. Upon discovery the Engineer will mark all areas/items required for corrective measures and mark the limits of areas where soils shall be loosened/decompacted in order to commence placement of topsoil and subsequent installation of the revegetation treatments in accordance with the applicable provisions of Section 260, "Revegetation" of these Special Technical Provisions.

Salvaged topsoil shall only be generated from the project site (within the limits of grading) as specified in Sections 195 "Clearing and Grubbing" and 260 "Revegetation" of these Special Technical Provisions.

205.08 Unsuitable Soils, Surplus Earthen Material, and Stockpiles

Unsuitable soils, surplus soils, and other excess earthen materials shall be removed and disposed of in accordance with all local, state, and federal regulations from the project site as a part of this item of work. No unsuitable or surplus material may be disposed of within the rights-of-way or project limits. The Contractor shall make all arrangements for disposal of the materials at off-site locations (including disposal outside of Tahoe basin) and at the Contractor's expense.

All surplus materials generated from the project site during construction operations, including but not limited to, clearing and grubbing, topsoil salvage, sod salvage, channel and pond bed material, earthwork, and other operations, shall be off-hauled and salvaged/disposed of outside the project limits and Tahoe basin (unless a specific off-site area is authorized for use by the Engineer and applicable regulatory agencies). Any shortage of material caused by premature disposal of the surplus or salvaged materials, by the Contractor, shall be replaced by him/her and no additional compensation will be allowed for such replacement. There is a net fill required for the project and therefore stockpiling soil for use in the Jennings Pond backfill is anticipated. Additionally, stockpiled soil from a previous project in the vicinity is available at Sewer Plant Road located approximately one mile from the Lam Watah Trailhead and should be utilized in the filling of Jennings Pond. A soil stockpile site is available at the County-owned parking lot at the northeast corner of Kahle Drive and US-50.

205.09 Measurement and Payment. "Floodplain and Channel Earthwork" shall be measured on a per bank cubic yard basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contractor shall bid based on the cut, fill, and net quantities

provided on the Project Plans. If the contractor disputes the quantities provided on the plans, the contractor shall pay for and provide a survey, at his/her own expense, and prepare the necessary figures and calculations to support the claim. Excess quantities will be paid for per cubic yard. Any associated contour grading and other general earthwork movement as required to complete the work shall be considered as included in the per cubic yard price.

The per cubic yard price paid for "Floodplain and Channel Earthwork" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, excavation, loading, transport, onsite hauling, local borrow, import, screening, conditioning, backfill, rough grading, scarifying, compacting, finish grading, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and placing additional local borrow or import soils as required for the grading and construction of the designated creek and floodplain areas for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

"Pond Earthwork and Floodplain Excavation" shall be measured on a per bank cubic yard basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contractor shall bid based on the cut, fill, and net quantities provided on the Project Plans. If the contractor disputes the quantities provided on the plans, the contractor shall pay for and provide a survey, at his/her own expense, and prepare the necessary figures and calculations to support the claim. Excess quantities will be paid for per cubic yard. Any associated contour grading and other general earthwork movement as required to complete the work shall be considered as included in the per cubic yard price.

The per cubic yard price paid for "Pond Earthwork and Floodplain Excavation" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, excavation, loading, transport, onsite hauling, local borrow, import, screening, conditioning, backfill, rough grading, scarifying, compacting, finish grading, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and placing additional local borrow or import soils as required for the grading and construction of the designated pond, microtopography, and floodplain areas for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

SECTION 210 – WATER QUALITY BASIN

210.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for constructing the water quality basin and associated rock spillway as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Provisions. All excavations, fill, earthwork, and associated grading shall be made true to the lines and grades as shown on the Project

Plans, staked by the Engineer, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits.

Rock size shall be as shown on Project Plans. Rock shall be angular and a color that matches native granite material found in the Lake Tahoe Basin. All rock used for the rock spillway shall be uniform in color and shape.

210.02 Measurement and Payment

“Water Quality Basin” shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contractor shall bid based on the bank cut, fill, net, and square footage quantities provided on the Project Plans. Any associated contour grading and other general earthwork movement as required to complete the work shall be considered as included in the lump sum price. The lump sum price paid for “Water Quality Basin” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, excavation, loading, transport, onsite hauling, local borrow, import, screening, conditioning, backfill, rough grading, scarifying, compacting, finish grading, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and placing rock as required for the grading and construction of the water quality basin for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

SECTION 215 – LAM WATAH TRAIL RAISING

215.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for constructing the raised Lam Watah Trail as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Provisions. All excavations, fill, earthwork, and associated grading shall be made true to the lines and grades as shown on the Project Plans, staked by the Engineer, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits.

215.02 Installation

The site of the trail shall be compacted to 90 percent minimum relative compaction. Imported fill used for trail raising shall be classified as low permeable fill per Section 200 of these Special Technical Provisions. Wire mesh to prevent beaver tunneling shall be per Plan.

Site must be inspected by the Engineer prior to installation of the trail materials. Engineer shall verify subgrade compaction. Once approved, low permeable fill shall be installed and compacted to 90 percent relative compaction. Low permeable fill shall adhere to specifications in Section 200. Engineer shall verify low permeable fill installation and compaction prior to installation of surface base course. Surface base course shall adhere to specifications in Section 200.

215.03 Measurement and Payment

“Lam Watah Trail Raising” shall be measured on a bank cubic yard basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contractor shall bid based on the cut, fill, net, and square footage quantities provided on the Project Plans. Any associated contour grading and other general earthwork movement as required to complete the work shall be

considered as included in the per cubic yard price. The cubic yard paid for “Lam Watah Trail Raising” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, excavation, loading, transport, onsite hauling, local borrow, import, screening, conditioning, backfill, rough grading, scarifying, compacting, finish grading, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and wire mesh and surface course as required for the construction of the raised Lam Watah Tail for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

SECTION 220 – CAMPGROUND CULVERT REPLACEMENT

220.01 General

Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for replacing the existing corrugated metal culverts at the Nevada Beach Campground Road with a concrete arch culvert with wingwalls in accordance with the Contract Documents, Standard Specifications, and these Special Technical Provisions, and in conformity with the lines, grades, dimensions, and general design parameters as shown on the Project Plans, and as established and directed by the Engineer. Work under this item also includes sawcutting, AC pavement and aggregate base removal and replacement, concrete curb removal and replacement, installation of rock at inlet and outlet, removal and disposal of the existing culverts, and grading required to complete the work. In situations where two or more specifications or standards apply to this work, the most stringent requirements shall govern.

In addition to these Special Technical Provisions and the Standard Specifications, the concrete arch culvert shall conform to the current/applicable AASHTO and ASTM standards.

Excavation depths and cover heights for the concrete arch culvert is expected to be in close proximity to that which is depicted on the Project Plans.

The Contractors attention is directed to the applicable provisions of Section 209 the Standard Specifications. The Contractor is advised of the possibility of encountering ground water, large boulders, rock, and other similar materials while excavating. There shall be no additional compensation or payment made to the Contractor for encountering or excavating such materials.

220.02 Installation

All materials and construction methods shall conform to the applicable provisions of these Special Technical Provisions and the Standard Specifications.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 200 of these Specifications. Material and structures scheduled for removal shall be removed entirely and disposed in appropriate disposal facilities outside the Lake Tahoe Basin. All waste material shall be disposed of in accordance with Tahoe Regional Planning Agency (TRPA) ordinances.

The culvert shall be reinforced concrete arch pipe conforming to section 706.04 of the Standard Specifications. Headwalls shall be constructed in accordance with the Project Plans and these Special Technical Provisions.

The concrete arch culvert shall be laid to the lines and grade shown on the Plans. The Contractor shall clean the interior of the concrete arch culvert as work progresses, and the concrete arch culvert shall be clear and free of all debris and sediment before acceptance by the Engineer and the introduction of flow to the proposed culvert.

The bottom of the trench shall be graded and prepared so as to provide a firm and uniform bearing for the concrete arch culvert along its entire length (or applicable segment for portion of the work) and prepared as indicated in the submitted and accepted installation specifications. Where the trench bottom is unsuitable (i.e. soft muck/refuse or bedrock/unyielding material unable to provide long-term support), the Contractor shall excavate to a depth required by the Engineer and replace with suitable material as specified or directed by the Engineer and geotechnical engineer. Sub-base and/or bedding materials shall be placed so as to provide a firm and uniform foundation and bedding for the concrete arch culvert along its entire length, well consolidated and compacted in conformance with the submitted and accepted installation specifications (bedding material shall be of no less quality and thickness as designated on the Plans). Structural backfill shall be as shown on the Plans and conforming Section 209.08 and Table 704-1 of the Standard Specifications. No payment will be made for unclassified structure backfill as such. All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Provisions and Standard Specifications. Full compensation shall be considered as included in the price bid for construction for the installation of the items to which such structural fill is required and will be considered incidental or appurtenant.

Any resultant disturbed areas, bare soils, etc., that remain following the construction of the concrete arch pipe culvert and completion of any applicable revegetation treatments, shall be stabilized and maintained in conformance with Section 160 "Temporary Erosion Control Measures" of these Special Technical Provisions.

Culvert may be repaired, if appropriate, because of handling damage and will be acceptable if, in the opinion of the Engineer, the repairs are sound and properly finished, and the repaired section conforms to the requirements of these Special Technical Provisions, the Standard Specifications, and any manufacturer's requirements.

Prior to acceptance of the concrete arch culvert, any damage, defects, and/or associated repairs are subject to review by an applicable pipe manufacturer. Any associated costs shall be the responsibility of the Contractor, and no additional compensation shall be allowed for.

220.03 AC Paving

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for the complete construction of an asphalt concrete structural pavement section to replace the pavement removed for installation of the concrete arch culvert crossing. This work shall include excavation, subgrade preparation, and aggregate base course, as shown on the Project Plans and in accordance with the Contract Documents, Standard Specifications, Special Technical Provisions, Project Permits, or as directed by the Engineer.

Aggregate base shall be produced from commercial quality aggregates and be Type 2, Class B conforming to section 300 of the Standard Specifications. Existing asphalt concrete (AC) pavement may be crushed or pulverized and mixed with virgin aggregate or used solely as aggregate base, provided the resulting processed material complies with the requirements of the Standard Specifications or where

accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 309). The Contractor is responsible to perform and furnish all material testing as necessary to ensure compliance with the provisions in the Standard Specifications and these Special Technical Provisions.

The construction including placement, spreading, and compaction of one or more courses of aggregate base on a prepared sub-grade shall be in accordance with Section 301, "Untreated Aggregate Courses" of the Standard Specifications.

Asphalt concrete shall be Type 3 (4% Marshal Voids) and shall conform to the provisions of the applicable sections of the Standard Specifications and these Special Technical Provisions. Asphalt concrete shall be placed to the lines, dimensions, and grades shown on the Plans or as directed by the Engineer. Asphalt concrete shall be produced from commercial quality asphalt and aggregates at a central mixing plant and conform to the following requirements:

- A. Asphalt binder (cement) shall conform to section 702.01 of the Standard Specifications.
- B. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work.

The Contractor shall make all provisions to saw cut the edges of existing asphalt to expose the full depth of the section and form a clean edge at any transverse joint, for the freshly laid mixture.

A tack coat of liquid asphalt shall be applied in accordance with the provisions in Section 412, "Tack Coat" of the Standard Specifications, to all contact surfaces of existing pavement, curbing, manholes, and other surfaces as designated by the Engineer prior to any asphalt concrete pavement being placed against them.

220.05 Curb and Gutter

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the curb and gutter as shown on the plans and to replace any existing curb and gutters that are destroyed during the campground culvert replacement. Rolled curb and gutter shall be constructed in conformance with section 609 "Curb and Gutter" of the Standard Specifications.

220.06 Inlet and Outlet Protection

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the rock inlet and outlet as shown on the plans and as necessary to achieve proper drainage through the culvert. Rock materials used shall be in conformance with section 200 of these special technical provisions. Since the rock will be placed within an active flow path, rock shall be round and match the surrounding natural rock in color.

220.07 Measurement and Payment

"Campground Culvert Replacement" shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract unit price paid for "Campground Culvert Replacement" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the concrete arch culvert, complete in place, including but not limited to saw-

cutting and removal of existing pavements and curb and gutter, trench excavation, shoring, sub-grade preparation, bedding, furnishing, inspecting, compaction, replacement of curb and gutter and pavement, inlet and outlet protection, transport, and disposal of excess materials and waste debris as shown on the Plans, as specified in these Special Technical Provisions and the Standard Specifications and as directed by the Engineer; and no additional compensation will be allowed.

Full compensation for all labor, material, tools, equipment, and incidentals necessary to perform the campground culvert replacement shall be considered as included in the contract unit price paid for "Campground Culvert Replacement" and no additional compensation will be allowed.

SECTION 230 – PROPOSED CREEK CHANNEL

230.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the proposed creek channel to the limits shown and in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and as directed by the Engineer.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allowed therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Provisions.

230.02 Sod Blanket Channel

The designated area shall be cleared and grubbed, and excavated/filled to the lines and grades as shown on the Project Plans. The surrounding floodplain shall be graded to the lines and grades shown on the Project Plans less the expected height of the salvaged sod. After the floodplain subgrade is completed, the Contractor shall request from the Engineer, stakes for the channel alignment. The Engineer will stake the channel alignment within 72 hours. The Contractor shall then grade the channel sub-grade and compact soil as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall place the sod banks as shown on the Plans followed by the channel bed material section to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 200, "Gravel, Cobble, Rock, Boulder & Other Aggregates," of these Special Technical Provisions). The bed materials shall be filled and compacted using a shovel or mcleod around all edges of sod and any structures to leave minimal voids. The Contractor shall hose down the channel to fill any voids with additional bed material as needed.

230.03 Buried Log Grade Controls

The designated area shall be cleared and grubbed and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be prepared and compacted as shown on the Plans. Following the compaction of the native materials, the Contractor shall properly place the log as shown on the Project Plans and as directed by the Engineer. Following the placement of the log, the Contractor shall then properly place and compact all designated channel bed material and fill (as specified on the plans) to create the bed and banks of the proposed creek channel per section 230.02.

230.03 Measurement and Payment

“Sod Blanket Channel” shall be measured on a per linear foot basis along the centerline of the facility complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The linear foot price for “Sod Blanket Channel” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the channel section, including but not limited to, excavation, sub-grade preparation, grading, sod placement, channel bed material placement, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

“Buried Log Grade Controls” shall be measured on a per each basis complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The per each price for “Buried Log Grade Controls” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the buried log grade controls, including but not limited to, excavation, sub-grade preparation, grading, wood materials, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

SECTION 235 – LOGS AND TIMBER

235.01 General

All logs shall be sized as indicated in the Plans. All logs are to be harvested from the trees marked for removal on site by the Contractor and cost of salvaging and storing these logs shall be included in other bid items. If logs are damaged by the contractor during removal, it is the sole responsibility of the Contractor to find a suitable replacement and import the logs into the site. Only logs from coniferous trees native to the Tahoe basin will be acceptable. All logs to be incorporated into the project must be tight grain sound wood with no rot. The Engineer has the right to refuse unsatisfactory logs prior to placement in the project.

235.02 Measurement and Payment.

“As-Directed Log Placement for Enhanced Floodplain Roughness Treatment” shall be measured on a per liner foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for “As-Directed Log Placement for Enhanced Floodplain Roughness Treatment” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in placing the cut logs above finished grade as directed by the Engineer, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for the materials in this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, should be incidental to the other construction items; no additional compensation will be allowed.

SECTION 240 – RELOCATE WOODEN FENCE

240.01 General

The existing wood fence will need to be disassembled and relocated to complete construction. Care should be taken to carefully remove the fence and place out of the disturbance area before grading occurs in the area. Once grading and surface treatments are complete, the fence can be reinstalled along the new boundary of Jennings Pond as directed by the Engineer.

240.02 Measurement and Payment.

“Relocate Wooden Fence” shall be measured on a per liner foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for “Relocate Wooden Fence” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in relocating the wooden fence, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for the materials in this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, should be incidental to the other construction items; no additional compensation will be allowed.

SECTION 260 – REVEGETATION

260.01 General. The Contractor shall perform all revegetation work as specified herein and in accordance with the provisions of these Special Technical Provisions, the Project Plans, and the Standard Specifications. The revegetation work shall consist of all site preparations associated with the revegetation treatments and shall include sod and plant salvage, storage and replanting, seeding, mulching, installation of erosion control blankets, installation of willow stakes and poles, and maintenance and record keeping in accordance with the requirements as shown on the Project Plans, and as directed by the Engineer. Areas to receive revegetation treatments shall include all areas disturbed during construction and all areas indicated on the plans and as directed by the Engineer.

Revegetation work shall be conducted during non-windy conditions. Windy conditions are defined as a sustained wind of 10 mph or more; gusts where the difference between the ambient and the increased velocity is more than 4 mph; or any conditions that may make the dispersal of revegetation and erosion control material difficult or inaccurate. The Contractor is responsible for providing certified instruments or data from certified instruments in case of a claim or conflict. There shall be no pay item, payment or claim for instruments or data from measuring instruments.

All revegetated areas shall be maintained for one year following completion of work to ensure proper establishment of vegetation. Supplemental treatments may be required if revegetation efforts are unsatisfactory following completion of work as determined by the Engineer. This re-treatment may include re-application of the seed mix, willow poles and stakes, containerized plants, mulch and other items as necessary to achieve the performance measures below. The cost of this bonding shall be included in the Revegetation bid item. The Contractor must achieve 70% vegetative cover for areas receiving seed mix application.

The Contractor shall notify the Engineer no less than five (5) working days in advance of revegetation work and shall not begin work until prepared revegetation treatment areas have been accepted by the Engineer. The Contractor shall request that treatment types and boundaries are located by the Engineer prior to progressing with the work.

No substitutions or alterations to these Special Technical Provisions shall be accepted without the prior written approval of the Engineer. No further disturbance of any treatment area shall be allowed once seeding or installation of cuttings and plant materials has been initiated.

260.02 Soil Disturbance

Soil disturbance shall be minimized and limited to those areas that require treatment. All existing vegetation within the project limits not designated for removal shall be protected. Delineate project boundaries with fencing per the requirements in Construction Limit Fencing and in these Special Technical Provisions. Traffic outside of project area is prohibited. Any existing or previously installed vegetation damaged shall be replaced by the Contractor. Areas to receive revegetation treatments shall include all areas disturbed during construction, as indicated on the Project Plans and as directed by the Engineer.

260.03 Submittals. Within ten (10) calendar days following the Notice to Proceed for the contract, the Contractor shall submit to the Engineer statements proving that orders for erosion control blanket and stakes have been received and accepted by the supplier(s). The statement(s) shall include product specifications and quantity of product(s) to be delivered and the estimated date(s) of delivery. Additionally, the Contractor shall submit plans, labels or material samples for the following items:

- Revegetation Schedule and Order of Work
- Irrigation Plan and Schedule

Proposed substitutions must be submitted in writing for approval by the Engineer.

260.04 Materials

Seed

All Seed Mix shall be supplied by the NTCDD to the Contractor 3 days prior to seeding. NTCDD will supply the contractor with enough seed for applying to disturbed areas plus an additional 20%. Contractor will supply at their expense any additional seed necessary to adequately seed the revegetation areas. Seed mix will include shallow rooted annual grasses and wildflowers as listed on the Project Plans.

Salvaged Sod and Wetland Plugs

Harvest from the footprint of the restoration area as shown on the plans and as staked in the field. Do not stockpile more than 30 calendar days. Use a low weight bearing equipment ASV-POSI TRACK SKID STEER with a front-end bucket (front end loader or tractor with bucket) to salvage and transport sod and minimize damage to native vegetation remaining in place along temporary maintenance access road.

Salvaged sod shall consist of cohesive, contiguous material of sedges (*Carex spp.*) and Baltic rush (*Juncus balticus*), and other wetland and mesic meadow species, as shown on the plans and as staked in the field by the RS. Remove in as large a unit as practicable, resulting in clean, vertical edges. Sod shall be scalped from the original ground surface to a depth of no less than eight (8) inches, as measured from the root crown. Do not stack. If stored, sod shall be placed with roots down and edges snugly adjoining adjacent sections in a shaded facility for a maximum time of one month; minimize storage and handling. Maintain

as a viable growth media and do not let material dry out during handling and storage. Re-plant concurrent with channel, floodplain, and pond construction to the greatest extent possible and as directed by the Engineer. Material that cannot be moved in a contiguous manner shall be salvaged, stockpiled, and re-applied as organic matter as directed by the Engineer.

Willow Stakes

All materials shall be cut from healthy, live, dormant branches of willow and shall be taken from suitable plants within the project area as identified by the Engineer. Exclusively cutting poles from one plant will not be allowed. Stakes may vary in length, depending on source material and application, but shall be a minimum of two (2) feet in length and a minimum of one (1) inch diameter and a maximum of two (2) inches diameter. Material shall not be cut more than seven days prior to installation. Stakes shall be straight, with all leaves removed from the stems. All cuts shall be clean without frayed ends. Cut bottoms on a forty-five degree angle. Keep material cut bottoms in a water filled bucket in a shaded environment or submerge the cut bottoms in a shaded stream pool.

Salvaged Willow and Alder Root Wads

Salvage native willows clumps from the restoration area. Prior to removal, prune willows so that branches include two to three nodes, but do not exceed six (6) inches in length. Cuts shall be clean, leave no frayed bark, and be made ½ inch above the node.

Carefully remove plants by excavating around the root zone with a backhoe bucket, or other approved equipment. As much of the root ball as feasible shall be removed intact. Prune damaged roots. Burlap may be used to wrap and protect the root zone during transport. Store in pre-excavated, pre-watered trenches and maintain well-watered and healthy until moved to the permanent planting sites. Engineer will indicate planting locations that will coincide with enhanced floodplain roughness and other areas.

Mulch

Mulch shall be wood chips generated on site or pine needles. Mulch shall contain no more than 5% impurities by volume such as pine cones, twigs, rocks or other material. Garbage shall represent no more than 0.5% of the total volume. Mulch shall contain no more than 2% by volume mineral soil and no more than 10% by volume decomposed organic matter.

Erosion Control Blanket and Stakes

A single layer of erosion control blanket is specified for the proposed water quality basin and upland slopes greater than or equal to 3:1. The blanket shall be North American Green SC150 BN 70% straw and 30% coconut fiber, 9.66 ounces per square yard, sewn between 2 biodegradable natural fiber nets, or equivalent as approved by the Engineer. Each roll or bail of fabric shall be identified with a tag or label securely affixed to the outside of the roll on one end. The label shall include the manufacturer or supplier, the style number, and the roll and lot numbers. Stakes shall be 12 inches in length, manufactured from a wood (North American Green Eco-STAKE or equivalent), or as approved by the Engineer. No plastic is allowable.

260.05 Installation of Treatments

The Contractor shall notify the Engineer no less than three working days in advance of revegetation work and shall not begin the work until prepared treatment areas have been approved. The Engineer shall verify labeling of erosion control blankets and stakes upon delivery to the site and prior to application.

Re-planting Salvaged Sod and Wetland Plugs

The Engineer shall approve the planting dates and final locations. Thoroughly water all plugs and sod blocks before re-planting. Plugs shall be transported from their storage location to planting location within 5 minutes. Re-plant salvaged wetland plugs and sod adjacent to the stream channel working away in the floodplain in areas identified by the Engineer. Immediately water sod and wetland plugs after completion of re-planting.

Preparing Seed Beds

All bare soils in the project area, and those in areas outside the project area that were disturbed by the Contractor, shall be loosened as needed to a depth of 6 inches unless otherwise specified on the plans or directed by the Engineer. Soils shall be loosened with hand tools, an agricultural disc, rippers, or other equipment approved by the Engineer. Soils shall be loosened so that no soil clods are larger than an average of 1 inch in diameter. Care must be taken around existing trees and shrubs to prevent root damage during soil conditioning, grading and excavation activities. No mechanical loosening of soil shall take place within the dripline of mature trees or shrubs. Final surfaces shall be left rough unless erosion control blankets are specified, in which case soils shall be raked smooth. No wheeled or other mechanical equipment shall be permitted to travel on the prepared seedbed.

Seeding

Seed shall be uniformly broadcast with hand-held seeders to achieve desired application rate. Incorporate seed by raking or harrowing to a depth of ¼ inch to ½ inch. Seed shall not be left uncovered more than 24 hours. Seeding shall not occur under conditions that would allow the seed to become windborne (winds greater than 5 mph) or to wash away.

Mulching

Material shall be evenly applied to a depth of approximately one (1) to two (2) inches, for 100% cover over revegetation areas (except for areas to receive the erosion control blanket—which shall not receive mulch).

Installing Erosion Control Blankets

Install where shown on the project plans according to the treatment types. Carefully key in blankets per Project Plans. Overlap blankets twelve (12) inches working upstream, if possible. Stake with stakes installed three (3) feet on center. Key fabric in to a six (6) inch deep toe trench at the toe of slopes. Anchor blankets in trenches with the stakes on one-foot centers, backfill the trench and compact loose soil. Overlap blanket any blanket ends twelve (12) inches minimum.

Installing Willow Stakes

Install willow stakes per the project plans. Stakes shall be pushed into a hole slightly larger than the diameter of the pole, prepared using a 4' bucket stinger, power auger, Waterjet Stinger, (<ftp://ftpfc.sc.egov.usda.gov/ID/programs/technotes/waterjet.pdf>), or other approved methodology. The bottom of the stake shall be at an elevation below the bankfull water elevation of the adjacent creek. Insert the stake in the excavated hole to the proper depth, backfill the hole with the excavated material and firmly tamp the soil around the poles to eliminate air pockets and hold the poles in place.

Salvaged Willow and Alder Rood Wads

Salvage native willows clumps from the restoration area as shown on the plans and as staked in the field and directed by the Engineer. Remove and re-plant willows with construction as much as practicable. Engineer will indicate planting locations.

260.06 Revegetation Treatment Types

Pond Treatment

Complete partial fill of Jennings Pond to 2" below finished grade. Cover bottom of new pond with pond bed material and compact to achieve finished grade.

Place Salvaged Sod

Complete stream channel and floodplain subgrade. Wet salvaged sod prior to moving. Place salvaged sod to construct sod blanket channel. Starting at channel banks or edge of disturbance area and working outward, place salvaged sod in a checkerboard pattern to achieve full coverage of restored floodplain. Tamp down to seat sod and achieve finished grade. Water sod immediately after planting and at least two times per day until irrigation is established.

Sod Seed Treatment

Apply seed mix over sod at the rates specified on the plans. For Jennings Pond, complete fill and pond treatment, install "sod cap" at top 12" of circumference of pond. Install sod on microtopography islands and at floodplain excavation. Water sod immediately after planting and at least 2 times per day until October 15th using pumped water from pond or Burke Creek.

Upland Treatment

Have Engineer check for any areas of excessive compaction. De-compact as necessary to 6" depth and rake smooth. See with Upland Seed Mix. Install single layer of straw coconut erosion control blanket on slopes 3:1 or greater, 3,000 square feet of erosion control blanket maximum to be installed. Mulch remaining areas with 1 to 2 inch layer of mulch.

Slope Treatment

Have Engineer check for any areas of excessive compaction. De-compact as necessary to 6" depth and rake smooth. See with Upland Seed Mix and cover surface with 1 to 2 inch layer of mulch.

260.07 Temporary Irrigation

Temporary irrigation shall be used to encourage rapid plant establishment. Irrigation is intended solely as an initial assistance for germination and establishment and is not intended to continue past the initial vegetation establishment period. Only areas within 25' of the Tahoe Beach Club access road shall receive irrigation.

Temporary irrigation shall be performed with a low-pressure impact system in order to establish vegetation to conditions described in these Special Provisions. Irrigation shall be performed such that water is applied evenly throughout all revegetation treatment areas and shall penetrate to at least six (6) inches below the ground surface within twelve (12) hours of irrigation and allows the surface soil to dry out while maintaining adequate moisture levels at depth. Exact irrigation scheduling for all areas shall depend on air and soil temperatures and will require adjusting during the course of the growing season. Irrigation schedules shall be as described in these Special Technical Provisions and submitted to the Engineer for acceptance to ensure proper timing, frequency and duration. Above-ground irrigation shall take place early in the morning or late in the evening whenever possible in order to minimize water loss due to high air temperatures and wind. A suitable timer/controller device shall be part of the

temporary irrigation system in order to program an irrigation schedule and apply water to the revegetation treatment areas as specified herein.

The temporary irrigation system shall consist of above-ground piping that is flexible, highly burst resistant and suitable for use in a creek fed piping system. The Contractor shall be responsible to provide for any underground crossings and pipe sleeves as may be necessary to avoid surface conflicts with roads, trails, and other public use areas. No irrigation application or overspray to concrete or asphalt surfaces will be allowed. Irrigation water shall come from a municipal water supply at the Tahoe Beach Club.

260.08 Performance Standard and Acceptance

The Contractor shall guarantee revegetation in accordance with these Special Technical Provisions. Revegetated areas will be inspected by the Engineer at completion of installation and accepted subject to compliance with specified materials and installation requirements.

Following one full growing season after treatment, the Contractor must achieve 70% vegetative cover for areas receiving seed mix application and 90% mulch coverage. Cover assessment shall be assessed by the point-intercept method. If specified coverage is not achieved, the Contractor may be required to re-seed, and/or re-mulch. The Contractor will provide the Engineer notification at least ten working days before the requested inspection date.

A revegetation security of 25 percent of the total cost of all revegetation work shall remain in effect until maintenance and survival guarantee criteria have been met as defined herein and accepted in writing by the Engineer. The acceptance for releasing the security will occur following the end of the first growing season if the success criteria is met. This guarantee period constitutes the warranty period strictly associated with the revegetation work described herein.

Acceptance of other work and/or filing of a Notice of Completion shall not constitute acceptance, waiver and/or modification of the revegetation, revegetation maintenance, and survival guarantee portion of the project.

260.10 Measurement and payment

“Place Salvaged Sod” shall be measured on a square foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for “Place Salvaged Sod” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in completing the revegetation of this area including the required maintenance and security, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

“Sod Seed Treatment” shall be measured on a square foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for “Sod Seed Treatment” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in completing the revegetation of this area including the required maintenance and security, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

“Pond Treatment” shall be measured on a square foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for “Pond Treatment” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in completing the pond bed treatment of this area, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

“Upland Treatment” shall be measured on a square foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. Additional unauthorized disturbance outside those areas shown on the Project Plans shall be at the expense of the contractor and not part of the square footage measured for payment. The contract price paid for “Upland Treatment” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in completing the revegetation of this area including the required erosion control blanket, soil preparation, seed installation, maintenance and bonding, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

“Slope Treatment” shall be measured on a square foot basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. Additional unauthorized disturbance outside those areas shown on the Project Plans shall be at the expense of the contractor and not part of the square footage measured for payment. The contract price paid for “Slope Treatment” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in completing the revegetation of this area including the required erosion control blanket, soil preparation, seed installation, maintenance and bonding, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

“Willow Transplant” shall be measured on a per each basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for “Willow Transplant” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in salvaging and installing the root wad as directed by the Engineer, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

“Temporary Irrigation” shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for “Irrigation” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in completing the irrigation for up to 12 months after project completion, including the required security, complete in place, as shown on the Plans, as specified in these Special Technical Provisions and as directed by the Engineer; and no additional compensation will be allowed.

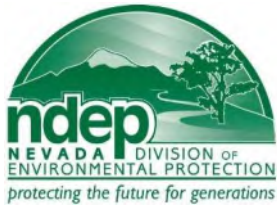
The sum of the value of the bid items in this section will constitute the cost of revegetation from which the 25 percent security is calculated from. Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

Appendix A: Preliminary Dewatering and Diversion Plan

PRELIMINARY DEWATERING AND DIVERSION PLAN

Burke Creek/Rabe Meadow Riparian Restoration Project

Prepared For:



Prepared By:



February 2024

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1.0 BACKGROUND AND OBJECTIVES

The Burke Creek/Rabe Meadow Riparian Restoration Project will implement restoration improvements in the Burke Creek Watershed between US Highway 50 and the watershed's outlet to Lake Tahoe at Nevada Beach Campground. Several restoration actions will be taken as part of this project, including the construction of a new creek outlet to Lake Tahoe, construction of a new access road to an existing sewer pump station, removal of meadow fill to expand the riparian area, installation of beaver dam analogs and similar in-channel structures, the removal of several historic ditches, the partial filling of a man-made pond, the construction of improvements to existing pedestrian trails in riparian areas, and the construction of stormwater improvements for Kahle Drive. The project will improve degraded watershed hydrology, increase riparian habitat, and reduce the input of urban stormwater pollutants to Lake Tahoe. The project area is primarily on US Forest Service Land, with a small portion on private land owned by the Tahoe Beach Club (TBC) and in the Kahle Drive right of way. Construction activities for the project are anticipated to primarily take place between May 1 and October 15, 2024, with smaller levels of activity to also occur between the same calendar dates in 2025. The project is classified as an Environmental Improvement Project (EIP) by the Tahoe Regional Planning Agency with EIP number 01.02.03.0025.

Objectives:

1. Restore nearly 1.8 acres of Rabe Meadow by decommissioning a drainage ditch that runs from the Kahle Drive to Lake Tahoe and removing fill from the historic Burke Creek Floodplain.
2. Create a high sinuosity Rosgen E1 channel in a 350 LF reach of Burke Creek where previous floodplain development created a straight, incised channel.
3. Reduce the delivery of sediment and nutrients to Lake Tahoe by disconnecting road runoff and improving the riparian health of Burke Creek.
4. Improve hydrologic function and reduce flooding in Nevada Beach Campground and an existing sewer pump station by constructing a new outlet of Burke Creek to Lake Tahoe closer to its historic pre-development outlet.
5. Reduce flooding on Kahle Drive by expanding the floodplain between Folsom Spring and Burke Creek, reducing the depth and size of Jennings Pond, and raising the Lam Watah trail.
6. Protect riparian vegetation and improve hydrologic connectivity by constructing improvements to trails in riparian areas.
7. Restore areas of historic meadows and improve meadow hydrology by backfilling and restoring ditches related to previous livestock grazing activities in the project area.
8. Increase suitable habitat for beaver, create self-sustaining hydrologic processes and increase habitat complexity by installing post-assisted log structures and beaver dam analogs in Burke Creek downstream of Jennings Pond and adding micro-topography within Jennings Pond.

Project Improvements:

- Construction of a new Burke Creek outlet channel to Lake Tahoe, entailing:
 - Removal of an existing access road to the Douglas County Lake Tahoe Sewer Authority (DCLTSA) pump station in Nevada Beach Campground in the riparian area adjacent to Burke Creek.
 - Construct a new pump station access road approximately 200 feet upstream with 3 open bottom culverts. The road will be approximately 360 feet long, 10 feet wide, with two-foot shoulders with approximately 60 linear feet crossing the riparian area.
 - Removal of middle and upstream existing concrete box culverts along the existing channel of Burke Creek near the Nevada Beach Campground.
 - Filling existing Burke Creek channel between removed concrete box culverts.
 - Construction of a sinuous channel and inset floodplain from the existing Burke Creek channel by the pump station access road to 0.5 feet above the highwater line of Lake Tahoe.
 - Filling of the Kahle Ditch from the existing access road to 0.5 feet above the highwater line of Lake Tahoe.
 - Undergrounding of power lines and lowering of gas line that currently run above and through the proposed restoration area.
 - Replacement of Nevada Beach Campground corrugated metal pipe (CMP) with concrete arch pipe.
- Backfilling of Kahle Ditch, floodplain restoration and creek restoration adjacent to the Tahoe Beach Club, entailing:
 - Removal of placed fill and old utility connections at the site of a former trailer home park to restore historic floodplain.
 - Filling of the entire length of Kahle Ditch along the Tahoe Beach Club property line.
 - Placement of wood structures in Burke Creek to improve channel complexity and floodplain connectivity.
 - Thinning of vegetation in the main channel of Burke Creek and filling of side channels that route water away from the main channel.
 - Restoration of Burke Creek to increase its sinuosity and reduce incision.
- Partial filling of Jennings Pond, entailing:
 - Reduction of pond depth and size by placing fill sourced from other parts of the project area (estimated at 2,450 CY) and adding islands and other microtopography.
 - Lower the elevation of an 8,000 square foot area between Folsom Spring and Burke Creek to create additional floodplain area by excavating approximately 250 cubic yards. Revegetate with salvaged sod and willow.
 - Raise a 400 foot long section of the Lam Watah Trail up to 4 feet by adding approximately 650 cubic yard of fill in some locations to protect infrastructure to the south from flooding. This action will also increase riparian wetting to help decommission user-created trails to sensitive areas.
 - Construction of willow stake structures, post-assisted log structures, and beaver dam analogs in Burke Creek downstream of Jennings Pond to help increase beaver habitat during the restoration and decrease channel capacity and increase channel complexity.

**PRELIMINARY DEWATERING AND DIVERSION PLAN
BURKE CREEK/RABE MEADOW RIPARIAN RESTORATION PROJECT**

- Construction of drainage improvements along Kahle Drive:
 - Construction of a stormwater basin at the end of Kahle Drive in the adjacent meadow.
- Construction of trail improvements, entailing:
 - Construction of up to 750 LF of boardwalk on the Lam Watah trail.
 - Construction of drainage improvements including the installation of drain rock and French drains on a 500 LF section of the Lam Watah Trail.
 - Decommissioning of user-created trails in the upper parts of Rabe Meadows using rock, scarification, revegetation, and wood structures.
- Filling of ephemeral ditches in upper meadow areas

The purpose of this Dewatering and Diversion Plan (DDP) is to detail the control of intercepted creek flows, groundwater flows, and seepage flows during the construction of proposed improvements described above. Dewatering and discharge processes and monitoring described in the following sections will allow the system to operate at an acceptable level while protecting water quality until construction is completed.

The Contractor shall submit a detailed Dewatering and Diversion Plan to the Engineer for distribution to Nevada Division of Environmental Protection (NDEP) and the Lake Tahoe Basin Management Unit (LTBMU) prior to the initiation of construction activities, and in accordance with the project plans, standard specifications, the special technical specifications, the Stormwater Pollution Protection Plan (SWPPP), the Forest Service Resource Protection Measures, and this plan. These entities will review and comment on the Plan within fifteen (15) working days and provide comments to the Engineer who will then provide the comments to the Contractor. The Contractor will update the plan based on the comments, if needed, and re-submit to the Engineer for review and acceptance. No work on the Project will be allowed to be performed until an accepted plan has been provided and certified.

The detailed dewatering plan shall include the Contractor's approach for dewatering including but not limited to: the dewatering location(s), number and size of pumping units (if applicable), power source for pumping units (if applicable), size and materials for pipes, materials for damming, piping discharge point(s), fuel storage location (if applicable), location of emergency or back up detention system, settling basin (if applicable), gravel bags, baker tank (if applicable), dirt bag filter (s) and location of dewatering infiltration area. The Contractor shall include the manufacturer's specifications where applicable.

The detailed diversion plan shall include the Contractors approach for diverting the natural flow of Burke Creek during construction of in-channel work including but not limited to: diversion method and materials, number and size of pumping units, power source for pumping units, piping discharge point(s), access and installation methodologies, protection methods for discharge point(s), fuel storage (if applicable), design flow rates, and final method for gradually introducing natural flow into the newly constructed channel while concurrently meeting all applicable regulatory water quality standards for discharge. The Contractor shall include the manufacturer's specifications where applicable.

Alternatively, the Contractor may adopt this plan and list the following information: diversion method and materials, number and size of pumping units, power source for pumping units, piping discharge point(s), access

and installation methodologies, protection methods for discharge point(s), fuel storage (if applicable), and design flow rates.

2.0 REGULATORY REQUIREMENTS

2.1 Effluent Requirements

The diversion and dewatering operations as well as the introduction of flow into the newly constructed channel are required to meet the permit requirements of Nevada Division of Environment Protection (NDEP), and the Tahoe Regional Planning Agency (TRPA). The NDEP standards for tributaries in the Lake Tahoe Basin reference the Nevada Administrative Code - Chapter 445A – NAC 445A.1628. The TRPA standards are specified in Chapter 81 – Water Quality Control of the TRPA Code of Ordinances. The more stringent NDEP standard for turbidity governs. NDEP Standards for discharge to tributaries of Lake Tahoe are in Appendix C.

Operations will be required to fully accommodate all in-channel flows and intercepted groundwater for the entire duration of the Project to assure Project success and to protect the downstream reaches of Burke Creek and Lake Tahoe from any discharge exceeding 10 NTUs, or the baseline turbidity value established prior to construction, whichever is higher. Per NDEP NAC445A.1628, single value turbidity cannot exceed 10 NTU in more than 10 percent of samples taken. Samples must be taken daily at Burke Creek and Lake Tahoe. See Section 3.3 for additional information on introduction of water to newly restored areas.

2.1 Aquatic Species Requirements

Prior to any dewatering or diversion activities, removal of aquatic invasive species by the Tahoe Resource Conservation District (TRCD) and salvage/recovery of aquatic species will be conducted by LTBMU Fisheries Staff within anticipated construction dewatering or diversion zones operations by electro-shocking or other suitable means as developed through consultation with the LTBMU fisheries staff. Aquatic species will be moved approximately 500 -700 feet upstream or downstream of project activities, as determined by USFS fisheries staff. Block nets will be installed to ensure fish do not move back into the Action Area. Nets will be cleaned one to two times daily to ensure the nets are functioning by LTBMU Staff or the Nevada Tahoe Conservation Staff.

3.0 DIVERSION REQUIREMENTS

3.1 Summary

The project area is at the downstream end of the Burke Creek watershed and includes Jennings Pond. Dewatering and diversion of the flows of Burke Creek will be required as part of this project. As well, it is anticipated that groundwater will be encountered during grading activities which will also necessitate pumped dewatering. Various sub-elements of this project will be constructed at different times from May-October. Appendix A provides a summary of project phasing and dewatering requirements for each phase. Exact project

timetables may be adjusted by the engineer based on permitting, precipitation, and hydrologic conditions in Burke Creek and Rabe Meadow.

3.2 Installing Diversion

Installation of each diversion dam shall only be initiated after approval from NTCD and the LTBMU. The diversion dam shall be built with sandbags no larger than 14" x 26." This will enable the transport of bags by hand in wet or sensitive areas. Plastic-lined diversion must be lined in 6 mil (min) tear resistant plastic. See plans and specifications for additional information on installing the diversion. The diversion dam shall be installed in a manner as to not create turbidity and shall be done all by hand (no use of equipment).

3.3 Channel and Pond Flushing and Diversion Decommissioning

Flushing of newly constructed restoration improvements must occur before any diversions are decommissioned. For flushing of new Burke Creek channel sections, the diversion and associated coffer dams shall remain in place while the contractor pumps no more than 50 gallons per minute into the new channel, taking care to wash and spray sections of loose dirt and sediment if possible. A pump shall be present upstream of the downstream coffer dam to pump flushing flows to upland at least 50 feet away from any active flow paths. NTCD will sample these flushing flows and notify the contractor when water quality standards have been met and additional flows can be directed into the new channel. Additional flow may be directed using a pump or the partial lowering of the diversion dam after one iteration of flushing flows have been completed. Lowering of the diversion dam shall remove no more than one sandbag at a time with testing and water quality standards being met between each sandbag removal at a minimum. Flushing flows for the channel could take up to two full days to meet water quality standards. Once flushing is completed and meets water quality standards, the upstream coffer dam can be fully removed. After this removal, testing shall occur upstream of the downstream coffer dam to ensure that standards are still being met. When standards are met, the downstream coffer dam can be removed.

For flushing of the partially filled Jennings Pond and associated microtopography the diversion and associated coffer dams shall remain in place while the contractor allows no more than 100 gallons per minute into the pond. A pump shall be present upstream of the downstream coffer dam to pump flushing flows to upland at least 50 feet away from any active flow paths. NTCD will sample these flushing flows just above the pump and notify the contractor when additional flows can be directed into the new pond by decommissioning additional sections of the upstream coffer dam. Flushing flows for Jennings Pond could take up to five full days to meet water quality standards. The Contractor may choose to leave water in Jennings Pond to settle sediment overnight. Once flushing is completed and meets water quality standards, the upstream coffer dam can be fully removed. After this removal, testing shall occur upstream of the downstream coffer dam to ensure that standards are still being met. When standards are met, the downstream coffer dam can be removed.

Decommissioning of each diversion dam shall only be initiated after acceptance of the completion of grading by the Engineer, NTCD, NDEP, and LTBMU. The decommissioning shall start with the shutdown of the diversion pump, if required, and then proceed with the slow and careful removal of portion(s) of the diversion dam. The

portion(s) of the diversion dam to be removed shall only be the top layers of the dam in order to minimize the downstream forces of the water on the new grading. The maximum allowable sandbag size for the diversion within Burke Creek and Kahle Ditch is 14" x 26" to better control the decommissioning of the diversion. The diversion dam shall be removed in a manner as to not create turbidity and shall be done all by hand (no use of equipment). Once the diversion dam has been removed, the diversion area will be restored or regraded per Engineer with appropriate water quality protection measures in place.

3.4 Phasing and Winterization

While this Project has an anticipated construction time of up to two years, staging of project construction will ensure that construction activities will finish by October 15 each year, with post-construction hydrology being adequate to convey large storm events. Any diversions installed will be eliminated before winter, and therefore, winterization of diversions is not expected to be necessary for the project.

3.5 Diversion Flow Rates

Groundwater flows are expected to be encountered due to the project's proximity to Burke Creek. A report prepared by Winzler Kelly in 2009 ("Burke Creek Restoration Project Alternatives Analysis Report") examined hydrology pertaining to the project and provided estimated flows in Burke Creek above Jennings Pond.

A 2003 drainage study by Carter-Burgess provides conservative estimates for stormwater and groundwater flows to the Kahle Ditch for the 10 year and 100 year events. This was cross-checked with the rational method using the approved TRPA coverage for the development and was within the range of potential surface runoff to the Kahle Ditch.

Finally, NTCD used HEC-HMS and HEC-RAS to examine potential storm flows to Burke Creek originating in meadows and upland areas to the northeast. These flows were modeled at a corrugated metal pipe (CMP) culvert in Nevada Beach campground.

Estimated peak flows for these three locations during storm events are shown in Table 1 below. Note that these storm flows are much more likely to occur in the winter and spring months, outside of the proposed construction period. Burke Creek flows should be used for the diversion construction near Jennings Pond.

Table 1: Estimated Peak Flows in project area

	Peak Flow for Indicated Return Period [cfs]	
	10 yr	100 yr
Burke Creek	47	121
Nevada Beach Campground CMP to Burke Creek outlet	3	13
Kahle Ditch	6.6	13.4

4.0 DEWATERING REQUIREMENTS

4.1 Summary

In addition to the flow from Burke Creek being routed downstream of the construction area as described in Section 3.0, planned excavation for the new channel construction and other improvements may introduce additional flow from groundwater into the system. Additionally, the partial filling of Jennings Pond will require extensive dewatering once the diversion is in place. Groundwater and seepage flows will be removed from construction and excavation areas as necessary and discharged to land at a location at least 50 feet from Burke Creek. It is assumed that the Contractor will use flexible hoses to carry the sediment-laden water from portable sump pumps to sprinklers, a dirtbag, or a natural depression to prevent surface flow to Burke Creek and soil erosion. A check valve should be placed on this line to assure no backflow into the construction area. The effluent may be reused for construction purposes as described in section 4.3. Cofferdams will be installed upstream and downstream of all dewatered areas prior to pumping. It is anticipated that standard coffer dams for dewatering Burke Creek will require 14" x 26" sandbags. Larger 25"x40" sandbags could be used for the cofferdam separating Jennings Pond from Burke Creek if the ground saturation allows tracked equipment to approach the pond. Examples of sandbags will be submitted by the contractor to the engineer for approval.

4.2 Dewatering Flow Rates

Flow from groundwater and seepage into the construction area for in-channel work, culvert placement, and grading may be encountered. No direct aquifer testing has been completed to accurately estimate the maximum rate of groundwater flow which will need to be pumped in order maintain a dewatered construction area during construction of the new channel.

Groundwater elevations have been investigated in the vicinity of the Kahle Ditch in 2003, 2007, 2016, and 2019 and groundwater elevations vary from 0 to 2 feet depth within that area where grading will be required. Groundwater elevations can be found in the Geotechnical Reports prepared for the Tahoe Beach Club in 2016, 2018, and 2019. The Contractor is responsible for appropriately dewatering the construction site in order to construct the Project improvements as described in this plan, the SWPPP and the Special Technical Specifications. A copy of the Tahoe Beach Club Geotechnical Reports will be provided with the contract documents for the Contractor's use and information on the geotechnical conditions within the Project area.

The 2009 Winzler Kelly report determined post-snowmelt base flows during the summer in Burke Creek upstream of Jennings Pond to be around 0.2 CFS with minimal variation. Because the Burke Creek Watershed is primarily spring-fed, stream flows during summer are relatively consistent even in the event of precipitation events. For example, during the two summers of flow data referenced in the Winzler Kelly report, stream flows did not exceed 1 CFS outside of winter and peak snowmelt.

Therefore, to convey streamflows and groundwater with an added safety factor, pumps shall be present on site in size and quantity to convey a minimum of 1 CFS (~450 GPM). Contractors will be required to submit pump specifications to the project engineer for approval. The dewatering summary table in Appendix A lists the number

of pumps required for each of the construction actions encompassed in these plans. At least one 3" pump must be on site at all times. Additional pumps may be of 1" and 2" size, however when 4 pumps are required for an activity per Appendix A, one of the additional pumps must be 2" in size.

4.3 Discharge and Treatment Options

Treatment options may include the use of dirt bag filters or use of existing water quality infrastructure such as the water quality basins at the end of Kahle Drive. The effluent that discharges from any dirt bag filter on the Project site will meet groundwater quality discharge standards before being allowed to infiltrate into the soil in a location that can appropriately accommodate it. The groundwater discharge standard used will be the TRPA Standard of 200 NTU since NDEP Standards only require best management practices and daily monitoring for erosion. TRPA Standards are listed in Appendix D. Discharge locations shall be accepted by the Engineer prior to placement and use by the Contractor. NTCD will take the discharge samples as daily grab samples.

If the treated decant is unable to meet requirements for direct release to the creek downstream of the work area (equal to or less than 10 NTU Turbidity), then it may be applied to the vegetation within a location at least 50 feet from Burke Creek for infiltration or pumped to a water truck and used as applied dust control. All discharged effluent water used for irrigation will occur at least 50 feet away from Burke Creek and will be immediately discontinued upon evidence of runoff. The effluent shall not be discharged into sanitary sewers. The effluent may be discharged into storm sewers that flow to Kahle Basin with the Engineer's approval. The contractor shall have hoses of 600 LF in length to enable adequate pumping distance from project areas and Burke Creek. No overnight pumping without construction personnel on site is allowed.

If the treated water is unable to meet quality requirements and the volume of water is too large to be consumed by use for construction purposes, a sedimentation tank may be necessary to treat the water. If necessary, a sedimentation tank would be used to bring the water to effluent standards (equal or less than 10 NTU Turbidity) before being discharged to Burke Creek.

4.4 Contractor Requirements

Contractors for this project are required to follow all guidelines in this plan and may not deviate from the plan without approval from the engineer. A fine for work done without engineer's approval of up to \$2500 per violation will pertain to any failure to follow the guidelines in this dewatering plan. As well the contractor will be subject to an hourly fine of \$250 for turbidity violations.

5.0 OPERATIONS AND MAINTENANCE

All temporary sumps and pumping systems necessary for dewatering activities shall be designed, operated, and maintained to avoid pumping of fine sediments from the subsurface. Monitoring of sumps and pump systems shall be conducted by the contractor at a minimum of every two hours to ensure that subsurface fine sediments are not being removed by the dewatering operation. Dewatering fluids and debris shall be disposed of in a suitable manner in compliance with the requirements of the SWPPP. Sedimentation tanks used on the project site, if

required, shall only be flushed and cleaned outside of the project area at an approved facility. Disposal of material shall meet all federal, state, and local requirements. No runoff waters or stormwater shall be allowed to drain into excavated areas, except where specifically identified in the project plans.

Routine monitoring of all diversion and dewatering systems will be conducted daily by the Contractor during active construction. If it is discovered that any portion of the system is not functioning properly, the Contractor shall shut down operations until the problem is evaluated and the necessary repairs to the system are made.

6.0 MONITORING

6.1 Water Quality Monitoring

When discharging construction water to the creek, the discharge effluent water quality must not exceed the upstream turbidity by 10 NTU at a location 200' downstream from the discharge point. See Appendices C and D for discharge requirements. Discharge effluent water quality will be measured for turbidity at a location 200' downstream from active construction utilizing daily grab samples by NTCD. When diversions, dewatering, or rewatering operations are occurring within 200 feet of Lake Tahoe, hourly turbidity grab samples will occur. Decommissioning diversions and rewatering new sections of channel shall not proceed to the next phase until turbidity standards are met in the previous phase. Additionally, visual inspection data will be collected at any diversion or dewatering discharge points on a daily basis. If turbidity levels fall outside the limits in Appendix C or if the discharge exhibits any odors, discoloration or oily sheen, the Contractor shall shut down operations until the problem is evaluated and the necessary repairs to the system are made.

6.2 Visual Inspections

When functioning, the Contractor will perform a visual inspection of the entire dewatering and diversion systems from intake to discharge point and note any problems or deficiencies in the system at least every two hours. Any deficiencies shall be corrected immediately and reported to the Engineer for inspection. If there is an issue with the fish screens or fish within the dewatering areas, the Contractor shall report this to the Engineer or LTBMU Fisheries crew immediately.

6.3 Recorded Data

Water Quality data will be collected by NTCD and the data shall include the following:

- Date and time
- Location
- Distance from Active Work Site
- Upstream Turbidity in NTU
- Downstream Turbidity in NTU
- Weather conditions
- Presence of waterfowl or aquatic wildlife

**PRELIMINARY DEWATERING AND DIVERSION PLAN
BURKE CREEK/RABE MEADOW RIPARIAN RESTORATION PROJECT**

- Color and clarity of discharge effluent
- Erosion or ponding downstream of discharge site
- Photographs taken

APPENDIX A:
DEWATERING SUMMARY TABLE

Burke Creek Rabe Meadow Riparian Restoration Project - Dewatering Action Summary

Action	Year	Anticipated Start Month	Anticipated End Month	Activity	Anticipated Hydrology Concerns	Dewatering/Mitigation measures	Diversion Length (ft)	Diversion Description	Pumps required on-site	Min. Hose Length (LF)
1a	2024	May	May	Replace existing degraded CMP below campground road with concrete arch culvert.	Located adjacent to ex. Burke Creek Channel, located in active flow path, High groundwater table.	For culvert at NV Beach Campground Road, a clear water diversion required if flows are present. Groundwater pumping to forest to east or upland area north of creek if only groundwater is present.	20	Use 2" pump to pump flows around to flexible hose and outlet structures/dissapator	1	50
1b	2024	May	May	Construction of hardened construction entrance from Nevada Beach Campground Road to DCLTSA Pump Station. Construct parking improvements and access road from station to edge of Burke Creek (crossing of creek with culverts to be installed during action 5a)	Located adjacent to ex. Burke Creek Channel, located in active flow path, High groundwater table.	For access from NV Beach, dewatering of creek not required. Very heavy focus during construction of ensuring adequate BMPs are in place. Pumps on site to pump groundwater to forest upland to east.	N/A	Use 2" pump to pump flows around to flexible hose and outlet structures/dissapator	1	200
2	2024	May	June	Construction of new channel and inset floodplain between ex. DCLTSA access road and Lake Tahoe barrier beach	Groundwater, Lake Tahoe Water Level influence, Surface flows in Kahle Ditch. Proximity to Lake Tahoe and popular recreation site.	Plug existing culvert and install coffer dam in Kahle Ditch upstream of sewer plant road to ensure water flows to north into Burke Creek. Pump groundwater to sandy upland to north, willows east of access road, upland area to east	N/A	N/A	4	600
3	2024, 2025	May	September	Construct BDAs, post-assisted log structures, and willow staking in Burke Creek and adjacent meadow	Creek flows, Wet Surface Access	Installation of small coffer dams surrounding work area. Pump clean water around work area to downstream. Visual monitoring and hourly grab samples of turbidity downstream.	N/A	N/A	2	100
4	2024	June	August	Construction of water quality basin at end of Kahle Drive	Groundwater	Pumping of groundwater to land at least 50' away from active stream or ditch flows	N/A	N/A	3	100
5a	2024	July	September	Upstream 400' from DCLTSA access road to Rabe Meadow. Activites include restoration of Burke Creek, removal of Kahle Ditch, construction of new DCLTSA access road crossing of creek/SEZ.	Creek Flows,multi-thread channels, groundwater flows, culvert footing installation	1. Pumping to mitigate coffer dam installation and vegetation removal by hand crews to reoccupy Burke Channel to the north of current flow path. 2. Pumping as needed to fill Kahle Ditch. 3. Diversion of Burke Creek using pipe around active work area to existing Burke Creek Channel downstream. Dewatering of excavation area for culvert footing installation. Diversion can be removed as long as new outlet channel is blocked by coffer dam.	420 LF	Water tight 12" diameter pipe with capacity of 1 cfs, rock outfall in a section of channel that will be decommissioned in September	5	500
5b	2024	July	September	SEZ restoration and Kahle Ditch removal for 390' upstream of 5a.	Creek Flows,multi-thread channels, groundwater flows	1. Pumping to mitigate coffer dam installation and vegetation removal by hand crews to reoccupy Burke Channel to the north of current flow path. 2. Pumping as needed to fill Kahle Ditch.	n/a	Water to be diverted from project area through existing channels in middle of Rabe Meadow. Coffor dams to be placed in select locations to block flows from ditch.	5	500
5c	2024	July	September	SEZ restoration and Kahle Ditch removal for 1600' upstream of 5b to Kahle Drive.	Multi-thread channels, groundwater flows	Pumping as needed to fill Kahle Ditch.	N/A	N/A	5	500
6	2024	August	August	Excavate bypass channel to disconnect Burke Creek from Jennings Pond	Groundwater, Burke Creek Flows, Beaver activity	This action is the construction of the dewatering channel for Jennings Pond. NO SOONER THAN AUGUST 7th, install cofferdam on northeast side of Jennings Pond. Engineer will mark out location to limit disturbance to resident beaver population. Heritage monitor must be on site during any earth moving	130 LF	4' wide channel lined with tear proof fabric, 2% slope	4	600
7	2024	August	September	Jennings Pond restoration	Groundwater, Jennings Pond water	NO SOONER THAN AUGUST 21st, use pumps and dirtbags to dewater pond area to dry areas or existing stormwater infrastructure. Sumps may need to be constructed for dewatering. At end of grading remove coffer dam and diversion installed with action 6. Once Burke Creek and Jennings Pond are receiving flow, decommission diversion channel and lower floodplain in this area. Heritage monitor must be on site during any earth moving.	N/A	N/A	4	600
8	2024	September	October	Remove DCLTSA access road between Tahoe Beach Club and upstream most box culvert in Nevada Beach Campground. Connect channel built in Action 2 with channel built in Action 5 by removing sand bags and/or pumping partial flows into channel.	Groundwater, surface flows to newly constructed channel, proximity to Lake Tahoe	Install coffer dam and pumps at downstream end of new Burke Creek alignment near Lake Tahoe and designate upland pumping area. Remove access road within new floodplain and construct channel section and floodplain through old road alignment.	N/A	N/A	4	200
9	2024 or 2025	June	September	Filling of ephemeral ditches in meadows/forests to north of Burke Creek	Groundwater, surface flows in the event of storms	Construct in dry season and with favorable weather forecast. Keep pumps on site during construction and use as needed for dewatering	N/A	N/A	1	100
10	2024 or 2025	June	September	Trail improvements	Groundwater, surface flows in the event of storms	Construct in dry season and with favorable weather forecast. Keep pumps on site during construction and use as needed for dewatering	N/A	N/A	1	100
11	2024 or 2025	Sep-23	May-24	Remove 2 upstream box culverts and fill existing Burke Creek alignment upstream of middle culvert	Groundwater	Pumping of groundwater seepage and flows from culvert. Burke Creek flows will be flowing through channel constructed in action 2	N/A	N/A	4	200
12	2024	July	September	Construction in portion of riparian area adjacent to Kahle Basin	Groundwater	Pumping of groundwater to Kahle Basin	N/A	N/A	2	100

APPENDIX B:

EXAMPLE DEWATERING AND DIVERSION DAILY INSPECTION FORM

APPENDIX C:

NDEP WATER QUALITY STANDARDS FOR LAKE TAHOE TRIBUTARIES

STANDARDS OF WATER QUALITY

Lake Tahoe Tributaries

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY CRITERIA TO PROTECT BENEFICIAL USES	Beneficial Uses ^a										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X		X	
Aquatic Life Species of Concern			Cold-water fishery.										
Temperature - °C		S.V. Oct-May ≤ 10.0 S.V. Jun-Sep ≤ 20.0			*								
pH - SU		S.V. 6.5 - 9.0			*								
Dissolved Oxygen - mg/L		S.V. ≥ 6.0			*								
Total Phosphorus (as P) - mg/L		A-Avg. ≤ 0.05			*	*							
Nitrate (as N) - mg/L		S.V. ≤ 10.0						*					
Nitrite (as N) - mg/L		S.V. ≤ 0.06			*								
Unionized Ammonia - mg/L		S.V. ≤ 0.004			*								
Total Suspended Solids - mg/L		S.V. ≤ 25.0			*								
Turbidity - NTU		S.V. ≤ 10.0			*								
Color - PCU		S.V. ≤ 75.0						*					
Total Dissolved Solids - mg/L		A-Avg. ≤ 500.0						*					
Chloride - mg/L		S.V. ≤ 250.0						*					
Sulfate - mg/L		S.V. ≤ 250.0						*					
Sodium - SAR		A-Avg. ≤ 8.0		*									
E. coli - cfu/100 mL ^b		S.V. ≤ 126.0				*							
Toxic Materials		^c											

* = The most restrictive beneficial use.

X = Beneficial use.

^a Refer to [NAC 445A.122](#) and [445A.1622](#) for beneficial use terminology.

^b The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.

APPENDIX D:
TRPA STANDARDS FOR SURFACE DISCHARGE

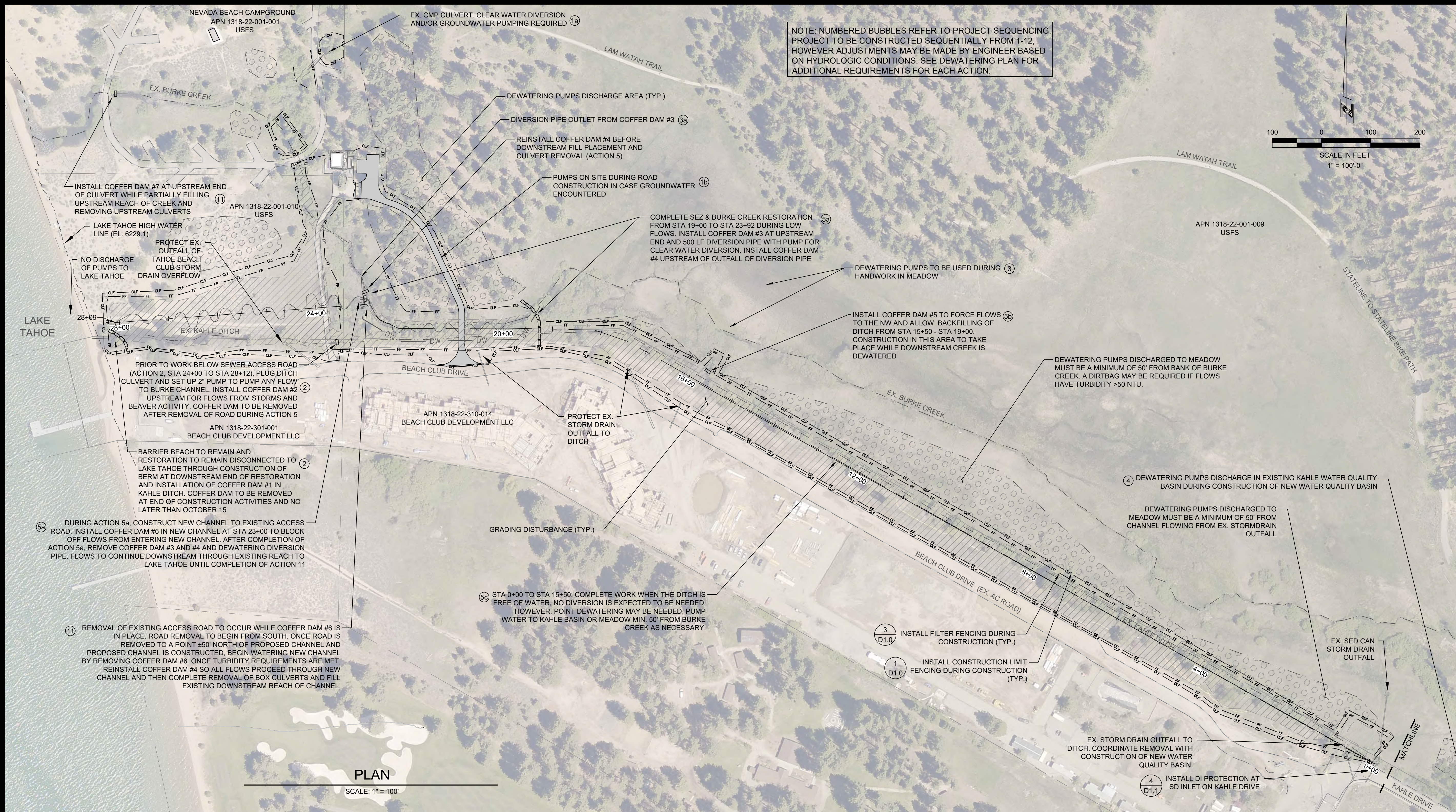
Table 3.10-2 TRPA Discharge Limits for Surface Runoff and Discharge to Groundwater

Constituent	Maximum Concentration
Surface Runoff	
Dissolved Inorganic Nitrogen as N	0.5 mg/l
Dissolved Phosphorus as P	0.1 mg/l
Dissolved Iron as Fe	0.5 mg/l
Grease and Oil	2.0 mg/l
Suspended Sediment	250 mg/l
Discharge to Groundwater	
Total Nitrogen as N	5 mg/l
Total Phosphate as P	1 mg/l
Iron as FE	4 mg/l
Turbidity	200 NTU ¹
Grease and Oil	40 mg/l

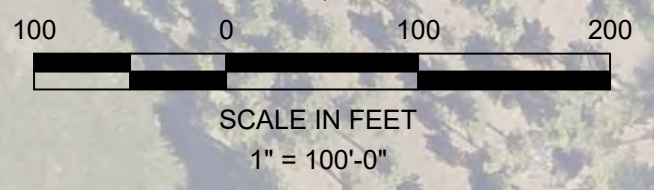
Source: TRPA 2012a

¹ NTU = Nephelometric Turbidity Unit

APPENDIX E:
DEWATERING PLAN SHEETS



NOTE: NUMBERED BUBBLES REFER TO PROJECT SEQUENCING. PROJECT TO BE CONSTRUCTED SEQUENTIALLY FROM 1-12, HOWEVER ADJUSTMENTS MAY BE MADE BY ENGINEER BASED ON HYDROLOGIC CONDITIONS. SEE DEWATERING PLAN FOR ADDITIONAL REQUIREMENTS FOR EACH ACTION.



PLAN

SCALE: 1" = 100'

- NOTES:
- NO TREE REMOVAL IS ALLOWED UNTIL REQUIRED WILDLIFE SURVEYS ARE COMPLETED. ALERT ENGINEER AT LEAST 7 DAYS PRIOR TO PLANNED TREE REMOVAL SO SURVEYS MAY PROCEED.
 - VEHICLE THROUGH TRAFFIC ON ROADS IN NEVADA BEACH CAMPGROUND AND AT THE TAHOE BEACH CLUB SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.
 - CONTRACTOR SHALL DELINEATE STAGING AREAS, EQUIPMENT EXCLUSION ZONES, AND AREAS OUTSIDE OF GRADING LIMITS WITH CONSTRUCTION LIMIT FENCING.
 - SEDIMENT LOGS AND SILT FENCE SHALL BE INSTALLED IN ACCORDANCE WITH TRPA AND THE RPMS TO PROTECT AREAS DOWN GRADIENT OF MATERIALS STORAGE AND ACTIVE GRADING AREAS. STABILIZE SOIL AFTER DISTURBANCE TO MINIMIZE SEDIMENT DISCHARGE.
 - SEE DEWATERING PLAN FOR ADDITIONAL INFORMATION ON PIPES, PUMPS AND DITCH SIZES. SEE DETAIL SHEETS FOR 1
D1.1 4
D1.0 ADDITIONAL DEWATERING DETAILS.
 - FISH RESCUE WILL BE COMPLETED PRIOR TO ANY DEWATERING OR WORK WITHIN BURKE CREEK OR KAHLE DITCH (WHEN WATER IS PRESENT). FISH NETS WILL REMAIN IN PLACE AT THE UPSTREAM AND DOWNSTREAM END OF THE WORK AREA FOR THE DURATION OF THE PROJECT. THE CONTRACTOR MUST COORDINATE WORK WITH THE USFS FISH RESCUE TEAM.
 - COFFER DAMS MAY BE PLACED INTERMITTENTLY ON RESTORED REACH FOR REWATERING OPERATIONS, SEE DEWATERING PLAN FOR MORE INFORMATION.
 - ALL DATES/YEARS ARE TENTATIVE AND SUBJECT TO CHANGE, HOWEVER CONSTRUCTION WILL BE LIMITED TO BE BETWEEN MAY 1 AND OCTOBER 15.

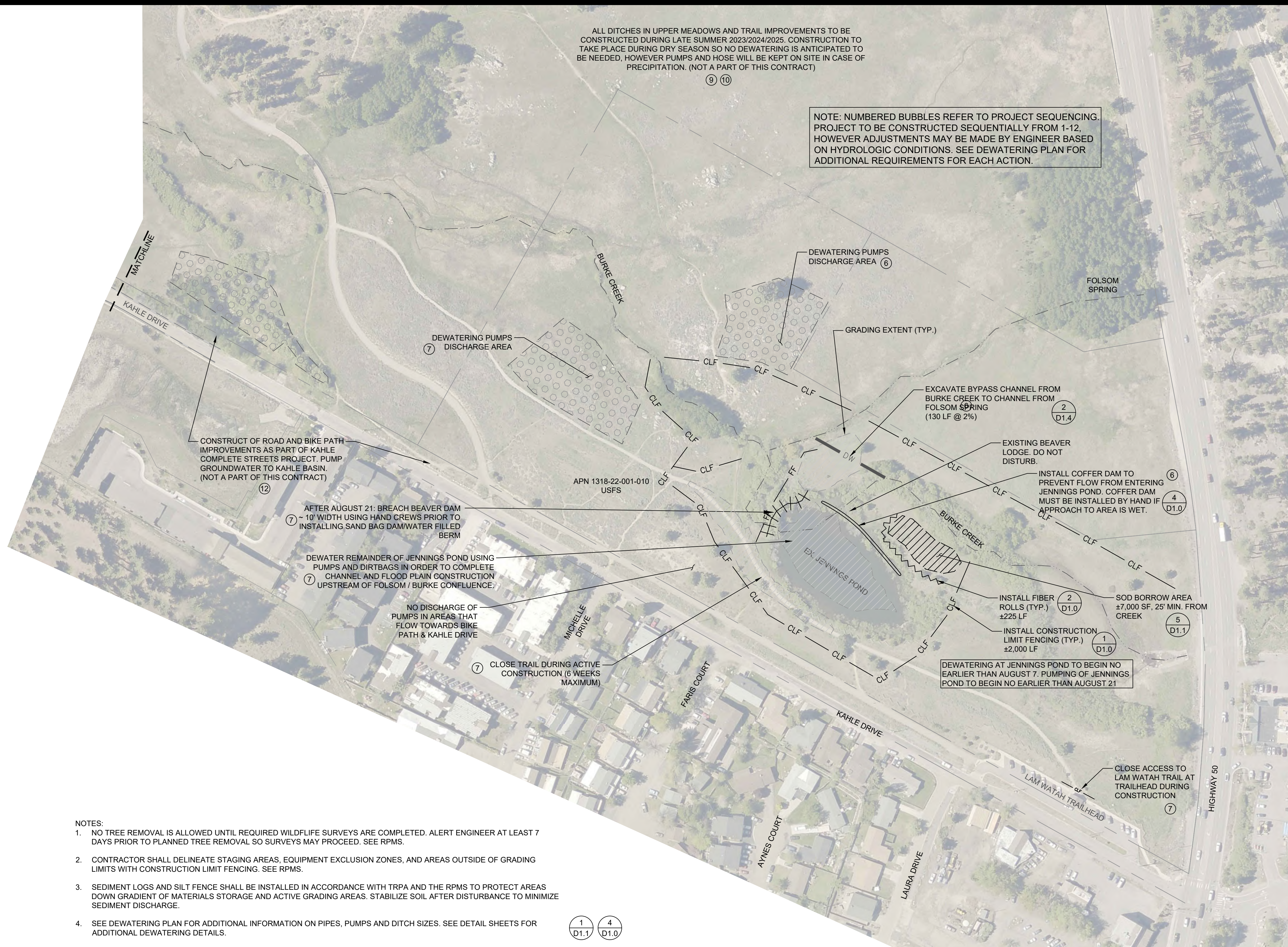
95% DESIGN
 NOT FOR CONSTRUCTION

DESIGNED/DRAWN	PJ
CHECKED BY	MK
DATE	1/2/2024
SCALE	AS SHOWN
PROJECT	BCRMRRP
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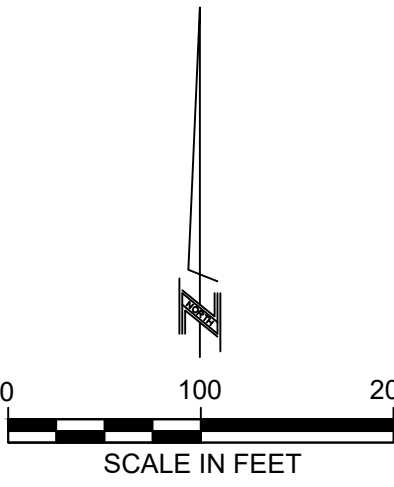




ALL DITCHES IN UPPER MEADOWS AND TRAIL IMPROVEMENTS TO BE CONSTRUCTED DURING LATE SUMMER 2023/2024/2025. CONSTRUCTION TO TAKE PLACE DURING DRY SEASON SO NO DEWATERING IS ANTICIPATED TO BE NEEDED, HOWEVER PUMPS AND HOSE WILL BE KEPT ON SITE IN CASE OF PRECIPITATION. (NOT A PART OF THIS CONTRACT)

NOTE: NUMBERED BUBBLES REFER TO PROJECT SEQUENCING. PROJECT TO BE CONSTRUCTED SEQUENTIALLY FROM 1-12. HOWEVER ADJUSTMENTS MAY BE MADE BY ENGINEER BASED ON HYDROLOGIC CONDITIONS. SEE DEWATERING PLAN FOR ADDITIONAL REQUIREMENTS FOR EACH ACTION.

- NOTES:
- NO TREE REMOVAL IS ALLOWED UNTIL REQUIRED WILDLIFE SURVEYS ARE COMPLETED. ALERT ENGINEER AT LEAST 7 DAYS PRIOR TO PLANNED TREE REMOVAL SO SURVEYS MAY PROCEED. SEE RPMS.
 - CONTRACTOR SHALL DELINEATE STAGING AREAS, EQUIPMENT EXCLUSION ZONES, AND AREAS OUTSIDE OF GRADING LIMITS WITH CONSTRUCTION LIMIT FENCING. SEE RPMS.
 - SEDIMENT LOGS AND SILT FENCE SHALL BE INSTALLED IN ACCORDANCE WITH TRPA AND THE RPMS TO PROTECT AREAS DOWN GRADIENT OF MATERIALS STORAGE AND ACTIVE GRADING AREAS. STABILIZE SOIL AFTER DISTURBANCE TO MINIMIZE SEDIMENT DISCHARGE.
 - SEE DEWATERING PLAN FOR ADDITIONAL INFORMATION ON PIPES, PUMPS AND DITCH SIZES. SEE DETAIL SHEETS FOR ADDITIONAL DEWATERING DETAILS.
 - FISH RESCUE WILL BE COMPLETED PRIOR TO ANY DEWATERING OR WORK WITHIN BURKE CREEK OR KAHLE DITCH (WHEN WATER IS PRESENT). FISH NETS WILL REMAIN IN PLACE AT THE UPSTREAM AND DOWNSTREAM END OF THE WORK AREA FOR THE DURATION OF THE PROJECT. THE CONTRACTOR MUST COORDINATE WORK WITH THE USFS FISH RESCUE TEAM.
 - COFFER DAMS MAY BE PLACED INTERMITTENTLY ON RESTORED REACH FOR REWATERING OPERATIONS. SEE DEWATERING PLAN FOR MORE INFORMATION.
 - ALL DATES/YEARS ARE TENTATIVE AND SUBJECT TO CHANGE, HOWEVER CONSTRUCTION WILL BE LIMITED TO BE BETWEEN MAY 1 AND OCTOBER 15.
 - OTHER DISCHARGE PUMP DEWATERING AREAS MAY BE USED TO LIMIT GROUND SATURATION AND RUNOFF. DISCHARGE SITES WILL BE AT LEAST 50' FROM BURKE CREEK AND FOLSOM SPRING.



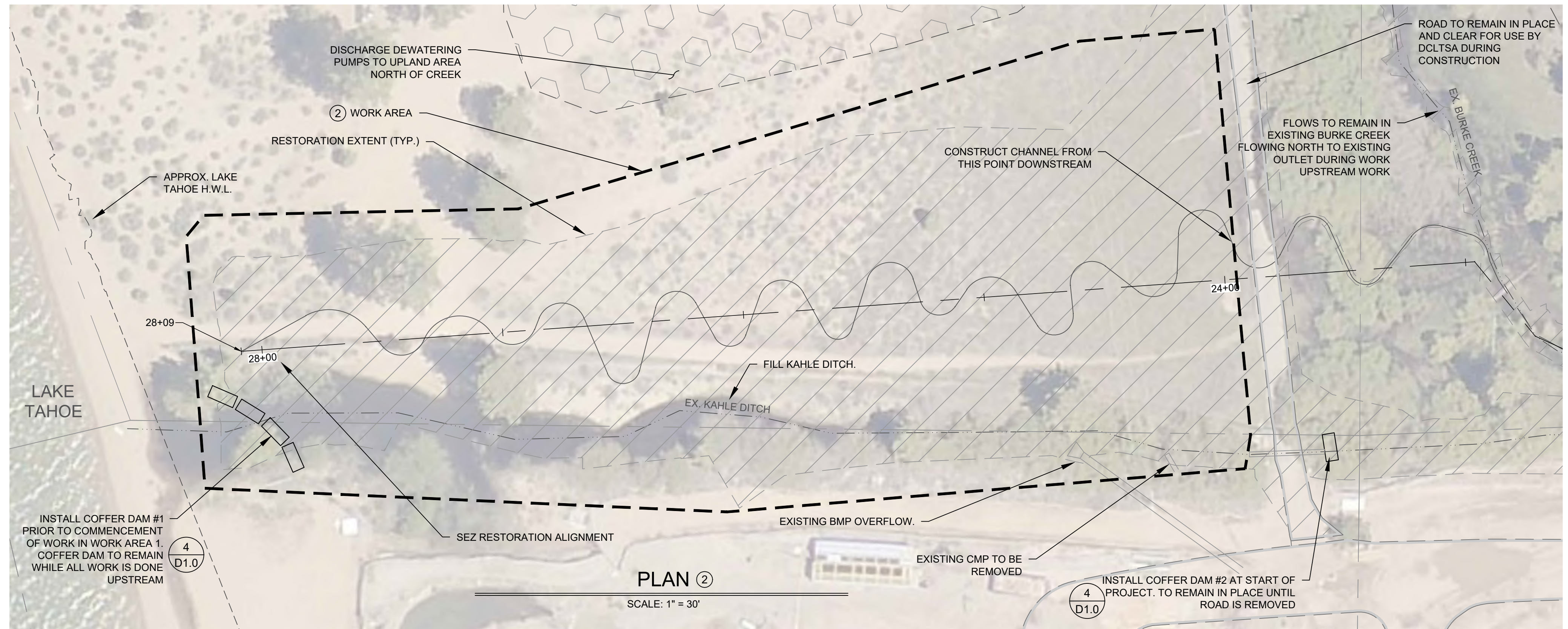
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PROJECT	BCRMRRP

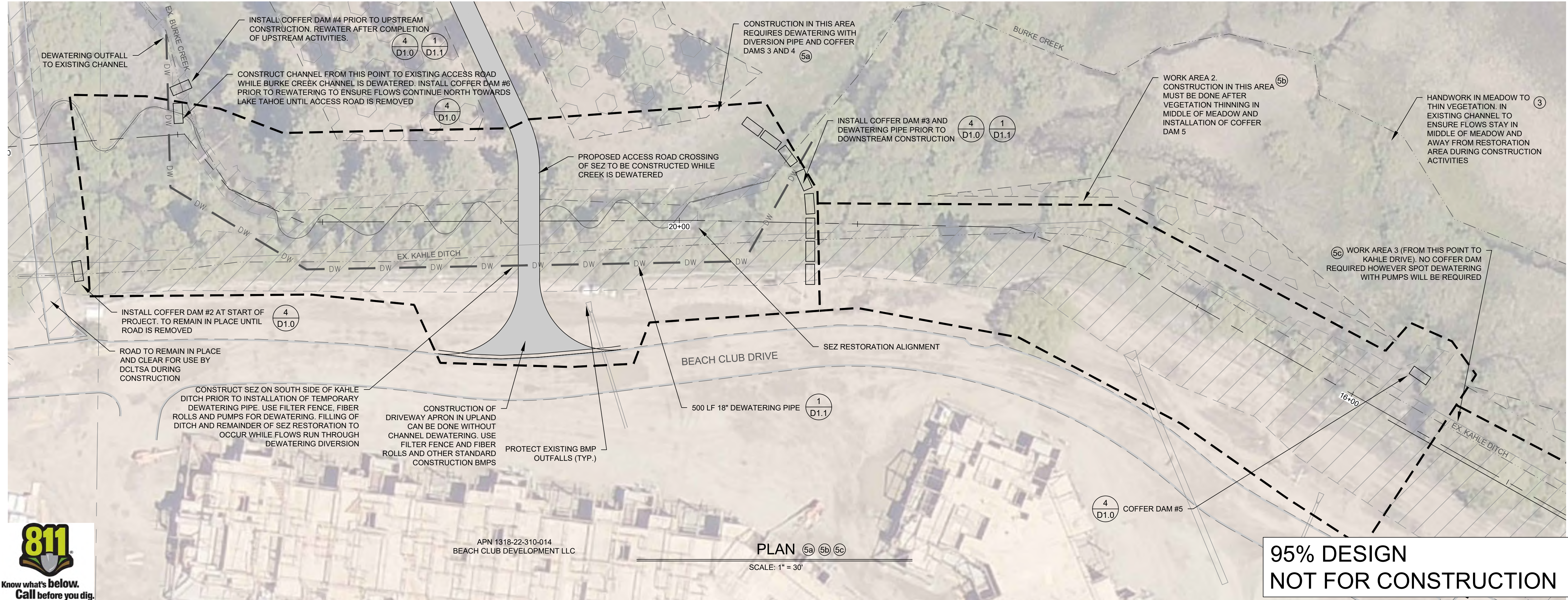
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NOTE: NUMBERED BUBBLES REFER TO PROJECT SEQUENCING. PROJECT TO BE CONSTRUCTED SEQUENTIALLY FROM 1-12. HOWEVER ADJUSTMENTS MAY BE MADE BY ENGINEER BASED ON HYDROLOGIC CONDITIONS. SEE DEWATERING PLAN FOR ADDITIONAL REQUIREMENTS FOR EACH ACTION.

- NOTES:
- NO TREE REMOVAL IS ALLOWED UNTIL REQUIRED WILDLIFE SURVEYS ARE COMPLETED. ALERT ENGINEER AT LEAST 7 DAYS PRIOR TO PLANNED TREE REMOVAL SO SURVEYS MAY PROCEED. SEE RPMS.
 - VEHICLE THROUGH TRAFFIC ON ROADS IN NEVADA BEACH CAMPGROUND AND AT THE TAHOE BEACH CLUB SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.
 - CONTRACTOR SHALL DELINEATE STAGING AREAS, EQUIPMENT EXCLUSION ZONES, AND AREAS OUTSIDE OF GRADING LIMITS WITH CONSTRUCTION LIMIT FENCING.
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 - SEE DEWATERING PLAN FOR ADDITIONAL INFORMATION ON PIPES, PUMPS AND DITCH SIZES. SEE DETAIL SHEETS FOR ADDITIONAL DEWATERING DETAILS.
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 - COFFER DAMS MAY BE PLACED INTERMITTENTLY ON RESTORED REACH FOR REWATERING OPERATIONS. SEE DEWATERING PLAN FOR MORE INFORMATION.
 - ALL DATES/YEARS ARE TENTATIVE AND SUBJECT TO CHANGE, HOWEVER CONSTRUCTION WILL BE LIMITED TO BE BETWEEN MAY 1 AND OCTOBER 15.



95% DESIGN
NOT FOR CONSTRUCTION



APN 1318-22-310-014
BEACH CLUB DEVELOPMENT LLC

PLAN 5a 5b 5c
SCALE: 1" = 30'

DESIGNED/DRAWN	PJ
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DATE	1/2/2024
SCALE	AS SHOWN
PROJECT	BCRMRRP
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Appendix B: US Forest Service Resource Protection Measures

Burke Creek Rabe Meadow Riparian Restoration Project

Resource Protection Measures

The following resource protection measures (RPMs) for the Burke Creek Rabe Meadow Riparian Restoration Project will minimize and avoid potential project-related effects on botanical resources, terrestrial and aquatic wildlife, water quality and soils, cultural resources, and recreational resources. For most resources, the RPMs directly incorporate the Standards and Guidelines from the LTBMU Land and Resource Management Plan (USFS 2016). In addition to RPMs, applicable Best Management Practices (BMPs) identified in the Project Stormwater Pollution Prevention Plan (SWPPP) will be utilized. Adherence to these BMPs ensures compliance with the Clean Water Act. The Nevada Tahoe Conservation District (NTCD) is responsible for the implementation of applicable RPMs and BMPs and will incorporate them into the final design plans and any plans required for permitting.

Botanical Resources

BOT-1 Sensitive Plants (not including Tahoe yellow cress)

No sensitive plant species (other than Tahoe yellow cress) were documented within the Project Area during field surveys.

- If sensitive species are observed within any Sub-Project Area during Project implementation, ground disturbing activities in that area will stop until the LTBMU Forest Botanist is notified and appropriate avoidance or mitigation actions are agreed on. If feasible, identified occurrences would be avoided with a protective buffer from restoration activities and protected *in situ*.

BOT-2 Revegetation

- Ground and vegetation disturbance shall be minimized to the areas necessary for construction. Seed and plant mixes must be approved by the Forest Botanist or their designated appointee who has knowledge of local flora. Non-native invasive species will not be intentionally used in revegetation. Seed lots will be tested for weed seed and test results will be provided to the Forest Botanist or their designated appointee. Persistent non-natives, such as timothy (*Phleum pretense*), orchardgrass (*Dactylis glomerata*), ryegrass (*Lolium spp.*), or crested wheatgrass (*Agropyron cristatum*) will not be used in revegetation.
- Seed and plant material will be sourced from species native to the Lake Tahoe Basin. As a general rule, plant and seed material should be collected from local genetic sources within the USFS Provisional Seed Zone of the disturbed area and within 500 – 1,000 ft. elevation of the site.

BOT-3 Tahoe yellow cress

Baseline and Inventory

- Monitoring will occur in TYC habitat within Sub-Project Area 1 during periods of active ground disturbance throughout the TRPA approved survey period from June 15- September 30th. The

monitoring will be conducted by a botanist approved by the LTBMU Forest Botanist and should occur within 14 days of projected disturbance. During the inventory, the botanist will count TYC “stems”, described as the above-ground leafy rosette that results from either seed germination or vegetative reproduction. Stems appear on the soil surface to be individuals, but may be connected below the surface by an extensive system of lateral and vertical roots (Stanton et al. 2015, pg. 17). The stem count will include an estimate of the percentage that are vegetative, flowering, and fruiting.

- During the inventory, the botanist will consult with the Project Managers to determine which stems, if any, will be directly impacted by the construction.

Avoidance

- TYC stems that will not be impacted will be flagged in blue and fluorescent orange and avoided for the duration of the Project.

Translocation

- TYC stems that may be indirectly impacted by Project activities will be translocated between June 15-September 30, 2024.
- Translocation methods shall follow Best Management Practices specified in the 2015 TYC Conservation Strategy (Stanton et al. 2015).
- The translocation may take several approaches which shall be determined in consultation with the LTBMU Forest Botanist:
 - 1) All extant stems may be immediately translocated to a receptor location (on-site or off) that will be determined based on site conditions, or
 - 2) All (or some portion) of the stems selected for translocation may be moved to potting tubes in a greenhouse for planting at a later date.

Seed collection

- Propagation of container-grown TYC in a greenhouse for out planting in subsequent years may be implemented if necessary to meet performance criteria. Seed collection would be conducted following standard USFS protocols and 2015 Conservation Strategy Best Management Practices (pg. 90).

Resource Protection Barriers

- New resource protection barriers in the form of large logs produced from meadow restoration activities and fencing will be installed surrounding the new channel location and outlet of Burke Creek for sustained protection of newly created TYC habitat from high intensity recreation impacts. Fencing would be designed in coordination with public services staff to maintain public access to the lake shore.
- Existing fencing at Burke Creek outlet will be maintained as long as TYC are present, or at least 3-years post-project.

Revegetation

- Revegetation treatments applied to the newly created channel of Burke Creek will be designed in coordination with Forest Botanist to minimize introduction of competitive pressure on TYC.

Post-project monitoring

- TYC habitat quality and plant abundance will be monitored in Sub-Project Area 1 following 2015 Conservation Strategy survey protocols (pg. 64) for 3-years post-project or until performance criteria are met.
- If TYC stem counts decline from the baseline count (from encroachment of upland vegetation species or recession of soil moisture) translocation or out planting to the newly constructed habitat would occur to meet performance criteria.

The following performance criteria is proposed:

- A baseline of 330 stems +/- 10% for the Sub-Project 1 area provides a performance target that integrates long-term survey data. This target represents the combined average stem count at both sites (230 stems at Burke Creek and 100 at Kahle Ditch) during the survey period from 2000-2023. Surveys during that period were conducted under a balanced number of high (8 years), low (9 years), and transitional lake levels (4 years), meaning it has relatively low bias.
- If the baseline target stem count of 330 stems +/-10%, is not achieved within Sub-Project Area 1 through natural processes of persistence of existing habitat and colonization of the new channel within 3-years post-project, the difference may be mitigated by a 2:1 planting of container-grown TYC in created habitat. This ratio is based on survival rates of > 50% from past plantings at this location (Stanton and Pavlik 2006).
- Propagation and out planting will follow Best Management Practices in the 2015 TYC Conservation Strategy.

BOT – 4 Salvaged Sod

Sod will be harvested and salvaged in disturbance areas (except where weeds are present), watered until re-planted, and used for revegetation of disturbed surfaces.

Invasive Plants

The following measures were identified in the project Invasive Plant Risk Assessment to reduce the risk of spreading invasive plants. These measures are consistent with Forest Service policy and manual direction and the 2016 LTBMU LRMP.

INV-01 through 08 are standard management measures, INV-09 has species-specific measures.

INV-01 Inventory

- Before the onset of construction activities, each Sub-Project Area, associated access routes, material source sites, and staging areas will be inventoried for invasive plants.
- Infestations discovered prior to or during project implementation will be flagged and reported to the Forest Botanist or their designated appointee for prioritization and assessment for treatment. If infestations cannot be avoided or treated, a barrier will be installed to prevent the spread of non-native invasive plants to new areas within the project area or off site. Appropriate barrier areas and methods will be established in coordination with the Forest Botanist.

INV-02 Equipment Cleaning

- All equipment and vehicles used for project implementation must be free of plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or steam-cleaning facility before the equipment and vehicles enter the project area.
- When working in known invasive plant infestations or designated weed areas, equipment shall be cleaned before moving to other National Forest Service system lands. These areas will be identified on project maps.

INV-03 Staging areas

- Equipment, materials, or crews will not be staged in invasive plant-infested areas, wherever feasible. If staging within existing infestations cannot be avoided, the invasive species would be treated/removed, then a barrier will be installed to prevent the spread of non-native invasive plants to new areas within the project area or off site. Appropriate barrier areas and methods will be established in coordination with the Forest Botanist.

INV-04 Control Areas

- Where feasible, invasive plant infestations on the LTBMU priority ranking list will be designated as Control Areas in coordination with the Forest Botanist. Equipment, traffic and soil-disturbing project activities would be excluded in Control Areas and will be identified on project maps and delineated in the field with orange 'noxious weed' flagging. Where Control Areas cannot be avoided, and risk of spread of a priority management species to new areas is high, invasive plants will be treated/removed and appropriate barriers will be installed, if feasible, and equipment will be washed on site before moving to a new sub-project area.

INV-05 Project-Related Disturbance

- The amount of ground and vegetation disturbance in staging and construction areas will be minimized to the extent possible. Where feasible, vegetation will be reestablished on disturbed bare ground to reduce invasive species establishment; revegetation is especially important in staging areas. Where soil compaction has occurred to an extent that would inhibit native plant establishment (including all access routes, staging and storage sites), disturbed areas should be de-compacted by scarifying and mulched prior to seeding. Revegetation activities in areas with existing infestations will be designed to favor native species establishment over non-native invasive species growth and spread.

INV-06 Post Project Monitoring

- After the project is completed, the Forest Botanist will be notified so that the project area can be monitored and treated for invasive plants for a minimum of three years after project implementation to mitigate project related introduction and spread of these species.

INV-07 Gravel, Fill, and Other Materials

- Gravel, fill, or other imported materials are required to come from a suitable or conditional weed-free source by the LTBMU weed free material program. Onsite sand, gravel, rock, or organic matter will be used when possible. If conditional sources are used, Early Detection and Rapid Response (EDRR) monitoring of application sites will be conducted for two growing seasons following implementation.
- Off-site fill is proposed for use that was sourced from the 2016 Kahle Basin Implementation Project. The fill is currently stored off-site on Sewer Plant Road and covered with protective tarps. The stock pile will be surveyed for invasive plants prior to movement to the Project area.

INV-08 Mulch and Topsoil

- North American Invasive Species Management Association (NAISMA) certified weed-free mulch will be used if chipped material is not available on site. Topsoil will be salvaged from the project area for use in onsite revegetation, unless contaminated with invasive species.

INV-09 Species-Specific Management Measures

See Table 2 below.

Table 2 Species-Specific Management Measures		
Scientific Name	Common Name	Treatment
<i>Bromus tectorum</i>	Cheatgrass	<ul style="list-style-type: none">• Flag and avoid where feasible.• Minimize disturbance in infested areas.• Use barriers to prevent spread from staging areas or constructed access routes.
<i>Cirsium arvense</i>	Canada thistle	<ul style="list-style-type: none">• Flag and avoid all existing infestations• Chemically treat infestations with Aminopyralid in rosette to early flowering stages.
<i>Cirsium vulgare</i>	Bull thistle	<ul style="list-style-type: none">• Remove plants by digging out the rosette and entire tap root, securely bag plants, and dispose offsite;• If present, remove flowering heads before seed set and dispose of off-site.• Plants may be left on-site to desiccate if they are in rosette stage with no signs of bud or flower development.

Table 2
Species-Specific Management Measures

Scientific Name	Common Name	Treatment
<i>Centaurea stoebe</i> ssp. <i>micranthos</i> <i>Centaurea diffusa</i>	Spotted knapweed Diffuse knapweed	<ul style="list-style-type: none"> • Flag and avoid ground disturbance in all existing infestations • Remove plants by digging out the rosette and entire tap root, securely bag plants, and dispose offsite; if present, remove flowering heads before seed set and dispose of off-site. • Plants may be left on-site to desiccate if they are in rosette stage with no signs of bud or flower development.
<i>Hypericum perforatum</i>	Klamath weed	<ul style="list-style-type: none"> • The deep taproots can regenerate, so hand pulling or digging is only effective for small isolated infestations. • Flag and avoid all existing infestations • Chemically treat infestations with Aminopyralid.
<i>Lepidium latifolia</i>	Perennial pepperweed	<ul style="list-style-type: none"> • Seedlings are easily controlled by hand-pulling, but mature plants will re-sprout. • Flag and avoid all existing infestations • Chemically treat infestations with Chlorsulfuron.
<i>Leucanthemum vulgare</i>	Oxeye daisy	<ul style="list-style-type: none"> • Dig out plants if the soil is moist and loose enough to remove the entire shallow root-system with hand tools digging more than 6 inches deep. Dispose of off-site. • For larger stands, Aminopyralid would be applied in the spring during the seedling to pre-bud stage.
<i>Potentilla recta</i>	Sulphur cinquefoil	<ul style="list-style-type: none"> • Verify species identification during pre-implementation surveys and flag occupied areas for avoidance or as control areas. • Dig out plants if the soil is moist and loose enough to remove the entire woody root. Dispose of off-site. • For larger stands, Aminopyralid would be applied in the spring during the rosette to pre-bud stage. • Wash equipment on site prior to moving to other project areas
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	<ul style="list-style-type: none"> • Manual removal of plants and roots. Disposed of off-site.

Table 2 Species-Specific Management Measures		
Scientific Name	Common Name	Treatment
		<ul style="list-style-type: none"> Post-project monitoring of the new outlet of Burke Creek will be needed to detect and address new infestations.

Terrestrial and Aquatic Wildlife

WL -1 Contractor Training

Prior to construction, all contractor, and subcontractor project personnel will receive training from qualified resource specialists (NTCD and/or USFS Personnel) regarding the appropriate work practices necessary to effectively implement these RPMs including appropriate wildlife avoidance measures; impact minimization procedures; the importance of sensitive resources, and the purpose and methods for protecting such resources.

WL – 2 Sierra Nevada Yellow Legged Frog

Projects activities would follow applicable protection measures as included below and identified in the US Fish and Wildlife Service Biological Opinion (see Terrestrial and Aquatic Wildlife Biological Evaluation (BE)) on Sierra Nevada yellow legged frog within the Lake Tahoe Basin (or superseding current direction). Protection measures include Programmatic Conservation Measures 1.c, 1.e, 1.f, 1.g, 1.h, 1.i, 1.m, 1.n, and 1.o. Program Specific Conservation Measures include 1.a, 1.d, 1.i, 1.w, 1.x, 1.y, 1.aa, and 1.ee. See Appendix B of the terrestrial and aquatic biological evaluation for details of these measures that protect habitat and water quality.

WL – 3 Dewatering and Diversion

Implement and follow the Dewatering and Diversion Plan as outlined in the Terrestrial and Aquatic Wildlife BE. Dewatering and drafting shall use screening devices for water drafting pumps. Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats. The following criteria should be used to avoid impacts:

- Drafting operations should be restricted to one hour after sunrise to one hour before sunset to avoid the use of lights that attract fish.
- Pumping rate shall not exceed 350 gallons per minute. In Jennings Pond, where pumping rates might need to exceed 350 gpm to meet project objectives, rates shall not exceed 850 gpm. Additionally, when pumping rates exceed 350 gpm, an Aquatic Resource Specialist or Watershed Specialist will monitor pumping operations to ensure that aquatic species are protected.
- The pumping rate shall not exceed ten percent of stream flow (estimated by pump operators) to ensure adequate downstream flow to support aquatic species.
- Drafting should occur in streams and pools with deep and flowing water; not streams with low flows and isolated pools.
- Pumping operations shall not result in obvious draw-down of upstream or downstream pools, unless dewatering is the goal.
- Each pumping operation shall use screens. The screen face should be oriented parallel to flow for best screening performance.

- The screen shall be cleaned as often as necessary to prevent approach velocity from exceeding 0.33 feet per second. Operators should withdraw the screen and clean it after each use, or as necessary to keep the screen face free of debris. Pumping should stop for screen cleaning when approximately fifteen percent or more of the screen area is occluded by debris. A suitable brush shall be available for this cleaning operation.
- Screen Mesh must be in good repair and present a sealed, positive barrier- effectively preventing entry of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, into the intake. The screen mesh size shall be:
 - Round openings - maximum 3/32 inch diameter (.09 inch)
 - Square openings - maximum 3/32 inch diagonal (.09 inch)
 - Slotted openings - maximum 1/16 inch width (.07 inch)

WL – 4 Aquatic Species Salvage

Salvage/recovery of aquatic species will be conducted by LTBMU Fisheries Staff within anticipated construction dewatering or diversion zone operations by electro-shocking or other suitable means. Aquatic species will be moved upstream or downstream of project activities where possible, or to other suitable habitat within the project area, as determined by USFS fisheries staff. Block nets will be installed to ensure fish do not move back into the project area. Nets will be cleaned one to two times daily to ensure the nets are functioning.

WL – 5 Bd Disinfection Protocol

Field gear (waders, float tubes, etc.) will be cleaned, decontaminated, and/or fully dried prior to entering or moving between aquatic habitats per the *Batrachochytrium dendrobatidis* (Bd) Disinfection Protocol described below:

- All field gear that comes in contact with water is disinfected using a 0.016% solution of quaternary ammonia (Quat 256) between water bodies.

Before leaving a site, rinse all infected gear to remove mud and debris. Then mix 7 eye drops of Quat 256 per liter of water in a drybag, and immerse and saturate all contaminated gear for 5 minutes, mixing occasionally. Do this away from water. Discard the quat mixture in broken-down organic soil in a non-vegetated area away from water. Cover lightly with soil.

WL - 6: Nesting Bird Surveys

Nesting bird surveys will be conducted (NTCD/Contractor) no more than 14 days prior to construction activities if work is scheduled to occur during the breeding season—April through August. If a nest is found, exclusionary avoidance zones (to be determined based on species-specific needs) will be created surrounding any active nests within or adjacent to the project.

WL – 7 Marten Den Surveys

Conduct (NTCD/Contractor) pre-implementation camera surveys where project activities would occur within suitable marten denning habitat plus a 50-meter buffer. Conduct surveys the same season as implementation. If marten are detected, follow-up with pedestrian den surveys no more than three weeks before project initiation and regardless of season. Possible dens will be further monitored by remote camera in order to determine if they are being actively used by marten. Based upon the results, the Responsible Official may implement a Limited Operation Period (LOP) and/or adapt construction timelines or facility locations as determined necessary to provide adequate protection. If dens of other species are located during the surveys, consult the Forest Biologist to determine whether to conduct camera surveys and/or protect the den.

WL – 8 North American Beaver

North American beaver lodges and dams shall not be disturbed between the months of March and August. Any removal and/or disturbance shall not occur until after 21 August of the year to prevent impacts to young kits that may be present within the lodge.

WL – 9 Bat Surveys

If tree removal occurs May 1 – August 31, surveys for possible bat roosts will be conducted within 30 days of the start of tree removal activities (NTCD/Contractor). Possible roost structures include snags, complex trees, trees with sloughing bark, and/or large diameter trees. If tree removal activities take more than 30 days and/or if there is a gap of 30 days between tree removal activities, surveys should be repeated. All potential roosting sites will be surveyed by a qualified biologist to determine usage. Specific survey methodologies will be determined in coordination with the Forest Biologist. If an active roost is identified, the Responsible Official may implement an LOP and/or adapt construction and/or tree removal timelines as necessary to provide adequate protection to the individuals in the roost.

WL – 10 Wildlife Egress

Measures shall be taken to allow for exit of trapped wildlife within the project area when excavations are left open overnight. Excavations shall be fitted with ramps and/or suitable egress for small mammals that may be contained within the excavated area. Construction monitors shall inspect all excavations and areas of active construction for trapped wildlife. Wildlife found in active construction areas will be allowed to passively leave the site. If necessary, wildlife may be relocated by a qualified biologist. The construction foreman will notify the environmental monitor immediately if any wildlife enters or becomes trapped in the work area.

WL – 11 Western Pearlshell Mussel Protection

eDNA samples will be collected to determine presence and location of western pearlshell mussels (*Margaritifera falcate*) in the project area prior to dewatering the creek or commencing construction activities. Avoid installing temporary crossings, diverting flows or dewatering streams in areas occupied by western pearlshell mussels. If these activities cannot be avoided to meet project objectives, mussels will be relocated to suitable habitat prior to implementation. Suitable relocation sites will be determined in the field by the Forest Service Aquatic Biologist and will take into consideration the mussel population within and outside of the project area.

WL - 12: General Wildlife Protections

- If sensitive or ESA listed species are found during implementation, pause project activities that may affect the species and notify the Forest Biologist within 24 hours.
- All trash and food will be removed from the site at the end of each workday to avoid attracting wildlife to the site.
- No harm, harassment, or collection of plant and wildlife species will be allowed. Feeding of wildlife will be prohibited.

WL – 13 Salvaged Sod

Sod will be harvested and salvaged in disturbance areas (except where weeds are present), watered until re-planted, and used for revegetation of disturbed surfaces during implementation.

WL – 14 Downed Wood

Retain/add downed wood in the open meadow areas where feasible for native amphibian species. Density should be approximately three logs >30 cm diameter at midpoint per 0.4 ha.

WL – 15 Aquatic Invasive Species Surveys

Surveys for aquatic invasive species will be performed prior to any ground disturbance or in water

activities. Removal of aquatic invasive plant species shall be performed prior to dewatering, filling or disturbance. Methods of removal may vary and shall be determined on a case-by-case basis (e.g. hand pulling, suction dredging, placement of benthic barriers, etc.)

Hydrology/Water Quality

HYD-1 Construction BMPs

Construction BMPs will include temporary erosion control BMPs (e.g., silt fencing, fiber rolls, drain inlet protection) and other requirements consistent with the project Stormwater Pollution Prevention Plan (SWPPP) to prevent sediment delivery and water quality impacts during construction.

HYD-2 Minimize Soil Disturbance

The extent of all excavation and soil disturbance will be minimized to avoid unnecessary soil disturbance.

HYD-3 Soil Disturbance Limits

Soil disturbing activities will not occur from October 15 to May 1 of each year unless an exemption request is applied for and approved from TRPA. Assure that permanent and temporary erosion control measures are in place for the winter season.

HYD-4 Excess Waste and Stockpile

Surplus or waste earthen materials will be removed from project sites, and stockpiled material will be stabilized and protected from erosion. All over-winter soil stockpiles shall be a minimum of 50 feet from drainage courses and storm drain inlets. Protect all stockpiles from winter precipitation and runoff using temporary perimeter sediment barriers, such as fiber rolls, silt fences, and/or gravel bags. Extend barriers around the entire perimeter of stockpile. Cover the entire stockpile with tarp, plastic, or other waterproof material for the duration of the winter. Tie down or weight covers to prevent movement. Inspect monthly and promptly repair or replace stockpile protections, as needed.

HYD-5 Spill Prevention Plan Requirements

Spill prevention plans will be prepared and implemented to capture and contain pollutants from fueling operations, and an emergency spill kit must be on site during active construction periods.

HYD-6 Construction Access:

- Temporary access routes will be constructed within or directly adjacent to the grading disturbance (within 10' with Engineer's direction) to minimize disturbance to vegetation and soil and limit stream or water channel crossings.
- Access to the channel in the middle of the meadow for wood structure placement will be by foot only, no access routes will be constructed in this area.

HYD-7 Diversion and Dewatering:

The Burke Creek channel will be diverted around active in-channel construction activities using pumps and diversion piping. In addition, segments of Burke Creek, Kahle Ditch and Jennings Pond will be dewatered before construction in those areas to facilitate backfilling and reconstruction in these areas. Dewatering discharge will remain a minimum of 50ft away from surface water flow and channels to prevent return flows to the creek and pond. Diversion and dewatering operations and equipment will be monitored daily to ensure they are functioning properly and not resulting in water quality violations. Refer to the detailed Dewatering and Diversion plan for more details.

HYD-8 Water Quality Best Management Practices

The project shall implement the erosion control and best management practices (BMP) included in the final plan set approved by the USFS LTBMU. Implementation of erosion control measures and BMPs and associated Stormwater Pollution Prevention Plan will decrease impacts to water quality and freshwater aquatic habitats.

Recreation and Public Safety

REC- 1 Parking Closure

Closures of the trailhead parking spaces at the Lam Watah trailhead will be limited to four spaces and will not occur during high volume holiday weekends. Public notice will be provided for temporary daily closure of a portion of the parking area and pathway in vicinity of the work area.

REC-2 Closure Signage and Fencing

Install signage and temporary barriers as needed during the intermittent closures. All signage and postings will meet applicable USFS universal accessibility guidelines (Architectural Barriers Act Accessibility Standards and Forest Service Outdoor Recreation Accessibility Guidelines). Temporary construction fencing will be placed in a manner such that it does not block existing travel routes on the Stateline-to-Stateline Bikeway and Lam Watah trail except during times when work is being conducted in that immediate vicinity.

REC- 3 Traffic Control

Implement traffic control as needed on Kahle Drive and at the Lam Watah Trailhead. Design access routes, staging areas and time of use to minimize impacts to public access to recreational lands.

Cultural Resources

CUL-01 Field Surveys

Heritage resource field surveys have been completed for all disturbance areas identified in the proposed action.

CUL-02 On-Site Historic Property Protection Measures

Heritage Program Manager or delegated Heritage Program staff (HPM/DHPS) may provide written approval for an undertaking's activities within or adjacent to the boundaries of historic properties based on professional judgment that such activities will not have an adverse effect on historic properties, or under carefully controlled conditions such as those specified below. All activities performed under Section 2.0 (Standard Protection Measures) must be documented in inventory or other Heritage Program Reports (HPMs), or other compliance reports prepared pursuant to the executed Region 5 Programmatic Agreement (PA).

1.0 Class I: Avoidance

HPM/DHPS shall exclude historic properties from areas where activities associated with undertakings will occur, except where authorized below.

1.1 Proposed undertakings shall avoid historic properties. Avoidance means that no activities associated with undertakings that may affect historic properties, unless specifically identified in this PA, shall occur within historic property boundaries, including any defined buffer zones (see clause 1.1(a), below).

Portions of undertakings may need to be modified, redesigned, or eliminated to properly avoid historic properties.

(a) Buffer zones may be established to ensure added protection where HPM/DHPS determine that they are necessary. The use of buffer zones in avoidance measures may be applicable where setting contributes to property eligibility under 36 CFR 60.4, or where setting may be an important attribute of some types of historic properties (e.g., historic buildings or structures with associated historic landscapes, or traditional cultural properties important to Indians), or where heavy equipment is used in proximity to historic properties.

(1) The size of buffer zones must be determined by HPMs or qualified Heritage Program staff on case-by-case bases.

(2) Landscape architects and qualified Heritage Program staff may be consulted to determine appropriate view sheds for historic resources.

(3) Indian tribes, or their designated representatives, and/or Native American Traditional Practitioners shall be consulted when the use or size of protective buffers for Indian traditional cultural properties needs to be determined.

1.2 Activities within historic property boundaries will be prohibited with the exception of using developed Forest transportation systems when the HPM or qualified heritage professional recommends that such use is consistent with the terms and purposes of this agreement, where limited activities approved by the HPM or qualified heritage professional will not have an adverse effect on historic properties, or except as specified below in sections 2.0 and 3.0 of Appendix E.

1.3 All historic properties within APEs shall be clearly delineated prior to implementing any associated activities that have the potential to affect historic properties.

(1) Historic property boundaries shall be delineated with coded flagging and/or other effective marking.

(2) Historic property location and boundary marking information shall be conveyed to appropriate Forest Service administrators or employees responsible for project implementation so that pertinent information can be incorporated into planning and implementation documents, contracts, and permits (e.g., clauses or stipulations in permits or contracts as needed).

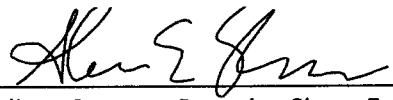
1.4 When any changes in proposed activities are necessary to avoid historic properties (e.g., project modifications, redesign, or elimination; removing old or confusing project markings or engineering stakes within site boundaries; or revising maps or changing specifications), these changes shall be completed prior to initiating any project activities.

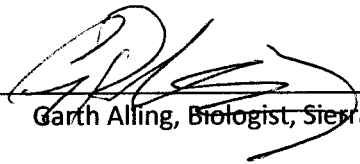
1.5 Monitoring by heritage program specialists may be used to enhance the effectiveness of protection measures. The results of any monitoring inspections shall be documented in cultural resources reports and the Infra database.

**INVASIVE PLANT RISK ASSESSMENT
BURKE CREEK RABE MEADOW
RIPARIAN RESTORATION PROJECT**

**LAKE TAHOE BASIN MANAGEMENT UNIT
USDA FOREST SERVICE**

March 2024

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Appendix A Invasive Plants of Management Concern on the Lake Tahoe Basin Management Unit

1 INTRODUCTION

The United States Forest Service (USFS) has identified invasive species as one of four critical threats to the nation's ecosystems. Invasive plants pose a significant threat to ecological function due to their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure. Infestations can also reduce the recreational or aesthetic value of native habitats.

Forest management activities can contribute to the introduction and spread of invasive plants by creating suitable environmental conditions for establishment and by acting as vectors for spread. The following risk assessment has been prepared to evaluate the risk associated with invasive plant introduction and spread as a result of the project.

1.1 ANALYSIS FRAMEWORK: PERTINENT LAWS, POLICIES, AND DIRECTION

A comprehensive summary of principal statutes governing the management of invasive plants on the National Forest System is available in FSM 2900. A brief summary of the pertinent laws, policies, and direction is provided below.

1.1.1 *Federal Laws and Executive Orders*

Executive Order 13112 (1999)—directs federal agencies to prevent the introduction of invasive species; detect and respond rapidly to control such species; and to minimize the economic, ecological, and human health impacts from invasive species on public lands.

1.1.2 *Forest Service Policies and Direction*

Forest Service Manual 2080 (1995)—Was replaced by FSM 2900 in 2011. FSM 2080 revised USFS national policy on noxious weed management to emphasize integrated weed management, which includes prevention and control measures, cooperation, and information collection and reporting.

Forest Service Manual 2900 (2011)—directs the Forest Service to manage invasive species with an emphasis on integrated pest management and collaboration with stakeholders, to prioritize prevention and early detection and rapid response actions, and ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the National Forest System (NFS) lands or to adjacent areas.

Forest Service Manual 2070 (2008)—provides guidelines for the use of native material on NFS lands. It restricts the use of persistent, non-native, non-invasive plant materials and prohibits the use noxious weeds for revegetation, rehabilitation and restoration projects. It also requires that all revegetation projects be reviewed by a trained or certified plant material specialist for consistency with national, regional, and forest policies for the use of native plant materials.

The Forest Service National Strategic Framework for Invasive Species Management (2011)—provides a consistent, agency-wide approach to the prevention, detection, and control of invasive insects, pathogens, plants, wildlife, and fish. The Framework provides broad and consistent strategic direction across all Forest Service Deputy Areas and agency programs. It also describes how National and Regional Invasive Species Issue Teams (NISIT and RISIT) will coordinate activities with the Forest Service and with Federal, State, and local partners. National priorities will be reviewed at least once every 5 years and

adjusted as needed. RISITs will assess and adjust their regional invasive species priorities for their respective ecosystems at least once every 5 years. The Framework incorporates the Invasive Species Systems Approach (ISSA) developed by the Forest Service to respond to threats over the next 5 to 10 years and supersedes the National Strategy and Implementation Plan for Invasive Species Management (2004). The ISSA identifies the elements and actions of the Framework that all programs and units within the National Forest System, Research and Development and State and Private Forestry should take, as appropriate, in addressing invasive species.

Region 5 Noxious Weed Management Strategy and Action Plan (USDA Forest Service 2000)—in response to national direction and regional needs, the region has developed this plan that is tiered to the national strategy. The Regional strategy emphasizes actions necessary to: promote the overall management of noxious weeds; to prevent the spread of weeds; control existing stands of weed infestations; promote the integration of weed issues into all Forest Service (FS) activities.

Sierra Nevada Forest Plan Amendment (USDA 2004)—Establishes the following invasive plant management prioritization: 1) prevent the introduction of new invaders; 2) conduct early treatment of new infestations; 3) contain and control established infestations. It also requires forests to conduct an invasive plant risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of management activities and develop mitigation measures for high and moderate risk activities with reference to the weed prevention practices in the Regional Noxious Weed Management Strategy. The 2016 LMP standards and guidelines included below supersede those Sierra Nevada Forest Plan Amendment plan components, however this invasive plant risk assessment has been prepared with guidance from the Sierra Nevada Forest Plan Amendment.

1.1.3 Forest Plan Direction

LTBMU Land Management Plan (LMP) (USDA 2016). The plan provides Standards and Guidelines regarding Invasive Species Management and directs the FS to incorporate prevention and control measures into project planning, management activities and operations to prevent new introductions or contribute to spreading of invasive species, and reduce impacts from existing infestations on NFS lands, or to adjacent lands and water bodies.

The LMP specifically addresses invasive plants through the development of desired conditions:

DC69. Invasive species do not adversely affect native species, human health, ecosystem processes, or other NFS resources.

DC70. Aquatic and terrestrial ecosystems are self-sustaining and resistant to the establishment of invasive species.

DC71. Invasive species management prioritizes prevention and early detection and rapid response actions.

The LMP also addresses Invasive Species Management Strategies for both aquatic and terrestrial species. Please refer to Standards and Guidelines below:

SG73. Incorporate prevention and control measures into project planning, management activities and operations to prevent new introductions or contribute to spreading of invasive species, and reduce impacts from existing infestations on NFS lands, or to adjacent lands and water bodies. [Standard]

SG74. When feasible, employ the following control measures, such as: [Guideline]

- a) Use contract and permit clauses to require that the activities of contractors and permittees (including but not limited to special use permits, utility permits, pack stock operators) are

conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species.

- b) Include invasive species prevention and control measures in mining plans of operation and reclamation plans.
- c) When working in known invasive species infestations during project implementation, equipment and vehicles shall be cleaned before moving to other NFS lands.
- d) Support partner agencies and their programs.
- e) Use on-site materials where feasible, unless contaminated with invasive species.

SG75. Gravel, fill, topsoil, mulch, and other materials should be free of invasive species. [Guideline]

SG76. New infestations are inventoried, and known infestations are prioritized and contained, controlled, or eradicated using an integrated management approach. [Standard]

Aquatic

SG77. Ensure that all motorized watercraft launching from staffed Forest Service facility have required documentation of AIS inspection. [Standard]

SG78. All equipment and vehicles (Forest Service and contracted) used in a waterbody during project implementation shall be inspected and free of invasive species prior to implementation. [Guideline]

SG79. Take actions as needed to minimize the risk of spreading Bd fungus and other potential aquatic pathogens and/or diseases through aquatic systems. [Guideline]

SG80. Ensure that field gear (waders, float tubes, etc.) is cleaned, decontaminated, and/or fully dried prior to entering or moving between aquatic habitats. [Guideline]

SG81. Establish non-motorized watercraft risk screening for AIS at staffed entry points for both Forest Service boat launches and recreation facilities adjacent to Lake Tahoe water bodies, including campgrounds, resorts, and day use areas. [Guideline]

SG82. Following emergency response guidelines, implement prevention measures to decrease the potential for aquatic invasive species transference during [Guideline]

Terrestrial

SG83. For projects involving ground disturbance, inventory project areas and adjacent areas (particularly access routes) for invasive plants. [Guideline]

SG84. If supplemental fodder (such as hay, straw, or silage) is required for permitted livestock, including horses and other pack animals, it shall be weed-free as certified by state or local certification programs. [Standard]

SG85. Screen plant materials used in revegetation, rehabilitation, and restoration (seed, cuttings, whole plants) for invasive plant risks. Avoid the use of persistent non-native plants unless justified in project documentation. [Guideline]

SG86. All equipment and vehicles (Forest Service and contracted) used off-road during project implementation shall be cleaned and free of invasive plant material before moving into the project area. [Guideline]

SG87. Following emergency response guidelines, utilize washing stations at staging areas, base camps, or other incident locations, to clean soil, seeds, vegetative material, or other debris that could contain invasive plant material from off-road equipment and vehicles. [Guideline]

SG88. Avoid locating landings or staging areas within areas infested by invasive plants, including during project implementation, fire management activities, and other ongoing management and maintenance activities. If infested areas are the only feasible landing/staging areas, then treat infestations prior to use, except in emergency situations. [Guideline]

SG89. Minimize the size of staging and construction areas. Where feasible, reestablish vegetation on disturbed bare ground to reduce invasive species establishment. [Guideline]

2 PROJECT DESCRIPTION

2.1 LOCATION AND EXTENT

The Burke Creek Rabe Meadow Riparian Restoration Project (Project), is located primarily on land managed by the US Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) in Stateline, Douglas County, Nevada (**Figure 1- Project Location and Vicinity**). The Project study area is 274 acres and includes the lowest reach of Burke Creek west of Highway 50, Rabe Meadow, a small parcel of private property owned by the Tahoe Beach Club, and a small part of the USFS Nevada Beach campground.

The Project area is bordered by Kahle Drive to the south, US Highway 50 to the east, Lake Tahoe to the west, and Nevada Beach Campground and Elks Point Road to the north. The project area includes the Lam Watah Trail and the Stateline-to-Stateline bike trail. The trailhead facilities are located at the corner of Kahle Drive and US Highway 50. The Project is located with the USGS South Lake Tahoe Quadrangle in T13N R 18E Sec 22.



Figure 1. Project Vicinity Map

2.2 PROJECT OVERVIEW AND PLANNED ACTIVITIES

The Burke Creek Rabe Meadow Riparian Restoration (Project) is being designed and managed by the Nevada Tahoe Conservation District (NTCD) under a cooperative agreement with the LTBMU. A small part of the Project would occur on adjacent private property owned by the Tahoe Beach Club. The purpose of the Project is to implement restoration to improve water quality and restore riparian and meadow vegetation to improve aquatic and terrestrial habitats. A central component of the Project is to re-align Burke Creek into a new high-sinuosity channel with a new outlet to Lake Tahoe and create a restored floodplain within Rabe meadow to create a more natural hydrology. The Project will also restore several man-made features including the Kahle Ditch, Jennings Pond, and remnant ditches. Other Project components include a new stormwater retention basin, construction of utility infrastructure with new access routes, and recreational improvements.

The Project includes 5 major components and has been divided into 5 Sub-Project areas as shown on the aerial imagery (**Figure 2- Project Overview and Project Sub-Project area locations**).

1. Burke Creek realignment and Kahle Ditch outlet restoration
2. Kahle Ditch restoration above new pump station access road
3. Restoration of Burke Creek alignment in the center of Rabe Meadow
4. Jennings Pond restoration and recreation improvements
5. Rabe Meadow ditches decommissioning

Project activities for the restoration include the following:

- Earthwork including excavation, fill, grading and utility trenching
- Dewatering of portions of Burke Creek, Jennings Pond, and Kahle ditch
- Salvage and relocation onsite of aquatic organisms within Burke Creek, Jennings Pond and Kahle ditch prior to dewatering activities
- Treatment and removal of invasive species within Rabe Meadow, Burke Creek, and Kahle Ditch.
 - Surveys for aquatic invasive species will be performed prior to any ground disturbance. Removal of aquatic invasive plant species shall be performed prior to dewatering, filling or disturbance. Methods of removal may vary and shall be determined on a case-by-case basis (e.g. hand pulling, suction dredging, placement of benthic barriers)
- Temporary access routes to portions of the restoration area
- Removal of conifers encroaching into meadow areas
- Revegetation using native seed, aspen plugs, and willow and sod transplanting
- Modify existing or obtain new special use permits with Nevada Energy, Southwest Gas, Douglas County, and the Douglas County Lake Tahoe Sewer Authority
- Decommission user-created trails and reconstruct trails and crossings that are causing resource damage.

Restoration will include a variety of techniques with the goals of improved water quality, erosion control, more natural hydrology, and robust riparian and meadow vegetation which in turn provide improved aquatic and terrestrial habitat for plants and animals. Restoration techniques utilized in each sub-project area will vary depending on observed existing conditions and machinery access to each area and will range from significant realignments of the creek and floodplain grading in some areas to smaller process-based restoration techniques in other areas. A project overview map of the project activities is attached for reference.

For a detailed project description of the proposed action please refer to the 2023 Burke Creek Rabe Meadow Riparian Project BE prepared for the project submitted to the USDA Lake Tahoe Basin Management Unit Forest Service Supervisors Office with this report.

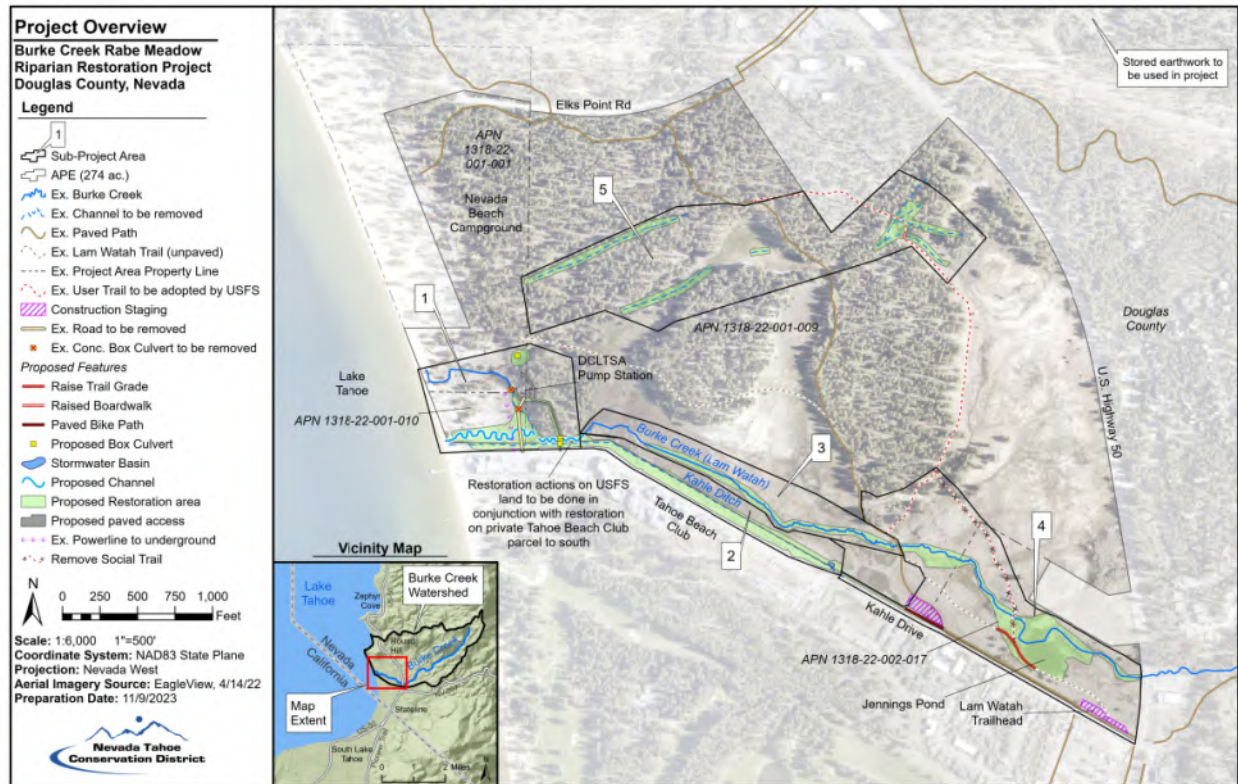


Figure 2. Project Overview and Sub-Project Area Locations Map

3 NON-PROJECT DEPENDENT FACTORS

3.1 INVENTORY

3.1.1 Surveys and Existing Data

The LTBMU Invasive Plants of Management Concern list (**Appendix A**) and spatial data of the most recent invasive plant surveys (LTBMU GIS for IPS) were reviewed prior to field surveys. For the purposes of the survey, it was assumed that there was potential for all terrestrial invasive plant species on this list within the project area.

In 2023, field surveys were conducted during multiple visits in June-July on approximately 16 acres within the botany analysis area where activities are planned. Additional surveys were conducted in these areas in 2021. For those areas outside of the surveyed areas, but within the botany analysis area, species occurrence information was compiled using LTBMU invasive plant species records and past survey reports.

Field surveys were designed around the flowering period and ecology of the invasive plants on the management list. Survey methodology consisted of a combination of general and intuitive controlled pedestrian surveys conducted along trails, parking areas, upland, riparian and meadow habitats targeted for Project activities. Staging areas and access routes were also surveyed. For each invasive species found, information was collected that described the size and extent of the infestation and mapped using a Global Positioning System (GPS).

3.1.2 Assessment Summary

Pre-implementation surveys and the current LTBMU invasive plant GIS database provides sufficient data to complete the risk assessment.

3.2 KNOWN INVASIVE PLANTS IN THE PROJECT AREA

Figure 3 provides the locations of known invasive plant infestations within the Project Area boundary.

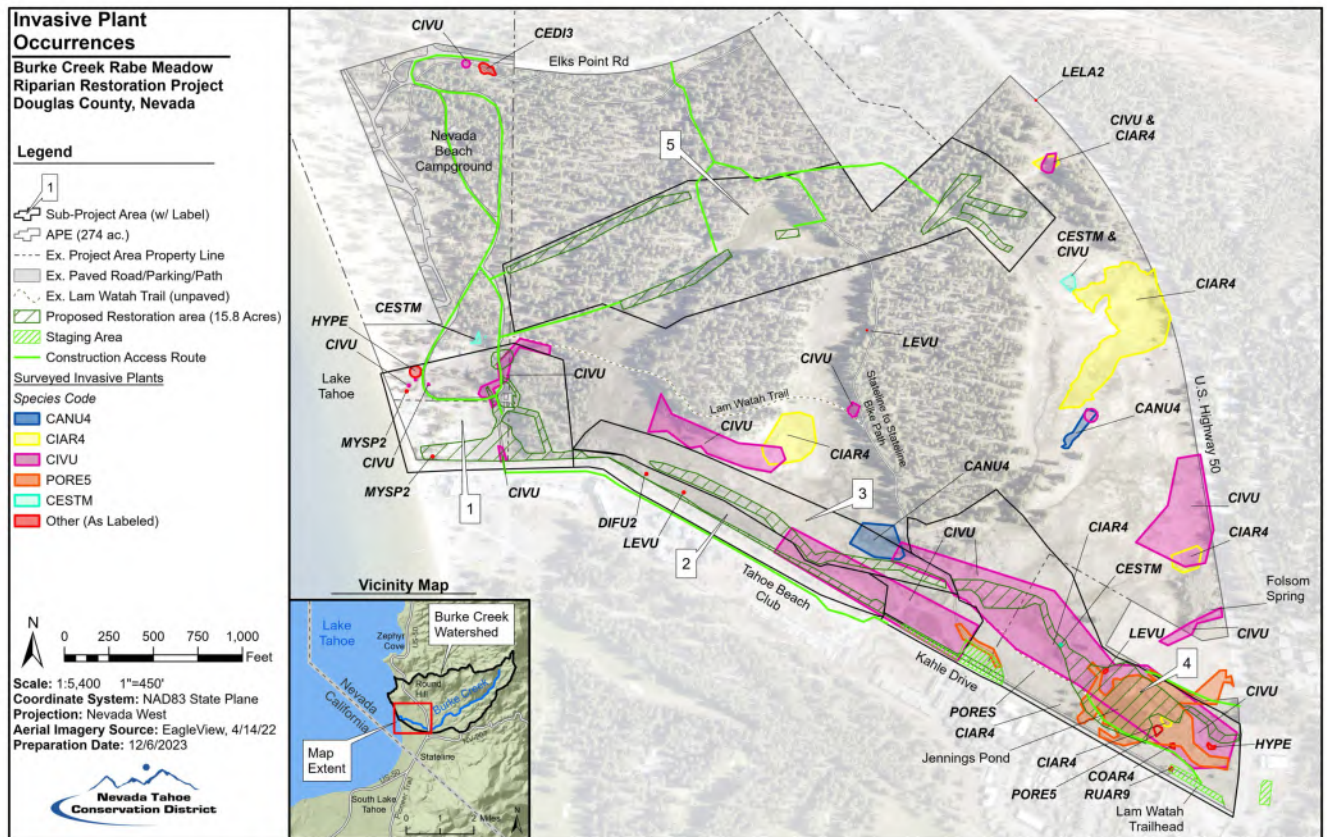


Figure 3. Location of known invasive plant infestations within the Project Area boundary.

Table 1 provides the LTBMU Invasive Plants of Management Concern known or with potential to occur in the Project Area. Infestation ID information is included for the 9 species mapped in the area.

Table 1: LTBMU Invasive Plants of Management Concern known or with potential to occur in the Project Area.

Scientific Name	Common Name	USDA Plant Code	Found?	Infestation Site ID
<i>Acroptilon repens</i>	Russian knapweed	ACRE3	No	
<i>Ailanthus altissima</i>	tree of heaven	AIAL	No	
<i>Bromus tectorum</i>	cheatgrass	BRTE	Yes	
<i>Carduus nutans</i>	nodding plumeless thistle	CANU4	Yes	0519436A, 0519885D
<i>Centaurea calcitrapa</i>	purple starthistle	CECA2	No	
<i>Centaurea diffusa</i>	diffuse knapweed	CEDI3	Yes	0519595B
<i>Centaurea solstitialis</i>	yellow starthistle	CESO3	No	
<i>Centaurea stoebe ssp. micranthos</i>	spotted knapweed	CESTM	Yes	0519885C, 0519129
<i>Centaurea virgata ssp. squarrosa</i>	squarrose knapweed	CEVIS2	No	
<i>Chondrilla juncea</i>	rush skeletonweed	CHJU	No	
<i>Cirsium arvense</i>	Canada thistle	CIAR4	Yes	519437, 519465A, 519885A, 519712 519709, 519877, 519223B, 05191746
<i>Cirsium vulgare</i>	bull thistle	CIVU	Yes	05191104, 0519130, 0519131, 0519132 05191854, 05191855, 0519219, 0519451A, 0519595A, 0519598 0519622, 0519921, 0519964, 05191745 05191755, 05191756, 05191797 0519183, 05191855
<i>Conium maculatum</i>	poison hemlock	COMA2	No	
<i>Cytisus scoparius</i>	Scotch broom	CYSC4	No	
<i>Dipsacus fullonum</i>	teasel	DIFU2	No	
<i>Dittrichia graveolens</i>	stinkwort	DIGR3	No	
<i>Elymus caput-medusae</i>	Medusa head	TACA8	No	
<i>Elymus repens</i>	quackgrass	ELRE4	No	
<i>Hydrilla verticillata</i>	hydrilla	HYVE3	No	
<i>Hypericum perforatum</i>	common St. Johnswort	HYPE	Yes	0519282, 519912, 05191742
<i>Isatis tinctoria</i>	dyer's woad	ISTI	No	
<i>Lepidium appelianum</i>	hairy whitetop	CAPU6 or LEAP7	No	

<i>Lepidium draba</i>	whitetop	CADR or LEDR	No	
<i>Lepidium latifolium</i>	perennial pepperweed	LELA2	Yes	0519793
<i>Leucanthemum vulgare</i>	oxeye daisy	LEVU	Yes	519461, 0519857, 05191748
<i>Linaria dalmatica ssp. dalmatica</i>	Dalmatian toadflax	LIDAD	No	
<i>Linaria vulgaris</i>	yellow toadflax	LIVU2	No	
<i>Lythrum salicaria</i>	purple loosestrife	LYSA2	No	
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	MYSP2	No	
<i>Onopordum acanthium</i>	Scotch thistle	ONAC	No	
<i>Potamogeton crispus</i>	curly pondweed	POCR3	No	
<i>Potentilla recta</i>	sulfur cinquefoil	PORE5	Yes	519609, 519338, 05191747, 05191837
<i>Rubus armeniacus</i>	Himalayan blackberry	RUAR5	No	
<i>Tamarix chinensis, T. ramosissima, and T. parviflora</i>	tamarisk	TACH2, TARA and TAPA4	No	

A number of the mapped occurrences are located within Project Areas. Sub-Project Area 1 contains bull thistle (*Cirsium vulgare*) along the existing access road and the channel and outlet of Burke creek. Diffuse knapweed (*Centaurea diffusa*), Canada thistle (*Cirsium arvense*), and St. John's wort (*Hypericum perforatum*) also occur in this area. Eurasian watermilfoil (*Myriophyllum spicatum*) occurs at the outlets of Kahle Ditch and Burke Creek. Sub-Project Area 2 and 3 contain a patch of teasel (*Dipsacus fullonum*) and a small infestation of oxeye daisy (*Leucanthemum vulgare*) near Kahle Ditch and larger infestations of bull thistle and Italian thistle in the meadow. Sub-Project Area 4 contains the greatest concentration of invasive plants. Spotted knapweed (*Centaurea stoebe ssp. micranthos*), Canada thistle, nodding plumeless thistle (*Carduus nutans*), and sulphur cinquefoil (*Drymocallis glandulosa*) infestations have been documented within the planned grading area.

Two other species were detected that have invasive potential. A few large shrub-like comfrey plants (*Symphytum officinale*) were found within and adjacent to the Burke Creek channel near Jennings Pond, mainly within the arm of the creek coming from Folsom Spring which is outside of Sub-Project Area 4. These plants were treated in 2022 (E. Williams, pers. Comm.). Smooth brome (*Bromus inermis*) was found along the existing sewer pump station access road. No infestations are mapped within Sub-Project Area 5.

The extent and number of infestations in the Project Area pose a high risk to spread.

3.3 HABITAT VULNERABILITY

General Disturbance: Burke Creek and Rabe Meadow were significantly impacted during urbanization of the Tahoe Basin. The watershed was logged extensively during the Comstock Era of the late 1800s and

Rabe Meadow was used for livestock grazing until the 1970s. There were multiple developments in the 1960s and 70s including development of Sky Harbor Airport, followed by redevelopment of the airport into Tahoe Shores Mobile Home Park. The mobile home park has been redeveloped and replaced by the Tahoe Beach Club. These changes have impaired the hydrological connection between Burke Creek and the surrounding meadow and degraded water quality and aquatic and terrestrial habitats. The degraded conditions increase the vulnerability to weeds.

Recreation: Increased recreational use over the past two decades has resulted in an expansive network of user-created trails and an overall increase of bare soil throughout Rabe meadow. The area at the Lam Watah trailhead is heavily infested by non-natives and the trails throughout the Project Area have the greatest vulnerability to common weeds that are transported on human shoes and pets. The open habitat and bare areas in Nevada Beach campground in the vicinity of the mouth of Burke Creek are also highly vulnerable to weed introduction and spread.

Hydrology: The riparian plant communities of Burke Creek and Kahle Ditch and portions of Rabe meadow are susceptible to invasive species that require mesic conditions such as oxeye daisy and Sulphur cinquefoil, and also to facultative species like the thistles that thrive in meadow habitats. The wettest parts of Rabe meadow are not generally accessed by humans or pets and are relatively resistant to many introduced plants. Although, there are many areas of erosion that create bare ground where non-native plants may establish.

3.3.1 Habitat Vulnerability assessment

Within Sub-Project Areas 1 and 4, recreation intensity is very high, non-native weeds are prevalent, there is erosion and bare ground, therefore, habitat vulnerability is assessed as very high. Sub-Project Areas 2-3 (except for the part of 3 that includes trail) have limited use and habitat vulnerability is assessed as low. A small part of Sub-Project Area 5 is on a user-trail, however, there is little reason to stray from the trail in the area and the vulnerability of the surrounding forest is assessed as low. The overall vulnerability of habitat within the Project Area is assessed as high because the risk of spread in localized areas is very high.

3.4 NON-PROJECT DEPENDENT VECTORS

Recreation: The multiple walking and bike trails, including the Lam Watah trailhead, are heavily used and are the primary vectors of weed seed being transported on human shoes and pets throughout the Project Area. Nevada Beach campground is heavily used and also provides a source of weeds in the vicinity of the mouth of Burke Creek through the summer months.

Water: The Burke Creek channel can transport non-natives through the Project Area and into Lake Tahoe. Roadside ditches adjacent to Kahle Drive and the culverts in US Highway 50 convey stormwater and may be a source of non-native plants.

Other Factors: Fire risk is very high in the area with the high risk of ignitions from Nevada Beach Campground. Fire suppression activities and fuels reduction could be a vector of weeds. The project area was historically grazed, but grazing has not occurred for decades and is no longer a source of invasive plants.

3.4.1 Non-Project Dependent Vector assessment

The risk of spread from non-project dependent vectors is very high due to the intensive recreation in the Project Area and ability of water to transport weeds through the Project Area. This high risk of spread is moderated by the small size and number of infestations of terrestrial invasive plants located within the Project Area. If the amount of weeds within the Project area increases, the risk of spread through recreation would also increase. For aquatic invasive plants, Lake Tahoe will remain a vector of Eurasian watermilfoil, and the new outlet of Burke Creek is likely to become infested after the Project is complete, due to the proximity of other infestations and high amount of visitor use.

4 PROJECT DEPENDENT FACTORS

4.1 HABITAT ALTERATION

The Project will implement ground disturbing actions including excavation and grading with heavy equipment. Project implementation will result in a high degree of habitat modification with the objective to restore the riparian corridor of Burke Creek and adjacent wetland habitats. The overall amount of these habitats is expected to increase as a result of the Project and the created habitat is expected to be of higher quality than existing conditions.

4.2 INCREASED VECTORS AS A RESULT OF PROJECT CONSTRUCTION

Construction: As shown in **Figure 3**, project activities and disturbance will occur within a total area of 15.8 acres out of the 247-acre analysis area. Invasive plant occurrences were found or are known to occur within areas that will be disturbed. In 2023, infestations listed in table 1 were revisited and treated. Infestations that persist in grading areas will be flagged on the ground prior to implementation, and treated if timing is appropriate, however it is unlikely extant infestations will be avoidable. Where infestations were not treated or re-occur during the construction season, project activities could expose and/or transport invasive plant propagules within and between Sub-Project Areas. The very high amount of habitat alteration and disturbance will occur within Sub-Project Area 4, the area that is the most heavily infested. Most of the disturbance in Sub-Project Area 1 will avoid infested areas.

Equipment and Access Routes: Construction equipment would move along access routes to Sub-Project Areas. The majority of the access routes do not have known infestations, however, the access routes in Sub-Project Areas 1 and 4 have known infestations.

Materials: The Project may utilize erosion control materials, road base, and a variety of fill. The majority of fill will be native soil sourced through Project implementation, although fill may be brought in from outside weed-free sources, as needed. Native fill from excavation in Sub-Project Area 1 will be used in Sub-Project Area 4 and could spread bull thistle, along with many other non-native weedy species. Sub-Project Area 2 does not have mapped occurrences, but fill from this area will be moved to fill Jennings Pond. Off-site fill is proposed for use that was sourced from the 2016 Kahle Basin Implementation Project. The fill is currently stored off-site on Sewer Plant Road and covered with protective tarps. The fill pile was surveyed in 2023 and *Bromus tectorum* and *Melilotus albus* were detected in the vicinity. These species are already present throughout the proposed grading areas. The risk of introducing new infestations through proposed fill material is low.

Roads & trails: The Project includes improvements to existing trails and will not create additional trails. An access road will be replaced and may result in a very minor increase in the amount of road within Nevada Beach Campground.

Utility Corridors: Bull thistle and many other non-native weedy species are located along the existing access road in Sub-Project Area 1 where utilities will be undergrounded. These infrastructure modifications will occur within the existing right-of way and would not expand the amount of utility corridors present in the Project Area.

Traffic/visitor use: The project includes recreation improvements within the Burke Creek/Rabe Meadows complex and Nevada Beach campground that are intended to rectify existing issues with access and concentrate use. Visitor use is expected to remain high, but is not expected to increase as a result of the improvements.

The temporary and potential long-term increase in vectors listed above will be addressed through the Management Measures described in the next section.

4.3 MANAGEMENT MEASURES

The following resource protection measures (RPMs) are proposed for the Burke Creek Rabe Meadow Riparian Restoration Project to minimize and avoid potential project-related effects on botanical resources. The following measures are designed to minimize risk of new weed introductions, minimize the spread of weeds within project areas, and minimize the spread of weeds between project areas. Measures INV-01-08 directly incorporate the Standards and Guidelines from the LTBMU Land and Resource Management Plan (USFS 2016) and INV-09 has species-specific measures. NTCD is responsible for the implementation of applicable RPMs and BMPs and will incorporate them into the final design plans and any plans required for permitting.

INV-01 Inventory

- Before the onset of construction activities, each Sub-Project Area, associated access routes, material source sites, and staging areas will be inventoried for invasive plants.
- Infestations discovered prior to or during project implementation will be flagged and reported to the Forest Botanist or their designated appointee for prioritization and assessment for treatment. If infestations cannot be avoided or treated, a barrier will be installed to prevent the spread of non-native invasive plants to new areas within the project area or off site. Appropriate barrier areas and methods will be established in coordination with the Forest Botanist.

INV-02 Equipment Cleaning

- All equipment and vehicles used for project implementation must be free of plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or steam-cleaning facility before the equipment and vehicles enter the project area.
- When working in known invasive plant infestations or designated weed areas, equipment shall be cleaned before moving to un-infested areas of the project and other National Forest Service system lands. These areas will be flagged on the ground and identified on project maps.

INV-03 Staging areas

- Equipment, materials, or crews will not be staged in invasive plant-infested areas, wherever feasible. If staging within existing infestations cannot be avoided, the invasive species would be treated/removed, then a barrier will be installed to prevent the spread of non-native invasive plants to new areas within the project area or off site. Appropriate barrier areas and methods will be established in coordination with the Forest Botanist.

INV-04 Control Areas

- Where feasible, invasive plant infestations on the LTBMU priority ranking list will be designated as Control Areas in coordination with the Forest Botanist. Equipment, traffic and soil-disturbing project activities would be excluded in Control Areas and will be identified on project maps and delineated in the field with orange 'noxious weed' flagging. Where Control Areas cannot be avoided, and risk of spread of a priority management species to new areas is high, invasive plants will be treated/removed and appropriate barriers will be installed, if feasible, and equipment will be washed on site before moving to a new sub-project area.

INV-05 Project-related disturbance

- The amount of ground and vegetation disturbance in staging and construction areas will be minimized to the extent possible. Where feasible, vegetation will be reestablished on disturbed bare ground to reduce invasive species establishment; revegetation is especially important in staging areas. Where soil compaction has occurred to an extent that would inhibit native plant establishment (including all access routes, staging and storage sites), disturbed areas should be de-compacted by scarifying and mulched prior to seeding. Revegetation activities in areas with existing infestations will be designed to favor native species establishment over non-native invasive species growth and spread.

INV-06 Post Project Monitoring

- After the project is completed, the Forest Botanist will be notified so that the project area can be monitored and treated for invasive plants for a minimum of three years after project implementation to mitigate project related introduction and spread of these species.

INV-07 Gravel, fill, and other materials

- Gravel, fill, or other imported materials will be required to be determined as a suitable or conditional weed-free source by the LTBMU weed free material program. Onsite sand, gravel, rock, or organic matter will be used when possible. If conditional sources are used, early detection rapid response (EDRR) monitoring of application sites will be conducted for two growing seasons following implementation.
- Off-site fill is proposed for use that was sourced from the 2016 Kahle Basin Implementation Project. The fill is currently stored off-site on Sewer Plant Road and covered with protective tarps. The stock pile will be surveyed for invasive plants prior to movement to the Project area.

INV-08 Mulch and topsoil

- North American Invasive Species Management Association (NAISMA) certified weed-free mulch will be used if chipped material is not available on site. Topsoil will be salvaged from the project area for use in onsite revegetation, unless contaminated with invasive species.

INV-9 Species-Specific Management Measures

See Table 2 below

<p align="center">Table 2 Species-Specific Management Measures</p>		
Scientific Name	Common Name	Treatment
<i>Bromus tectorum</i>	Cheatgrass	<ul style="list-style-type: none"> • Flag and avoid where feasible. • Minimize disturbance in infested areas. • Use barriers to prevent spread from staging areas or constructed access routes.
<i>Cirsium arvense</i>	Canada thistle	<ul style="list-style-type: none"> • Flag and avoid all existing infestations • Chemically treat infestations with Aminopyralid in rosette to early flowering stages.
<i>Cirsium vulgare</i>	Bull thistle	<ul style="list-style-type: none"> • Remove plants by digging out the rosette and entire tap root, securely bag plants, and dispose offsite; • If present, remove flowering heads before seed set and dispose of off-site. • Pulled plants may be left on-site to desiccate if they are in rosette stage with no signs of bud or flower development.
<i>Centaurea stoebe</i> ssp. <i>micranthos</i> <i>Centaurea diffusa</i>	Spotted knapweed Diffuse knapweed	<ul style="list-style-type: none"> • Flag and avoid ground disturbance in all existing infestations • Remove plants by digging out the rosette and entire tap root, securely bag plants, and dispose offsite; if present, remove flowering heads before seed set and dispose of off-site. • Pulled plants may be left on-site to desiccate if they are in rosette stage with no signs of bud or flower development.
<i>Hypericum perforatum</i>	Klamath weed	<ul style="list-style-type: none"> • The deep taproots can regenerate, so hand pulling or digging is only effective for small isolated infestations. • Flag and avoid all existing infestations

<p align="center">Table 2 Species-Specific Management Measures</p>		
Scientific Name	Common Name	Treatment
		<ul style="list-style-type: none"> Chemically treat infestations with Aminopyralid.
<i>Lepidium latifolia</i>	Perennial pepperweed	<ul style="list-style-type: none"> Seedlings are easily controlled by hand-pulling, but mature plants will re-sprout. Flag and avoid all existing infestations. Chemically treat infestations with Chlorsulfuron.
<i>Leucanthemum vulgare</i>	Oxeye daisy	<ul style="list-style-type: none"> Dig out plants if the soil is moist and loose enough to remove the entire shallow root-system with hand tools digging more than 6 inches deep. Dispose of off-site. For larger stands, Aminopyralid would be applied in the spring during the seedling to pre-bud stage.
<i>Potentilla recta</i>	Sulphur cinquefoil	<ul style="list-style-type: none"> Verify species identification during pre-implementation surveys and flag occupied areas for avoidance or as control areas. Dig out plants if the soil is moist and loose enough to remove the entire woody root. Dispose of off-site. For larger stands, Aminopyralid would be applied in the spring during the rosette to pre-bud stage. Wash equipment on site prior to moving to other project areas
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	<ul style="list-style-type: none"> Manual removal of plants and roots. Disposed of off-site. Post-project monitoring of the new outlet of Burke Creek will be needed to detect and address new infestations.

4.3.1 Assessment summary

The risk of weed introduction and spread will be minimized by inventorying each Sub-Project Area prior to construction related disturbance, whenever feasible, and cleaning all construction equipment before entering the Project area or moving between areas. Staging in infested areas will be avoided to the extent feasible or appropriate protective barriers will be installed. Gravel, fill and revegetation materials will be screened for invasive species before use. Control Areas for construction exclusion will be designated, if appropriate, and infestations will be treated when feasible. These measures will be taken in coordination with the Forest Botanist and will avoid or reduce existing infestations and minimize the risk of spread. Post –project monitoring will reduce the long-term impacts of the Project. The consequences of not using these measures will result in increased risk of invasive plant infestations in the Project area and result in the degradation of sensitive resources. The resource protection measures listed above directly incorporate the Standards and Guidelines from the LTBMU Land and Resource Management Plan (USFS 2016) and are designed to minimize risk of new weed introductions, minimize the spread of weeds within units, and minimize the spread of weeds between units. These measures will be incorporated into Project designs.

5 ANTICIPATED WEED RESPONSE TO PROJECT

The overall risk of invasive weed spread and establishment as a result of Project implementation is moderate. This determination is based on the following and summarized in **Table 3**:

1. Invasive plants occur in the Project area;
2. Soil disturbance will occur within potentially infested riparian and meadow habitat;
3. Construction equipment and activities could import and spread weed propagules; and
4. The risk of transport of weed propagules through non-project dependent factors such as recreation and waterways is very high.

Table 3. Summary of Risk Factors

	Factor	Risk	Assessment summary
NON-PROJECT DEPENDENT FACTORS	Inventory	N/A	Pre-implementation surveys were completed in 2023 and the current LTBMU database of invasive plants is sufficient to complete the risk analysis.
	Known invasive plants	High	There are many known invasive plant occurrences within and around the Project area.
	Habitat vulnerability	High	Sub-Project Areas 1 and 4 are very vulnerable due to high recreation intensity. Sub-Project Areas 2-3 and 5 are low due to low accessibility and low levels of infestation.
	Non-project dependent vectors	Very High	Recreation intensity is very high within the Project Area and water and Lake Tahoe can also transport invasive plant propagules.
PROJECT-DEPENDENT FACTORS	Habitat alteration expected as a result of project	High	Project activities include excavation and grading to restore riparian corridor and wetland habitats. Although the created habitat is expected to be higher quality, a high degree of habitat modification will occur.
	Increased vectors as a result of project implementation	Low	Implementation of Management Measures are intended to reduce the temporary increase in potential

	Factor	Risk	Assessment summary
			weed spread from machinery and materials. Long-term increases in vectors are not expected.
	Management measures	Moderate	Standard management measures will be incorporated through design features to reduce invasive plant introduction and spread.
ANTICIPATED WEED RESPONSE		High	High levels of current infestation and high risk of spread.

6 REFERENCES

United States Department of Agriculture (USDA). 2016. Lake Tahoe Basin Management Unit Land and Resource Management Plan. USDA Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

USDA. 2012. Region 5 Noxious Weed Management Strategy and Action Plan. USDA Forest Service, Pacific Southwest Region. Vallejo, CA.

USDA. 2004a. National Strategy and Implementation Plan for Invasive Species Management. USDA Forest Service, Washington Office, Washington D.C.

USDA. 2004b. Sierra Nevada Forest Plan Amendment Record of Decision. USDA Forest Service, Pacific Southwest Region, Vallejo, CA.

USDA. 2005. Pacific Northwest Region, Invasive Plant Program; Preventing and Managing Invasive Plants. U.S.D.A. Forest Service. Final Environmental Impact Statement.

APPENDIX A. Invasive Species of Management Concern on the Lake Tahoe Basin Management Unit

Table 1: 2023 Invasive Plants of Management Concern. All species from the Terrestrial Invasive Plant Species (TIPS) Environmental Assessment (EA) (2010) are included in this list regardless of observations in the on LTBMU. Species in bold are not included in the TIPS EA (2010) and therefore their treatment options on LTBMU land may be limited.

Scientific Name	Common Name	USDA Plant Code	LTBMU Priority	NDA	CDFA	Cal-IPC	LTBWCG
<i>Acroptilon repens</i>	Russian knapweed	ACRE3	Medium	B	A	Moderate	Group 1
<i>Ailanthus altissima</i>	tree of heaven	AIAL	High		C	Moderate	Group 1
<i>Berteroa incana</i>	Hoary alyssum	BEIN2	High		B	Watch	
<i>Bromus tectorum</i>	cheatgrass	BRTE	Low			High	
<i>Carduus nutans</i>	nodding plumeless thistle	CANU4	High	B	A	Moderate	Group 1
<i>Centaurea calcitrapa</i>	purple starthistle	CECA2	Medium	A	B	Moderate	Group 1
<i>Centaurea diffusa</i>	diffuse knapweed	CEDI3	High	B	A	Moderate	Group 1
<i>Centaurea solstitialis</i>	yellow starthistle	CESO3	Medium	A	C	High	Group 1
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	CESTM	High		A	High	Group 2
<i>Centaurea virgata</i> ssp. <i>squarrosa</i>	squarrose knapweed	CEVIS2	High	A	A	Moderate	
<i>Chondrilla juncea</i>	rush skeletonweed	CHJU	High	A	A	Moderate	Group 1
<i>Cirsium arvense</i>	Canada thistle	CIAR4	High	C	B	Moderate	Group 1
<i>Cirsium vulgare</i>	bull thistle	CIVU	Low		C	Moderate	Group 2
<i>Conium maculatum</i>	poison hemlock	COMA2	Low	C		Moderate	
<i>Convolvulus arvensis</i>	Common bindweed	COAR4	Low		C		
<i>Cytisus scoparius</i>	Scotch broom	CYSC4	Medium		C	High	Group 2
<i>Dipsacus fullonum</i>	teasel	DIFU2	Low			Moderate	Group 1
<i>Dittrichia graveolens</i>	stinkwort	DIGR3	Low			Moderate ; Alert	Group 1
<i>Elymus caput-medusae</i>	Medusa head	TACA8	High			High	Group 1
<i>Elymus repens</i>	quackgrass	ELRE4	Low		B		
<i>Hydrilla verticillata</i>	hydrilla	HYVE3		A	A	High	
<i>Hypericum perforatum</i>	common St. Johnswort	HYPE	Medium	A	C	Limited	Group 2
<i>Isatis tinctoria</i>	dyer's woad	ISTI	High	A	B	Moderate	Group 1
<i>Lepidium appelianum</i>	hairy whitetop	CAPU6 or LEAP7	Medium		B		Group 1
<i>Lepidium draba</i>	whitetop	CADR or LEDR	Medium		B	Moderate	Group 1
<i>Lepidium latifolium</i>	perennial pepperweed	LELA2	High	C	B	High	Group 2
<i>Leucanthemum vulgare</i>	oxeye daisy	LEVU	Low			Moderate	Group 2
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	LIDAD	High	A	A	Moderate	Group 2
<i>Linaria vulgaris</i>	yellow toadflax	LIVU2	High	A		Moderate	Group 2
<i>Lythrum salicaria</i>	purple loosestrife	LYSA2	High	A	B	High	Group 1
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	MYSP2		A		High	
<i>Onopordum acanthium</i>	Scotch thistle	ONAC	High	B	A	High	Group 1
<i>Phalaris arundinacea</i>	Reed canary grass	PHAR3	Low				
<i>Potamogeton crispus</i>	curly pondweed	POCR3				Moderate	
<i>Potentilla recta</i>	sulfur cinquefoil	PORE5	Medium	A			Group 1
<i>Rubus armeniacus</i>	Himalayan blackberry	RUAR5	Medium			High	
<i>Tamarix chinensis</i> , <i>T. ramosissima</i> , and <i>T. parviflora</i>	tamarisk	TACH2, TARA and TAPA4	High	C		High	Group 1

Appendix C: US Forest Service Decision Memorandum and Specialist Reports

BURKE CREEK RABE MEADOW RIPARIAN RESTORATION PROJECT



Decision Memo

U.S. Forest Service
Lake Tahoe Basin Management Unit
Douglas County, Nevada



March 2024

BACKGROUND

Burke Creek is a small stream in the Lake Tahoe Basin that passes just north of the intersection of State Route 50 (SR 50) and Kahle Drive in Douglas County, NV. The project is located on National Forest System (NFS) lands including Burke Creek and Rabe Meadow between SR 50 and the outlet of Burke Creek at Lake Tahoe at Nevada Beach within the Lake Tahoe Basin Management Unit (LTBMU).

The Project area includes Burke Creek, Kahle Ditch, intermittent stream channels, meadows, Jennings Pond, recreation trails, and a sewer pump station. The area also includes the parking lot that provides access to the Lam Watah trail and the Rabe Meadow Multi-Use Trail (which is a portion of the Stateline-to-Stateline Bikeway). This area provides popular recreation access and opportunity. Pedestrians and bike riders travel through the meadow and enjoy meadow, forest, and stream environments as they travel to Nevada Beach or along the bike path to Roundhill Pines Resort. The area's proximity to the concentrated Stateline hotels contributes to its popular recreation use. The existing trailhead parking lot located at Kahle Drive and SR 50 includes 20 parking spaces, a restroom, a picnic area, and multiple interpretive signs/kiosks. The trailhead parking lot and Rabe Meadow Multi-Use Trail are managed by Douglas County under Special Use Permit with the Forest Service. The Lam Watah trail is managed by the Forest Service. The Douglas County Lake Tahoe Sewer Authority manages a sewer pump station at Nevada Beach under Special Use Permit with the Forest Service.

Burke Creek was modified and relocated to accommodate stormwater runoff from development including the Jennings Casino, SR 50, Kahle Drive and the Oliver Park subdivision. Around 1980, the land below SR 50 was acquired by the USFS, including the foundation of the incomplete construction of the Jennings Casino. Restoration conducted at that time included removal of the above ground structures, burial of some of the below ground foundation structures, and channel restoration. Kahle ditch was installed to manage stormwater runoff. The straight channel of Kahle Ditch does not slow stormwater velocities and its capacity is often exceeded during storm events resulting in flooding of Kahle Drive and the adjacent Tahoe Beach Club development.

NEED FOR PROJECT

Burke Creek and Rabe Meadow have been impacted by historic uses such as logging, grazing, and development over the past 150 years that have resulted in significant modifications to the stream, its tributaries, and surrounding meadows. The changes to the watershed decreased the overall area of healthy wetlands and stream length. Increased recreational use of Rabe Meadow over the past two decades has resulted in an expansive network of user-created trails and an overall increase of bare soil within the meadow. As a result of these uses, the Burke Creek Watershed has degraded water quality and lower quality aquatic and terrestrial habitat. Restoration of the watershed is needed to expand the

riparian areas, increase channel length, improve habitat, reduce soil erosion, reduce flooding to nearby infrastructure, and improve water quality.

DECISION

The 2014 Burke Creek-Rabe Meadow Complex Master Plan identified the Burke Creek Highway 50 Crossing, Kahle Basin Implementation Project, Kahle Drive Complete Street, and the Burke Creek Kahle Ditch Riparian Restoration Project as essential actions to improve water quality in the Burke Creek Watershed. The first two of these projects were completed in 2016 and 2018, respectively. The last project is encompassed in the actions described in this document and the Kahle Drive Complete Street project is being planned under a separate effort.

I have decided to implement the project, described below, which includes restoration of Burke Creek and Rabe Meadow between SR 50 and the outlet of Burke Creek at Lake Tahoe at Nevada Beach on National Forest System Lands within the Lake Tahoe Basin Management Unit (LTBMU).

PROJECT DESCRIPTION

Restoration will include a variety of techniques with the goals of improved water quality, erosion control, more natural hydrology, and robust riparian and meadow vegetation which in turn provide improved aquatic and terrestrial habitat for plants and animals. Restoration techniques utilized in each sub-project area will vary depending on observed existing conditions and machinery access to each area and will range from significant realignments of the creek and floodplain grading in some areas to smaller process-based restoration techniques in other areas. A project overview map of the project activities is attached for reference. The project includes the activities described for each sub-project area below:

Sub-Project Area 1: Burke Creek Outlet realignment and Kahle Ditch outlet restoration

Sub-Project Area 1 includes the lowest reach of Burke Creek at the outlet to Lake Tahoe and the outlet of Kahle Ditch. Known occurrences of Tahoe yellow cress (TYC) are present at these outlets that will be protected and/or moved according to established protocols in the TYC Conservation Strategy. Restoration goals in Sub-Project Area 1 are to improve hydrologic function of Burke Creek and alleviate flooding that currently results in public health and safety concerns. The relocation of the Douglas County Lake Tahoe Sewer Authority (DCLTSA) pump station access road to a narrower area of the Burke Creek floodplain further away from Lake Tahoe will alleviate the substantial flooding impacts to the DCLTSA pump station while providing conveyance for the 100-year flood through natural bottom culverts. The creation of a new channel and floodplain will increase the frequency and extent of floodplain overbanking and reduce stagnant water and flooding in the Nevada Beach Campground. Upsizing undersized metal culverts under the Nevada Beach Campground Road will also alleviate flooding to campsites and reduce the need for maintenance. Kahle Ditch will be filled with native material and become a portion of the floodplain for the new channel alignment. The majority of Kahle Ditch within this Sub-Project Area is located on private property owned by the Tahoe Beach Club.

The following project actions are proposed in this sub-project area:

- Construct a new Burke Creek alignment and outlet to Lake Tahoe within an approximately 1.8-acre area near Nevada Beach. The new channel and floodplain will provide flood conveyance of the predicted 100-year flood event.
- Remove the existing paved pump station access road originating from the Tahoe Beach Club property.
- Construct additional paved areas surrounding the DCLTSA pump station to facilitate emergency vehicle turnaround and additional parking.

- Construct a new pump station access road approximately 200 feet upstream with 3 open bottom culverts. The road will be approximately 360 feet long, 10 feet wide, with two-foot shoulders with approximately 60 linear feet crossing the riparian area. Issue special use permit amendment to Douglas County Lake Tahoe Sewer Authority.
- Backfill approximately 600 linear feet of Burke Creek and construct a new longer channel to add channel length and improve floodplain access and width.
- Remove two box culverts (upstream culvert along existing DCLTSA access road and middle culvert along Nevada Beach Campground Rd) and the Burke Creek channel in between. Most of the existing Burke Creek channel including the most downstream box culvert will be retained and minimal backfilling would occur to convey flood flows and preserve occupied TYC habitat in the existing mouth of Burke Creek.
- Remove two metal culvert pipes under Nevada Beach Campground Road and replace with a concrete box culvert for stormwater and flood drainage.
- Remove existing metal fence along the Tahoe Beach Club/Nevada Beach boundary.
- Manually remove aquatic invasive plants within the Burke Creek and Kahle Ditch channels and off-haul any soil contaminated by aquatic invasive species.
- Underground approximately 300 linear feet of existing overhead electric transmission lines and shared trench utility conduit to the south of the Nevada Beach campground. Issue special use permit amendment to NV Energy.
- Install approximately 150 linear feet of sewer utility broadband between the existing Sewer Pump Station and the undergrounded electric transmission line to the west along the new sewer plant access and existing campground road, issue special use permit amendment to Douglas County Lake Tahoe Sewer Authority.
- Lower approximately 220 ft of buried gas line to avoid conflicts with the new channel and lowered floodplain, issue special use permit amendment to Southwest Gas.
- Dewater and backfill approximately 500 linear feet of Kahle Ditch above the high-water line of Lake Tahoe at 6,229.1 feet of elevation (Lake Tahoe Datum). Complete associated fish salvage.
 - The backfill of Kahle Ditch will occur in the vicinity of a known Tahoe yellow cress occurrence. Plants that may be present would be transplanted to a receptor location (on-site or off) to be determined based on conditions or temporarily to a greenhouse prior to backfilling of the ditch.
- Stage approximately 1,600 cubic yards of excess cut material in designated areas for later use as fill in sub-project area 4.
- Install up to 650 linear feet of wood/wire fencing adjacent to the new creek channel to protect the restoration area and Tahoe yellow cress habitat.
- Access construction areas using existing campground road and the access roads from the Tahoe Beach Club to the sewer pump station.

Sub-Project Area 2: Kahle Ditch restoration upstream of new pump station access road

Sub-project Area 2 encompasses restoration actions along Kahle Ditch upstream of the new pump station access road. Restoration activities will also occur on private parcels owned by the Tahoe Beach Club in this area. The restoration goals in this area are to improve hydrologic function of Burke Creek, disconnect and treat urban runoff and remove remnant materials associated with the Tahoe Shores Mobile Home Park, remove non-native plants, and to restore stream environment zone (SEZ) and improve floodplain width. Minimal grading will occur to achieve floodplain connectivity.

The following project actions are proposed in this sub-project area:

- Manually remove aquatic invasive plants within the Burke Creek and Kahle Ditch channels.
- Dewater Burke Creek and Kahle ditch and complete associated fish salvage.
- Backfill approximately 2,100 linear feet of Kahle Ditch.
- Grade up to one acre of Rabe Meadow to achieve natural floodplain slopes and a multi-branch stream channel.
- Install approximately 1,800 square foot vegetated stormwater basin to treat water from the end of Kahle Drive. Issue special use permit amendment to Douglas County.
- Stage approximately 1,600 cubic yards of excess cut material in designated areas for later use as fill in sub-project area 4.
- Access will occur from Tahoe Beach Club property and Kahle Drive.

Sub-Project Area 3: Restoration of Burke Creek alignment in the center of Rabe Meadow

Sub-Project Area 3 encompasses 1,200 linear feet of a straight section of Burke Creek in the center of Rabe Meadow. The majority of the reach flows in a generally straight channel that appears to be the remnants of an irrigation ditch. Restoration goals for this area are to improve the hydrologic function of Burke Creek and Rabe Meadow, promote overbanking and aggradation (build-up) of sediment in Rabe Meadow, create habitat to encourage beaver colonization and create conditions for the development of a naturally evolving and branching channel system.

The following project actions are proposed in this sub-project area:

- Manually remove aquatic invasive plants within the Burke Creek channel.
- Reactivate remnant channels within Rabe Meadow using log grade controls, woody debris, and Beaver Dam Analog (BDA)¹ structures. A straightened section of Burke Creek that occupies a former irrigation ditch will be restored with the use of woody structures that mimic beaver activity and promote overbanking and lead to increased complexity of the channel.
- Divert Burke Creek flows around hand crew work areas and complete associated fish salvage, as needed.
- Access the channel in the middle of the meadow for wood structure placement by foot from the Lam Watah trail.

Sub-Project Area 4: Jennings Pond restoration and recreation improvements

This Sub-Project Area includes the 1,600 linear feet reach of Burke Creek that begins approximately 300 linear feet upstream from the Stateline-to-Stateline bike path bridge and ends at the culvert at Highway 50. The 1982 Jennings Pond restoration and the downstream end of the 2018 highway crossing restoration occurred within this area. These previous restorations created generally hydrologically stable conditions, but several areas of head cutting, bank erosion and incision exist within this sub-project area. User-created trails and bridges are causing resource damage in and around riparian areas. Jennings Pond, a man-made structure created in 1982, is impacting hydrologic processes, causing damage to nearby infrastructure, and preventing significant water from reaching the meadow area below. A

¹ A Beaver Dam Analog is a man made structure designed to mimic the appearance and function of a natural beaver dam to achieve restoration goals such as increased habitat and riparian width.

reduction in the size of Jennings Pond will allow this site to return to a more natural hydrology while maintaining some ponded habitat for native species, including beaver. This will also alleviate issues related to the pond overflowing and associated recreational trail damage by decreasing the overall volume of water in the pond.

The following project actions are proposed in this sub-project area:

- Drain Jennings Pond with diversion and pumps. All native aquatic fish and amphibian species will be relocated.
- Manually remove any aquatic invasive species.
- Install BDAs and/or wood structures downstream of Jennings Pond.
- Partially fill Jennings Pond with soil from other parts of the project to reduce flooding of recreation trails and Kahle Drive. Microtopography (small variations and fluctuations in the ground topography) will be constructed to improve habitat for native species.
- Construct approximately 350 feet (3,500 sf) of Class 1 paved bike trail and issue special use permit amendment to Douglas County.
- Place fill between Kahle Drive and the existing stormwater basin's berm to improve drainage in the area.
- Lower an approximately 8,000 square foot area between Folsom Creek and Jennings Pond to reroute flood flows away from infrastructure.
- Raise approximately 400 linear feet of the Lam Watah Trail to direct flows away from Kahle Drive and the Stateline- to-Stateline Bikeway.
- Decommission user-created trails in environmentally and culturally sensitive areas.
- Access Jennings Pond from the Lam Watah Trailhead and close the Lam Watah trail adjacent to the pond during construction.
- Construct 850 linear feet of temporary access routes to install diversion from Burke Creek to Folsom Spring.

Sub-Project Area 5: Rabe Meadow ditch restoration

Numerous ditches exist in the meadows and upland area directly to the north of Burke Creek that were likely used for irrigation related to livestock grazing. While these ditches are no longer in use, hydraulic modeling suggests that they intercept and convey water that would otherwise end up in the meadows. Significant conifer encroachment is also occurring in the meadows adjacent to these ditches.

The following project actions are proposed in this sub-project area:

- Backfill and/or plug approximately 2,800 linear feet of ditches using excess native fill generated from other sub-project areas.
- Revegetate filled ditches with native plants.
- Install woody debris structures in ditches.
- Remove conifers encroaching into the historic meadow (approx. 4.8 acres).
- Access the meadow ditches from Nevada Beach and/or the Stateline-to-Stateline bike path on existing trails and directly adjacent to the restoration areas.
- Construct 350 linear feet of temporary access road originating from the Stateline-to-Stateline Bikeway.

Entire Project Area

- Earthwork including excavation, fill, grading and utility trenching.

- Dewater portions of Burke Creek, Jennings Pond, and Kahle Ditch.
- Treat and remove invasive species within Rabe Meadow, Burke Creek, and Kahle Ditch.
- Remove conifers encroaching into meadow areas.
- Revegetate disturbed areas using native seed, aspen plugs, and willow and sod transplanting.
- Amend existing NV Energy, Southwest Gas, Douglas County, and the Douglas County Lake Tahoe Sewer Authority special use permits.
- Total excavation of approximately 5,300 cubic yards and fill of approximately 6,500 cubic yards resulting in a net fill of approximately 1,200 cubic yards. All fill is sourced locally from the Rabe Meadow Complex and up to 600 cubic yards of fill will come from the 2018 Kahle Basin Implementation Project located in the same project area. Some fill generated from the adjacent Tahoe Beach Club may also be used after materials testing is performed.

PROJECT SCHEDULE

Construction can occur between May 1 and October 15 each year in accordance with the Tahoe Regional Planning Agency (TRPA) Code of Ordinances. If the early or late season is particularly dry, a variance from the grading deadline may be sought from TRPA. Construction of the project will occur starting as early as May 2024 and will be conducted in phases as portions of the project site become accessible based on ground saturation. Project phasing is designed to limit recreational impacts during peak season and mitigate impacts to species and habitat requirements. Each Phase will begin with the installation of best management practices specific to each sub-project area including terrestrial and aquatic invasive plant survey, best management practices such as fencing, temporary erosion control, and equipment cleaning areas, fish rescue and relocation, dewatering and diversion actions, and construction of access and staging, as required.

Construction will be phased in general starting with work in sub-project area 1 in May, moving upstream and into the next sub-project areas. All project implementation actions are expected to be completed in 1 year, however some of the sub-project area work could be completed in 2025, as needed. The work on Jennings Pond in sub-project area 4 will occur late in the season to protect beaver kits and prevent impacts to beavers. In specific, the diversion of flows away from Jennings Pond to facilitate dewatering the pond will not begin until August 7th and active dewatering of Jennings Pond using pumps will not begin until August 21st.

Construction Access

Primary access to the project area will be via Kahle Drive, the Lam Watah Trail, the Stateline-to-Stateline Bikeway, the Tahoe Beach Club private property, and the Nevada Beach Campground Road. No road closures are expected during construction; however, traffic control may be required at times. Access routes will be created within planned disturbance boundaries for equipment to reach the stream. With the exception of construction entrances made of rock and filter fabric to limit soil track-off and the use of existing paved roads, access routes will be on native earth which will be de-compacted when moving out of the area. Up to 1,000 linear feet of the Lam Watah trail and some user-created trails may need to be closed during the construction near Jennings Pond. The user-created trail near the Stateline-to-Stateline bike path will be closed during paving of the new bike trail segment. If necessary, trail detours will be provided during closures and/or escorts will be provided for trail users through construction areas. Access through the Nevada Beach Campground will be by 10-wheel dump trucks, up to 5 roundtrips per day for up to 16 weeks, only between the hours of 9:00 am and 5:00 pm, and will be minimized whenever possible. The use of rubber tracked equipment will limit the impact of construction to trails and riparian

areas. Areas disturbed by construction access routes will be de-compacted, restored, and revegetated at the end of the project.

Construction Staging

Staging areas will be needed for construction equipment and machinery, excavated earthwork, and construction materials. The project will utilize native fill material stored off site that originated from the Kahle Basin Project constructed in 2018. Off-haul of earthwork that is unsuitable for use in the project will be ongoing during the project to minimize on-site earthwork piles. Several staging areas will be used including a previously disturbed area from the construction of the Kahle Basin, parking sites (up to 4 total) for the Lam Watah trailhead, the existing Pump Station access road and new Pump Station turnaround, and areas offsite owned by Douglas County (paved parking lot across US 50 at corner of US 50 and Kahle Drive) or the Tahoe Beach Club (private property). Construction Best Management Practices (BMPs) such as sediment logs or filter fence will be installed and maintained around all staging areas in addition to efforts to eliminate the spread of invasive plant species that may occur within the staging sites.

PUBLIC INVOLVEMENT

This project is a result of a long and robust collaborative process. The project actions were included in the 2014 Burke Creek-Rabe Meadow Complex Master Plan which had input from agencies including the Nevada Tahoe Conservation District, the Nevada Department of Transportation, the Nevada Division of State Lands, the Nevada Division of Environmental Protection, the Tahoe Regional Planning Agency, and Douglas County between 2011 and 2014. The Master Plan also received input from the local business community including the Tahoe Beach Club, Lakeside Casino (now owned by Barton Health), and the Oliver Park General Improvement District prior to completion. The bikeway extension and the stormwater basin components of this project have been scoped extensively through press releases, surveys, technical advisory groups, and public meetings between 2011 and October 2022 for the Kahle Drive Complete Street Project. In 2015, the project area became part of an EPA Community Watershed Planning effort and regular agency meetings and public outreach including surveys and meetings were conducted to gather feedback about water quality issues in the area. At the September 2018 *50-percent design Technical Advisory Committee meeting* for the Kahle Drive Complete Street Project, Jennings Pond removal was presented in addition to the Kahle Drive Complete Street components in Rabe Meadow, and agencies were supportive of the actions. Since 2019, the beaver activity at Jennings Pond causing flooding to nearby trails and roads has prompted public contact of the Nevada Tahoe Conservation District, the LTBMU, and Douglas County and discussions of the project have occurred with these interested persons. Since 2011, the Nevada Tahoe Conservation District has been meeting with the Tahoe Beach Club at least quarterly to discuss restoration actions within the Burke Creek Watershed.

The action was first listed as a proposal on the LTBMU Schedule of Proposed Actions (SOPA) January 1, 2023. On February 21, 2023, the project was posted on the LTBMU Forest Projects webpage, email notices were sent to the list of interested parties, and a press release was sent to surrounding media outlets to announce the start of a public scoping period. Comments were accepted from February 21, 2023 to March 14, 2023. A total of ten letters were received. No comments were received that were substantive in nature resulting in the need to analyze and alternative to the proposed action. Comments were received regarding the level of analysis for the project. I directed the staff to look closely at the list of extraordinary circumstances for the use of a Categorical Exclusion. No extraordinary circumstances were found to exist and therefore I did not find sufficient need to prepare an Environmental Assessment.

While no comments were received that resulted in the creation of an alternative, the public did help us to refine our project documentation. Quite a few comments were received that resulted in either updates to biological documents or to this Decision Memo. Commenters were concerned about the environmental effects of the project on Tahoe yellowcress, Sierra Nevada yellow-legged frog, beavers, migratory birds, and sediment transport to Lake Tahoe. Others commented about concerns that the project will increase the habitat for beavers. Commenters were also concerned about the impact of the project on flooding in the area, specifically on Tahoe Beach Club property. Additionally, commenters made some suggestions that were outside the scope of the project. While the project does include removal of conifers within the meadow, there was not sufficient need for restoration in upland areas and therefore additional forest health activities were not considered. Beyond providing habitat for species, the Forest Service does not actively manage wildlife populations. This is conducted by State wildlife departments and is outside the scope of this project. This project does not preclude the Forest Service from working with Nevada Department of Wildlife in the future to manage the beaver populations. It is anticipated, however, that the beaver populations will neither significantly increase or decrease because of this project, and flooding onto adjacent property is anticipated to significantly reduce due to the actions in Kahle Ditch and Burke Creek. Concerns about dog waste in the meadow exist, however this project does not plan to alter the existing use patterns at the site. Information about dog etiquette and additional dog waste stations are items that can be updated or installed onsite at any time.

CATEGORICAL EXCLUSIONS

The action is categorically excluded from documentation in an environmental impact statement (EIS) or an environmental assessment (EA). The applicable category of actions is as follows:

Forest and grassland management activities with a primary purpose of meeting restoration objectives or increasing resilience. Activities to improve ecosystem health, resilience, and other watershed and habitat conditions may not exceed 2,800 acres (36 CFR 220.6(e)(25):

(i) Activities to meet restoration and resilience objectives may include, but are not limited to:

(A) Stream restoration, aquatic organism passage rehabilitation, or erosion control;

(ii) The following requirements or limitations apply to this category:

(A) Projects shall be developed or refined through a collaborative process that includes multiple interested persons representing diverse interests;

(B) Vegetation thinning or timber harvesting activities shall be designed to achieve ecological restoration objectives, but shall not include salvage harvesting as defined in Agency policy; and

(C) Construction and reconstruction of permanent roads is limited to 0.5 miles. Construction of temporary roads is limited to 2.5 miles, and all temporary roads shall be decommissioned no later than 3 years after the date the project is completed. Projects may include repair and maintenance of NFS roads and trails to prevent or address resource impacts; repair and maintenance of NFS roads and trails is not subject to the above mileage limits.

Because the project includes restoration of Burke Creek and the surrounding Rabe Meadow to improve water quality, hydrology, and riparian health and resilience; I am using the category specifically created by Congress for this purpose. Trees to be removed do not include salvage harvesting and will improve the riparian habitat within the project site. The project was developed and refined through a collaborative

effort between LTBMU hydrologists, biologists, and engineers (both LTBMU and Nevada Tahoe Conservation District). This category is the best fit for the project actions.

EXTRAORDINARY CIRCUMSTANCES

I find that there are no extraordinary circumstances that will warrant further analysis and documentation in an EA or EIS. I considered resource conditions identified in agency procedures that should be considered in determining whether extraordinary circumstances might exist:

Federally listed threatened or endangered species or designated critical habitat, species proposed for federal listing or proposed critical habitat, or forest service sensitive species:

FEDERALLY LISTED BOTANICAL AND ANIMAL SPECIES

No botanical species listed as threatened or endangered under the federal Endangered Species Act (ESA) are present in the project area. As described in the biological evaluation (BE) prepared for the project, with incorporation of applicable resource protection measures (RPMs), the action will have no effect on federally listed plant species.

The Project **may affect but is not likely jeopardize the continued existence** of the California spotted owl (*Strix occidentalis occidentalis*) as this species is not known to occupy or utilize the project area for nesting. No protected activity center for this species is within, or immediately adjacent to the project area.

The Project **may affect not likely to adversely affect** the Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) due the potential for this species to occur in the project area, and the benefits of the project resulting in improved habitat suitability for this species, reduction in sediment loading and increased flows to the waters of Lake Tahoe.

The Project **may affect not likely to adversely affect** the monarch butterfly (*Danaus plexippus*) due to temporary nature of impacts associated with loss of foraging area/habitat during construction.

The Project **will not affect** North American wolverine (*Gulo gulo luscus*) because there is no suitable habitat in the Project area.

The Project **will not affect** Sierra Nevada red fox (*Vulpes vulpes necator*) because there is no suitable habitat in the Project area.

The Project **will not affect** Sierra Nevada yellow-legged frog (*Rana sierrae*) or critical habitat as there is no critical habitat within the project area. Surveys for Sierra Nevada yellow-legged frog verified that there are no Sierra Nevada yellow-legged frog present in or within 11.5 miles of the project area. Additionally, non-native trout species are present in Burke Creek that are known to prey upon, displace and prevent establishment of Sierra Nevada yellow-legged frog. The project will benefit suitable habitat.

FOREST SERVICE SENSITIVE BOTANICAL AND ANIMAL SPECIES

Determinations for Forest Service Sensitive botanical and animal species are as follows, based on the detailed analyses and determinations provided in the Biological Evaluations prepared for the project.

The action will not effect on the following Forest Service Sensitive plant species: *Arabis rigidissima* var. *demota*, *Boechera tiehmii*, *Boechera tularensis*, *Botrychium lineare*, *Botrychium lunaria*, *Dendrocollybia racemosa*, *Draba asterophora* var. *asterophora*, *Draba asterophora* var. *macrocarpa*, *Draba cruciata*, *Erigeron miser*, *Eriogonum luteolum* var. *saltuarium*, *Eriogonum umbellatum* var. *torreyanum*, *Helodium*

blandowii, *Hulsea brevifolia*, *Lewisia kelloggii* ssp. *hutchinsonii*, *Lewisia kelloggii* ssp. *kelloggii*, *Lewisia longipetala*, *Meesia uliginosa*, *Orthotrichum praemorsum*, *Peltigera gowardii* because they are not known from the Project area and have no suitable habitat in the area and therefore, will not be affected by the Project.

The Project area contains suitable meadow and riparian habitat for the following Forest Service Region 5 Sensitive Plant species: *Botrychium ascendens*, *Botrychium crenulatum*, *Botrychium minganense*, *Botrychium montanum*, *Bruchia bolanderi*, and *Ivesia sericolueca*.

It is my determination that Project **will not affect** *Botrychium ascendens*, *Botrychium montanum*, or *Ivesia sericolueca*. This determination is based on a) no occurrences were detected within the Project Area during pre-implementation surveys; b) suitable riparian and meadow habitat for *B. ascendens* and *B. montanum* did not contain incense cedar, which is a component of suitable habitat on the LTBMU; and c) volcanic soils, which are characteristic of suitable habitat for *Ivesia sericolueca*, are not present.

It is my determination that the Project **may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability** of the following 3 species: *Botrychium crenulatum*, *B. minganense*, and *Bruchia bolanderi*. This determination is based on a) the lack of known occurrences within the Project Area; b) impacted suitable meadow/riparian habitat would have an expected vegetation recovery period of 3 years; c) the Project is expected to result in the long-term improvement of hydrological conditions and meadow/riparian habitat quality; and d) the implementation of pre-construction inventory and protection measures for individuals that could be present.

It is my determination that the Project **may affect individuals, but is not likely to result in a trend toward Federal listing or a loss of viability** for Tahoe yellow cress (*Rorippa subumbellata*; TYC). This determination is based on a) direct impacts to extant TYC stems in the existing outlet of Burke Creek and Kahle Ditch would be avoided during project construction; b) indirect effects from change in habitat condition at the outlet of Kahle Ditch would be mitigated by the translocation of those stems and/or planting of container-grown TYC; c) translocation and out planting have been successfully utilized at this location in the past; d) the creation of a new alignment of Burke Creek is anticipated to result in a net gain of high quality habitat for TYC which would mitigate the removal of habitat from Kahle Ditch and potential loss of habitat quality in the existing mouth of Burke Creek; e) the improved habitat conditions will increase the probability that TYC can persist over the long term under changing lake levels; f) resource protection barriers will provide protection from recreation impacts at the new channel; and g) post-project monitoring and management will ensure that TYC can continue to persist in this location in the future.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for bald eagle (*Haliaeetus leucocephalus*) because resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals), and any modifications to habitat would be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for fringed myotis (*Myotis thsanodes*) because resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals), and any modifications to habitat will be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** of Great Basin rams-horn (*Helisoma (Carninifex) newberryi*) as suitable habitat for the species is

in Folsom Spring just outside the project boundary and in the waters of Lake Tahoe. The project will result in minor impacts to the Folsom Spring channel near its confluence with Burke Creek.

The Project **will not affect** great gray owl (*Strix nebulosa*) because the action is outside the current range of these species or because there is no suitable habitat in the Project area.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** of Lahontan Lake tui chub (*Gila bicolor pectinifer*) as the existing mouth of Burke Creek is suitable habitat. The project will result in increase in habitat suitability and area through the construction of the new creek mouth and overall increase in water quality and decrease in sediment reaching the waters of Lake Tahoe.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** of American goshawk (*Accipiter atricapillus*) as this species is not known to occupy or utilize the project area for nesting. No protected activity center for this species is within, or immediately adjacent to the project area.

For Pacific marten (*Martes caurina*), direct impacts to individuals will be avoided by the implementation of resource protection measures (den site surveys). Therefore, the Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for the Pacific marten.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for pallid bat (*Antrozous pallidus*) because resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals), and any modifications to habitat will be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for Townsend's big-eared bat (*Corynorhinus townsendii*) because resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals), and any modifications to habitat will be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for western bumble bee (*Bombus occidentalis*) due to temporary nature of impacts associated with loss of foraging area/habitat during construction.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for willow flycatcher (*Empidonax traillii adastus*) due to temporary nature of impacts associated with loss of foraging area/habitat during construction.

Migratory Birds

An Assessment of Burke Creek Rabe Meadow Riparian Restoration Project Effects on Migratory Birds report was prepared for the project. Therein, the report outlines potential impacts to a list of migratory bird species as provided by US Fish and Wildlife Service (USFWS) for the project area. Of the 14 migratory bird species listed by USFWS, a total of eight species whose habitat would be either directly or indirectly affected by the project are as follows; black-throated gray warbler, California spotted owl, Cassin's finch, evening grosbeak, Lewis' woodpecker, long-eared owl, olive-sided flycatcher, and pinyon jay.

The potential of unintentional adverse effects to migratory bird species have been reduced through the adherence of Forest Plan standards and guidelines. Potential impacts may possibly occur to some individuals (not populations) and only unintentionally. Specifically, the project is designed to create,

sustain, or enhance a diversity of avian habitats. Although some project actions may have unintentional short-term adverse effects on some individual birds, eggs or nests, adverse effects at the species population level are not expected due to the amount of habitat within and adjacent to the project area and across the forest.

Floodplains, Wetlands, or Municipal Watersheds

The project area includes floodplains and wetlands. An overall increase in wetland function and area will result from project implementation. The project will restore a meadow and stream channel to improve hydrologic function and connectivity with a floodplain under the annual high flow conditions. As detailed in the April 2023 report entitled "100-Year Flood Analysis – Burke Creek Rabe Meadow Riparian Restoration Project," the restored sections of channel and floodplains will provide flood conveyance of the predicted 100-year flood and decrease flood risks for adjacent infrastructure including the Douglas County Lake Tahoe Sewer Authority Nevada Beach Pump Station and the Nevada Beach Campground. The project will have no effect or slightly lower the flood risk for the adjacent Tahoe Beach Club or Oliver Park developments and associated roads. The project will have a beneficial effect on municipal watersheds and Lake Tahoe due to reduced erosion, reduced flood impacts to adjacent infrastructure, increased wetland and riparian function, and increased stormwater treatment.

Congressionally Designated Areas

There are no congressionally designated areas within the project area.

Inventoried Roadless Areas or Potential Wilderness Areas

There are no Inventoried Roadless Areas or potential wilderness areas within the project area.

Research natural areas

There are no research natural areas within the project area.

American Indians religious or cultural sites

There are known American Indian religious or traditional heritage resource sites within the project area, but they are outside the area of disturbance. Informal consultation with the Washoe Tribe of Nevada and California was initiated on April 1, 2022, during a comprehensive site walk and sharing of the project description and the Washoe Tribe representatives supported the Project and expressed no concerns. Formal consultation with the Washoe Tribe of Nevada and California was initiated on December 14, 2023 and no comments were received during the consultation period.

Archaeological sites, or historic properties or areas

Archaeological Survey Report has been completed for this project, pursuant to the *Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region, as amended 2018* (Region 5 Programmatic Agreement), and affirm that all necessary steps have been taken to identify, record, and determine effects on historic properties within the project's area of potential effect. Implementation of this project will require the application of standard resource protection measures as outlined in the Region 5 Programmatic Agreement and noted in the Archaeological Survey Report.

ADDITIONAL CONSIDERATIONS

In addition to the listed extraordinary circumstances, I also considered impacts to recreation, scenery, beavers and impacts to private property, based on comments received during scoping (see PUBLIC INVOLVEMENT, above).

Recreation

The project area includes high use recreation lands such as Nevada Beach, Nevada Beach Campground, the Stateline-to-Stateline Scenic Bikeway, the Lam Watah Trail, and user-created trails throughout Rabe Meadow. The project has been phased to limit overall impacts to recreation during the peak season of July and August. Since construction in Lake Tahoe is limited to May 1 through October 15 each year, it is impossible to limit all impacts during peak recreation use. Temporary impacts to recreation are as follows: construction access through the Nevada Beach Campground for up to 16 weeks five roundtrips per day and will be minimized whenever possible and especially between July 1 and Labor Day, temporary closure of a small portion of the south end of Nevada Beach (aka the boat-in beach) during construction and revegetation, temporary reduction of parking at the Lam Watah Trailhead by up to four spaces for up to eight weeks, temporary closure of Lam Watah trail up to 1,000 linear feet, temporary closure of Stateline-to-Stateline Bikeway for up to 800 linear feet, and temporary increase in construction noise. Permanent impacts to recreation include permanent enclosure of Tahoe Yellow Cress area on the south end of Nevada Beach, change of trail alignment to the boat-in beach at Nevada Beach, paving of native surface trail segment near Kahle Drive, and reducing the depth and size of Jennings Pond and improving stream and meadow function in the area. The partial filling of Jennings Pond will change the recreation use from a pond-based recreation to stream and shallow ponded meadow recreation. The project will improve the overall trail condition year-round by reducing flooding impacts and improving trail surface quality.

Scenic

The project will remove riparian vegetation that screens nearby development as viewed from FS lands, however riparian vegetation will be planted that will screen nearby development from recreation users' view once established. The project is undergrounding overhead utility lines also visible in this location to improve the scenic quality. Vegetation that serves as a screen will be protected in place and preserved when possible. The removal of riparian vegetation for construction will have a temporary impact on the viewshed. The addition of wooden fencing at the Burke Creek outlet to protect Tahoe Yellow Cress will also have a scenic impact, however, natural materials will be utilized to limit the impact to the visual environment.

Private Property

A major impetus for the project was the recurrent flooding of Burke Creek, Jennings Pond and Kahle Ditch onto Kahle Drive and adjacent private property. The project will significantly reduce the flooding in the entire project area, including onto adjacent private property. The new channel is being designed to increase the sinuosity of Burke Creek, which functions to slow down the flow, as well as increase the overall length of the channel, which increases the surface area for infiltration. Functioning stream/meadow ecosystems include a channel that seasonally overtops onto the floodplain. Altering the flow path from the artificial channel of Kahle Ditch to a location further from private property will allow for this seasonal overtopping to occur without flooding of the roadways and adjacent properties. Final calculations about flow volume, velocities, etc. will be completed at the time of final design. Access to private property will be affected intermittently by short-term road closures to allow for equipment movement. As described above, the beach (which is a very popular destination for neighborhood walkers)

will remain accessible, with possible short-term closures during construction. Access will ultimately be maintained.

Beavers

The project is designed to minimize impacts to the existing beaver population, including the timing of construction in the areas around the beaver lodges. While there may be short-term effects to beavers in the project area during construction, the project is not expected to negatively affect the beavers or their habitat in the long-term. Although the project will reduce the size and depth of Jennings Pond, restored areas in the project are expected to continue to provide suitable beaver habitat. Additionally, the project is not expected to provide significantly more habitat for beavers, however the restored habitat will be able to withstand additional flooding from future beaver activities and beavers will complement the restoration actions and help achieve project goals. Future management of beavers was not included as a project element because it is outside of the scope of the project, however there are no current plans to remove or relocate beavers from the project area, and the project is designed to accommodate and encourage beaver activity further from Kahle Drive and private property.

FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS

This project complies with Federal, State, and Local laws. Specifically:

National Forest Management Act: This Act requires the development of long-range land and resource management plans, also called a "Forest Plan". The Act requires all projects and activities to be consistent with the local forest plan. The LTBMU Land Management Plan (LMP) was approved in 2016. This project is consistent with the LMP as adopted in 2016.

Endangered Species Act: In accordance with Section 7(c) of the Endangered Species Act, the USFWS list of "endangered and threatened species that may be affected by projects in the Lake Tahoe Basin Management Area" was reviewed and appropriate restrictions are reflected in the design features of this project.

National Historic Preservation Act: Section 106 of the National Historic Preservation Act requires Federal agencies to assess the effect of a project on any district, site, building, structure, or object that is included in, or eligible for inclusion in the National Register. Section 106 of the National Historic Preservation Act (P.L. 89.665, as amended) also requires Federal agencies to afford the SHPO a reasonable opportunity to comment. Surveys conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by this decision were reflected in the project planning.

State/Local Laws: The project will implement best management practices and resource protection measures that are compliant with any permit or waiver issued by the Nevada Division of Environmental Protection. Some project activities fall under the *Memorandum of Understanding* (MOU) between TRPA and Forest Service Region 5 regarding Stream Restoration and Forest Health Projects. LTBMU staff will coordinate closely with TRPA during project planning to ensure that the project is consistent with TRPA's environmental thresholds and permits are sought for activities outside the MOU.

ADMINISTRATIVE REVIEW

This decision is not subject to the pre-decisional administrative review process per 36 CFR § 218.23 - Proposed projects and activities not subject to legal notice and opportunity to comment. *The legal notice and opportunity to comment procedures of this subpart do not apply to: (a) Any project or activity categorically excluded from documentation in an environmental assessment or environmental impact statement.*

IMPLEMENTATION DATE

Implementation may begin immediately in areas where pre-implementation survey requirements and any associated documentation have been completed. Work is estimated to begin in Spring of 2024. Earliest ground disturbing activities will occur after May 1 to meet TRPA grading deadlines. If work needs to occur after October 15, 2024, a grading exception from the TRPA will be requested. If needed, work in 2025 will start after May 1 and is anticipated to be completed by July of 2025. Nevada Tahoe Conservation District and the Forest Service will coordinate the required survey work to gain clearance for implementation prior to initiating project treatments.

Interdisciplinary coordination during project development, design, and implementation is mandated in the 2016 LTBMU Land Management Plan and is based on the Forest Service's multiple use land management mandate. The project Interdisciplinary Team (IDT) will continue to work as a group throughout the implementation of this project. The IDT consists of resource specialists from planning, heritage, public services, terrestrial and aquatic wildlife, botany, hydrology, and engineering. The IDT will continue to gather information throughout implementation to ensure appropriate resource protection measures are applied while the needs of this project are met.

CONTACT

For additional information concerning this decision or project, please contact Theresa Cody, Restoration Hydrologist, 530-545-2057, theresa.cody@usda.gov.


ERICK J. WALKER
Forest Supervisor


Date

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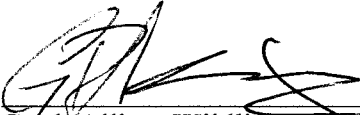
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UNITED STATES DEPARTMENT OF AGRICULTURE-FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT

Biological Assessment/Biological Evaluation
Terrestrial and Aquatic Wildlife Species

Burke Creek Rabe Meadow Riparian Restoration Project
Douglas County, NV
T 13 N, R 18 E, Sec 22

March 2024

Prepared by:  Date: 6 MAR 2024
Garth Alling, Wildlife Biologist Sierra Ecotone Solutions LLC

Reviewed/Approved by:  Date: March 11, 2024
Sarah Muskopf, LTBMU Aquatic Biologist

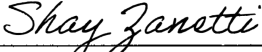
Reviewed/Approved by:  Date: March 11, 2024
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1. Introduction

The purpose of this Biological Assessment/Biological Evaluation (BA/BE) is to document proposed activities under the Burke Creek Rabe Meadow Riparian Restoration Project (Project) in sufficient detail to determine how an action or proposed action may affect any threatened, endangered, proposed, candidate, or sensitive species and their habitats (FSM 2670.5). FSM 2672.4 directs us to complete the biological evaluation for all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on Federally listed threatened, endangered, proposed, candidate, or species listed as sensitive by the Pacific Southwest Regional Forester (i.e., sensitive species). The BE, therefore, provides a process through which potential effects of the proposed action on sensitive species are evaluated and considered during the planning and review process. Part of the BE is completed to determine whether a proposed action or any of the alternatives will result in a trend toward the sensitive species becoming federally listed.

The Project site is located on land managed by the US Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) in the town of Stateline in Douglas County, Nevada (**Figure 1-Vicinity Map**). The Project, is located primarily on land managed by the USFS LTBMU but is being designed and managed by the Nevada Tahoe Conservation District (NTCD) under a Participating Agreement with the LTBMU. A small part of the site is on private property owned by the Tahoe Beach Club. The purpose of the Project is to implement restoration to create a more natural hydrology to improve water quality and restore riparian and meadow vegetation to improve aquatic and terrestrial habitats. A central component of the Project is to re-align Burke Creek into a new high-sinuosity channel with a new outlet to Lake Tahoe and create a restored floodplain within Rabe meadow. The Project will also restore several man-made features including the Kahle Ditch, Jennings Pond, and remnant ditches. Other Project components include a new stormwater retention basin, a new access road to an existing sewer pump station, and recreational improvements.

Species lists are based on the 16 June 2022 (updated 26 February 2024) U.S. Fish and Wildlife Service (USFWS) species list (Project Code: Project Code: 2022-0055187 (<https://ipac.ecosphere.fws.gov> - Appendix A). The Pacific Southwest Regional Forester's sensitive species are based on the list that was updated on July 3, 2013 (USDA 2013).

Analysis is presented in this document to determine the effects the Project on the following threatened (T), endangered (E), proposed (P), candidate (C), and/or Forest Service sensitive (FSS) aquatic and terrestrial wildlife species; botanical species are addressed in separate reports and are not considered in this document.

2. Species Considered And To Be Analyzed

An Official Species List of Federal Endangered and Threatened Species that may be affected by the Project was provided by the US Fish and Wildlife Service (USFWS) on 16 June 2022 (updated 26 February 2024) FWS species list (see Appendix A). This list fulfills the requirements of the USFWS to provide a current species list pursuant to Section 7 of the Endangered Species Act (ESA) to determine the effects of the Burke Creek Rabe Meadow Riparian Restoration Project. The following threatened (T), endangered (E), proposed (P), candidate (C) species, and Forest Service Sensitive (FSS) species were considered:

Federally listed Terrestrial Wildlife and Aquatic Species Pursuant to ESA:

Endangered:

- Sierra Nevada Yellow-legged Frog (*Rana sierrae*)
- Critical Habitat for Sierra Nevada Yellow-legged Frog
- Sierra Nevada Red Fox (*Vulpes vulpes necator*)

Threatened:

- Lahontan cutthroat trout (*Oncorhynchus clarkia henshawi*)
- North American wolverine (*Gulo gulo luscus*)

Proposed Threatened:

- California spotted owl (*Strix occidentalis occidentalis*)

Candidate:

- Monarch butterfly (*Danaus plexippus*)

Region 5 Forest Service Sensitive Wildlife and Aquatic Species:

Mammals

- Pacific marten (*Martes caurina*)
- North American wolverine (*Gulo gulo luscus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Pallid bat (*Antrozous pallidus*)
- Fringed myotis (*Myotis thysanodes*)

Birds

- Bald Eagle (*Haliaeetus leucocephalus*)
- American Goshawk (*Accipiter atricapillus*)
- California Spotted Owl (*Strix occidentalis occidentalis*)
- Great Gray Owl (*Strix nebulosa*)
- Willow Flycatcher (*Empidonax traillii adastus*)

Invertebrates

- Western bumble bee (*Bombus occidentalis*)
- Monarch butterfly (*Danaus plexippus*)

Fish

- Lahontan Lake tui chub (*Gila bicolor pectinifer*)

Invertebrates

- Great Basin rams-horn (*Helisoma (Carninifex) newberryi*)

3. Species/Habitat No Longer Considered

The distribution and habitat associations of the special-status species were reviewed using records from the Nevada Natural Heritage Program, LTBMU-wide surveys, and current range maps for species. Following the review, several species and critical habitat were excluded from further analysis:

- Sierra Nevada Red Fox

Sierra Nevada red fox (SNRF) is known to occur near the southern border of the LTBMU, approximately 17 miles south of this project area. SNRF are a high elevation species primarily found over 8,000 feet elevation, in rugged areas with a high snow pack. This project area is entirely below 6,500 feet elevation and in an area of the LTBMU that gets the least snow. Therefore, there is no SNRF habitat within this project area and SNRF would not be expected to be found here. Further analysis of this species is not necessary.

- North American wolverine

On February 28, 2008, a detection of a lone male wolverine occurred approximately 14-19 miles northwest of the LTBMU near Truckee, California. This was the first verified record of a wolverine in California since 1922. Agency biologists and researchers used genetic samples (i.e. hair and scat) to determine that the wolverine was most closely related to, and most likely came from, a population on the western edge of the Rocky Mountains rather than either the historic California population (compared to samples taken from museum specimens) or contemporary northern Cascades (Washington) population (Moriarty et al. 2009). In 2023 there were two detections in California, one south of the LTBMU near Mammoth, CA and another one near Truckee. These detections may represent attempted dispersal events, indicating continued wolverine expansion in the contiguous United States and other wolverines may have travelled to the Sierra Nevada and remain undetected. There are no current known occurrences on the LTBMU. There are approximately 65,000 acres of wolverine habitat on the LTBMU (USDA LTBMU 2018). Wolverine is also a high elevation species that requires rugged terrain and late spring snow pack. These conditions are not found in the project area. Because this species is not known to currently occur on the LTBMU, and habitat is not present in the project area, further analysis is not necessary at this time.

- Great grey owl

It is presumed that this species does not occur in the LTBMU and will not occur during the life of the Project. Although protocol surveys for great gray owl have not been conducted on the LTBMU, this species has not been detected during other large-scale owl surveys conducted on the Basin. If the species were to occur, it is within reason to assume that it would have been detected during surveys for other owls. Nearby surveys for great gray owls detected this species on the Eldorado, Stanislaus, Sierra, and Tahoe National Forests but not on the Plumas or Sequoia National Forests. The nearest detection of this species to the Lake Tahoe basin occurred near Carson Pass in 1971 approximately 1.1 miles south of the LTBMU. A second great gray owl detection was reported near Grover Hot Springs State Park, approximately 7.9 miles southeast of the analysis area, in 1979. Based on the lack of detections on the Forest and the presumption that this species likely would have been detected if it were present, the great gray owl appears to be absent from the Lake Tahoe basin, or to occur rarely or at extremely low densities. There are no Protected Activity Centers (PAC) for great gray owls on the LTBMU. Because this species is not known to currently occur on the LTBMU, further analysis is not necessary at this time.

- Sierra Nevada yellow-legged frog Critical Habitat

There is no critical habitat for Sierra Nevada yellow-legged frog (SNYLF) in the Project Area. The closest critical habitat is approximately 11.5 miles to the southwest of the Project Area in Desolation Wilderness. Further analysis to critical habitat for SNYLF is not necessary at this time as this project will have **No Effect**.

4. Current Management Direction and Compliance

Current management direction on desired future conditions for Threatened, Endangered, Candidate, Proposed, Forest Service Sensitive and Management Indicator Species on the LTBMU can be found in the following documents, filed at the respective Supervisor's Offices:

- Forest Service Manual and Handbooks (FSM/H 2670)
- National Forest Management Act (NFMA)
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Lake Tahoe Basin Management Unit Land and Resource Management Plan (LRMP) 2016
- TRPA Code of Ordinances

5. Description of the Project

5.1 Location

The Project is located primarily on land managed by the USFS, LTBMU in Stateline, Douglas County, Nevada (Figure 1- Project Location and Vicinity). The Project study area is 274 acres and includes the lowest reach of Burke Creek west of Highway 50, Rabe Meadow, a small parcel of private property owned by the Tahoe Beach Club, and a small part of the USFS Nevada Beach campground. The project area contains 120 acres of Stream Environment Zone, 1.1 miles of perennial stream channel, and 97.5 acres of wetland. 157 acres are considered suitable habitat for Sierra Nevada Yellow-legged frog.

The Project area is bordered by Kahle Drive to the south, US Highway 50 to the east, Lake Tahoe to the west, and Nevada Beach Campground and Elks Point Road to the north. The project area includes the Lam Watah Trail and the Stateline-to-Stateline bike path. The trailhead facilities are located at the corner of Kahle Drive and US Highway 50. The Project is located within the USGS South Lake Tahoe Quadrangle in T13N R 18E Sec 22.

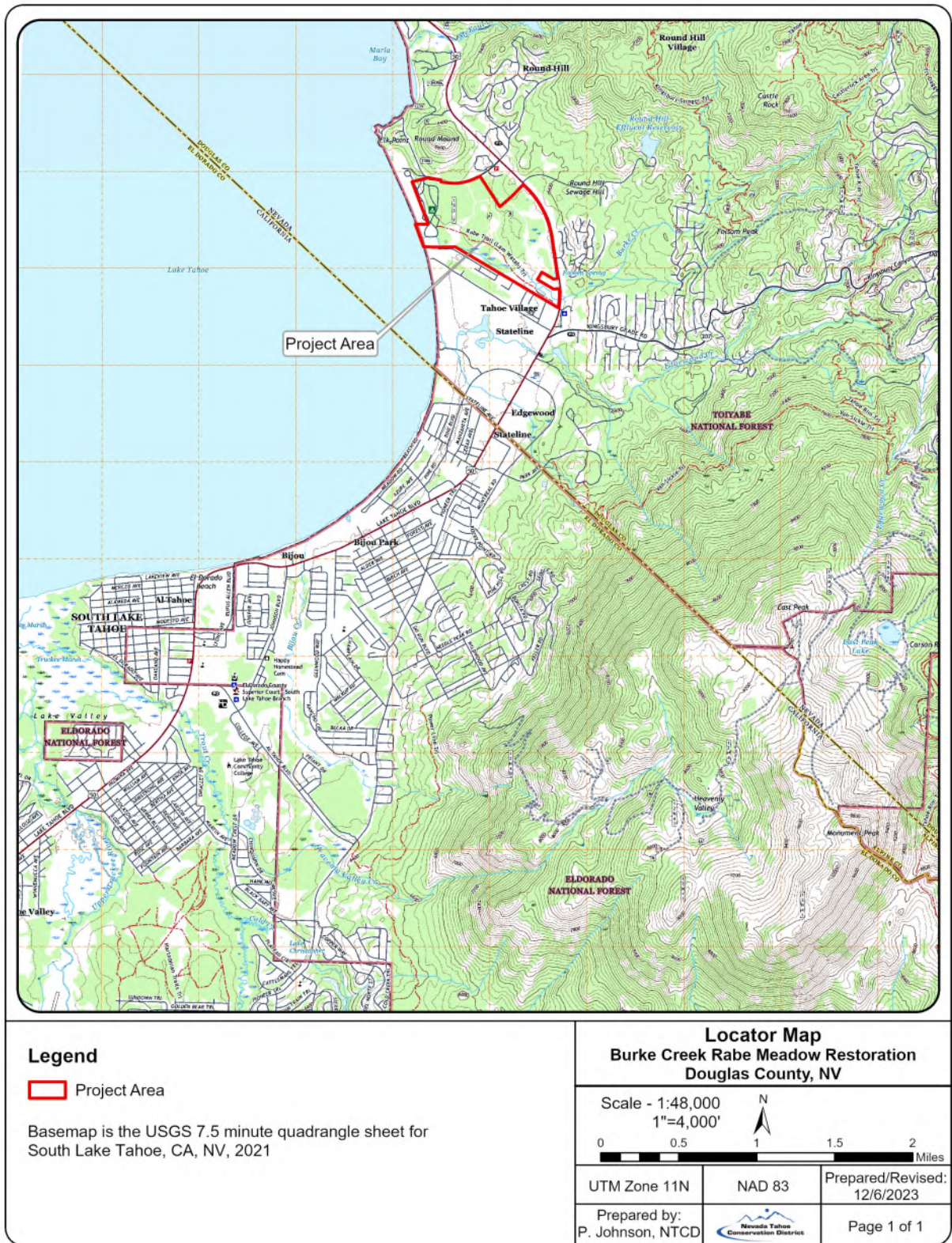


Figure 1. Project Location and Vicinity

5.2 Project Components and Construction Implementation

The Project includes 5 major components and has been divided into 5 Sub-Project areas as shown on the aerial imagery (**Figure 2- Project Sub-areas locations**).

1. Burke Creek realignment and Kahle Ditch outlet restoration
2. Kahle Ditch restoration above new pump station access road
3. Restoration of Burke Creek alignment in the center of Rabe Meadow
4. Jennings pond restoration and recreation improvements
5. Rabe Meadow ditches decommissioning

Proposed Project activities for the restoration include the following:

- Earthwork including excavation, fill, grading and utility trenching
- Dewatering of portions of Burke Creek, Jennings Pond, and Kahle ditch
- Salvage and relocation onsite of aquatic organisms within Burke Creek, Jennings Pond and Kahle ditch prior to dewatering activities
- Treatment and removal of invasive species within Rabe Meadow, Jennings Pond, Burke Creek, and Kahle Ditch.
 - Surveys for aquatic invasive species will be performed prior to any ground disturbance. Removal of aquatic invasive plant species shall be performed prior to dewatering, filling or disturbance. Methods of removal may vary and shall be determined on a case-by-case basis (e.g. hand pulling, suction dredging, placement of benthic barriers)
- Temporary access routes to portions of the restoration area
- Removal of conifers encroaching into meadow areas
- Revegetation using native seed, aspen plugs, and willow and sod transplanting
- Modifying existing or obtaining new special use permits with Nevada Energy, Southwest Gas, Douglas County, and the Douglas County Lake Tahoe Sewer Authority
- Decommissioning user-created trails and reconstructing trails and crossings that are causing resource damage.

Restoration will include a variety of techniques with the goals of improved water quality, erosion control, more natural hydrology, and robust riparian and meadow vegetation which in turn provide improved aquatic and terrestrial habitat for plants and animals. Restoration techniques utilized in each sub-project area will vary depending on observed existing conditions and machinery access to each area and will range from significant realignments of the creek and floodplain grading in some areas to smaller process-based restoration techniques in other areas. The Proposed Action includes the sub-project areas below:

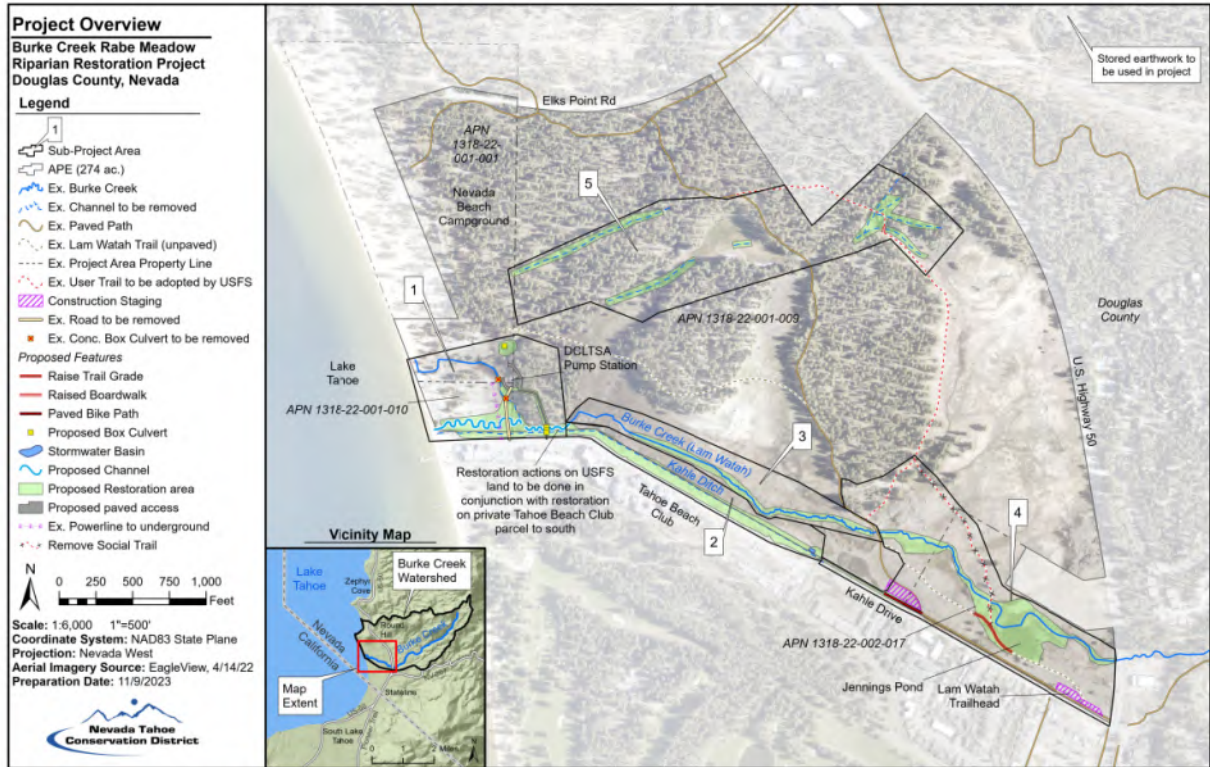


Figure 2. Sub-Project area Locations

1. Sub-Project Area 1: Burke Creek Outlet realignment and Kahle Ditch outlet restoration

Sub-Project Area 1 includes the lowest reach of Burke Creek at the outlet to Lake Tahoe and the outlet of Kahle Ditch (Figure 3). Known occurrences of Tahoe yellow cress (TYC) are present at these outlets that will be protected and/or moved according to established protocols in the TYC Conservation Strategy (Stanton et al. 2015). Restoration goals in Sub-Project Area 1 are to improve hydrologic function of Burke Creek and alleviate flooding that currently results in public health and safety concerns. The relocation of the Douglas County Lake Tahoe Sewer Authority (DCLTSA) pump station access road to a narrower area of the Burke Creek floodplain further away from Lake Tahoe will alleviate the substantial flooding impacts to the DCLTSA pump station while providing conveyance for the 100-year flood through natural bottom culverts. The creation of a new channel and floodplain will increase the frequency and extent of floodplain overbanking and reduce stagnant water and flooding in the Nevada Beach Campground. Upsizing undersized metal culverts under the Nevada Beach Campground Road will also alleviate flooding to campsites and reduce the need for maintenance. Kahle Ditch will be filled with native material and become a portion of the floodplain for the new channel alignment. The majority of Kahle Ditch within this Sub-Project Area is located on private property owned by the Tahoe Beach Club.

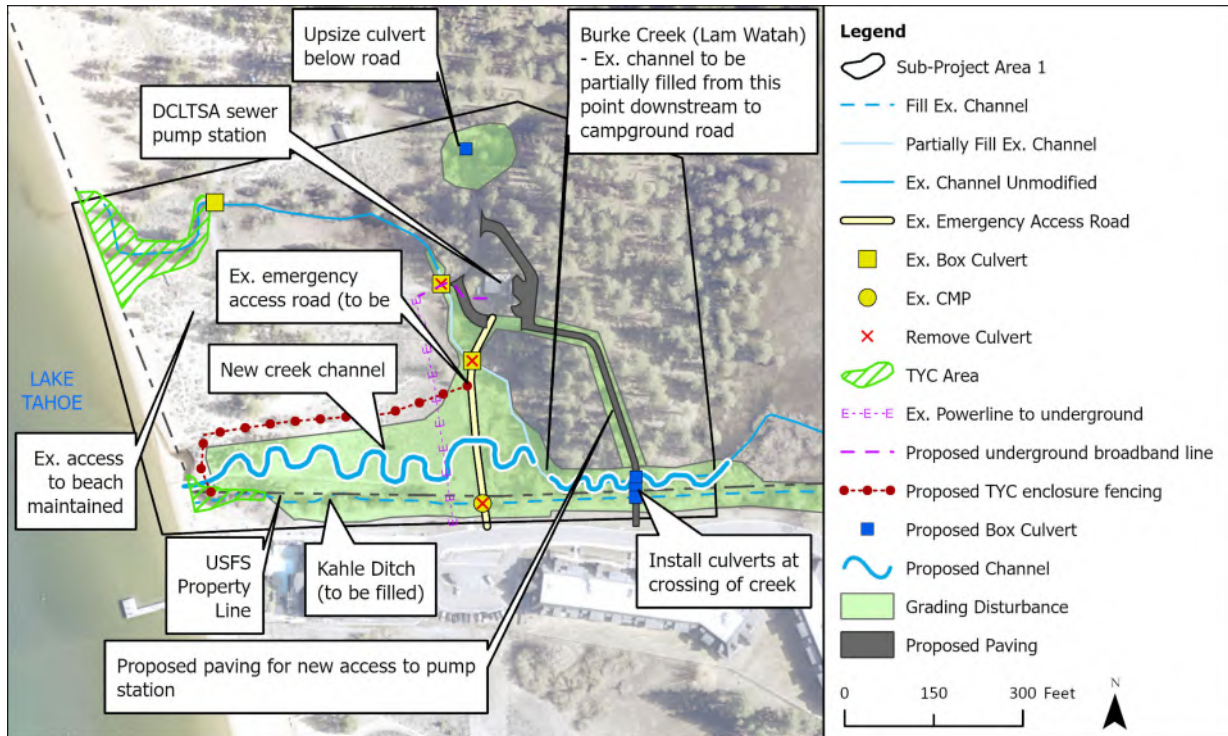


Figure 3. Sub-Project Area 1: Burke Creek Outlet realignment and Kahle Ditch outlet restoration components and location (TYC= Tahoe yellowcress).

The following project actions are proposed in this sub-project area:

- Construct a new Burke Creek alignment and outlet to Lake Tahoe within an approximately 1.8-acre area near Nevada Beach. New channel and floodplain will provide flood conveyance of the predicted 100-year flood event.
- Remove the existing paved pump station access road originating from the Tahoe Beach Club property.
- Construct a new pump station access road approximately 200 feet upstream with 3 open bottom culverts. The road will be approximately 360 feet long, 10 feet wide, with two-foot shoulders with approximately 60 linear feet crossing the riparian area. Issue special use permit amendment to Douglas County Lake Tahoe Sewer Authority.
- Partially backfill (approximately 600 linear feet) an incised reach of Burke Creek and construct a new longer channel to add channel length and improve floodplain access and width.
- Remove two box culverts and the Burke Creek channel in between. Most of the existing Burke Creek channel including the most downstream box culvert will be retained and no backfilling would occur to convey flood flows and preserve occupied TYC habitat in the existing mouth of Burke Creek.
- Remove two metal pipes under Nevada Beach Campground Road and replace with a concrete box culvert for stormwater and flood drainage.
- Remove the existing metal fence along the Tahoe Beach Club/Nevada Beach boundary.
- Manually remove aquatic invasive species within Burke Creek and Kahle Ditch prior to any work in these channels and off-haul any soil contaminated by aquatic invasive species.

- Underground approximately 300 linear feet of existing overhead electric transmission lines and shared trench utility conduit to the south of the Nevada Beach campground. Issue special use permit amendment to NV Energy.
 - Install approximately 150 linear feet of sewer utility broadband between the existing Sewer Pump Station and the undergrounded electric transmission line to the west terminating at the existing campground road. Issue special use permit amendment to Douglas County Lake Tahoe Sewer Authority.
 - Lower approximately 220 ft of buried gas line to avoid conflicts with the new channel and lowered floodplain. Issue special use permit amendment to Southwest Gas.
 - Dewater and backfill approximately 800 linear feet of Kahle Ditch above the high-water line of 6,229.1 feet of elevation (Lake Tahoe Datum). Complete associated fish salvage.
 - The backfill of Kahle Ditch will occur in the vicinity of a known Tahoe yellow cress occurrence. Plants that may be present would be transplanted to a receptor location (on-site or off) to be determined based on conditions or temporarily to a greenhouse prior to backfilling of the ditch.
 - Stage approximately 1,600 cubic yards of excess cut material in designated areas for later use as fill in sub-project area 4.
 - Install up to 650 linear feet of wood/wire fencing adjacent to the new creek channel to protect the restoration area and Tahoe yellow cress habitat.
 - Access construction areas using existing campground road and the access roads from the Tahoe Beach Club to the sewer pump station.
2. **Sub-Project Area 2: Kahle Ditch restoration upstream of new pump station access road**

Sub-project Area 2 encompasses restoration actions along Kahle Ditch upstream of the new pump station access road (**Figure 4**). Restoration activities will also occur on private parcels owned by the Tahoe Beach Club in this area. The restoration goals in this area are to improve hydrologic function of Burke Creek, disconnect and treat urban runoff and remove remnant materials associated with the Tahoe Shores Mobile Home Park, remove non-native plants, and restore stream environment zone (SEZ) and improve floodplain width. Minimal grading will occur to achieve floodplain connectivity.

The following project actions are proposed in this sub-project area:

- Backfill approximately 2,100 linear feet of Kahle Ditch.
- Grade up to one acre of Rabe Meadow to achieve natural floodplain slopes and a multi-branch stream channel.
- Install approximately 1,800 square foot vegetated stormwater basin to treat water from the end of Kahle Drive. Issue special use permit amendment to Douglas County.
- Dewater Burke Creek and Kahle Ditch and complete associated fish salvage.
- Manually remove aquatic invasive species within the Burke Creek and Kahle Ditch channels.
- Stage approximately 1,600 cubic yards of excess cut material in designated areas for later use as fill in sub-project area 4.
- Access will be from Tahoe Beach Club property and Kahle Drive.

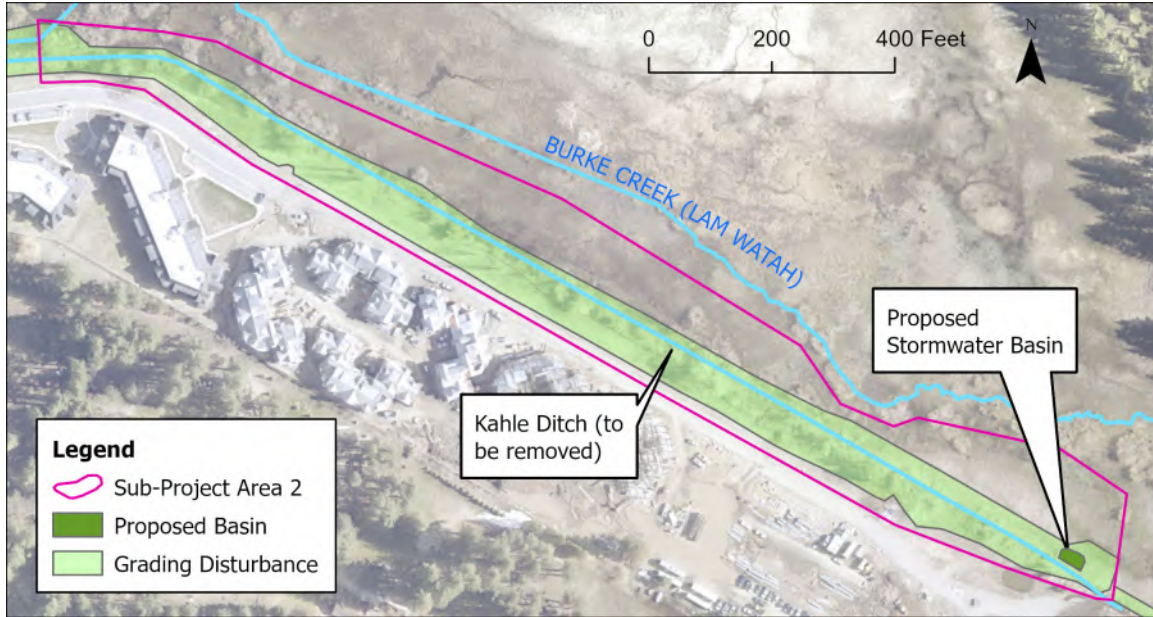


Figure 4. Sub-Project Area 2: Kahle Ditch restoration components upstream of new pump station access and location

3. Sub-Project Area 3: Restoration of Burke Creek alignment in the center of Rabe Meadow

Sub-Project Area 3 encompasses 1,200 linear feet of a straight section of Burke Creek in the center of Rabe Meadow (**Figure 5**). The majority of the reach flows in a generally straight channel that appears to be the remnants of an irrigation ditch. Restoration goals for this area are to improve the hydrologic function of Burke Creek and Rabe Meadow, promote overbanking and aggradation of sediment in Rabe Meadow, create habitat to encourage beaver colonization and create conditions for the development of a naturally evolving and branching channel system.

The following project actions are proposed in this sub-project area:

- Reactivate remnant channels within Rabe Meadow using log grade controls, woody debris, and Beaver Dam Analog (BDA)¹ structures. A straightened section of Burke Creek that occupies a former irrigation ditch will be restored with the use of woody structures that mimic beaver activity and promote overbanking and lead to increased complexity of the channel.
- Dewater Burke Creek and Kahle ditch, and complete associated fish salvage.
- Manually remove aquatic invasive plants where necessary.
- Access the channel in the middle of the meadow for wood structure placement by foot from the Lam Watah trail.

¹ A Beaver Dam Analog is a man made structure designed to mimic the appearance and function of a natural beaver dam to achieve restoration goals such as increased habitat and riparian width.

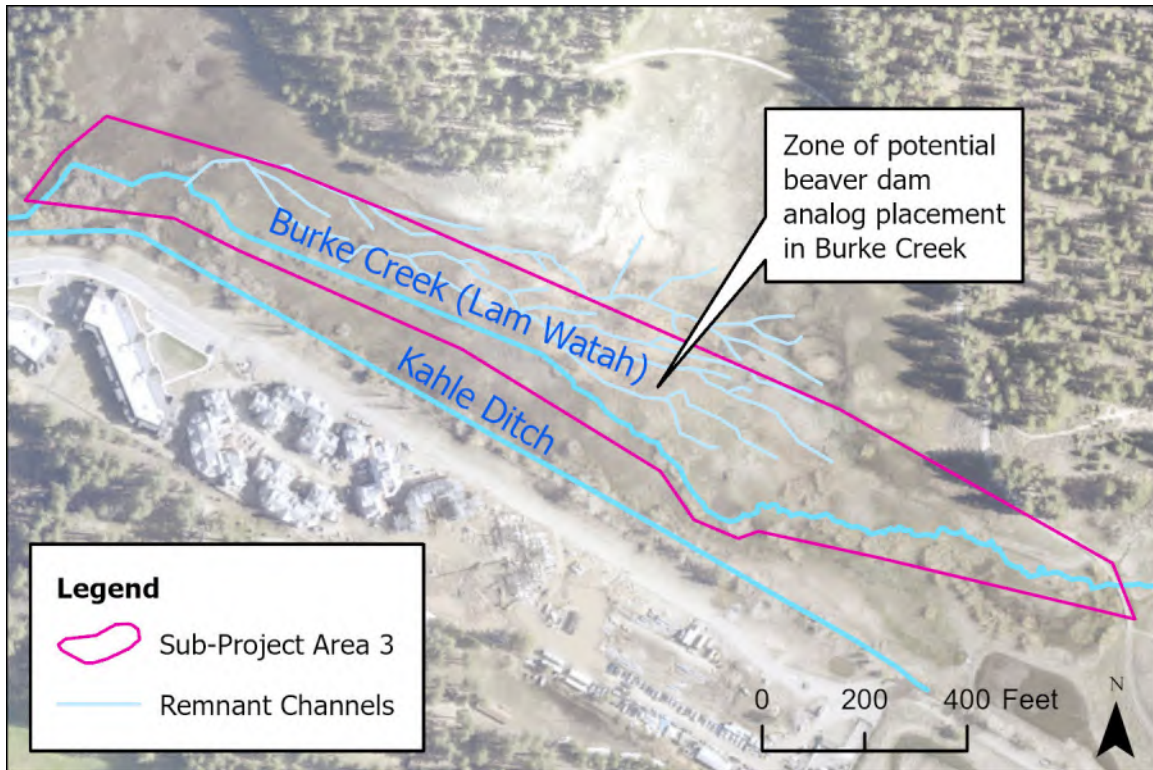


Figure 5. Sub-Project Area 3: Restoration of Burke Creek alignment in the center of Rabe Meadow components and location

4. Sub-Project Area 4: Jennings Pond restoration and recreation improvements

This Sub-Project Area includes the 1,600 linear feet reach of Burke Creek that begins approximately 300 linear feet upstream from the Stateline-to-Stateline bike path bridge and ends at the culvert at Highway 50 (**Figure 6**). The 1982 Jennings Pond restoration and the downstream end of the 2018 highway crossing restoration occurred within this area. These previous restorations created generally hydrologically stable conditions, but several areas of head cutting, bank erosion and incision exist within this sub-project area. User-created trails and bridges are causing resource damage in and around riparian areas. Jennings Pond, a man-made structure created in 1982, is impacting hydrologic processes, causing damage to nearby infrastructure, and preventing significant water from reaching the meadow area below. A reduction in the size of Jennings Pond would allow this site to return to a more natural hydrology while maintaining some ponded habitat for native species. This reduction will alleviate issues related to pond avulsion and associated recreational trail damage.

The following project actions are proposed in this sub-project area:

- Drain Jennings Pond with diversion and pumps. All native aquatic species will be relocated.
- Install BDAs and/or wood structures downstream of Jennings Pond.
- Partially fill Jennings Pond with soil from other parts of the project (or from an outside weed-free source, if necessary) to reduce flooding of recreation trails and Kahle Drive. Microtopography will be constructed to improve habitat for native species. Prior to filling, manually remove any aquatic invasive species.

- Lower the elevation of an 8,000 square foot area between Folsom Spring and Burke Creek to create additional riparian area by excavating approximately 250 cubic yards. Revegetate with salvaged sod and willow.
- Raise a 400-foot long section of the Lam Watah Trail up to 4 feet in some locations to protect infrastructure to the south. This action will also increase riparian wetting to help decommission user-created trails in sensitive areas.
- Construct approximately 350 feet (3,500 sf) of Class 1 paved bike trail and issue special use permit amendment to Douglas County.
- Place fill between Kahle Drive and the existing stormwater basin's berm to improve drainage in the area.
- Decommission user-created trails in sensitive areas.
- Access Jennings Pond from the Lam Watah Trailhead and close the Lam Watah trail adjacent to the pond during construction.
- Construct 850 linear feet of temporary access routes to install diversion from Burke Creek to Folsom Spring.

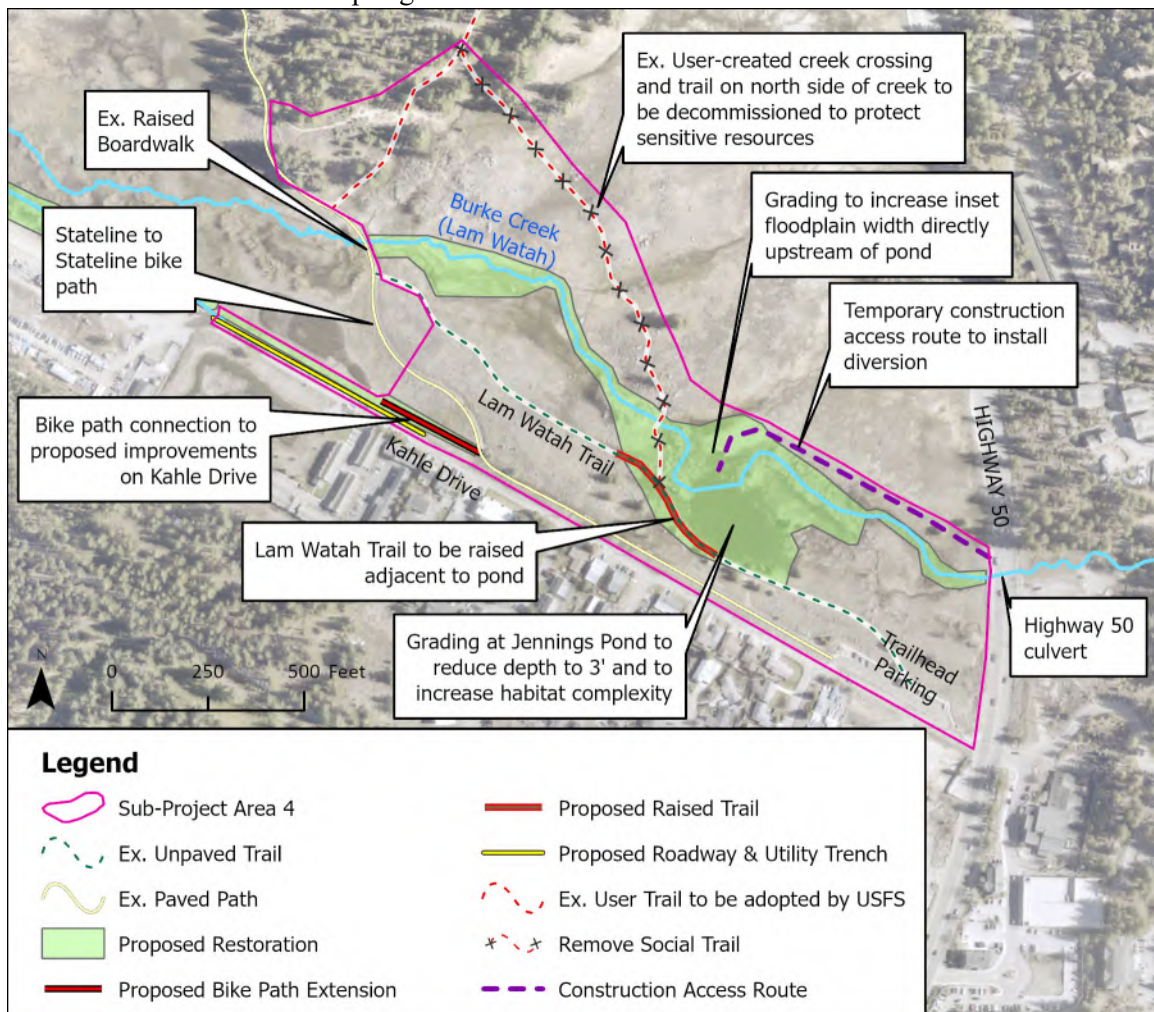


Figure 6. Sub-Project Area 4: Jennings Pond restoration and recreation improvements
5. Sub-Project Area 5: Rabe Meadow ditch restoration

Numerous ditches exist in the meadows directly to the north of Burke Creek (**Figure 7**). Several ditches remain in this meadow and the upland area to the north that were likely used for irrigation related to livestock grazing. While these ditches no longer are in use, hydraulic modeling suggests that they intercept and convey water that would otherwise end up in the meadows. Significant conifer encroachment is also occurring in the meadow adjacent to these ditches.

The following project actions are proposed in this sub-project area:

- Decommission approximately 2,800 linear feet of ditches using excess native fill of approximately 1,600 cubic yards generated from other sub-project areas (or from an outside weed-free source, if necessary).
- Revegetate filled ditches with native plants.
- Install woody debris structures in ditches.
- Complete minor trail realignment and upgrades including construction of boardwalk and/or bridge trail segments in wet meadow areas.
- Manual removal of aquatic invasive plants where necessary.
- Remove conifers encroaching into the historic meadow (approx. 4.8 acres).
- Access the meadow ditches from Nevada Beach and/or the Stateline-to-Stateline bike path on existing trails and directly adjacent to the restoration areas.
- Construct 350 linear feet of temporary access routes originating from the Stateline-to-Stateline Bikeway and other established trails.

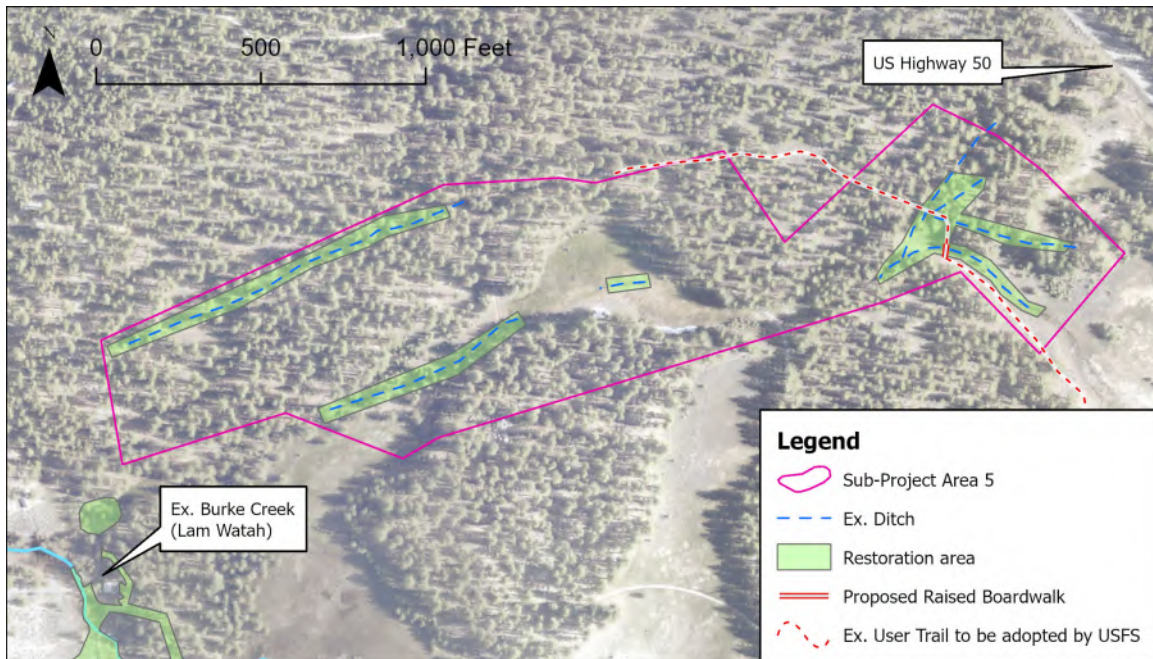


Figure 7. Sub-Project Area 5: Rabe Meadow ditch restoration location

Entire Project Area

- Earthwork including excavation, fill, grading and utility trenching.
- Dewater portions of Burke Creek, Jennings Pond, and Kahle ditch.
- Treat and remove invasive species within Rabe Meadow, Burke Creek, and Kahle Ditch.

- Remove conifers encroaching into meadow areas.
- Revegetate disturbed areas using native seed, aspen plugs, and willow and sod transplanting.
- Amend existing NV Energy, Douglas County, Southwest Gas, and the Douglas County Lake Tahoe Sewer Authority special use permits.
- Total excavation of approximately 5,300 cubic yards and fill of approximately 6,500 cubic yards resulting in a net fill of approximately 1,200 cubic yards. All fill is sourced locally from the Rabe Meadow Complex and up to 600 cubic yards of fill will come from the 2018 Kahle Basin Implementation Project located in the same project area. If necessary, fill may be imported from an outside weed-free source. Some fill generated from the adjacent Tahoe Beach Club may also be used after materials testing is performed.

Project Schedule

Construction can occur between May 1 and October 15 each year in accordance with the Tahoe Regional Planning Agency Code of Ordinances. If the early or late season is particularly dry, a variance from the grading deadline may be sought from TRPA. Construction of the project will occur starting as early as May 2024 and will be conducted in phases as portions of the project site become accessible based on ground saturation. Project phasing is designed to limit recreational impacts during peak season and mitigate impacts to species and habitat requirements. Each Phase will begin with the installation of best management practices specific to each sub-project area including terrestrial and aquatic invasive plant survey, best management practices such as fencing, temporary erosion control, and equipment cleaning areas, fish rescue and relocation, dewatering and diversion actions, and construction of access and staging, as required.

Construction will be phased in general starting with work in sub-project area 1 in May, moving upstream and into the next sub-project areas. All project implementation actions are expected to be completed in 1 year, however some of the sub-project area work could be completed in 2025, as needed. The work in Jennings Pond in sub-project area 4 will occur late in the season to protect beaver kits and prevent impacts to beavers. In specific, the diversion of flows away from Jennings Pond to facilitate dewatering the pond will not begin until August 7th. Active dewatering of Jennings Pond using pumps will not begin until August 21.

Construction Access

Primary access to the project area will be via Kahle Drive, the Lam Watah Trail, the Stateline-to-Stateline Bikeway, the Tahoe Beach Club private property, and Nevada Beach Campground. No road closures are expected during construction; however, traffic control may be required at times. Within the project area, access routes will be created within planned disturbance boundaries for equipment to reach the stream. With the exception of construction entrances made of rock and filter fabric to limit soil track-off, access routes will be on native earth which will be de-compacted when moving out of the area. Up to 1,000 linear feet of the Lam Watah trail, a segment of the Stateline-to-Stateline bike trail, and some user-created trails may need to be closed during the construction near Jennings Pond. The user-created trail near the Stateline-to-Stateline bike path will be closed during paving of the new bike trail segment. If necessary, trail detours will be provided during closures. Access through the Nevada Beach Campground will be by 10-wheel dump trucks, up to 5 roundtrips per day for up to 16 weeks, only between the hours of 9:00 am and 5:00 pm, and will be minimized whenever possible. The use of rubber tracked equipment will limit the impact of construction to trails and riparian areas. Areas disturbed by construction access routes will be de-compacted, restored, and revegetated at the end of the project.

Construction Staging

Staging areas will be needed for construction equipment and machinery, excavated earthwork, and construction materials. The project will utilize native fill material stored off site that originated from the Kahle Basin Project constructed in 2018, and if needed imported material from a weed-free source. Off-haul of earthwork that is unsuitable for use in the project will be ongoing during the project to minimize on-site earthwork piles. Several staging areas will be used including a previously disturbed area from the construction of the Kahle Basin, parking sites (up to 4 total) for the Lam Watah trailhead, the existing Pump Station access road and new Pump Station turnaround, and areas offsite owned by Douglas County (paved parking lot across US 50 at corner of US 50 and Kahle Drive) or the Tahoe Beach Club (private property). Construction Best Management Practices (BMPs) such as sediment logs or filter fence will be installed and maintained around all staging areas in addition to efforts to eliminate the spread of invasive plant species that may occur within the staging sites.

5.3 Existing Conditions

Watershed Hydrology and Restoration History

The Burke Creek watershed is approximately 1,600 acres and drains a small portion of the Carson Range in Nevada, flowing southwest to west into Lake Tahoe. The headwaters are located north of Kingsbury Grade near Castle Rock. The creek passes through multiple culverts in two neighborhoods before it reaches the highly developed Highway 50 corridor. Hydrology in the watershed is snow-melt dominated and peak flows occur during the snow-melt season (March through June), during rain-on-snow events, or from runoff from summer thunderstorms. Groundwater monitoring conducted in 2015 in the upper portion of Rabe Meadow concluded that Burke Creek is the primary source of shallow groundwater levels that support the hydrophytic vegetation of Rabe Meadow (Balance 2015). Folsom Spring and treated stormwater runoff from the US 50 right-of-way also contribute flow to the meadow.

A multi-year restoration project completed in 2018 restored a portion of Burke Creek on the upstream side of US 50 and routed the creek through a new larger culvert under the highway into Jennings Pond. The purpose of the larger culvert was to improve drainage along the corridor and reduce the frequency of flooding of the highway. Stormwater treatment improvements were also installed to prevent pollutants from US 50 and adjacent commercial parking lots from entering Burke Creek.

Jennings Pond is located on an old disturbed site that was once slated for construction of a casino in the late 1970's. The Jennings Casino site was acquired by the USFS in 1978 along with Rabe Meadow. This acquisition allowed the USFS to end the seasonal cattle grazing in Rabe Meadow and restore the site. In 1981, the USFS restored the casino site by breaking up and burying the foundations, and reshaping and restoring Burke Creek in the upper one-third of the meadow where it had been previously diverted into a concrete lined ditch. USFS also transformed an excavated borrow pit into an in-stream sediment pond (Jennings Pond) and performed revegetation of the disturbed areas. The existing man-made Jennings Pond supports a variety of avian and riparian species in addition to North American beaver (*Castor canadensis*). Invasive plant species are known to occur in this area.

Previous restoration efforts have improved stream channel function compared to conditions that were created during urban development that occurred through the 60's and 70's. However, restoration efforts conducted during the 80's west of US 50 resulted in a channel morphology with too low of a gradient relative to channel sediment bed load. Over the years this has resulted in substantially reduced channel capacity. In addition, willows that were planted as part of restoration have grown so robustly that they actually are now contributing to reduced channel capacity. This entire channel was constructed on a knoll, perching the channel at a slightly higher elevation than the surrounding floodplain. All these factors have led to several areas of head cutting, bank erosion and incision.

In the lowest reach, Burke Creek outlets directly to Lake Tahoe only during higher flow years and when lake level is high. Under low flows (and lake level) a berm forms at the mouth, stranding the creek in a pool that becomes stagnant. On the way to the lake, Burke Creek passes through three box culverts in the NV Beach Campground installed in 1992. The upper two of these culverts have accumulated substantial amounts of sediment and exhibit substantial backwatering even during times of low flow. Just to the north of the middle box culvert a small ephemeral channel originating in Rabe Meadow enters the creek that conveys stormwater during large storms. These higher flows lead to substantial flooding in this area that adversely affects the infrastructure and operations of Nevada Beach Campground.

An urban stormwater treatment basin (Kahle Drive basin) was built in 1992 that collects stormwater flows from Kahle Drive into Kahle Ditch. An additional stormwater treatment basin was constructed in 2019 to capture additional stormwater from Kahle Drive and the adjacent neighborhood. Kahle Ditch increases in size as it gets closer to Lake Tahoe and outlets to the lake only during high flows (and high lake levels). During low flows, water sits stagnantly in the ditch.

Vegetation

The Project area includes the following plant community types: the riparian corridors and outlets of Burke Creek and Kahle Ditch, the complex of wet meadow habitats in Rabe meadow, Jennings Pond, the Kahle Drive retention basin, revegetated areas, the sandy upland habitat adjacent to Lake Tahoe, and upland Jeffrey pine/mixed conifer forest east of Nevada Beach Campground.

The Burke Creek stream channel up and downstream of Jennings Pond supports a dense riparian plant community comprised of willow (*Salix* sp.), mountain alder (*Alnus incana* ssp. *tenuifolia*), aspen (*Populus tremuloides*) and some black cottonwood (*P. fremontii*). In the 2018 restoration, the new enlarged culvert was located to the north of the forested riparian zone, and this new primary channel is very shallow and supports a diverse assemblage of obligate wetland plant species such as American brooklime (*Veronica americana*), watercress (*Nasturtium officinale*), and seep monkeyflower (*Erythranthe gutattus*). The channel from Folsom Spring further north is deeper and supports similar aquatic species with more developed banks that support a high diversity of sedges and rushes such as Sierra rush (*Juncus nevadensis*) and Nebraska sedge (*Carex nebrascensis*). Areas between these channels have been re-vegetated with species such as blue wildrye (*Elymus glaucus*), lupine (*Lupinus* sp.) and sticky cinquefoil (*Drymocallis glandulosa*).

The wetlands adjacent to the Burke creek channel extend throughout portions of Rabe meadow and support wetland species like Mountain bog bulrush (*Scirpus microcarpus*), large leaf sedge (*Carex amplifolia*), and cattail (*Typha* sp.). Many types of grasses like tufted hairgrass (*Deschampsia cespitosa*) occur in the meadow and a rich array of forbs including willowherbs (*Epilobium* sp.) and showy plants like bigleaf avens (*Geum macrophyllum*) and Oregon

checkerbloom (*Sidalcea oregano*). Aquatic invasive plant species observed in the project area include Eurasian watermilfoil (*Myriophyllum spicatum*) in the lowest reach of Burke Creek and in the Kahle Ditch. Comfrey (*Symphytum officinale*) also was observed above Jennings Pond toward Folsom Spring. Invasive species within the project area will be treated prior to implementation to ensure project activities do not increase or spread invasive species occurrences.

There is no riparian overstory along Burke Creek in the central part of Rabe Meadow to the east of the bridge. That area is saturated all year long and very open. West of the bridge, a riparian overstory is present in what may be a previous main channel of Burke Creek. The main meandering channel to the north is also open and lacks an overstory. Kahle Ditch has a well-developed riparian overstory of willows and wetland species along the banks. The Kahle Drive stormwater retention basin is filled with cattail and bordered to the east by a revegetated upland area.

Outside of the meadow, the upland vegetation is dominated by an open Jeffrey pine (*P. jeffreyi*) forest with a sparsely distributed shrub layer of big sage (*Artemisia tridentata*) and bitterbrush (*Purshia tridentata*) and very sparse grasses and forbs.

Aquatic and Terrestrial wildlife and Habitats

Non-native salmonids and native fishes have been observed in Burke Creek, including Lahontan redbside shiner (*Richardsonius egregius*), Lahontan tui-chub (*Gila bicolor*), speckled dace (*Rhinichthys osculus*) and Tahoe suckers (*Catostomus tahoensis*) (USDA LTBMU 2016). Lahontan cutthroat trout have not been documented to occur in Burke Creek (USDA LTBMU 2016). However, Federal and State Agencies have been actively stocking Lake Tahoe with Lahontan Cutthroat trout and no barriers exist to prevent fish moving into the project area. From 2019 through 2022 U.S. Fish and Wildlife (Tech Memo, 2022) and Nevada Department of Wildlife have stocked 268,324 Lahontan cutthroat trout in Lake Tahoe (**Table 1 and 2**), increasing the likelihood and potential for Lahontan cutthroat trout to be in the project area.

Table 1: Nevada Department of Wildlife Lahontan cutthroat (LCT) trout stocking records in Lake Tahoe proper from 2019 through 2022.

Waterbody	County	Species	Number	Average Size	Stock Date
Lake Tahoe	Washoe	LCT	500	12.6	10/7/2019
Lake Tahoe	Washoe	LCT	1500	12.7	10/7/2019
Lake Tahoe	Douglas	LCT	4645	8.1	5/27/2020
Lake Tahoe	Washoe	LCT	3583	10.4	6/9/2021
Lake Tahoe	Douglas	LCT	1500	10	6/11/2021
Lake Tahoe	Washoe	LCT	3637	9.2	6/16/2021
Lake Tahoe	Washoe	LCT	1290	9.2	6/16/2021
Lake Tahoe	Douglas	LCT	1640	9.5	6/18/2021
Lake Tahoe	Douglas	LCT	3693	9.5	6/18/2021
Lake Tahoe	Washoe	LCT	3070	9.1	6/23/2021
Lake Tahoe	Douglas	LCT	4002	9.5	6/25/2021
Lake Tahoe	Washoe	LCT	2921	9.6	7/2/2021
Lake Tahoe	Washoe	LCT	4101	8.7	7/7/2021
Lake Tahoe	Douglas	LCT	5378	8.3	7/9/2021

Table 1: Nevada Department of Wildlife Lahontan cutthroat (LCT) trout stocking records in Lake Tahoe proper from 2019 through 2022.

Waterbody	County	Species	Number	Average Size	Stock Date
Lake Tahoe	Washoe	LCT	6018	8.2	7/28/2021
Lake Tahoe	Douglas	LCT	5984	8.1	7/30/2021
Lake Tahoe	Washoe	LCT	2568	11	9/15/2021
Lake Tahoe	Washoe	LCT	856	11	9/17/2021
Lake Tahoe	Washoe	LCT	3948	9	6/1/2022
Lake Tahoe	Douglas	LCT	4857	9	6/14/2022
Lake Tahoe	Washoe	LCT	6240	9	7/5/2022
Lake Tahoe	Douglas	LCT	6280	9.3	7/7/2022
Lake Tahoe	Washoe	LCT	6441	9.1	7/14/2022
Lake Tahoe	Washoe	LCT	6800	9	7/23/2022
Lake Tahoe	Washoe	LCT	5875	8.9	8/2/2022
Lake Tahoe	Washoe	LCT	5000	4	8/18/2022
TOTAL			102327		

Table 2: U.S. Fish and Wildlife Lahontan cutthroat (LCT) trout stocking records in Lake Tahoe proper from 2019 through 2022.

Waterbody	Location	Species	Number	Stock Date
Lake Tahoe	Kiva Beach Lake Tahoe	LCT	1200	10/5/2019
Lake Tahoe	Kiva Beach Lake Tahoe	LCT	415	10/6/2019
Lake Tahoe	Kiva Beach Lake Tahoe	LCT	1244	10/6/2019
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	500	10/7/2019
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	1500	10/7/2019
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	4645	5/27/2020
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	3583	6/9/2021
Lake Tahoe	Zephyr Cove	LCT	1500	6/11/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	4927	6/16/2021
Lake Tahoe	Zephyr Cove	LCT	5333	6/18/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	3070	6/23/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	3070	6/23/2021
Lake Tahoe	Zephyr Cove	LCT	4002	6/25/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	2921	7/2/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	4101	7/7/2021
Lake Tahoe	Zephyr Cove	LCT	5378	7/9/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	6018	7/28/2021
Lake Tahoe	Zephyr Cove	LCT	5984	7/30/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	3133	8/19/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	2568	9/15/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	856	9/17/2021
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	3948	6/1/2022

Table 2: U.S. Fish and Wildlife Lahontan cutthroat (LCT) trout stocking records in Lake Tahoe proper from 2019 through 2022.

Waterbody	Location	Species	Number	Stock Date
Lake Tahoe	El Dorado Beach Lake Tahoe	LCT	5438	6/7/2022
Lake Tahoe	Zephyr Cove	LCT	4857	6/14/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	6139	6/22/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	6550	6/28/2022
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	6240	7/5/2022
Lake Tahoe	Meeks Bay Lake Tahoe	LCT	30	7/6/2022
Lake Tahoe	Zephyr Cove	LCT	6280	7/7/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	4877	7/12/2022
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	6441	7/14/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	1503	7/22/2022
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	6800	7/26/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	3784	7/28/2022
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	5875	8/2/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	4299	8/4/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	5589	8/16/2022
Lake Tahoe	Sand Harbor State Park Lake Tahoe	LCT	6700	8/18/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	5799	8/23/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	7550	8/30/2022
Lake Tahoe	Lake Forest Boat Ramp Lake Tahoe	LCT	1350	9/1/2022
Total			165997	

Other aquatic wildlife that occupy the area include Sierran treefrog (*Pseudacris sierra*) and mountain garter snake (*Thamnophis elegans elegans*). No Sierra Nevada yellow-legged frogs (SNYLF) have been detected in the project area; however, 11.4 acres of suitable habitat for SNYLF is within the project footprint (see **Figure 10**).

Aquatic invasive species are known to occur in the lower reaches of Burke Creek and in Kahle ditch in the form of Eurasian watermilfoil. Suitable habitat for this species and other warmwater invasive species occurs throughout the project area.

The project area contains a mixture of habitat types, **Figure 11** shows the habitats that are within the 274-acre project area/area of potential effect (APE). Existing habitat types were delineated using the CWHR habitat types (CDFW 2014) shown in **Figure 11** and listed below. Habitat types are as follows; Aspen (2.6 ac), Barren (0.4 ac), Riverine (6.4 ac), Wet Meadow (79.8 ac), Jeffrey Pine (134.6), Lacustrine (freshwater pond) (1.5 ac), Montane Riparian (7.2 ac), Perennial Grassland (4.2 ac) and Sagebrush (37.1 ac). This variety of habitats provides for a variety of suitable habitat for sensitive wildlife species. Jeffrey Pine contains second growth trees and large rock outcrops that is suitable habitat for sensitive bat species and American goshawk. The Aspen and Montane Riparian Habitat is suitable for willow flycatcher. Existing Lacustrine and Riverine habitats offer suitable habitat for Sierra Nevada yellow-legged frog and fish species (Lahontan cutthroat trout, Lahontan lake tui-chub) and great basin rams-horn. The wet meadow areas contain flowering plants that offer habitat for monarch butterfly and western bumblebee. The majority of the restoration is located within wet meadow, montane riparian and riverine habitat of Burke Creek, Kahle Ditch and Jennings Pond.

The project area (designated as APE on the attached figures) contains a total of 15,969 linear feet of streams, 119.6 acres of Stream Environment Zone (SEZ), and 157 acres of suitable habitat for Sierra Nevada yellow-legged frog. The restoration areas as outlined in the project description above contains 4,366 linear feet of streams and 11.8 acres of SEZ, and 12.6 acres of suitable habitat.

Burke Creek and Rabe Meadow have been impacted by historic uses such as logging, grazing, and development over the past 150 years that have resulted in significant modifications to the stream, its tributaries, and surrounding meadows. The changes to the watershed decreased the overall area of healthy wetlands and stream length. Increased recreational use of Rabe Meadow over the past two decades has resulted in an expansive network of user-created trails and an overall increase of bare soil within the meadow. As a result of these uses, the Burke Creek Watershed has degraded water quality and lower quality aquatic and terrestrial habitat. Restoration of the watershed is needed to expand the riparian areas, increase channel length, improve habitat, reduce soil erosion, and improve water quality. Restoration will include a variety of techniques with the goals of improved water quality, erosion control, more natural hydrology, and robust riparian and meadow vegetation which in turn provide improved aquatic and terrestrial habitat for plants and animals. Restoration techniques utilized in each sub-project area as described above will vary depending on observed existing conditions and machinery access to each area and will range from significant realignments of the creek and floodplain grading in some areas to smaller process-based restoration techniques in other areas.

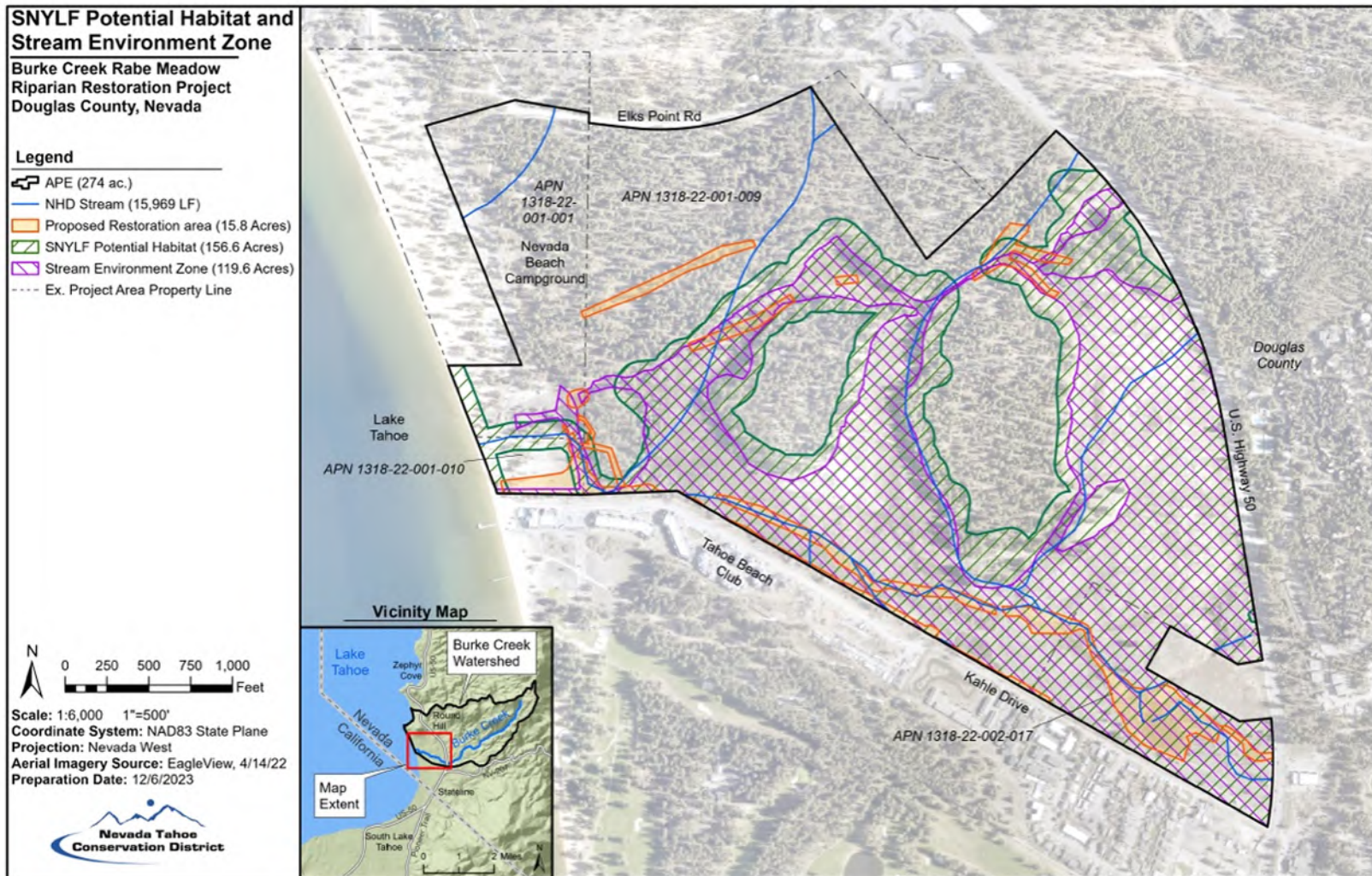


Figure 10. SNYLF Potential Habitat and Stream Environment Zone

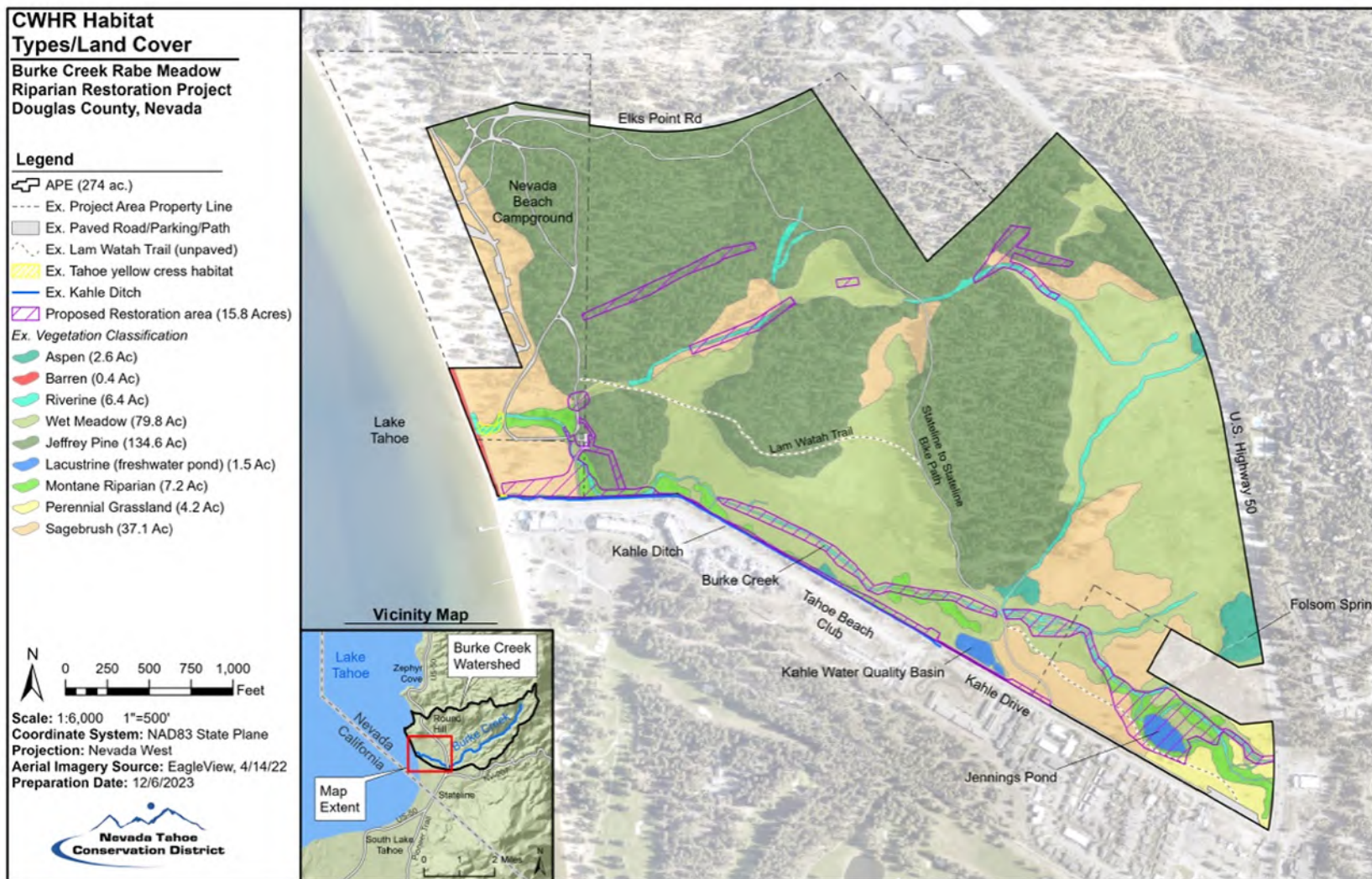


Figure 11. CWHR Habitat Types within the Project Area

5.4 Resource Protection Measures relevant to Terrestrial and Aquatic Wildlife Species

The following resource protection measures relevant to terrestrial and aquatic wildlife species and habitat will be incorporated into the design and implementation of the project:

- **WL -1 Contractor Training**
Prior to construction, all contractor, and subcontractor project personnel will receive training from qualified resource specialists (Nevada Tahoe Conservation District Personnel and/or USFS) regarding the appropriate work practices necessary to effectively implement these Resource Protection Measures included in this BE including appropriate wildlife avoidance measures; impact minimization procedures; the importance of sensitive resources, and the purpose and methods for protecting such resources.
- **WL – 2 Sierra Nevada Yellow Legged Frog**
Project activities would follow applicable protection measures as included below and identified in the US Fish and Wildlife Service Biological Opinion (Appendix B) on Sierra Nevada yellow legged frog within the Lake Tahoe Basin (or superseding current direction). Protection measures include Programmatic Conservation Measures 1.c, 1.e, 1.f, 1.g, 1.h, 1.i, 1.m, 1.n, and 1.o. Program Specific Conservation Measures include 1.a, 1.d, 1.i, 1.w, 1.x, 1.y, 1.aa, and 1.ee. See Appendix B for details of these measures that protect habitat and water quality.
- **WL – 3 Dewatering and Diversion**
Implement and follow the Dewatering and Diversion Plan as outlined in Appendix C. Dewatering and drafting shall use screening devices for water drafting pumps. Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats. The following criteria should be used to avoid impacts:
 - Drafting operations should be restricted to one hour after sunrise to one hour before sunset to avoid the use of lights that attract fish.
 - Pumping rate shall not exceed 350 gallons per minute. In Jennings Pond, where pumping rates might need to exceed 350 gpm to meet project objectives, rates shall not exceed 850 gpm. Additionally, when pumping rates exceed 350 gpm, an Aquatic Resource Specialist or Watershed Specialist will monitor pumping operations to ensure that aquatic species are protected.
 - The pumping rate shall not exceed ten percent of stream flow (estimated by pump operators) to ensure adequate downstream flow to support aquatic species.
 - Drafting should occur in streams and pools with deep and flowing water; not streams with low flows and isolated pools.
 - Pumping operations shall not result in obvious draw-down of upstream or downstream pools.
 - Each pumping operation shall use screens. The screen face should be oriented parallel to flow for best screening performance.
 - The screen shall be cleaned as often as necessary to prevent approach velocity from exceeding 0.33 feet per second. Operators shall withdraw the screen and clean it after each use, or as necessary to keep screen face free of debris. Pumping shall stop for screen cleaning when approximately fifteen percent or more of the screen area is occluded by debris. A suitable brush shall be on board the truck for this cleaning operation.

- Screen Mesh must be in good repair and present a sealed, positive barrier-effectively preventing entry of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, into the intake. The screen mesh size shall be:
 - Round openings - maximum 3/32 inch diameter (.09 inch)
 - Square openings - maximum 3/32 inch diagonal (.09 inch)
 - Slotted openings - maximum 1/16 inch width (.07 inch)
- WL – 4 Aquatic Species Salvage
Salvage/recovery of aquatic species will be conducted by LTBMU Fisheries Staff within anticipated construction dewatering or diversion zone operations by electro-shocking or other suitable means. Aquatic species will be moved upstream or downstream of project activities, or to other suitable habitat within the project area, as determined by USFS fisheries staff. Block nets will be installed to ensure fish do not move back into the project area. Nets will be cleaned one to two times daily to ensure the nets are functioning.
- WL – 5 Bd Disinfection Protocol
Field gear (waders, float tubes, etc.) will be cleaned, decontaminated, and/or fully dried prior to entering or moving between aquatic habitats per the *Batrachochytrium dendrobatidis* (Bd) Disinfection Protocol (Appendix D).
- WL - 6: Nesting Bird Surveys
Nesting bird surveys will be conducted (NTCD/Contractor) no more than 14 days prior to construction activities if work is scheduled to occur during the breeding season— April through August. If a nest is found, exclusionary avoidance zones (to be determined based on species-specific needs) will be created surrounding any active nests within or adjacent to the project.
- WL – 7 Marten Den Surveys
Conduct (NTCD/Contractor) pre-implementation camera surveys where project activities would occur within suitable marten denning habitat plus a 50-meter buffer. Conduct surveys the same season as implementation. If marten are detected, follow-up with pedestrian den surveys no more than three weeks before project initiation and regardless of season. Possible dens will be further monitored by remote camera in order to determine if they are being actively used by marten. Based upon the results, the Responsible Official may implement a Limited Operation Period (LOP) and/or adapt construction timelines or facility locations as determined necessary to provide adequate protection. If dens of other species are located during the surveys it would be up to the discretion of the project biologist to conduct camera surveys and/or protect the den.
- WL – 8 North American Beaver
North American beaver lodges and dams shall not be disturbed between the months of March and August. Any removal and/or disturbance shall not occur until after 21 August of the year to prevent impacts to young kits that may be present within the lodge.
- WL – 9 Bat Surveys
If tree removal occurs May 1 – August 31, surveys for possible bat roosts will be conducted within 30 days of the start of tree removal activities (NTCD/Contractor). Possible roost structures include snags, complex trees, trees with sloughing bark, and/or large diameter trees. If tree removal activities take more than 30 days and/or if there is a gap of 30 days between tree removal activities, surveys shall be repeated. All potential roosting sites will be surveyed by a qualified biologist to determine usage. Specific survey methodologies will be determined in coordination with the USFS. If an active

roost is identified, the Responsible Official may implement an LOP and/or adapt construction and/or tree removal timelines as necessary to provide adequate protection to the individuals in the roost.

- WL – 10 Wildlife Egress
Measures shall be taken to allow for exit of trapped wildlife within the project area when excavations are left open overnight. Excavations shall be fitted with ramps and/or suitable egress for small mammals that may be contained within the excavated area. Construction monitors shall inspect all excavations and areas of active construction for trapped wildlife. Wildlife found in active construction areas will be allowed to passively leave the site. If necessary, wildlife may be relocated by a qualified biologist. The construction foreman will notify the environmental monitor immediately if any wildlife enters or becomes trapped in the work area.
- WL – 11 Western Pearlshell Mussel Survey
eDNA samples will be collected to determine presence and location of western pearlshell mussels in the project area prior to dewatering the creek or commencing construction activities. Avoid installing temporary crossings, diverting flows or dewatering streams in areas occupied by western pearlshell mussels (*Margaritifera falcate*). If these activities cannot be avoided to meet project objectives, mussels will be relocated to suitable habitat prior to implementation. Suitable relocation sites will be determined in the field by the Forest Service Aquatic Biologist and will take into consideration the mussel population within and outside of the project area.
- WL - 12: General Wildlife Protections
 - If sensitive or ESA listed species are found during implementation, pause project activity that may affect the species and notify the project biologist within 24 hours.
 - All trash and food will be removed from the site at the end of each workday to avoid attracting wildlife to the site.
 - No harm, harassment, or collection of plant and wildlife species will be allowed. Feeding of wildlife is prohibited.
- WL – 13 Salvaged Sod
Sod will be harvested and salvaged in disturbance areas (except where weeds are present), watered until re-planted, and used for revegetation of disturbed surfaces during implementation.
- WL – 14 Downed Wood
Retain/add downed wood in the open meadow areas where feasible for native amphibian species. Density should be approximately three logs >30 cm diameter at midpoint per 0.4 ha.
- WL – 15 Aquatic Invasive Species Surveys
Surveys for aquatic invasive species will be performed prior to any ground disturbance or in water activities. Removal of aquatic invasive plant species shall be performed prior to dewatering, filling or disturbance. Methods of removal may vary and shall be determined on a case-by-case basis (e.g., hand pulling, suction dredging, placement of benthic barriers, etc.)
- HYD – 8 Water Quality Best Management Practices
The project shall follow the water quality and erosion control best management practices

(BMP) included in the final plan set approved by USFS LTBMU and the Stormwater Pollution Prevention Plan. Implementation of the Stormwater Pollution Prevention Plan will decrease impacts to water quality and freshwater aquatic habitats.

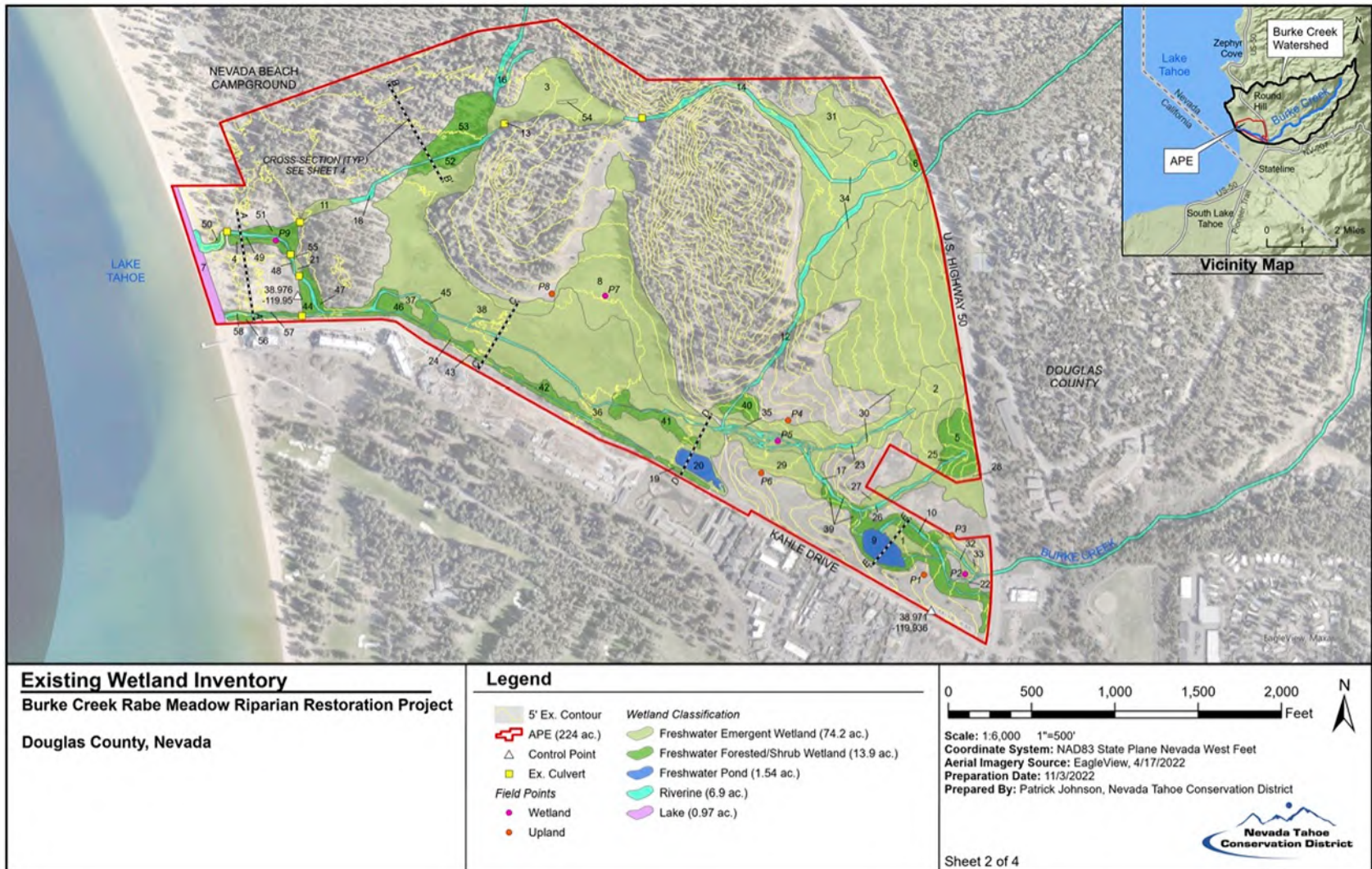


Figure 12 – Existing Conditions

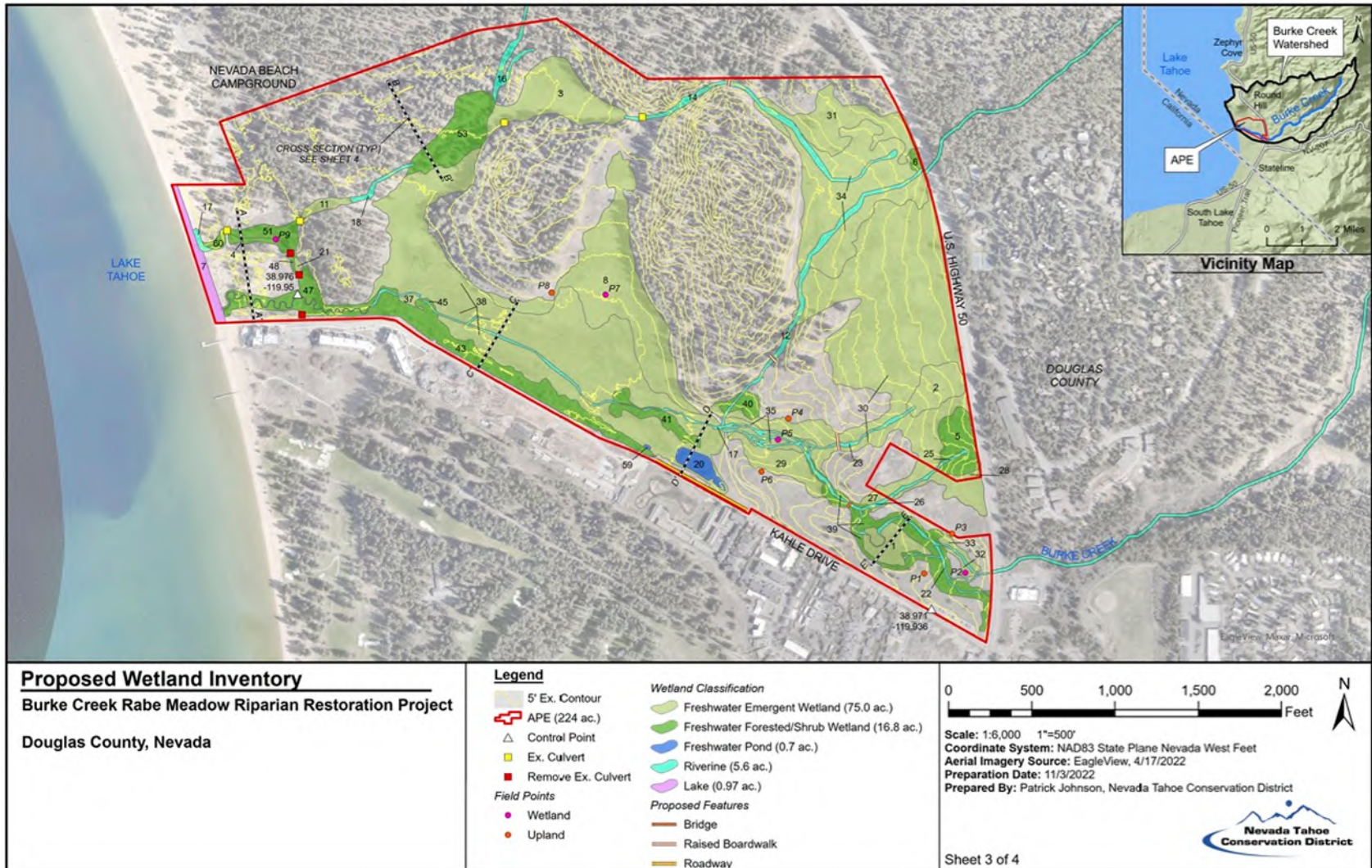


Figure 13 – Proposed Conditions

6. Species Accounts and Effects of the Project

6.1 Species Accounts

Species and occurrence information for Lahontan cutthroat trout, California spotted owl, American goshawk, willow flycatcher, great grey owl, bald eagle, Pacific marten, Western bumble bee, Monarch Butterfly, Sierra Nevada yellow-legged frog, and the three sensitive bat species (Fringed myotis, Pallid, Townsend's big-eared) are discussed below.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was federally de-listed on August 8, 2007 (Federal Registrar Vol. 72, No. 130, pp. 37346-37372) and then placed on the USFS Region 5 Regional Forester's sensitive species list. The winter and nesting bald eagle population in the LTBMU is also designated as a Tahoe Regional Planning Agency (TRPA) Special Interest Species.

Bald eagles occur throughout most of North America and have undergone large population fluctuations over the past two centuries (Buehler 2000, Murphy and Knopp 2000, USDA 2001). This species occurs and winters throughout California, except in desert areas. Migratory individuals from north and northeast of the State arrive between mid-October and December and remain until March or early April. Most bald eagle breeding in California occurs in the northern counties (Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties), typically at low elevations; breeding in the high Sierra Nevada is rare (USDA 2001). Bald eagles have been recorded in the Lake Tahoe basin as far back as 1874. Sighting records indicate that the Lake Tahoe Basin is used year-round by bald eagles; however, use occurs primarily during fall and winter months in correspondence with kokanee salmon (*Oncorhynchus nerka*) spawning activity (Murphy and Knopp 2000). Most of the bald eagle sightings in the Basin have occurred along undeveloped shorelines (east and west shores of Lake Tahoe and at Fallen Leaf and Marlette Lakes) and south shore marshes (Laves and Romsos 2000). This species has been known to breed at Marlette Lake on the east side of Lake Tahoe and at Emerald Bay on the south shore.

Bald eagles are usually monogamous and pair for life, though re-pairing may occur if either of the pair dies. The mating season varies by latitude (dates given for the Lake Tahoe basin). Pair initiation begins in January and egg-laying occurs in early May. Incubation lasts for approximately 35 days, and hatching occurs in mid-June. Both parents provide care for the nestlings for approximately 10-12 weeks. Juveniles fledge in late August and exhibit nest site dependency for 4-11 weeks following the first flight. Bald eagles require 4-5 years to reach sexual maturity and full adult plumage.

Nest trees are "typically established in large, dominant live trees with open branch work and are often located within 1.6 km [0.96 miles] of open water" (Murphy and Knopp 2000). Nest trees must be sturdy to support the large, heavy stick nests built by this species at or just below the tree canopy (Murphy and Knopp 2000). Nests are located most frequently in stands with less than 40 percent canopy cover (Call 1978 in Murphy and Knopp 2000). Nest trees in the Lake Tahoe basin are located in close proximity to open water (<656 feet) and far from developed shorelines (>1.5 miles) (Murphy and Knopp 2000). Roost trees are perches where one or more bald eagles rest at night and may occur long distances from open water bodies.

There are currently an estimated 12,870 acres of high and moderate capability nesting habitat, 7,218 acres of high and moderate capability perching habitat, and 129,005 acres of high and moderate capability foraging habitat for bald eagle within the LTBMU.

Occurrence/Survey History in Project Area

No specific surveys have been performed within the project area for bald eagles, however incidental sightings have been noted of eagles flying over the project area and roosting in trees within ½ mile of the project site.

California Spotted Owl

The California spotted owl (*Strix occidentalis occidentalis*) is a Forest Service Sensitive species and was recently added to the US Fish and Wildlife Endangered Species Act list as Proposed Threatened. The range of the California spotted owl is considered to include the southern Cascades, the entire Sierra Nevada province of California, all mountainous regions of the southern California province, and the central Coast Ranges at least as far north as Monterey County (Verner, et al. 1992). In the Sierra Nevada, the major forest types comprising known and potential habitat include mixed conifer, red fir, ponderosa pine/hardwood, eastside pine, and foothill riparian/hardwood forests (Verner, et al. 1992). Mixed conifer forest is the most abundant forest type and contains most of the known owl sites. Nest stands typically include a mixture of tree sizes with a number of very large, tall, old trees and usually at least two canopy layers. Large snags and an accumulation of downed woody debris are usually present. Foraging habitat is similar in structure and composition, but also comprises more open stands with canopy covers down to 40 percent.

Spotted owls may have more than one nest stand within their home range, and nest stands may be used intermittently for many years. Nesting behavior is initiated in February or early March when pairs begin roosting together and calling to each other more frequently at dusk before foraging or when returning to roost before dawn (Forsman 1976; Forsman et al. 1984). Egg-laying occurs in March or April. The average incubation period is 30 ± 2 days, hatching peaks May 7-21 (Sierra Nevada), and fledging (i.e., defined as young leaving the nest) occurs generally when the nestlings are 34-36 days old (Forsman et al. 1984). The post-fledging dependency period extends through late summer; dispersal from the natal site occurs in September or October (Gutierrez and Carey 1985; Miller 1989).

Throughout forest service land in the Sierra Nevada, California spotted owl nesting habitat is protected in PACs. The PAC includes 300 acres of the highest quality nesting habitat available, and the most recent nest site or activity center within a spotted owl breeding territory as described in management direction for the forest (USDA 2016). A PAC size of 300 acres corresponds with the following two criteria reported by Verner et al. (1992) in the California Spotted Owl report: 1) the size of the nest stand and adjacent suitable nesting stands; and 2) the area encompassing approximately 50% of radio-telemetry locations within spotted owl territories on the Sierra National Forest (USDA 2001). The amount of high and moderate capability nesting, roosting, and foraging habitat within each spotted owl PAC varies according to what is available, given existing conditions, on the forest. While there is forested land within the project area, none of it is moderate or high-quality spotted owl habitat according to the LTBMU's habitat model.

Occurrence/Survey History in Project Area

Approximately 5-6 pairs (17-18 individuals) of California spotted owls are known to occur in the Lake Tahoe Basin. No detections have occurred within 2 miles of the project area.

Fringed Myotis

The fringed myotis (*Myotis thysanodes*) is a Forest Service Sensitive species. The species is found in western North America from south-central British Columbia to central Mexico and to the western

Great Plains (Natureserve 2012). In California, it is distributed statewide except the Central Valley and the Colorado and Mojave Deserts and is associated with pinyon-juniper, valley foothill hardwood and hardwood-conifers (CWHR 2008).

The fringed myotis uses caves, crevices, cliffs, mines, large decadent trees, and bridges and buildings for roosting, hibernacula, and maternity colonies (Keinath 2004, Weller 2005, CWHR 2008). They day and night roost under bark and in tree hollows, and in northern California they day roost in snags only (Keinath 2004; Weller and Zabel 2001). Medium to large diameter snags are important day and night roosting sites (Weller and Zabel 2001). There is increased likelihood of occurrence of this species as snags greater than 30 cm in diameter increases and percent canopy cover decreases (Keinath 2004). Large snags and low canopy cover, typical of mature, forest habitat types, offer warm roost sites (Keinath 2004). Decay classes were two to four (Keinath 2004) in ponderosa pine, Douglas-fir, and sugar pine.

Habitat alteration threatens this species because it is dependent on older forest types. Keinath (2004) summarized this in the Region 2 conservation assessment for the fringed myotis, indicating that this species depends on abundant large diameter snags and trees with thick loose bark. Thus, harvesting old growth and removal of snags for safety or fuel reduction reasons may reduce available roost sites.

Occurrence/Survey History in Project Area

Recent detections of fringed myotis in 2014 have been recorded in the Spooner Summit area at an elevation of 7,000-7,600 feet, approximately 11 miles to the north of the Project area (NDOW 2014). No surveys have been performed for fringed myotis bats within the Project area. Large snags within the project area may be suitable for roost sites. No detections have been recorded within one mile of the project area.

Great Basin Rams-horn

Great Basin rams-horn (*Helisoma newberryi*) is a Region 5 Forest Service Sensitive Species. This aquatic pulmonate snail has hemoglobin in its blood and a secondary gill or pseudobranch, allowing it to occupy poorly oxygenated, but cold waters such as cold spring upwellings. It can be almost invisible to the casual observer even when abundant because it may burrow into muddy substrates. This species may be found in larger lakes and slow rivers, including larger spring sources and spring-fed creeks (Taylor 1981). In Eagle Lake, Lassen County, this species commonly occurs on top of sandy substrates at depths greater than 10 feet (3 meters) (Brim Box et al. 2005). Historically the species occurred in Lake Tahoe and the slow flowing outflow into the Lower Truckee River.

Occurrence/Survey History in Project Area

The population status of Great Basin rams-horn is currently unknown as no surveys have been conducted, however they have been detected in Lake Tahoe approximately 1,500 meters north of the Burke Creek mouth and there is a spring (Folsom Spring) with suitable habitat within the project area. Folsom Spring is within the project area.

Lahontan Cutthroat Trout

The Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*; LCT) was listed as an endangered species in 1970. In 1975, under the Endangered Species Act of 1973, the LCT was reclassified as threatened to facilitate management and to allow for regulated angling. In 1995, the U.S. Fish and Wildlife Service (FWS) released its recovery plan for LCT, encompassing six river basins within LCT historic range.

Historically, the Lahontan cutthroat trout was endemic to the physiographic Lahontan basin of northern Nevada, eastern California, and southern Oregon (USDI 1995). In California, the subspecies historically occurred in the streams and lakes of the Lahontan system, on the east side of the Sierra Nevada. The current distribution is a fraction of the historic distribution. Lake Tahoe's population was extinct by 1930. Since the summer of 2011, the Nevada Department of Wildlife (NDOW) and USFWS have planted LCT in the waters of Lake Tahoe where they are presumed to occur in the lake waters and tributary creeks as noted in **Tables 1 and 2** above. However, competition and inbreeding with introduced trout species, and predation by introduced species decrease the likelihood that this fish species occupies these streams (NNHP 2019).

Habitat Requirements and Natural History: Lahontan cutthroat trout are obligatory stream spawners and spawn from April to July, with eggs being deposited in one fourth to one half inch gravels within riffles, pocket water, or pool crests (USDI 1995). In the Sierra Nevada, native Lahontan habitat primarily consists of eastern high mountain meadow streams (over 6,000 feet elevation). Optimal habitat for LCT is characterized by: clear cold water and relatively stable summer water temperatures, with an average maximum summer temperature of less than 43 deg F to 72 deg F and variations of no more than 37 deg F; one to one pool to riffle ratios and a relatively silt free, rocky substrate in the riffle run area; well vegetated, stable stream banks; approximately 25 percent of the stream area providing cover; and relatively stable water flow regimes, with daily fluctuations less than 50 percent of the average annual daily flow (Hickman and Raleigh 1982).

Occurrence/Survey History in Project Area

Occupied habitat for LCT is present outside the proposed project area within the waters of Lake Tahoe and the Upper Truckee River and Taylor Creek (LTBMU 2016). Lake Tahoe is at the outfall of Burke Creek and immediately adjacent to the project area. Burke Creek provides suitable habitat but LCT are often not able to access Burke Creek during low flows as the mouth of the creek is blocked by the barrier beach system. After large hydrologic events (e.g., October 2021, December 2022, January 2023) the creek blows out the beach system and provides access to the creek from the waters of Lake Tahoe. The creek also flows into the waters of Lake Tahoe during spring flows, when LCT would most likely access the project area. No LCT have been observed during surveys in the Project area in 2012 and 2013 (USDA 2016).

Lahontan Lake tui chub

Lahontan Lake tui chub (*Gila bicolor pectinifer*) is a Region 5 Forest Service Sensitive Species. They occur in open water habitats, such as lakes, lagoons or river mouths and feed primarily on zooplankton. Tui chub populations have presumably declined as a result of introduction of non-native species, specifically kokanee salmon (*Oncorhynchus nerka*) and opossum shrimp (*Mysis relicta*), which, through predation and competition, have significantly reduced native zooplankton (Moyle 2002). Compounding these impacts are the illegal introductions of invasive warm-water fishes, specifically largemouth bass but potentially blue gill, crappie and brown bullhead catfish, which prey on juvenile chubs at their inshore rearing habitats (Kamerath et al. 2008).

Occurrence/Survey History in Project Area

Lahontan Lake tui chub are known to be present in Lake Tahoe and were found at the mouth of Burke Creek during fish assessment surveys in 2012 and 2013 (USDA Forest Service 2016).

Monarch Butterfly

The Monarch butterfly (*Danaus plexippus*) is a Candidate species under the ESA (listed 17 December 2020), and therefore also an LTBMU sensitive species. The monarch butterfly is a candidate species and not yet listed or proposed for listing. There are no section 7 requirements for candidate species however a discussion has been provided for this species below.

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic chemicals (cardenolides) as a defense against predators. The larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months (USFWS 2021). Monarch butterflies require a diversity of blooming nectar producing plants, on which they feed throughout their migration and on breeding grounds in addition to the milkweed noted above. In the western US, nectar and milkweed resources are often associated with riparian corridors.

Occurrence/Survey History in Project Area

There is potential habitat for monarch within the project area in the form of flowering plant species that produce nectar within the project area. No milkweed (*Asclepias*) species were observed during the plant survey of the project area. Detections of *D. plexippus* are known to occur within close proximity (within 1 mile) to the project site in Kingsbury Meadows in 1967 and in Bijou California in 1980 (gbif.us accessed January 2023). Suitable migration habitat is present onsite, however breeding habitat is not present due to the absence of milkweed species that is required for breeding.

American Goshawk

The American goshawk (*Accipiter atricapillus*) is a Forest Service Sensitive species. The species inhabits a broad range of forested communities, including mixed conifer, true fir, montane riparian, Jeffrey pine, ponderosa pine, and lodgepole pine forest. Within California, this species occurs in the Sierra Nevada, Klamath, Cascade, Inyo-White, Siskiyou, and Warner Mountains, and the North Coast Ranges (Zeiner, et al. 1990; USFS 2000). Goshawks may also inhabit suitable habitats in the Transverse Ranges and other mountainous areas in southern California (Zeiner, et al. 1990; USFS 2000). A study conducted in the Lake Tahoe region found that nest-site areas used by northern goshawks were characterized by high canopy closure, high densities of trees in the >60-100 centimeter and >100 centimeter diameter-at-breast-height (dbh) classes, low densities of 5-30 centimeter dbh trees, and low shrub/sapling and ground cover (Keane 1999). Other site factors, including northerly aspects, proximity to water or meadows, forest openings, and low slope angles, have also been associated with nest sites in numerous studies, although these factors vary widely (USFS 2000). Snags and logs are considered important

components of northern goshawk foraging areas, as they provide habitat for prey populations (USDA 1988b).

Northern goshawks are known to prey on over 50 species of birds and mammals throughout their western range (Graham et al. 1994). Prey size varies little between geographic regions (Boal and Mannan 1994). In the Lake Tahoe region, primary prey species include Douglas squirrel (*Tamiasciurus douglasii*), Steller's jay (*Cyanocitta stelleri*), northern flicker (*Colaptes auratus*), and ground squirrel (*Spermophilus* spp.). Other prey species include American robin (*Turdus migratorius*), blue grouse (*Dendragapus obscurus*), other woodpeckers, and other squirrels (Keane 1999).

The home range increases in size from the breeding season to the non-breeding season and is generally larger for males than for females throughout the year. During the breeding season, the average home range of goshawks in the LTBMU is 6,745 acres for males and 5,040 acres for females. Non-breeding season home ranges averaged 23,448 acres for males and 13,888 acres for females (Keane 1999). Home ranges include areas with a greater proportion of larger tree size classes and higher density classes than that randomly available across the landscape.

On Forest Service land in the Sierra Nevada, American goshawk nesting habitat is protected by the delineation of PACs. American goshawk PACs are delineated to include the best available 200 acres of nesting habitat, and the most recent nest site and alternate nests within a goshawk breeding territory as described in management direction for the forest (USDA 2016). The size of the PACs corresponds with criteria reported by Detrich and Woodbridge (1994) such that territory occupancy rates of approximately 100% were associated with clusters of nest stands totaling 150 - 200 acres (USDA 2001). The total acreage included in goshawk PACs on the LTBMU varies as "non-forest vegetation (such as brush and meadows) should not be counted as part of the 200 acres" (USDA 2004).

Occurrence/Survey History in Project Area

One PAC is located within one mile of the project site; Burke Creek PAC. This PAC had the most recent active nest in 1992 and the most recent American goshawk detection was in 2015. There was one detection within the project area in 1993 but more recent surveys have not resulted in detections.

Pacific Marten

The Pacific marten (*Martes caurina*) is a Forest Service Sensitive species. Distribution within the Sierra Nevada range is continuous at high elevations, at lower elevations there is a large gap (historic and current) in distribution in Tuolumne County and new large gaps where none were recorded previously (Zielinski et al. 2005).

Marten occur in suitable habitats throughout the Lake Tahoe Basin, predominantly on the western and southern sections (Spencer and Rustigian-Romsos 2012). Suitable montane habitats in the northern Sierra Nevada, including the Lake Tahoe basin, occur between 3,400 and 10,400 feet elevation and between 4,000 to 13,100 feet in the southern portion of the range (Schempf and White 1977). Suitable habitat is considered dense (60-100% canopy closure), multi-storied, multi-species late seral stage coniferous forest of red fir, red fir/white fir mixtures, lodgepole pine, and mixed conifer (Freel 1991). Complex structure near the ground surface and the presence of snags are also considered key components of suitable marten habitat.

The southern distribution of martens in the Lake Tahoe Basin is most likely a peninsular distribution, based on the urbanization in the southern part of the Basin. The Luther Pass area is likely where martens are able to travel through in a peninsular distribution from the southwest portion of the Basin. This area has no potential for input of martens from the north, south, or east due to the lack of suitable habitat combined with the high amount of urbanization (Slauson et al. 2017). Peninsular distributions of martens are more reliant on the existing conditions within their distribution to support their persistence than the west shore population, which is better connected regionally (Slauson et al. in prep).

Occurrence/Survey History in Project Area

The closest marten detection was from a camera station placed in Van Sickle State Park in 2010 approximately 1.5 miles to the south east of the project site (HBA 2010). No site-specific surveys for forest carnivores have occurred within the project area. Known Pacific marten occurrences have not been recorded within the project area.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a Forest Service Sensitive species. Throughout California, the pallid bat is usually found in low to middle elevation habitats below 6000 feet (Barbour and Davis 1969; Philpott 1997), however, the species has been found up to 10,000 feet in the Sierra Nevada Mountains. The range in California is statewide and it is predicted to occur on every National Forest in the Region (CWHR 2008).

At high elevation, the species is associated with conifer forests (Rambaldini 2005). Miner and Stokes (2005) suggest that riparian, chaparral, oak savannah, and cultivated areas are preferred habitat types, and Baker et al. (2008) further suggest open pine forest within higher elevations. CWHR (2008) suggest that all habitat types within California provide suitable foraging habitat for pallid bats and the following habitats found in the Lake Tahoe Basin provide suitable reproduction and roosting habitats: barren, mixed conifer, Sierran mixed conifer, urban, and white fir. Crevices in rock outcrops are the primary roost sites, although buildings, caves, tree hollows, and mines are also used (Hermanson and O'Shea 1983; Rambaldini 2005; Stephenson and Calcarone 1999; Miner and Stokes 2005; NatureServe 2011).

In forested habitats in the Sierra Nevada Mountains, Baker et al. (2008) found pallid bats in areas with greater availability of Sierran mixed conifer and white fir than open meadows, grasslands, barren areas, and montane chaparral. They caution, however that they were unable to discern actual habitat use at a finer scale. Johnston and Gworek (2006) found pallid bat activity in the Sierra Nevada Mountains greatest where there was open mixed conifer forest near short grassland habitat. Roosts located were primarily in incense cedar trees.

Occurrence/Survey History in Project Area

No surveys have been performed for pallid bats within the Project area. Suitable habitat is present within the project area. No detections have been recorded within one mile of the project area. Pallid bat are difficult to distinguish from big brown bat with acoustic data, therefore their presence may be missed as a result of past survey activity. Pallid bats have been observed within the Tahoe basin.

Sierra Nevada Yellow-Legged Frog

On 29 April 2014, the USFWS designated the Sierra Nevada yellow-legged frog (*Rana sierrae*) as an endangered species under the Endangered Species Act of 1973. Sierra Nevada yellow-legged frog inhabits ponds, lakes, and streams associated with montane riparian, lodgepole pine,

subalpine conifer, and wet meadow communities (Zeiner et al. 1988, Jennings and Hayes 1994). Open stream and lake margins that gently slope to a depth of about 2 to 3 inches appear to be preferred (Jennings and Hayes 1994). In the Sierra Nevada, this species' elevational range extends from approximately 4,500 to 12,000 feet (Stebbins 1985, Jennings and Hayes 1994). There are 157 acres of suitable habitat in the project area. Critical Habitat for this species is located 11.5 miles to the southwest of the project area in the Desolation Wilderness in the Sierra Nevada.

In the Sierra Nevada, breeding typically occurs from May to August depending on local conditions (Stebbins 1985). In still water environments, such as pools, eggs are deposited as unattached masses in shallow water; however, in streams the egg masses may be attached to the substrate (Jennings and Hayes 1994). Due to the short active season and the brevity of the intervals during which the aquatic habitat maintains warm temperatures, larvae (tadpoles) may over-winter up to two times before attaining metamorphosis (Mullally and Cunningham 1956, Jennings and Hayes 1994).

USFS and US Fish and Wildlife Service (USFWS) had a coordination meeting on January 11, 2022 to discuss a suite of projects that could require some level of consultation in FY22. Burke Creek Rabe Meadow Riparian Restoration Project was discussed. Sarah Muskopf and Chad Mellison (ESA Biologist USFWS) had a conversation regarding short term impacts to suitable habitat for Sierra Nevada yellow-legged frog on January 12, 2022. Based on a conversation with Chad Mellison (Reno Field Office) from the USFWS Sacramento Office, it was confirmed that projects in suitable habitat where no SNYLF have been detected after completing USFWS Biological Opinion protocols that have short term impacts to suitable habitat can reach a no effect determination with appropriate rationale.

Occurrence/Survey History in Project Area

157 acres of suitable habitat for Sierra Nevada yellow-legged frog (SNYLF) has been identified in the project area. Surveys have been performed in the Burke Creek project area by Sierra Ecotone Solutions LLC personnel in 2021 (three surveys: July 7, July 19, August 2), and 2016 (two surveys: June 15 and August 23). No Sierra Nevada yellow-legged frog were observed in either survey year. Known existing occurrences (Hell Hole) of Sierra Nevada yellow-legged frog are within 10 miles from the Project Area. No critical habitat exists in the project area. The nearest critical habitat is 11.5 miles from the project area.

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a Forest Service Sensitive species. This species occurs throughout the west, and is distributed from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the south and southeastern United States. It has been reported in a wide variety of habitat types ranging from sea level to 3,300 meters. Habitat associations include: coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types.

Distribution is strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity forming rock and/or historic mining districts. Its habit of roosting on open surfaces makes it readily detectable, and it is often the species most frequently observed (commonly in low numbers) in caves and abandoned mines throughout its range. It has also been reported to utilize buildings, bridges, rock crevices and hollow trees as roost sites. Summer maternity colonies range in size from a few dozen to several hundred

individuals. Foraging associations include: edge habitats along streams, adjacent to and within a variety of wooded habitats. It often travels large distances while foraging, including movements of over 10 miles during a single evening. It is a moth specialist with over 90% of its diet composed of lepidopterans.

Occurrence/Survey History in Project Area

No surveys have been performed for Townsend's big-eared bat within the Project area. Suitable foraging and roosting habitat is present within the project area. No detections have been recorded within one mile of the project area. Due to difficulty in the accuracy of auditory detections, this species may be underrepresented in past surveys within the Tahoe Basin. Townsend's big-eared bats have been detected within the Tahoe Basin.

Western Bumble Bee

The Western bumble bee (*Bombus occidentalis*) is a Forest Service Sensitive species. There are 94 collection records for the Western bumble bee on 11 national forests in Region 5, including seven on the LTBMU (Hatfield 2012). There is only one record of the western bumble bee on the LTBMU since 2000.

Historically, the western bumble bee was one of the most broadly distributed bumble bee species in North America (Cameron et al. 2011). The species was broadly distributed across western North America along the Pacific Coast and westward from Alaska to the Colorado Rocky Mountains (Thorp and Shepard 2005, Koch et al. 2012). Currently, the western bumble bee occurs in all states adjacent to California but is experiencing severe declines in distribution and abundance due to a variety of factors including diseases and loss of genetic diversity (Tommasi et al. 2004, Cameron et al. 2011, Koch et al. 2012).

The overall status of populations in the west is largely dependent on geographic region: populations west of the Cascade and Sierra Nevada mountains are experiencing dire circumstances with steeply declining numbers, while those to the east of this dividing line are more secure with relatively unchanged population sizes. The reasons for these differences are not known.

Bumble bees are threatened by many kinds of habitat alterations that may fragment or reduce the availability of flowers that produce the nectar and pollen they require, and decrease the number of abandoned rodent burrows that provide nest and hibernation sites for queens. Major threats that alter landscapes and habitat required by bumble bees include agricultural and urban development. Exposure to organophosphate, carbamate, pyrethroid and particularly neonicotinoid insecticides has recently been identified as a major contributor to the decline of many pollinating bees, including honey bees and bumble bees (Henry et al. 2012, Hopwood et al. 2012). In the absence of fire, native conifers encroach upon meadows and this can also decrease foraging and nesting habitat available for bumble bees.

Occurrence/Survey History in Project Area

No surveys have been performed for western bumble bees within the Project area or adjacent areas. Nothing is known about the status of the species in the project area. Suitable foraging habitat includes the riparian area surrounding Burke Creek and Rabe Meadow that supports a variety of flowering plants.

Willow Flycatcher

The willow flycatcher (*Empidonax trailii*) is a Forest Service Sensitive species on the LTBMU. This neotropical migrant species breeds within the contiguous United States, except the Southeast, and the southern margins of Canada (Green et al. 2003) and winters from Mexico to northern South America (USDA 2001). Three subspecies occur in California: *E. t. extimus* (southern California), *E. t. brewsteri* (north of Fresno County from the Pacific coast to the western slopes of the Sierra Nevada crest), and *E. t. adastus* (on the eastern slopes of the Sierra Nevada and Cascade ranges, including the Lake Tahoe basin – a watershed that drains to the east of the Sierra crest) (summarized in USDA 2000 and Greene et al. 2003). *E. t. adastus*, occurs and breeds on the LTBMU from May through September (summarized in USDA 2000 and Greene et al. 2003) and winters from the Mexican state of Colima to northwestern Venezuela (Unitt 1999 in USDA 2001).

Historically, this species likely occurred in suitable habitats throughout California (Grinnell and Miller 1944) and portions of Nevada including the central coast, Central Valley, Sierra Nevada, and Great Basin (summarized in USDA 2001). Willow flycatchers were common in the Sierra Nevada until as recently as 1910 and locally abundant through 1940 (summarized in USDA 2001). However, this species has declined precipitously in the Sierra Nevada since 1950 (summarized in Green et al. 2003). Urbanization and the draining, channelization, and filling of wetlands, grazing, mining, and pesticide-use are likely responsible for the decline in range and abundance of this species. Much of the suitable habitat within the Lake Tahoe basin has been developed since 1900; as much as 35 percent of streamside zones, 50 percent of meadows, and 75 percent of marshes were estimated to have been lost to development by 2001 (USDA 2001).

Livestock grazing, predation, and human activity have all been considered threats to flycatcher nesting habitat. Grazing has been essentially eliminated in the Lake Tahoe basin, assisting in the restoration of primary habitat for the species. However, grazing continues to be considered a suitable use on the LTBMU. Poorly managed grazing can alter the hydrologic and vegetative characteristics of meadows and contribute to poor quality habitat for nest selection and increased visibility (vulnerability) of nests to predation (Brookshire et al. 2002, Auble et al. 1994, Stanley and Knopf 2002, Scott et al. 2003). Nest predation is the leading cause of nest failure in willow flycatcher nests in the LTBMU (Mathewson et al. 2011). Human activity (presence of people, dogs, and vehicles) has also been found to be a significant impact to land birds, surpassing that of habitat loss from development (Schlesinger et al. 2008).

Willow flycatchers currently occur and breed in areas (e.g., Upper Truckee River watershed) where they were thought to have “all but disappeared” (USDA 2001), though at very low densities and with limited reproductive success. The recent extirpation of this species from Yosemite National Park, where suitable habitats are presumably better preserved than those located outside the park suggests that other factors may be contributing to the decline of this species in the Sierra Nevada (Siegel et al. 2008). Siegel et al. (2008) tentatively suggested that severe habitat degradation during the 19th century (due to grazing, which was discontinued in Yosemite National Park decades ago), meadow desiccation (due to global warming and resulting in earlier spring melt and a reduction in site wetness), disrupted meta-population dynamics, or conditions on the wintering grounds or along migration routes may explain the decline in Yosemite National Park.

The CWHR model describes high to moderate capability nesting habitats in the montane riparian vegetation type (high = 2D, 3D, 4M, and 4D; moderate = 2M, 3M); high to moderate capability perching habitats in the montane riparian vegetation type (high = greater than 2P; moderate = 2P); and high capability foraging habitat (no moderate capability habitats described) in the montane

riparian (all strata except 1 and 2S) and wet meadow (all strata) vegetation types for this species. However, as the CWHR model is not subspecies-specific and the local subspecies, *E. t. adastus*, is known to nest only in wet meadows in the Lake Tahoe Basin, high and moderate capability nesting habitat will include the wet meadow vegetation type (all strata) only for the purposes of this analysis.

An estimated 3,588 acres of high and moderate capability nesting habitat, 3,600 acres of high and moderate capability perching habitat, and 3,600 acres of high and moderate capability foraging habitat currently exist for willow flycatcher within the LTBMU.

In the Lake Tahoe basin, the breeding season generally occurs from late May or early June, when breeding birds arrive and establish territories, until the fledgling dependency period ends in the middle of September. Sanders and Flett (1989) reported the average territory size for a paired male willow flycatcher as approximately 0.84 acres (range = 0.145 to 2.19) in the central Sierra Nevada. This species typically nests from June 1 to August 31 and fledges young between July 15 and August 31. Fledglings remain in territories for 2-3 weeks after fledging (USDA 2004). However, these dates vary due to factors such as when willow flycatchers arrive on the breeding grounds, snow pack, late spring and summer weather, nest predation, and brown-headed cowbird parasitism (Green et al. 2003).

Occurrence/Survey History in Project Area

Historically there have been no willow flycatchers detected within the project area. The project area was surveyed in 2022 with no detections (Sierra Ecotone Solutions LLC, in prep) and partially surveyed in 2005 with no detections. The closest willow flycatcher detection was in 2005 in the Edgewood Creek drainage approximately 1.5 miles to the east.

6.2 Direct and Indirect Effects

Bald Eagle

No large trees are proposed for removal in association with the project. There are no active nest trees within the project area that will be impacted. Roosting bald eagle may be temporarily impacted as a result of construction equipment and restoration activities. As the project is located outside of known nesting sites, the Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for bald eagle.

California Spotted Owl

Habitat suitability for California spotted owls within the project area is considered low quality and the project will not result in effects to the species. The Project will not affect suitable habitat for owls or directly affect individuals, and is not likely to result in a trend toward Federal listing or loss of viability for the California spotted owl.

Great Basin Rams-horn

Folsom spring is outside any disturbance associated with the project. The downstream-most segment of Folsom spring just upstream of the confluence with Burke Creek will be modified slightly for a diversion channel to route flows away from Jennings Pond prior to partial backfill. This modification (no larger than 400 sq. ft. of channel) will result in minor disturbance to the bed of the channel and will be temporary. Work in this area will occur in the span of less than a week and will result in a low likelihood of impacts to this species. The spring will be protected from implementation effects resulting from this action because it is outside the disturbance area and therefore any Great Basin rams-horn that may be present in the spring would be protected.

The project has the potential to increase suitable habitat for the species by slowing streamflows through re-establishment of the active floodplain.

Lahontan Cutthroat Trout

The Project will result in long term beneficial effects to the suitability of the instream habitat for Lahontan cutthroat trout (LCT). Past surveys have not located LCT in the project area. Brook trout were observed within the project area. Brook trout are known to outcompete LCT and therefore due to their presence, the likelihood of LCT being present in Burke Creek is low. Under the existing condition, LCT may access Burke Creek during spring flows when the creek breaks through the beach system and flows directly into the open water of Lake Tahoe and after large hydrologic events. Because LCT have been actively stocked in Lake Tahoe and are spring spawners, they could utilize the project area. Additionally, the project will likely result in increased flows to the waters of Lake Tahoe through reestablishment of the creek with the floodplain in Rabe Meadow and elimination of the ditch that channels water away from Burke Creek. This increase of flows may result in greater opportunity for LCT to occupy the reaches of Burke Creek that are being restored.

Temporary impacts to Burke Creek between US Highway 50 and the waters of Lake Tahoe will occur during implementation activities. These impacts include dewatering of the creek, fish salvage actions, and disturbance to the bed and bank and reconstruction of the channel. Resource protection measures and BMPs will be implemented to mitigate short-term impacts. Suitable habitat in Burke Creek will improve because of project implementation. Actions will increase depth of stream environments, improve water quality, and decrease siltation in aquatic habitats. As noted in the 2016 Basin Wide Fish Assessment, brook trout (90% of the trout species caught) were observed in Burke Creek. Brook trout outcompete LCT and with their presence in the creek, it would be unlikely LCT would utilize Burke Creek. However, LCT may occupy Burke Creek and the waters of Lake Tahoe just downstream of the Project Area and have the potential to be impacted as a result. The project may affect Lahontan cutthroat trout due to the above noted project activities. The restoration will allow for increased flows to reach Lake Tahoe and will increase suitable habitat for the species.

Lahontan Lake tui chub

While Lahontan Lake tui chub is known to occur in Lake Tahoe it was observed at the existing mouth of Burke Creek. Burke Creek above the existing mouth itself is not tui chub habitat. Work at the existing mouth of Burke Creek will not occur below the lowest culvert in the Nevada Beach Campground. Relocation of flows away from the existing creek mouth to the new outfall will likely result in the degradation of habitat for tui chub at the existing creek mouth. The new channel of Burke Creek and associated channel mouth will result in increased habitat suitability and area for this species to forage through increased flows reaching Lake Tahoe. These flows will potentially result in a dynamic creek mouth and decreased time of the creek entering Lake Tahoe only as sub-surface flow. The restoration of the Burke Creek watershed as planned has the potential to result in an increase in biodiversity and may result in increases in zooplankton within the project area, thereby increasing habitat suitability for this species at the new creek mouth. The project will not adversely affect individuals but will improve habitat by reducing sediment running into Lake Tahoe and creating a new more open creek mouth with Lake Tahoe that will expand suitable habitat.

Monarch butterfly

Suitable foraging areas for monarch butterfly are located in the project area. The temporary impact resulting from the project through the loss of foraging area (flowering plants within the project site) is not likely to result in the loss of individuals. The project will result in an overall

increase in riparian habitat and will likely also result in an increase in the number of flowering plants. The completed project will result in a benefit to this species through the addition of potential nectar sources. Therefore, the Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of monarch butterfly.

American Goshawk

The project area contains moderate and small portions of high-quality habitat for American Goshawk (*Accipiter atricapillus*). American goshawk are unlikely to utilize the project area for foraging due to the high presence of human activity within the forested habitat adjacent to Burke Creek in the project area. As the project is located outside of a Protected Activity Center, the Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the American goshawk.

Pacific Marten

Currently forested areas with large diameter trees and rock piles adjacent to the project could support denning, and riparian areas provide foraging habitat for marten. Marten may not find the project area suitable for denning because of their proximity to large openings and active human usage with Lam Watah Trail in close proximity to, and bisecting the project area. However, marten are known to forage on the border of openings.

The Project would increase human traffic in the area during construction (summer season after the young are born) and increase the noise from both humans and equipment. The increased human presence during the summer months also coincides with marten breeding activity. These impacts will be minimized with implementation of resource protection measures that are listed above, notably WL - 7 that requires the project area and habitat adjacent to the project area be surveyed for reproductive activity before construction activities.

The project will result in increased biodiversity of plant and animal species in the immediate area through enhancement of riparian habitat. Marten may utilize the project area for foraging and may benefit from enhanced riparian habitat through the increase of prey species as a result of restoration. Prior to commencement of construction activities, the project area will be surveyed for marten den sites as outlined in the design feature WL – 7 above. If an active den site is located, a limited operating period will be implemented. The project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for Pacific marten.

Sierra Nevada Yellow-Legged Frog

The upper portion of the project area was previously analyzed in 2016 for the Burke Creek Highway 50 Crossing and Realignment Project (LTBMU 2015) that determined the project “may affect but is not likely to adversely affect” SNYLF. New direction as discussed above in Section 3 states “projects in suitable habitat where no SNYLF have been detected after completing USFWS Biological Opinion protocols that have short term impacts, specifically beneficial, to suitable habitat can reach a no effect determination with appropriate rationale”.

Protocol-level surveys (2016, and 2021) were performed within the project site. No SNYLF were detected in any of the surveys. The project site contains suitable habitat. The project will increase the length of the creek and wetland areas adjacent to the creek bed and will result in increased area suitable for SNYLF in the future. Impacts to the suitable habitat will be temporary in nature while the creek is dewatered, diverted and active grading of the creek bed and adjacent banks occurs. Upon completion of the project and subsequent growth of the proposed plantings and re-establishment of the sod and plants along the banks, the overall quantity and quality of the habitat will increase. As the project area is not occupied by SNYLF as shown from protocol surveys and

the known existence of non-native trout, known to predate, displace, and prevent the establishment of SNYLF, the Project will have no effect on the species. There will be only a temporary impact to the existing suitable habitat; however, the result of the restoration will be an overall increase in SNYLF habitat.

There is no critical habitat for SNYLF located within or adjacent to the project site. The closest critical habitat is located approximately 11.5 miles to the south west of the project area.

Townsend's big-eared bat, Fringed Myotis bat, and Pallid bat

Although no surveys have been performed in the Project area, the suitability of the surrounding habitat of the project leaves the possibility open for these species to be disturbed by project implementation. All three species are sensitive to human disturbance while roosting. Fringed Myotis bat and Pallid bat may roost under the bark of the large trees that are planned for removal. Townsend's big eared bat may occupy rock crevices or hollow trees adjacent to project activities that may be disturbed as a result of project implementation and construction. Inclusion of resource protection measure WL-6 will decrease the impacts to roost sites. Overall, the Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for Townsend's big-eared, fringed myotis or pallid bat.

Willow Flycatcher

The restoration will result in an overall increase in riparian habitat and health and increase the amount of willow flycatcher habitat. A total of 11 acres of marginal habitat exists within the project area. Small willows only have saturated soils in a high-water year in areas that are not influenced and occupied by beaver. The habitat is fragmented by recreational trails and the presence of humans and domestic animals further decreases the quality of habitat and increases chances for nest parasitism. Temporary impacts to the existing habitat will result during implementation of the project through the removal of willow vegetation and replanting and reconfiguring of the creek. Post restoration conditions will result in higher quality habitat for willow flycatcher as there will be more saturated soils and standing water as a result of re-establishment of the floodplain. As there are no known willow flycatchers occupying the project area, the Project would not directly affect individuals, and is not likely to result in a trend toward Federal listing or loss of viability for the willow flycatcher.

Western bumble bee

Suitable foraging areas for western bumble bee are located in the project area. The temporary impact resulting from the project through the loss of foraging area (flowering plants within the project site) is not likely to result in the loss of individuals. The project will result in an overall increase in riparian habitat and will likely also result in an increase in the number of flowering plants. The completed project will result in a benefit to this species through the addition of potential nectar sources. Therefore, the Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of Western bumble bee.

6.3 Cumulative Effects

Past, present and reasonably foreseeable future management of the area surrounding the Project site in the Burke Creek and Edgewood Creek watersheds, were analyzed to determine if a cumulative effect would exist when combined with the Burke Creek Restoration Project.

Cumulative timber losses that occur as a result of fire within and adjacent to the project vicinity would reduce available habitat for associated wildlife species and would compound the effects of the project. Lightning is the primary cause of fires in the upper elevations, while human-caused fires are more prevalent in the lower elevation areas that are more accessible to the public. The Caldor Fire burned within 5 miles of the project site and resulted in loss of suitable habitat for all wildlife species that occupied the area. The temporary increase in human use of the area as a result of construction activities may result in an increase in chances of fires within the project area during construction.

Expansion of the Nevada Beach Campground would potentially have a negative impact on the project area through the increase of human activity in the area. Currently the Lam Watah Trail sees high usage of people to walk the area, recreate and to access Nevada Beach. The potential future expansion of the campground would increase the number of people in the area that could result in a higher impact to the stream, wetland and habitat in the project site.

Timber thinning practices established by the Forest Service's Land Management Plan require the harvest of excess or unwanted trees within accessible immature stands where the cut trees can be harvested for consumptive purposes. The primary purposes of thinning are to maintain optimum growing conditions to assure healthy trees and to reduce the potential for rapid and intensive wildfire spread due to excessive fuel loading. Thinning would result in a minor cumulative impact associated with the Project as the project proposes to remove conifer encroachment from meadow areas.

The timber management practice standards and guidelines contained within the LTBMU LMP (2016) require that timber cuts be planned based on land allocations to decrease the potential of destructive wildfires and to preserve benefits for vegetative diversity, wildlife habitat, visual quality, recreation opportunities and watershed protection. Based on TRPA and Forest Service regulations, the enhancement of older stands would continue in the Lake Tahoe Basin and would result in an overall increase of late seral forest types associated with sensitive species habitat over time.

Aside from the minor loss of conifer habitat, the project will provide an overall increase in riparian and wetland habitat and offer beneficial effects to the aquatic environment. Temporary impacts during construction will result, however the benefits of the project far outweigh the impacts during implementation.

7. Determination

The determinations included in **Table 3** follow the guidelines and definitions established by the Pacific Southwest Region of the Forest Service (USDA 1996) for federally listed and sensitive species. The following determinations were found based on the description of the Project.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for bald eagle because project resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to

individuals), and any modifications to habitat would be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect but is not likely jeopardize the continued existence** of the California spotted owl as this species is not known to occupy or utilize the project area for nesting. No protected activity center for this species is within, or immediately adjacent to the project area.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for fringed myotis because project resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals), and any modifications to habitat will be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** of Great Basin rams-horn as suitable habitat for the species is in Folsom Spring just outside the project boundary and in the waters of Lake Tahoe. The project will result in minor impacts to the Folsom Spring channel near its confluence with Burke Creek.

The Project **will not affect** great gray owl because the Project is outside the current range of the species and there is no suitable habitat in the Project area.

The Project **may affect not likely to adversely affect** the Lahontan cutthroat trout due the potential for this species to occur in the project area, and the benefits of the project resulting in improved habitat suitability for this species, reduction in sediment loading and increased flows to the waters of Lake Tahoe.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** of Lahontan Lake tui chub as the existing mouth of Burke Creek is suitable habitat. The project will result in increased habitat suitability and area through the construction of the new creek mouth and an overall increase in water quality and decrease in sediment reaching the waters of Lake Tahoe.

The Project **may affect not likely to adversely affect** the monarch butterfly due to temporary nature of impacts associated with loss of foraging area/habitat during construction.

The Project **will not affect** North American wolverine because there is no suitable habitat in the Project area.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** of American goshawk as this species is not known to occupy or utilize the project area for nesting. No protected activity center for this species is within, or immediately adjacent to the project area.

For Pacific marten, direct impacts to individuals will be avoided by the implementation of resource protection measures (den site surveys). Therefore, the Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for the Pacific marten.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for pallid bat because project resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals),

and any modifications to habitat will be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **will not affect** Sierra Nevada red fox because there is no suitable habitat in the Project area.

The Project **will not affect** Sierra Nevada yellow-legged frog or critical habitat as there is no critical habitat within the project area. Surveys for Sierra Nevada yellow-legged frog verified that there are no Sierra Nevada yellow-legged frog are present in or within 11.5 miles of the project area. Additionally, non-native trout species are present in Burke Creek that are known to prey upon, displace and prevent establishment of Sierra Nevada yellow-legged frog. The project will benefit suitable habitat.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for Townsend's big-eared bat because project resource protection measures will protect individuals if they were detected in the project area (therefore no direct impacts to individuals), and any modifications to habitat will be relatively minor when compared to the availability of suitable habitat in the vicinity and the greater Lake Tahoe Basin.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for western bumble bee due to temporary nature of impacts associated with loss of foraging area/habitat during construction.

The Project **may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability** for willow flycatcher due to temporary nature of impacts associated with loss of foraging area/habitat during construction.

Table 3. Special-Status Terrestrial Wildlife and Aquatic Species and Effect Determinations				
Species	Known to Occur in Action Area	Suitable Habitat in Action Area	Legal Status¹	Determination²
Birds				
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Y	Y	Forest Service Sensitive Species	Project – MANL
California Spotted Owl (<i>Strix occidentalis occidentalis</i>)	N	Y	Federally Proposed Threatened Forest Service Sensitive Species	Project – NLAA
Great Gray Owl (<i>Strix nebulosa</i>)	N	N	Forest Service Sensitive Species	Project – NE
American Goshawk (<i>Accipiter atricapillus</i>)	Y	Y	Forest Service Sensitive Species	Project – MANL
Willow Flycatcher (<i>Empidonax traillii adastus</i>)	N	Y	Forest Service Sensitive Species	Project – MANL
Mammals				
Fringed myotis (<i>Myotis thysanodes</i>)	N	Y	Forest Service Sensitive Species	Project – MANL
North American wolverine (<i>Gulo gulo luscus</i>)	N	N	Federally Threatened Forest Service Sensitive Species	Project – NE
Pacific marten (<i>Martes caurina</i>)	Y	Y	Forest Service Sensitive Species	Project – MANL
Pallid bat (<i>Antrozous pallidus</i>)	N	Y	Forest Service Sensitive Species	Project – MANL
Sierra Nevada Red Fox (<i>Vulpes vulpes necator</i>)	N	N	Federally Endangered	Project - NA
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	N	Y	Forest Service Sensitive Species	Project – MANL
Fish				
Lahontan cutthroat trout (<i>Oncorhynchus clarkii henshawi</i>)	N	Y	Federally Threatened	Project – NLAA
Lahontan Lake tui chub (<i>Gila bicolor pectinifer</i>)	N	N	Forest Service Sensitive Species	Project – MANL
Amphibians				
Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)	N	Y	Federally Endangered	Project – NA
Critical Habitat for Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)	N	N	Federally Endangered	Project – NA
Invertebrates				
Great Basin rams-horn (<i>Helisoma (Carninifex) newberryi</i>)	N	N	Forest Service Sensitive Species	Project – MANL

Monarch butterfly (<i>Danaus plexippus</i>)	N	Y	Federal Candidate Forest Sensitive Species	Project – NLAA
Western bumble bee (<i>Bombus occidentalis</i>)	N	Y	Forest Sensitive Species	Project – MANL

¹Legal status:

Federal Candidate = Candidate species for federal listing by the USFWS under the Endangered Species Act.

Federal Threatened = USFWS listed as “Threatened” under the ESA

Forest Service Sensitive = Sensitive species listed by Region 5, US Forest Service. Regional Forester sensitive species list was revised on October 15, 2007.

²Determination

U.S. Fish and Wildlife Service listed species:

NA = The project will not affect the species or its designated critical habitat.

NLAA = May affect but is not likely to adversely affect the (name of species) or its proposed critical habitat

Forest Service sensitive species:

NE = The project will not affect the species.

MANL = May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

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Appendix A - USFWS species list



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
Phone: (775) 861-6300 Fax: (775) 861-6301

In Reply Refer To:

February 09, 2024

Project Code: 2022-0055187

Project Name: Burke Creek Rabe Meadow Riparian Restoration Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see [Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service \(fws.gov\)](#).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

PROJECT SUMMARY

Project Code: 2022-0055187
Project Name: Burke Creek Rabe Meadow Riparian Restoration Project
Project Type: Restoration / Enhancement - Wetland
Project Description: Perform restoration to Burke Creek and Rabe Meadow through modification to the stream, re-establishing flood plain, remove conifer encroachment, and filling of ditches.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@38.975733250000005,-119.94377724921527,14z>



Counties: Douglas County, Nevada

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Threatened
Sierra Nevada Red Fox <i>Vulpes vulpes necator</i> Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4252	Endangered

BIRDS

NAME	STATUS
California Spotted Owl <i>Strix occidentalis occidentalis</i> Population: Sierra Nevada No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7266	Proposed Threatened

REPTILES

NAME	STATUS
Northwestern Pond Turtle <i>Actinemys marmorata</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Sierra Nevada Yellow-legged Frog <i>Rana sierrae</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered

FISHES

NAME	STATUS
Lahontan Cutthroat Trout <i>Oncorhynchus clarkii henshawi</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3964	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the ["Supplemental Information on Migratory Birds and Eagles"](#).

1. The [Bald and Golden Eagle Protection Act](#) of 1940.
2. The [Migratory Birds Treaty Act](#) of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

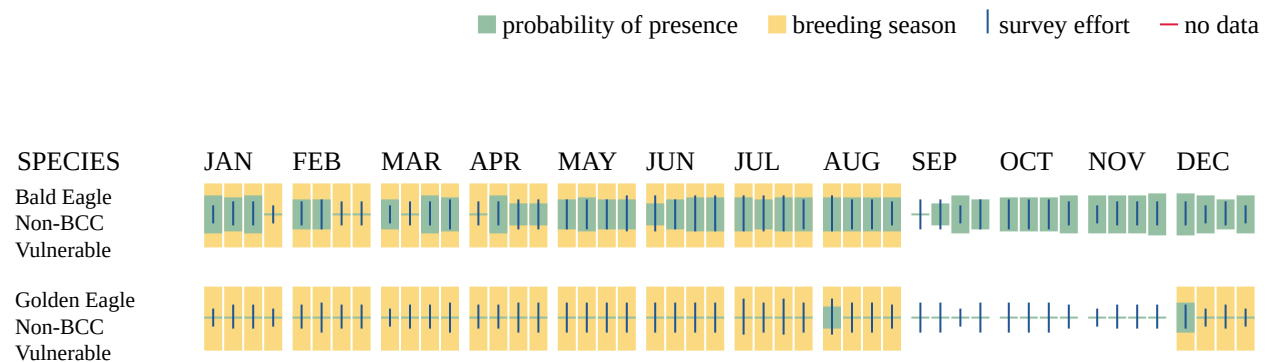
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<p>Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626</p>	Breeds Jan 1 to Aug 31
<p>Black-throated Gray Warbler <i>Dendroica nigrescens</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9584</p>	Breeds May 1 to Jul 20
<p>California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10955</p>	Breeds Mar 1 to Jul 31
<p>Cassin's Finch <i>Carpodacus cassinii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462</p>	Breeds May 15 to Jul 15
<p>Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10575</p>	Breeds Jun 1 to Aug 31
<p>Evening Grosbeak <i>Coccothraustes vespertinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9465</p>	Breeds May 15 to Aug 10
<p>Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680</p>	Breeds Dec 1 to Aug 31
<p>Lawrence's Goldfinch <i>Carduelis lawrencei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464</p>	Breeds Mar 20 to Sep 20
<p>Lewis's Woodpecker <i>Melanerpes lewis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408</p>	Breeds Apr 20 to Sep 30
<p>Long-eared Owl <i>asio otus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631</p>	Breeds Mar 1 to Jul 15

NAME	BREEDING SEASON
<p>Olive-sided Flycatcher <i>Contopus cooperi</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/3914</p>	Breeds May 20 to Aug 31
<p>Western Grebe <i>aechmophorus occidentalis</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/6743</p>	Breeds Jun 1 to Aug 31
<p>Willet <i>Tringa semipalmata</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/10669</p>	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

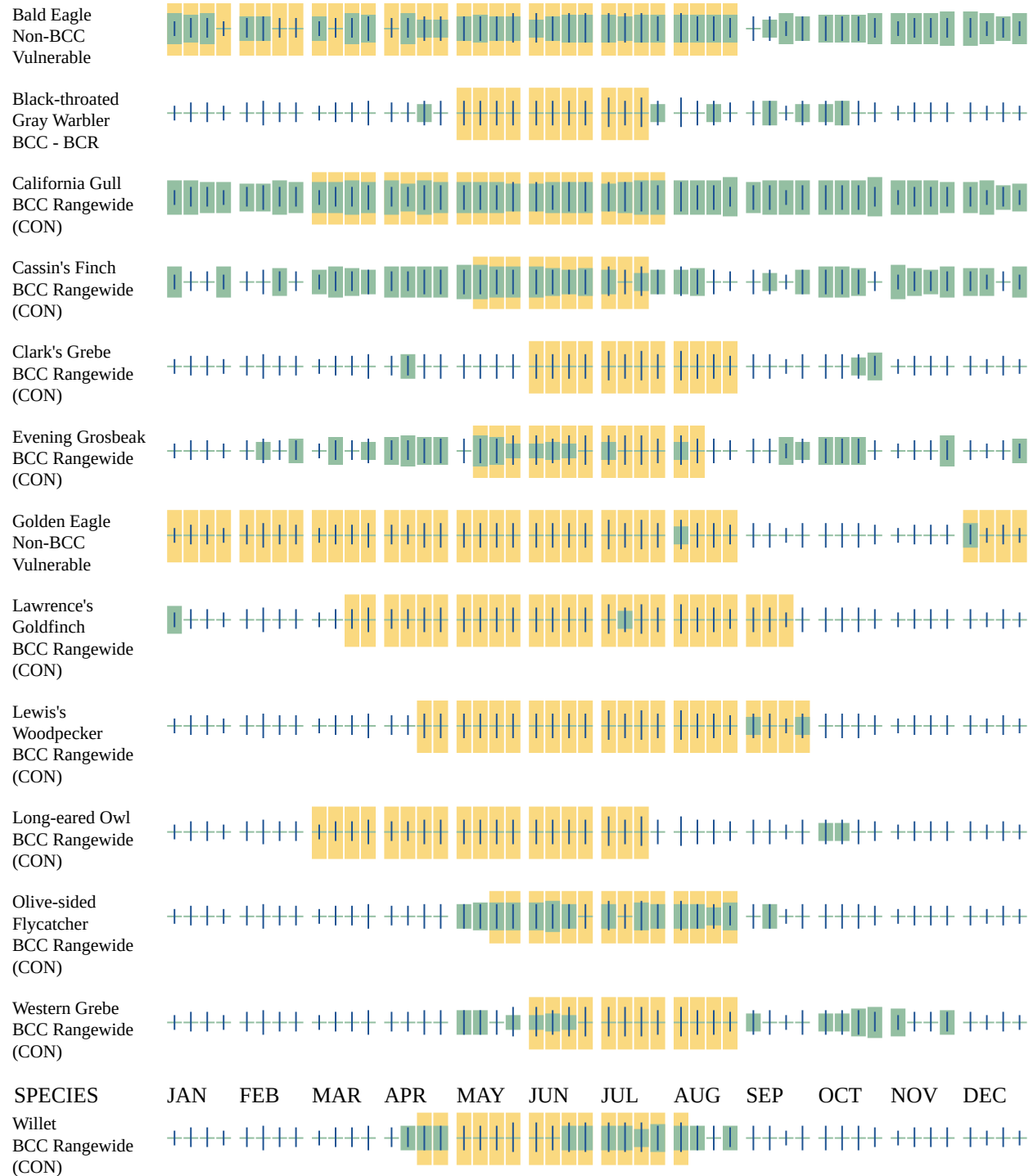
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort — no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>

- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1B
- PEM1A

FRESHWATER POND

- PUBFx
- PUBHx

FRESHWATER FORESTED/SHRUB WETLAND

- PSS1B
- PSS1A

RIVERINE

- R4SBA
- R4SBC

LAKE

- L1UBH

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Appendix B: SNYLF Programmatic Biological Opinion

1. Scientifically sound
2. Statistically robust
3. Probabilistic
4. Unbiased
5. Developed by an interdisciplinary team with expertise in
 - a. Ecology of the three montane amphibian species
 - b. Monitoring design and statistical analysis
 - c. Montane meadow ecology
 - d. Hydrology
 - e. Range ecology and management
 - f. Vegetation ecology and management
6. Conducted at scale(s) appropriate to questions posed and inferences made.
7. Specific measures regarding sampling, reporting and analysis periodicity (e.g. when, where, how often?)
8. Of sufficient duration within forest planning horizons, generally 10-15 years, to appropriately address the questions posed and inferences made, including any questions related to incremental and slow changes.

Although the goal is to design, fund and implement a cooperative inter-agency monitoring strategy, the Forest Service will retain the responsibility for oversight, implementation, analysis and reporting. The initial year of effectiveness monitoring (field season 2015) will be conducted largely as a pilot and used to refine methods, process, protocols, and other components.

Programmatic Conservation Measures

The following conservation measures are intended to avoid, and minimize, the effects of projects in the nine Forest programs on the Sierra Nevada yellow-legged frog, the Northern Distinct Population Segment of the mountain yellow-legged frog, and Yosemite toad,. These measures are the appropriate S&Gs and BMPs from the individual Forest Land and Resource Management as amended by the 2004 Sierra Nevada Forest Plan Amendment (USFS 2004), and Region 5 Hydrologic Best Management Practices. These S&Gs and BMPs are treated as minimums. Site-specific application of each will be tailored to exact project landscapes, topography, geology, soils, etc. and result in greater specificity, thereby providing more stringent protections for the three listed amphibians and their habitat. Some S&Gs and BMPs are designed to be implemented for all of the nine Forest programs, while others are specific to a single program. The majority of the conservation measures are intended to protect the three listed species, wildlife, and/or sensitive habitats. In addition to the S&Gs and BMPs, at the project level the nine Forests implement additional "Design Criteria" that specify how these will be implemented to meet site-specific desired conditions, such as avoiding or minimizing ongoing impacts to known occurrences of the three amphibian species. The Forest Biologist will work with the project manager to develop any minor project specific adjustments. These specific Design Criteria actions will be included as part of the Batch Process for individual projects. They also will be documented in a written report submitted after project completion to the Service.

1. General Measures: The following S&Gs and BMPs establish general guidelines that will be implemented for all nine Forest Service programs. Site-specific implementation measures that comport with these guidelines will be described for individual projects as they are proposed:

- a. Wheeled vehicles off designated routes, trails, and limited off-highway vehicle (OHV) use will be prohibited to reduce the risk of crushing, injuring, or disturbing individuals of the three listed amphibians (per S&G 69).
- b. Within critical aquatic refuges, occupied habitats, or areas proposed as Critical Habitat, mitigation measures to avoid impacts to the 3 listed amphibians will be implemented for ground disturbing equipment to reduce the risk of killing individuals and adversely affecting their habitat (per S&G 109). The measures may include avoiding the activity all together.
- c. Low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions will be implemented when needed to achieve Riparian Conservation Objectives in the written opinion of the Forest Biologist in order to minimize impacts to riparian conservation areas when operating off of existing roads. The measures include minimizing construction of skid trails or roads for access into riparian conservation areas for fuel treatments, salvage harvest, or hazard tree removal (per S&G 113).
- d. Prescribed fire treatments will be designed to minimize disturbance to ground cover and riparian vegetation in riparian conservation areas (per S&G 111). Further, no prescribed fires will be lit within riparian vegetation (per S&G 109).
- e. The use of low velocity water pumps and screening devices for pumps (per S&G 110) will be utilized during drafting for project treatments to preventing mortality of eggs, tadpoles, juveniles, and adult frogs.
- f. Pesticide application within riparian conservation areas, for example to control invasive species or promote reforestation, will be limited to situations where the application is consistent with riparian conservation objectives (per S&G 97). The applications will be designed to avoid adverse effects to individuals and aquatic habitats of the three amphibian species where application is within 500 feet of occupied sites (per S&G 98).
- g. Fuels and other toxic materials will be stored outside of riparian conservation areas and critical aquatic refuges (per S&G 99) to limit the exposure of the three amphibian species to the toxic materials associated with vegetation management activities.
- h. If management activities are proposed in a CAR or RCA, site-specific mitigation measures will be designed to (1) minimize risk of sediment entry into aquatic systems and (2) minimize impacts to habitat for aquatic- and riparian-dependent species (per S&G 92).
- i. Mechanical ground-disturbing activities may occur within RCAs and CARs when the activity is consistent with riparian conservation objectives (per S&G 113). Potential adverse effects will be minimized by a requirement to utilize low ground pressure equipment, helicopters, over snow logging or other non-ground disturbing methodologies when operating off of existing roads. BMPs will be applied, and construction of new skid roads or trails into these areas minimized.
- j. When a project results in riparian vegetation being outside the range of natural variability to an extent that the three listed amphibians and/or their habitats may be negatively affected,

design criteria will be incorporated to mitigate effects or restore to riparian vegetation to the natural range of variability during project implementation (per S&G 105).

- k. Disturbance will be limited to 20 percent or less of streambanks and natural lake shorelines to reduce the impacts to cover in aquatic habitats (per S&G 103). This is measured as a percent of stream reach or lake/pond shoreline affected by management activities such as bank sloughing, chiseling, trampling, or other means of exposing bare soil or cutting plant roots.
- l. In CARS or RCAs, proposed management activities will increase or decrease frequency and distribution of coarse woody debris so that they more closely match levels within the range of natural variability in order to sustain stream channel physical complexity and stability (per S&G 108).
- m. Native vegetation cover will be enhanced by various techniques including planting, seeding, soil stabilization, after wildfires to reduce the effects on wildlife and their habitats (per S&G 112). Seeds or cuttings will be obtained from appropriate local native plant species.
- n. Management activities will not adversely affect water temperatures required for local species, including the three amphibian species (per S&G 96).
- o. For projects that could adversely affect streams to the extent that the three listed amphibians and/or their habitats may be negatively affected, and the streams are already outside the range of natural variability, mitigation measures and short-term restoration actions will be implemented to prevent declines and/or improve conditions. Long-term restoration actions will be evaluated and implemented according to priority (per S&G 102), which includes adverse impacts to listed species.
- p. Forests will prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, forests will survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles (per S&G 118).
- q. Culverts and stream crossings will not create barriers except for the benefit of the three Sierra Nevada amphibians. Water drafting sites will be located to avoid adverse effects to instream flows and depletion of pool habitat. Where possible, maintain and restore timing, variability and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features (per S&G 101).
- r. Corrective actions will be implemented when needed to restore hydrologic connectivity of aquatic systems that are disrupted by roads (per S&G 100).
- s. When permits, if any, are re-issued, measures to minimize sedimentation will be evaluated and included as necessary (per S&G 93).

- t. Actions consistent with S&Gs and the desired conditions of aquatic habitats will be implemented after identifying and evaluating adverse effects of recreation-associated activities (per S&G 116).
- u. When gathering of pack stock is necessary, such as an overnight pack stock trip, new facilities will be located outside of meadow and riparian conservation areas to reduce the risk of directly killing or injuring individuals and impacting these habitats (per S&G 119).

Program Specific Conservation Measures

1. The following S&Gs and BMPs will be specifically implemented for the **Timber Harvest, Vegetation Management, Fuels Management, and Watershed Restoration** Programs. These conservation measures will be included as part of the individual projects that can be appended to this programmatic biological opinion.
 - a. Protection needs will be established with appropriate restrictions and mapped prior to commencement of operations (per BMP 1.4). This includes wetlands, meadows, lakes, springs, streamcourse protection zone widths, etc.
 - b. A limited operating period may be established to ensure that negative impacts to resources may be avoided; contract provisions can also be used to close down operations during adverse operating conditions (per BMP 1.5)
 - c. The size and shape of regeneration harvest units will be established to prevent erosion and sediment in order to protect fish, wildlife and other resource needs including the three listed amphibians (per BMP 1.7).
 - d. An emergency response plan will be created and implemented to prevent contamination of waters from accidental spills of hazardous substances (per BMP 7.4).
 - e. Water quality and hydrologic considerations as evaluated by a trained earth or water scientist will be incorporated into the timber sale planning process (per BMP 1.1).
 - f. Fire and fuels management activities in the form of preventative, corrective and administrative measures include the use of prescribed fire or mechanical methods to achieve resource objectives to reduce flooding and erosion perturbations. This may be achieved by managing the frequency, intensity and extent of wildfire (per BMP6.1). Where operations disturb the soil, a vegetative ground cover will be established to prevent erosion and sedimentation (per BMP 1.15)
 - g. Harvested or managed areas will be revegetated within five years to contain the minimum number, size and species composition specified in regional silvicultural guides for each forest type. This protects water quality by helping to stabilize soils, increasing ground cover and providing improved infiltration (per BMP 1.23).
 - h. Soil erosion will be minimized to protect water quality via the stabilizing influence of vegetation foliage and root networks. Surface-disturbed areas will be revegetated with grass

or browse species between previously planted trees as needed for control of overland runoff and to meet wildlife needs (per BMP 5.4).

- i. Forests will maintain desirable stream channel characteristics and watershed conditions to ensure favorable conditions of water quality and quantity and maintain habitat for three listed amphibians. In designing harvest units, size and distribution of natural structures, such as snag and down logs, will be considered to prevent erosion and sedimentation (per BMP 1.2).
- j. High-erosion hazard areas will be identified pre-project to adjust treatment measures and prevent downstream water-quality degradation (per BMP 1.3).
- k. Unstable lands will be protected by providing special treatment of these areas to avoid triggering mass slope failure with resultant erosion and sedimentation (per BMP 1.6).
- l. Tractor logging will be avoided where the predicted, post-logging erosion hazard cannot be reduced to either "low" or "moderate." The careful control of skidding patterns will serve to avoid onsite and downstream channel instability, build-up of destructive runoff flows, and erosion in sensitive watershed areas such as meadows and Streamside Management Zones (per BMP 1.9; per BMP 1.10).
- m. The soil mantle will be protected from excessive disturbance to maintain the integrity of the Streamside Management Zones and other sensitive watershed areas, and control erosion on cable corridors. Heavy machinery will not be used over the sale area to reduce the amount of soil disturbance. Erosion-control measures will be applied as necessary in cable corridors to control erosion and runoff (per BMP 1.11).
- n. Locate new log landings or reuse old landings located in such a way as to avoid watershed impacts and associated water quality degradation. Landing locations will be selected that involve the least amount of excavation and the least erosion potential, and to the extent feasible are well outside of the Streamside Management Zone; near the ridges away from headwater swales in areas that will allow skidding without crossing channels; and avoid violating the Streamside Management Zone, or causing direct deposit of soil and debris to the stream. The Sale Administrator will work with the Forest Biologist and the IDT when considering landings that do not meet these criteria. Landings will be located where the least amount of skid roads will be required, and sidecast can be stabilized without entering drainages or affecting other sensitive areas. Landings will be positioned such that the skid road approach will be as nearly level as possible to promote safety, and protect the soil from erosion. The number of skid trails entering a landing will be kept to a minimum (per BMP 1.12).
- o. The Forest Service will ensure that purchasers and their sub-contractors understand and adhere to water-quality BMP prescriptions formulated during the timber sale planning process to prevent and control erosion during timber sale operations. This will be accomplished by setting forth the purchaser's responsibilities in the timber sale contract, and holding the purchaser accountable for actions of their sub-contractor (per BMP 1.13).

- p. Appropriate erosion and sedimentation protection for disturbed areas will be provided by spreading slash, mulch, wood chips, or, by agreement, some other treatment, on portions of tractor roads, skid trails, landings, cable corridors or temporary road fills (per BMP 1.14).
- q. Erosion will be minimized by ensuring that constructed erosion-control structures are stabilized and working (per BMP 1.20)
- r. The Forest Service's formal acceptance of erosion control work by the sale purchaser will be required to ensure the adequacy of required erosion-control work on timber sales (per BMP 1.21).
- s. Water quality will be maintained or improved by protecting sensitive areas from degradation which likely would result from using mechanized equipment for slash disposal. Special slash treatment site preparation will be prescribed in sensitive areas (including areas with habitat for the three listed amphibians) to facilitate slash disposal without use of mechanized equipment (per BMP 1.22).
- t. Use of mechanized equipment will be prohibited from sensitive areas in meadows, wetlands, Streamside Management Zones, and landslide areas (per BMP 1.22, per BMP 1.8, and per BMP 1.1).
- u. For soil disturbing treatments other than timber harvest (cover by other BMPs), preventative measures will be implemented that decrease sediment production and stream turbidity resulting from management activities e.g., disking, seed drilling, windrowing, that mechanically treat slopes. Preventative measures that will limit surface-disturbance activities will be identified for each specific site based on the slope, infiltration rate, permeability, and water-holding capacity of the soil of the site. Examples of preventative measures include extra ground cover requirements and/or buffers of streams and/or riparian areas for mechanical treatment (per BMP 5.1).
- v. During project planning, slope limitation will be established for tractor use to reduce gully and sheet erosion and associated sediment production. This is a preventive measure to limit excessive surface disturbance and prevent surface water from concentrating. This measure facilitates making allowances for proper drainage of disturbed areas by limiting tractor operation to slopes where corrective measures such as water bars can be effectively installed (per BMP 5.2).
- w. Watersheds will be restored to repair degraded watershed conditions and improve water quality and soil stability. Watershed restoration is a corrective measure to improve ground cover density; improve infiltration; prevent excessive overland runoff and conserve the soil resource; stabilize stream banks and stream channels; improve soil productivity; reduce flood occurrence and flood damage; and improve overall watershed function (per BMP 7.1)
- x. The designations of SMZs will minimize the potential for adverse effects from adjacent management activities. Management activities within these zones are designed to improve riparian values and to protect the three listed amphibians. The SMZ will be a zone of total exclusion of activity, or a zone of closely managed activity that acts as an effective filter and

- absorptive zone for sediment; maintains shade; protects aquatic and terrestrial riparian habitats; protects channel and streambanks; and promotes floodplain stability (per BMP 1.8).
- y. Damage to the ground cover, soil, and the hydrologic function of meadows will be avoided to protect meadows. Unless otherwise agreed, trees felled into meadows will be removed by end-lining, with slash removed, and the resulting disturbance will be repaired where necessary to protect vegetative cover, soil, and water quality (per BMP 1.18).
 - z. In order to protect streamcourses and aquatic areas where diversion of the stream has resulted from timber management, unobstructed passage of stormflows will be provided, sediment and other pollutants entering streamcourses controlled, and the natural course of any stream restored as soon as practicable (per BMP 1.19).
 - aa. Tractor operations will be limited in wetlands and meadows. In order to limit turbidity and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion use of mechanical equipment will be excluded in wetland and meadows except for the purpose of restoring wetland and meadow functions. Sediment and other pollutants will be controlled from entering streamcourses. The application of this BMP will be mandatory on all vegetation-manipulation projects as prescribed in the environmental documentation (per BMP 5.3). Specific protection measures will be established for each area that could incur adverse water-quality impacts (per BMP 1.18).
 - bb. Water-quality will be protected during the implementation of prescribed fires. The prescription will include at the watershed- and subwatershed-scale, the optimum and maximum burn block size, aggregate burned area, acceptable disturbance for contiguous and aggregate length for the Riparian/Streamside Management Zones; and expected fire return intervals and maximum expected area covered by water-repellant soils. (per BMP 6.2)
 - cc. Water quality will be protected from prescribed burning effects by maintaining soil productivity; minimizing erosion; and minimizing ash, sediment, nutrients, and debris from entering water bodies (per BMP 6.3). Some of the techniques that will be used to prevent water-quality degradation include constructing water bars in fire lines, reducing fuel loading in drainage channels; and maintaining the integrity of the Streamside Management Zone within the limits of the burn plan.
 - dd. Where possible, any long- and short-term adverse impacts to water quality associated with the occupancy and modification of floodplains will be avoided. Factors that will be evaluated include, environmental quality, ecological effects, and individual safety and health will be considered as well as flood frequencies, watershed conditions, climatic and environmental factors associated with past flood events, flood flow quantities and specific flood boundaries (per BMP 7.2).
 - ee. Adverse water-quality impacts associated with destruction, disturbance, or modification of wetlands will be avoided (per BMP 7.3). Factors that will be evaluated include, but are not limited to, water supply, water quality, recharge areas, functioning of the wetland during flood and storm events, flora and fauna, habitat diversity and stability, and hydrologic function of riparian areas.

- ff. A water quality monitoring plan will be part of an environmental document, a management plan, or a special use permit, or it will be developed in response to other needs to evaluate the implementation and effectiveness of a management prescription in protecting water quality (per BMP 7.6).
 - gg. Management by closure to seasonal, temporary, and permanent use will be used to exclude activities that could result in damages to either resources or improvements, including impaired water quality from roads and trails (per BMP 7.7). Closure to use will occur when the condition of the watershed must be protected to preclude adverse water-quality effects and adverse impacts to the three listed amphibians (per BMP 1.5; per BMP 2.9).
 - hh. For any new proposed action or activity that may affect water quality, the Forest Service will examine all past, present, and future activities in a sub-watershed that may have a cumulative effect to water quality and beneficial uses (uses specified in water quality standards for each water body or segment), including the three listed amphibians if present in the sub-watershed or downstream. This Cumulative Watershed Effects (CWE) analysis is guided by considerations such as: whether the proposed activity along with other activity in that sub watershed exceed thresholds and are the risks to water quality are too great; whether the action can be deferred to let the watershed recover before implementation; and whether the short-term risks are acceptable, with added mitigation, given the long-term benefits (e.g., mechanical treatment of fuels may cause some short-term risk to water quality which may be acceptable if the treatment can prevent the greater impacts of a future large, high severity wildfire). The CWE process greatly facilitates development of appropriate mitigation measures/design criteria to avoid adverse effects to the three listed amphibians (per BMP 7.8).
2. The following S&Gs and BMPs will be specifically implemented for the **Road and Trail Maintenance** Program. These conservation measures will be included as part of the individual projects that can be appended to this programmatic biological opinion.
- a. To protect hydrologic values and aquatic species water source development and utilization will follow specific criteria for the location of drafting sites, procedures for drafting operations, as well as approaches and drafting pads (per BMP 2.5).
 - b. The Forest Service will minimize water, aquatic, and riparian resource disturbances that may affect individuals of the three amphibian species and related sediment production when constructing, reconstructing, or maintaining temporary and permanent water crossings (BMP 2.8). Specifications for stream crossing areas and design, construction/reconstruction of permanent and temporary crossings, as well as maintenance of these crossings included in 36 technical specifications listed in BMP 2.8 will be followed.
 - c. Measures described in BMP 2.11 to prevent adverse effects from fuels, lubricants, cleaners, and other harmful materials that are discharged into nearby surface waters or infiltrate through soils to contaminate groundwater resources on skin-respiring amphibians resulting from equipment refueling and servicing will be implemented.

Appendix C: Dewatering Plan

Appendix D: Bd (*Batrachochytrium dendrobatidis*) Disinfection Protocol

Disinfection of Field Gear

All field gear (footwear, nests, etc) that comes in contact with water is disinfected using a 0.016% solution of quaternary ammonia between meadows greater than 100 m apart to prevent the spread of amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) and other potential pathogens (Johnson et al. 2003).

Gear should be disinfected between any meadows more than 100m apart. When moving among hydrologically connected sites (less than 100m) disinfection is probably neither useful nor practical.

However, if travelling across steeper topography with significant cascades or barriers to amphibians, such as ridges, then err on the safe side and disinfect. For example, disinfect between Upper and Lower Kerrick, or between Upper and Lower Cathedral Lakes, or between significant reaches of Lyell Canyon. For this same reason, when possible, survey large meadows from the higher end to the lower end.

At the site which you are leaving, rinse all infected gear to remove mud and debris. Then mix 7 eye drops of Quat 256 per liter of water, in a drybag, and immerse and saturate all contaminated gear for 5 minutes, mixing occasionally. Do this away from water.

Discard the quat mixture in broken-down organic soil in a non-vegetated area away from water. A trail path often works well. Cover lightly with soil.

Continue to your next survey location. When you arrive, retrieve enough water from the meadow (using your dry bag) to rinse your disinfected gear. Discard the rinse water as carefully as you would the original disinfecting quat mixture.

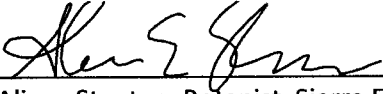
For Further Reference see: http://www.parcplace.org/Bd_conference.html

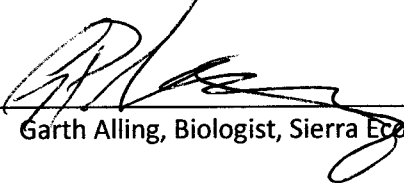
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT

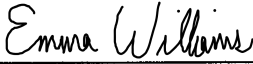
**BIOLOGICAL EVALUATION
OF BOTANICAL SPECIES**

Burke Creek Rabe Meadow Riparian Restoration Project

March 2024

Prepared by:  Date: 3/6/24
Alison Stanton, Botanist, Sierra Ecotone Solutions

Prepared by:  Date: 6 MAR 2024
Garth Alling, Biologist, Sierra Ecotone Solutions

Reviewed by:  Date: 3/11/2024
Emma Williams, Forest Botanist

SUMMARY OF EFFECTS

The Burke Creek Rabe Meadow Riparian Restoration Project (Project) includes suitable meadow and riparian habitat for the following Forest Service Region 5 Sensitive Plant species: *Botrychium ascendens*, *Botrychium crenulatum*, *Botrychium minganense*, *Botrychium montanum*, *Bruchia bolanderi*, and *Ivesia sericolueca*.

It is my determination that the Project **will not affect** *Botrychium ascendens*, *Botrychium montanum*, or *Ivesia sericolueca*. This determination is based on a) no occurrences were detected within the Project Area during pre-implementation surveys; b) suitable riparian and meadow habitat for *B. ascendens* and *B. montanum* did not contain incense cedar, which is a component of suitable habitat on the LTBMU; and c) volcanic soils, which are characteristic of suitable habitat for *Ivesia sericolueca*, are not present.

It is my determination that the Project **may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability** of the following 3 species: *Botrychium crenulatum*, *B. minganense*, and *Bruchia bolanderi*. This determination is based on a) the lack of known occurrences within the Project Area; b) impacted suitable meadow/riparian habitat would have an expected vegetation recovery period of 3 years; c) the Project is expected to result in the long-term improvement of hydrological conditions and meadow/riparian habitat quality; and d) the implementation of pre-construction inventory and protection measures for individuals that could be present.

It is my determination that the Project **may affect individuals, but is not likely to result in a trend toward Federal listing or a loss of viability** for Tahoe yellow cress (*Rorippa subumbellata*; TYC). This determination is based on a) direct impacts to extant TYC stems in the existing outlet of Burke Creek and Kahle Ditch would be avoided during project construction; b) indirect effects from change in habitat condition at the outlet of Kahle Ditch would be mitigated by the translocation of those stems and/or planting of container-grown TYC; c) translocation and out planting have been successfully utilized at this location in the past; d) the creation of a new alignment of Burke Creek is anticipated to result in a net gain of high quality habitat for TYC which would mitigate the removal of habitat from Kahle Ditch and potential loss of habitat quality in the existing mouth of Burke Creek; e) the improved habitat conditions will increase the probability that TYC can persist over the long term under changing lake levels; f) resource protection barriers will provide protection from recreation impacts at the new channel; and f) post-project monitoring and management will ensure that TYC can continue to persist in this location in the future.

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Appendix A Burke Creek Rabe Meadow plant species list

Appendix B Invasive Plant Risk Assessment

Appendix C Assessment of Other Botanical Resources

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Table 2. Acreages of California Wildlife Habitat Relationships (CWHR) habitat types in the Project Area and percent potentially impacted

Table 3. Forest Service Region 5 Sensitive Plant Species Occurrence Summary for the Burke Creek Rabe Meadow Restoration Project

Table 4. Tahoe yellow cress stem counts from Nevada Beach and Tahoe Beach Club from 1978-2022

LIST OF FIGURES

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1 INTRODUCTION

The Burke Creek Rabe Meadow Riparian Restoration Project (Project) is located primarily on land managed by the US Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) but is being designed and managed by the Nevada Tahoe Conservation District (NTCD) under a participating agreement with the LTBMU. A small part of the Project is located on adjacent private property owned by the Tahoe Beach Club. The purpose of the Project is to implement restoration to improve water quality and restore riparian and meadow vegetation to improve aquatic and terrestrial habitats. A central component of the Project is to re-align Burke Creek into a new high-sinuosity channel with a new outlet to Lake Tahoe and create a restored floodplain within Rabe meadow to create a more natural hydrology. The Project will also decommission several man-made features including the Kahle Ditch, Jennings Pond, and remnant ditches and restore them to historic upland and meadow habitat. Other Project components include a new stormwater retention basin, a new access road to an existing sewer pump station, construction of utility infrastructure with new access routes, and recreational improvements.

The purpose of this Biological Evaluation (BE) is to provide an analysis of the Project activities to determine whether they have the potential to affect the viability of any special status plant, lichen, and fungi species or their habitats. Special status species include Federally Endangered, Threatened, Proposed and Candidate species, and species on the Forest Service Region 5 Sensitive Plant List (collectively referred to as TEPCS botanical species). This BE provides the means to conduct this review, analyze the significance of potential adverse effects, and determine how negative impacts will be minimized or avoided for species whose viability may be affected.

The objectives of a BE are to:

- ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or animal species or contribute to a trend toward Federal listing;
- comply with the requirements of the Endangered Species Act that actions of the Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species; and
- provide a process and standard through which TEPCS species receive full consideration in the decision-making process.

2 CURRENT MANAGEMENT DIRECTION

2.1 FEDERAL LAW AND FOREST SERVICE DIRECTION

Endangered Species Act (16USC 1531 et seq.): This biological evaluation is being prepared in accordance with the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.). Under this act, federal agencies must ensure that any action authorized, funded, or carried out by the agency is not likely to (a) jeopardize the continued existence of any listed species or (b) result in the destruction or adverse modification of a listed species' designated critical habitat. Section 7 of the act requires federal agencies to consult the U.S. Fish and Wildlife Service concerning listed (i.e., threatened or endangered) plant species that fall under their jurisdiction.

Forest Service Manual, Section 2670 (USDA 2005): Forest Service Manual (FSM) Section 2672.41 requires a biological evaluation (BE) and/or biological assessment (BA) be conducted for all Forest

Service planned, funded, executed, or permitted programs and activities. The objectives of this BE are to: ensure that Forest Service actions do not contribute to the loss of population viability of any native or desired non-native species or contribute to trends toward federal listing; comply with the requirements of the Endangered Species Act (ESA) so that federal agencies do not jeopardize or adversely modify critical habitat (as defined in ESA) of any federally listed species; and, provide a process and standard to ensure that federally threatened and endangered and Region 5 Sensitive species receive full consideration in the decision-making process.

LTBMU Land Management Plan (LMP) (USDA 2016): directs the LTBMU to manage the viability of sensitive botanical species and to ensure that these species do not become threatened or endangered because of Forest Service activities. The primary purpose of the direction is to assure that existing habitat of these species is adequately protected and that additional habitat is provided to perpetuate the species. This direction implements the protections legislated in the National Forest Management Act and the Endangered Species Act.

2.2 REGIONAL DIRECTION

Tahoe Regional Planning Agency (TRPA) Code of Ordinances (TRPA 2012): directs the agency to conserve threatened, endangered, and sensitive plant species and uncommon plant communities and delineates five plant species as sensitive: *Rorippa subumbellata* (Tahoe yellow cress); *Bochera* (*Arabis*) *rigidissima* var. *demota* (Galena Creek rock cress); *Lewisia longipetala* (long-petaled Lewisia); *Draba asterophora* v. *macrocarpa* (Cup Lake draba); and *Draba asterophora* v. *asterophora* (Tahoe draba). Projects and activities in the vicinity of sensitive plants and their associated habitat that are likely to harm, destroy or otherwise jeopardize plants or habitat are prohibited, unless their significant adverse effects are fully mitigated.

3 DESCRIPTION OF THE PROJECT

3.1 PROJECT LOCATION

The Burke Creek Rabe Meadow Riparian Restoration Project (Project), is located primarily on land managed by the LTBMU in Stateline, Douglas County, Nevada (**Figure 1- Project Location and Vicinity**). The Project study area is 274 acres and includes the lowest reach of Burke Creek west of Highway 50, Rabe Meadow, a small parcel of private property owned by the Tahoe Beach Club, and a small part of the USFS Nevada Beach campground.

The Project area is bordered by Kahle Drive to the south, US Highway 50 to the east, Lake Tahoe to the west, and Nevada Beach Campground and Elks Point Road to the north. The project area includes the Lam Watah Trail and the Stateline-to-Stateline bike Trail. The trailhead facilities are located at the corner of Kahle Drive and US Highway 50. The Project is located with the USGS South Lake Tahoe Quadrangle in T13N R 18E Sec 22.



Figure 1. Project Location and Vicinity with Project Area (in red)

3.2 PROJECT COMPONENTS AND CONSTRUCTION IMPLEMENTATION

The Project includes 5 major components and has been divided into 5 Sub-Project areas, as shown on the aerial imagery (**Figure 2- Sub-Project areas locations**).

1. Burke Creek realignment and Kahle Ditch outlet restoration
2. Kahle Ditch restoration above new pump station access road
3. Restoration of Burke Creek alignment in the center of Rabe Meadow
4. Jennings Pond restoration and recreation improvements
5. Rabe Meadow ditches decommissioning

Proposed Project activities for the restoration include the following:

- Earthwork including excavation, fill, grading and utility trenching
- Dewatering of portions of Burke Creek, Jennings Pond, and Kahle Ditch
- Salvage and onsite relocation of aquatic organisms within Burke Creek, Jennings Pond and Kahle Ditch prior to dewatering activities
- Treatment and removal of invasive species within Rabe Meadow, Burke Creek, and Kahle Ditch.
 - Surveys for aquatic invasive species will be performed prior to any ground disturbance. Removal of aquatic invasive plant species shall be performed prior to dewatering, filling or disturbance. Methods of removal may vary and shall be determined on a case-by-case basis (e.g., hand pulling, suction dredging, placement of benthic barriers)
- Temporary access routes to portions of the restoration area
- Removal of conifers encroaching into meadow areas
- Revegetation using native seed, aspen plugs, and willow and sod transplanting
- Modify existing or obtain new special use permits with Nevada Energy, Southwest Gas, Douglas County, and the Douglas County Lake Tahoe Sewer Authority

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- Decommission user-created trails and reconstruct trails and crossings that are causing resource damage.

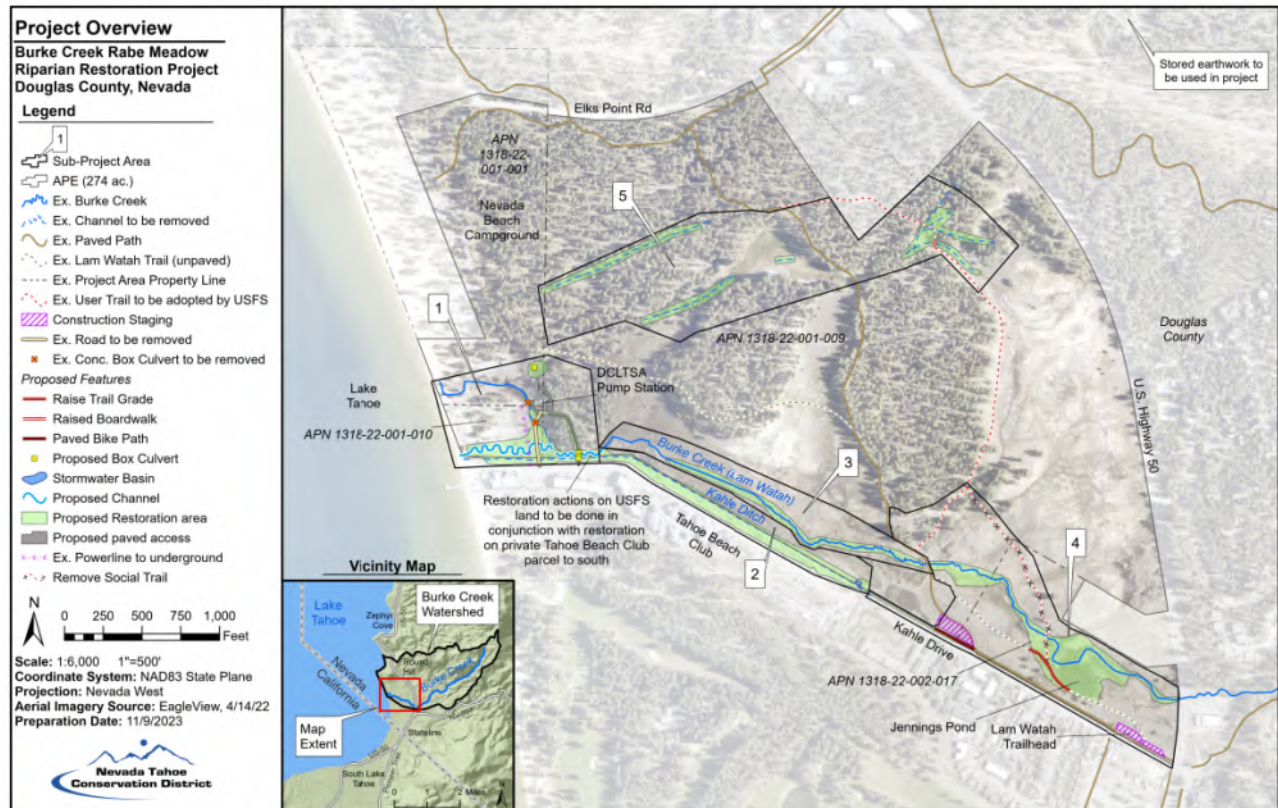


Figure 2. Sub-Project area locations

Restoration will include a variety of techniques with the goals of improved water quality, erosion control, more natural hydrology, and robust riparian and meadow vegetation which in turn provide improved aquatic and terrestrial habitat for plants and animals. Restoration techniques utilized in each sub-project area will vary depending on observed existing conditions and machinery access to each area and will range from significant realignments of the creek and floodplain grading in some areas to smaller process-based restoration techniques in other areas. The Project includes the sub-project areas below:

1. Sub-Project Area 1: Burke Creek Outlet realignment and Kahle Ditch outlet restoration

Sub-Project Area 1 includes the lowest reach of Burke Creek at the outlet to Lake Tahoe and the outlet of Kahle Ditch (**Figure 3**). Known occurrences of Tahoe yellow cress (TYC) are present at these outlets and will be protected and/or moved according to established protocols in the TYC Conservation Strategy (Stanton et al. 2015). Restoration goals in Sub-Project Area 1 are to improve hydrologic function of Burke Creek and alleviate flooding that currently results in public health and safety concerns. The relocation of the Douglas County Lake Tahoe Sewer Authority (DCLTSA) pump station access road to a narrower area of the Burke Creek floodplain further away from Lake Tahoe will alleviate the substantial flooding impacts to the DCLTSA pump station while providing conveyance for the 100-year flood through natural bottom culverts. The creation of a new channel and floodplain will increase the frequency and extent of floodplain overbanking and reduce stagnant water and flooding in the Nevada

Beach Campground. Upsizing undersized metal culverts under the Nevada Beach Campground Road will also alleviate flooding to campsites and reduce the need for maintenance. Kahle Ditch will be filled with native material and become a portion of the floodplain for the new channel alignment. The majority of Kahle Ditch within this Sub-Project Area is located on private property owned by the Tahoe Beach Club.

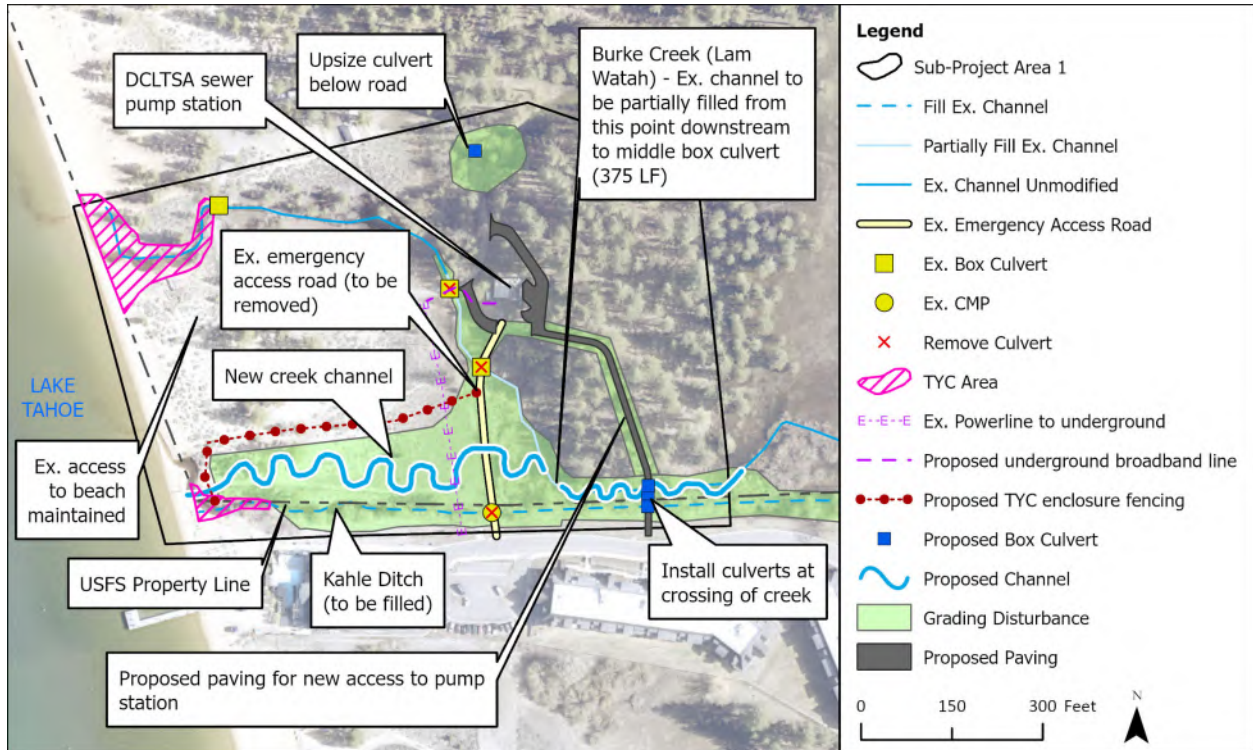


Figure 3. Sub-Project Area 1: Burke Creek Outlet realignment and Kahle Ditch outlet restoration components and location (TYC= Tahoe yellow cress).

The following project actions are proposed in this sub-project area:

- Construct a new Burke Creek alignment and outlet to Lake Tahoe within an approximately 1.8-acre area near Nevada Beach. New channel and floodplain will provide flood conveyance of the predicted 100-year flood event.
- Remove the existing paved pump station access road originating from the Tahoe Beach Club property.
- Construct a new pump station access road approximately 200 feet upstream with 3 open bottom culverts. The road will be approximately 360 feet long, 10 feet wide, with two-foot shoulders with approximately 60 linear feet crossing the riparian area. Issue special use permit amendment to Douglas County Lake Tahoe Sewer Authority.
- Partially backfill (approximately 600 linear feet) an incised reach of Burke Creek and construct a new longer channel to add channel length and improve floodplain access and width.
- Remove two box culverts and the Burke Creek channel in between. Most of the existing Burke Creek channel including the most downstream box culvert will be retained and no backfilling would occur to convey flood flows and preserve occupied TYC habitat in the existing mouth of Burke Creek.

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- Remove two metal pipes under Nevada Beach Campground Road and replace with a concrete box culvert for stormwater and flood drainage.
- Remove the existing metal fence along the Tahoe Beach Club/Nevada Beach boundary.
- Manually remove aquatic invasive species within Burke Creek and Kahle Ditch and off-haul any soil contaminated by aquatic invasive species.
- Underground approximately 300 linear feet of existing overhead electric transmission lines and shared trench utility conduit to the south of the Nevada Beach campground. Issue special use permit amendment to NV Energy.
- Install approximately 150 linear feet of sewer utility broadband between the existing Sewer Pump Station and the undergrounded electric transmission line to the west terminating at the existing campground road. Issue special use permit amendment to Douglas County Lake Tahoe Sewer Authority.
- Lower approximately 220 ft of buried gas line to avoid conflicts with the new channel and lowered floodplain. Issue special use permit to Southwest Gas.
- Dewater and backfill approximately 800 linear feet of Kahle Ditch above the high-water line of 6,229.1 feet of elevation (Lake Tahoe Datum). Complete associated fish salvage.
 - The backfill of Kahle Ditch will occur in the vicinity of a known Tahoe yellow cress occurrence. Plants that may be present would be transplanted to a receptor location (on-site or off) to be determined based on conditions or temporarily to a greenhouse prior to backfilling of the ditch.
- Stage approximately 1,600 cubic yards of excess cut material in designated areas for later use as fill in sub-project area 4.
- Install up to 650 linear feet of wood/wire fencing adjacent to the new creek channel to protect the restoration area and Tahoe yellow cress habitat.
- Access construction areas using existing campground road and the access roads from the Tahoe Beach Club to the sewer pump station.

2. Sub-Project Area 2: Kahle Ditch restoration upstream of new pump station access road

Sub-project Area 2 encompasses restoration actions along Kahle Ditch upstream of the new pump station access road (**Figure 4**). Restoration activities will also occur on private parcels owned by the Tahoe Beach Club in this area. The restoration goals in this area are to improve hydrologic function of Burke Creek, disconnect and treat urban runoff and remove remnant materials associated with the Tahoe Shores Mobile Home Park, remove non-native plants, and to restore stream environment zone (SEZ) and improve floodplain width. Minimal grading will occur to achieve floodplain connectivity.

The following project actions are proposed in this sub- project area:

- Backfill approximately 2,100 linear feet of Kahle Ditch.
- Grade up to one acre of Rabe Meadow to achieve natural floodplain slopes and a multi-branch stream channel.
- Install approximately 1,800 square foot vegetated stormwater basin to treat water from the end of Kahle Drive. Issue special use permit amendment to Douglas County.
- Dewater Burke Creek and Kahle Ditch and complete associated fish salvage.
- Manually remove aquatic invasive species within the Burke Creek and Kahle Ditch channels.
- Stage approximately 1,600 cubic yards of excess cut material in designated areas for later use as fill in sub-project area 4.

- Access will be from Tahoe Beach Club property and Kahle Drive.

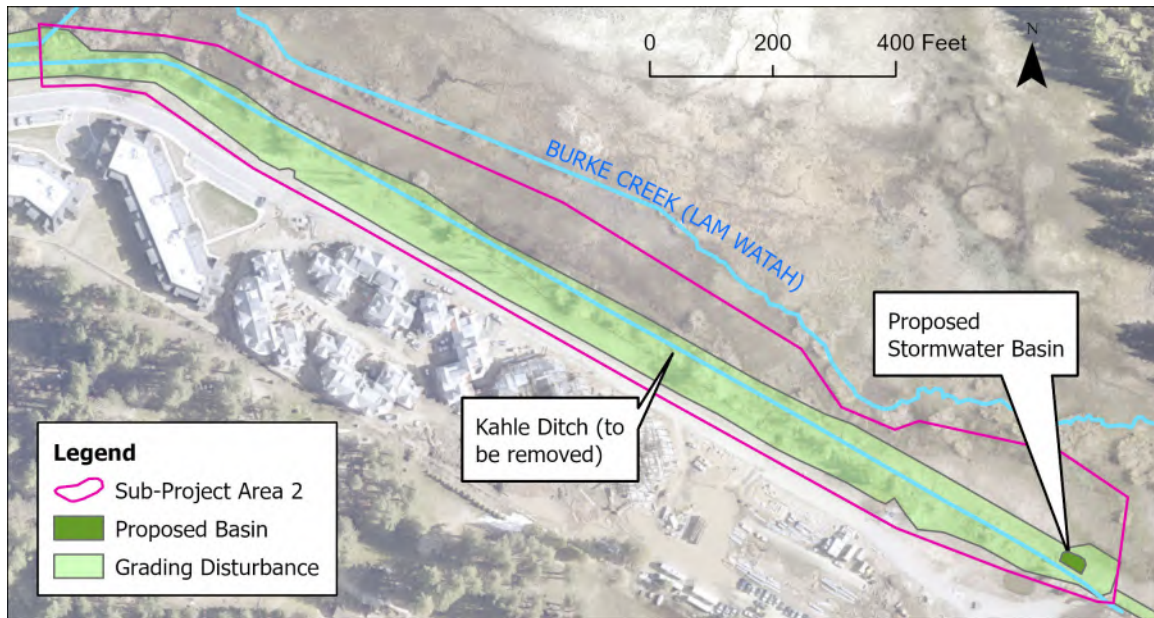


Figure 4. Sub-Project Area 2: Kahle Ditch restoration components upstream of new pump station access and location

3. Sub-Project Area 3: Restoration of Burke Creek alignment in the center of Rabe Meadow

Sub-Project Area 3 encompasses 1,200 linear feet of a straight section of Burke Creek in the center of Rabe Meadow (**Figure 5**). The majority of the reach flows in a generally straight channel that appears to be the remnants of an irrigation ditch. Restoration goals for this area are to improve the hydrologic function of Burke Creek and Rabe Meadow, promote overbanking and aggradation of sediment in Rabe Meadow, create habitat to encourage beaver colonization and create conditions for the development of a naturally evolving and branching channel system.

The following project actions are proposed in this sub-project area:

- Reactivate remnant channels within Rabe Meadow using log grade controls, woody debris, and Beaver Dam Analog (BDA)¹ structures. A straightened section of Burke Creek that occupies a former irrigation ditch will be restored with the use of woody structures that mimic beaver activity and promote overbanking and lead to increased complexity of the channel.
- Dewater Burke Creek and Kahle ditch, and complete associated fish salvage.
- Manually remove aquatic invasive plants where necessary.
- Access the channel in the middle of the meadow for wood structure placement by foot from the Lam Watah trail.

¹ A Beaver Dam Analog is a man made structure designed to mimic the appearance and function of a natural beaver dam to achieve restoration goals such as increased habitat and riparian width.

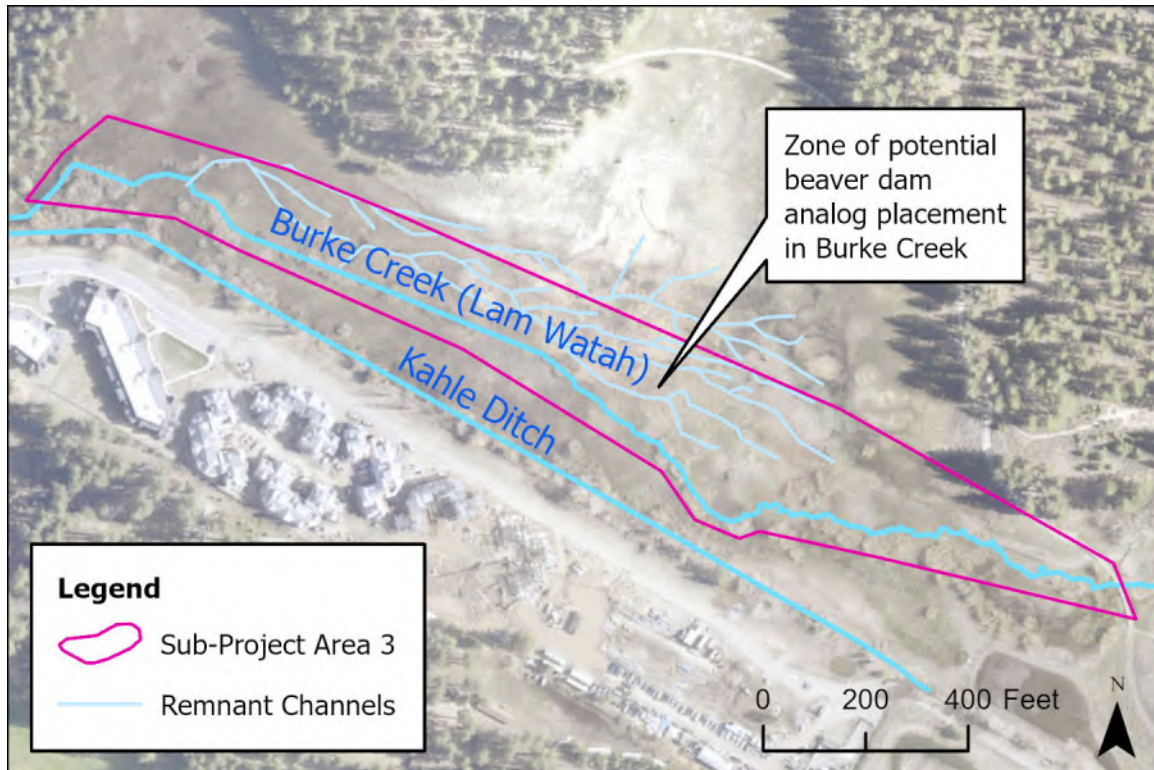


Figure 5. Sub-Project Area 3: Restoration of Burke Creek alignment in the center of Rabe Meadow components and location

4. Sub-Project Area 4: Jennings Pond restoration and recreation improvements

This Sub-Project Area includes the 1,600 linear feet reach of Burke Creek that begins approximately 300 linear feet upstream from the Stateline-to-Stateline bike path bridge and ends at the culvert at Highway 50 (Figure 6). The 1982 Jennings Pond restoration and the downstream end of the 2018 highway crossing restoration occurred within this area. These previous restorations created generally hydrologically stable conditions, but several areas of head cutting, bank erosion and incision exist within this sub-project area. User-created trails and bridges are causing resource damage in and around riparian areas. Jennings Pond, a man-made structure created in 1982 is impacting hydrologic processes, causing damage to nearby infrastructure, and preventing significant water from reaching the meadow area below. A reduction in the size of Jennings Pond will allow this site to return to a more natural hydrology while maintaining some ponded habitat for native species. This reduction will alleviate issues related to pond avulsion and associated recreational trail damage. Prior to implementation actions, any aquatic invasive species would be manually removed.

The following project actions are proposed in this sub-project area:

- Drain Jennings Pond with diversion and pumps. All native aquatic species will be relocated.
- Install BDAs and/or wood structures downstream of Jennings Pond.
- Partially fill Jennings Pond with soil from other parts of the project (or from an outside weed-free source, if needed) to reduce flooding of recreation trails and Kahle Drive. Micro-topography will be constructed to improve habitat for native species. Prior to filling, manually remove any aquatic invasive species.

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- Lower the elevation of an 8,000 square foot area between Folsom Spring and Burke Creek to create additional riparian area by excavating approximately 250 cubic yards. Revegetate with salvaged sod and willow.
- Raise a 400-foot long section of the Lam Watah Trail up to 4 feet in some locations to protect infrastructure to the south. This action will also increase riparian wetting to help decommission user-created trails to sensitive areas.
- Construct approximately 350 feet (3,500 sf) of Class 1 paved bike trail and issue special use permit amendment to Douglas County for trail.
- Place fill between Kahle Drive and the existing stormwater basin's berm to improve drainage in the area.
- Decommission user-created trails in sensitive areas.
- Access Jennings Pond from the Lam Watah Trailhead and close the Lam Watah trail adjacent to the pond during construction.
- Construct 850 linear feet of temporary access routes to install diversion from Burke Creek to Folsom Spring.

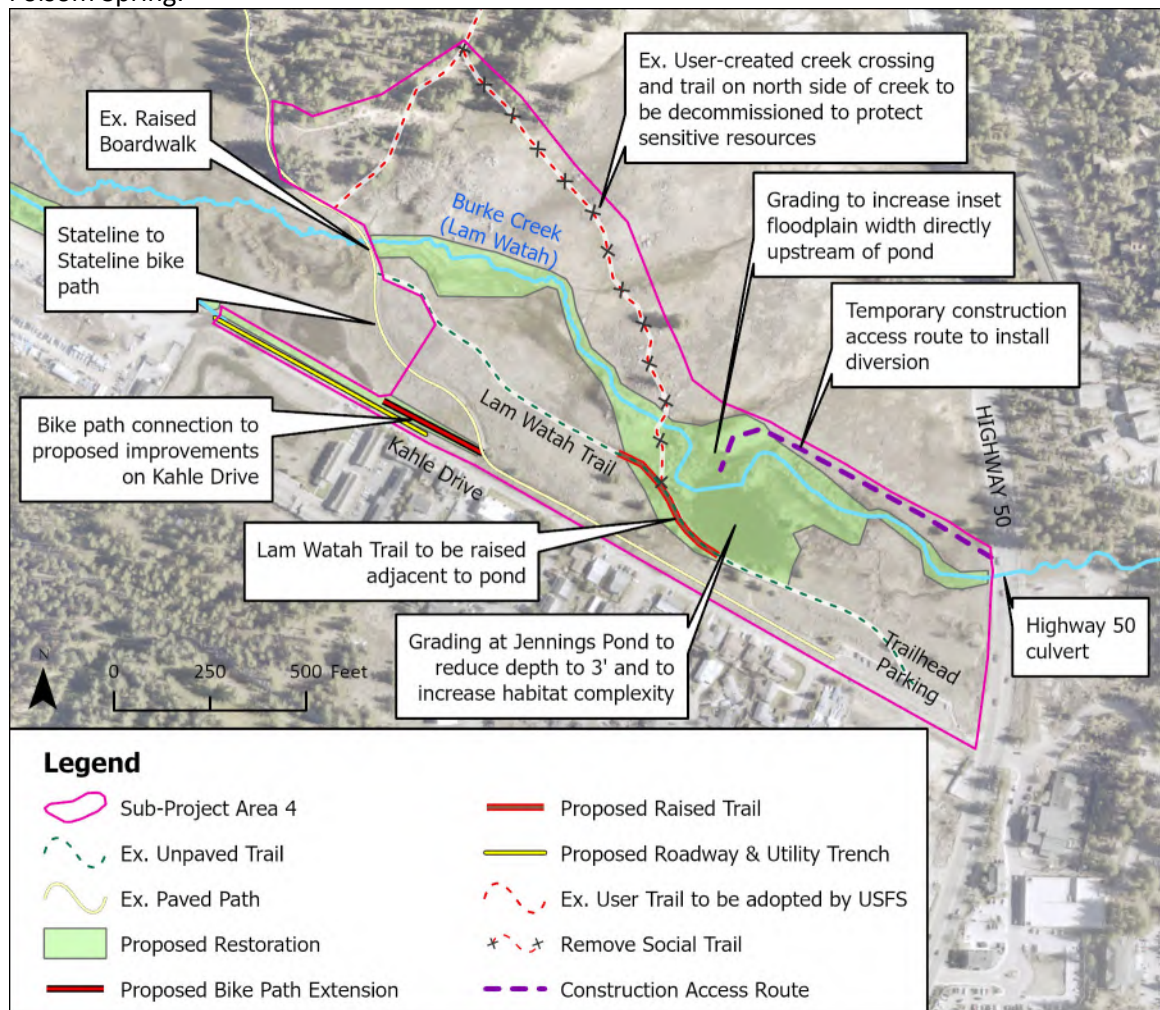


Figure 6. Sub-Project Area 4: Jennings Pond restoration and recreation improvements

5. Sub-Project Area 5: Rabe Meadow ditch restoration

Numerous ditches exist in the meadows directly to the north of Burke Creek (**Figure 7**). Several ditches remain in this meadow and the upland area to the north that were likely used for irrigation related to livestock grazing. While these ditches no longer are in use, hydraulic modeling suggests that they intercept and convey water that would otherwise end up in the meadows. Significant conifer encroachment is also occurring in the meadow adjacent to these ditches.

The following project actions are proposed in the sub-project area:

- Decommission approximately 2,800 linear feet of ditches using excess native fill of approximately 1,600 cubic yards generated from other sub-project areas (or from another weed-free outside source, as needed).
- Revegetate filled ditches with native plants.
- Install woody debris structures in ditches.
- Complete minor trail realignment and upgrades including construction of boardwalk and/or bridge trail segments in wet meadow areas.
- Manually remove aquatic invasive plants, where necessary.
- Remove conifers encroaching into the historic meadow (approx. 4.8 acres).
- Access the meadow ditches from Nevada Beach and/or the Stateline-to-Stateline bike path on existing trails and directly adjacent to the restoration areas.
- Construct 350 linear feet of temporary access routes originating from the Stateline-to-Stateline Bikeway and other established trails.

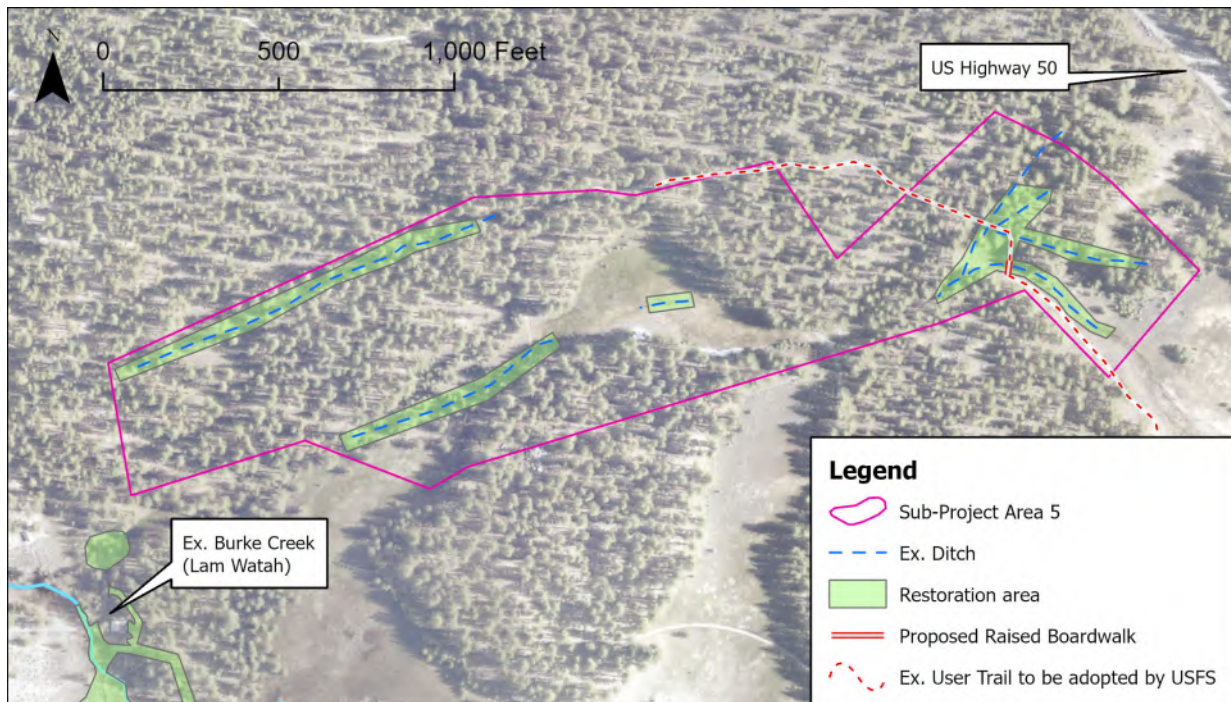


Figure 7. Sub-Project Area 5: Rabe Meadow ditch restoration location

Entire Project Area

- Perform earthwork including excavation, fill, grading and utility trenching.
- Dewater portions of Burke Creek, Jennings Pond, and Kahle ditch.
- Treat and remove invasive species within Rabe Meadow, Burke Creek, and Kahle Ditch.

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- Remove conifers encroaching into meadow areas.
- Revegetate disturbed areas using native seed, aspen plugs, and willow and sod transplanting.
- Amend existing NV Energy, Douglas County, Southwest Gas, and the Douglas County Lake Tahoe Sewer Authority special use permits.
- Total excavation of approximately 5,300 cubic yards and fill of approximately 6,500 cubic yards resulting in a net fill of approximately 1,200 cubic yards. All fill is sourced locally from the Rabe Meadow Complex and up to 600 cubic yards of fill will come from the 2018 Kahle Basin Implementation Project located in the same project area. Some fill generated from the adjacent Tahoe Beach Club may also be used after materials testing is performed. And fill material may be imported into the project area from a weed-free source if needed.

Project Schedule

Construction can occur between May 1 and October 15 each year in accordance with the Tahoe Regional Planning Agency Code of Ordinances. If the early or late season is particularly dry, a variance from the grading deadline may be sought from TRPA. Construction of the project will occur starting as early as May 2024 and will be conducted in phases as portions of the project site become accessible based on ground saturation. Project phasing is designed to limit recreational impacts during peak season and mitigate impacts to species and habitat requirements. Each Phase will begin with the installation of best management practices specific to each sub-project area including terrestrial and aquatic invasive plant survey, best management practices such as fencing, temporary erosion control, and equipment cleaning areas, fish rescue and relocation, dewatering and diversion actions, and construction of access and staging, as required.

Construction will be phased in general starting with work in sub-project area 1 in May, moving upstream and into the next sub-project areas. All project implementation actions are expected to be completed in 1 year, however some of the sub-project area work could be completed in 2025 as needed. The work on Jennings Pond in sub-project area 4 will occur late in the season to protect beaver kits and prevent impacts to beavers. In specific, the diversion of flows away from Jennings Pond to facilitate dewatering the pond will not begin until August 7th. Active dewatering of Jennings Pond using pumps will not begin until August 21.

Construction Access

Primary access to the project area will be via Kahle Drive, the Lam Watah Trail, the Stateline-to-Stateline Bikeway, the Tahoe Beach Club private property, and Nevada Beach Campground. No road closures are expected during construction; however, traffic control may be required at times. Within the project area, access routes will be created within planned disturbance boundaries for equipment to reach the stream. With the exception of construction entrances made of rock and filter fabric to limit soil track-off, access routes will be on native earth which will be de-compacted when moving out of the area. Up to 1,000 linear feet of the Lam Watah trail and some user-created trails may need to be closed during the construction near Jennings Pond. The user-created trail near the Stateline-to-Stateline bike path will be closed during paving of the new bike trail segment and a segment of the Stateline-to-Stateline bike trail will be closed for a short period during construction. If necessary, trail detours will be provided during closures. Access through the Nevada Beach Campground will be by 10-wheel dump trucks, up to 5 roundtrips per day for up to 16 weeks, only between the hours of 9:00 am and 5:00 pm, and will be minimized whenever possible. The use of rubber tracked equipment will limit the impact of construction

to trails and riparian areas. Areas disturbed by construction access routes will be de-compacted, restored, and revegetated at the end of the project.

Construction Staging

Staging areas will be needed for construction equipment and machinery, excavated earthwork, and construction materials. The project will utilize native fill material stored off site that originated from the Kahle Basin Project constructed in 2018. Off-haul of earthwork that is unsuitable for use in the project will be ongoing during the project to minimize on-site earthwork piles. Several staging areas will be used including a previously disturbed area from the construction of the Kahle Basin, parking sites (up to 4 total) for the Lam Watah trailhead, the existing Pump Station access road and new Pump Station turnaround, and areas offsite owned by Douglas County (paved parking lot across US 50 at corner of US 50 and Kahle Drive) or the Tahoe Beach Club (private property). Construction Best Management Practices (BMPs) such as sediment logs or filter fence will be installed and maintained around all staging areas as well as efforts to eliminate the spread of invasive plant species that may occur within the staging sites.

Resource protection measures (RPMs)

Resource protection measures are proposed for the Burke Creek Rabe Meadow Riparian Restoration Project to minimize and avoid potential project-related effects on botanical resources, terrestrial and aquatic wildlife, water quality and soils, cultural resources, and recreational resources. The RPMs presented in Section 7 have been incorporated into project design to minimize impacts to species in the project area. RPMs were developed using the guidance provided in the Forest Service Manual and the LTBMU Land and Resource Management Plan. In addition to RPMs, applicable Best Management Practices (BMPs) identified in the Project Stormwater Pollution Prevention Plan (SWPP) will be utilized. Adherence to these BMPs ensures compliance with the Clean Water Act. The effects analysis and determinations presented in this BE assume applicable BMPs and RPMs would be incorporated into the final design plans and any plans required for permitting. NTCD is responsible for RPM implementation.

4 EFFECTS ANALYSIS METHODS

4.1 ANALYSIS AREA

The area analyzed in this document is referred to as the ‘botany analysis area’; it encompasses approximately 274 acres and consists of all project activities and access roads in the project area (**See Project Area in Figure 1**) and includes the 5 proposed Sub-Project areas (**See Figure 2 Sub- Project area locations**). The area was selected to capture all potential rare botanical species and invasive plants that (a) occur within the project area, (b) have suitable habitat within the project area, (c) are near enough to potentially be affected indirectly by project activities, or (d) have source populations (i.e. potential for seed dispersal) located within close proximity to the project activities.

4.2 SPECIES TO BE ANALYZED

4.2.1 Species considered under the Endangered Species Act

Whitebark pine (*Pinus albicaulis*) is the only federally listed botanical species known to occur within the LTBMU. The species was listed as Threatened under the Endangered Species Act with no designated critical habitat in December, 2022. Whitebark pine grows on poor rocky soils in red fir and subalpine forest. The Project area is below the elevational range the species has been observed in the Lake Tahoe Basin (above 7,000 ft.) and does not contain suitable habitat. For these reasons, this project would have no effect on whitebark pine individuals or suitable habitat.

4.2.2 R5 Regional Forester’s Sensitive Species List

The Regional Forester identifies species for which population viability is a concern because of (1) downward population trends and/or (2) diminished habitat capacity that would reduce species distribution (FSM 2672.11, USDA 2005). The R5 Sensitive list was last revised in 2013 (USDA 2013). All Forest Service Region 5 Sensitive botanical species that are known or have suitable habitat on LTBMU were considered.

4.2.3 Species considered

Those species present or with suitable habitat within the botany analysis area are anticipated to have the highest potential to be impacted by the project activities. Conversely, species outside of the analysis area are not anticipated to be impacted by the project either directly, indirectly, or cumulatively; as such, species outside the analysis area were considered, but dismissed from further effects analysis.

Table 1 lists all Federally Threatened, Proposed and Candidate, and Forest Service Region 5 Sensitive botanical species that are known or have suitable habitat on LTBMU.

The species analyzed in detail in this document are those that were found or have suitable habitat within the botany analysis area:

- Upswept moonwort (*Botrychium ascendens*)
- Scalloped moonwort (*Botrychium crenulatum*)
- Mingan moonwort (*Botrychium minganense*)
- Western Goblin (*Botrychium montanum*)
- Bolander’s candle moss (*Bruchia bolanderi*)
- Plumas ivesia (*Ivesia sericoleuca*)
- Tahoe yellow cress (*Rorippa subumbellata*)

Table 1. Federally Threatened, Endangered, Proposed, and Candidate, and R5 Forest Service Sensitive Botanical Species List

Scientific Name	Common Name	Suitable habitat characteristics	Known on LTBMU	Habitat in Project Area	Found in Project Area
<i>Boechea rigidissima</i>	Galena Creek rock cress	Open, rocky areas along forest edges of conifer and/or aspen stands; usually found on north aspects; 5,900 -7,00 ft.	Y	N	N
<i>Boechea tiehmii</i>	Tiehm’s rock cress	Open rocky soils in the Mt. Rose Wilderness; 9,800-12,000 ft.	Suitable habitat only	N	N

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Scientific Name	Common Name	Suitable habitat characteristics	Known on LTBMU	Habitat in Project Area	Found in Project Area
<i>Boechea tularensis</i>	Tulare rockcress	Shaded, mostly east-facing subalpine rocky areas, including rocky slopes, rock-lined streams and seeps, rocky outcrops, saddles, and canyons; 7,800-10,500 ft.	Known only from herbarium or text records	N	N
<i>Botrychium</i> spp.		<i>Botrychium</i> species are found in similar habitat; wet or moist soils such as marshes, meadows, and along the edges of lakes and streams; generally occur with mosses, sedges, rushes, and other riparian vegetation; 2,000-13,000 ft.			
<i>Botrychium ascendens</i>	upswept moonwort	See <i>Botrychium</i> spp.	X	Y	N
<i>Botrychium crenulatum</i>	scalloped moonwort		X	Y	N
<i>Botrychium lineare</i>	slender moonwort		Suitable habitat only	N	N
<i>Botrychium lunaria</i>	common moonwort		Suitable habitat only	N	N
<i>Botrychium minganense</i>	Mingan moonwort		X	Y	N
<i>Botrychium montanum</i>	western goblin		X	Y	N
<i>Bruchia bolanderi</i>	Bolander's candle moss		Mainly in montane meadows and stream banks, but also on bare, slightly eroding soil where competition is minimal.	X	Y
<i>Dendrocollybia racemosa</i> ¹	branched collybia	On old decayed or blackened mushrooms or occasionally in coniferous duff, usually within old growth stands.	Known only from herbarium or text records	N	N
<i>Draba asterophora</i> var. <i>asterophora</i>	Tahoe draba	Rock crevices and open granite talus slopes on north-east slopes; 8,500-10,900 ft.	X	N	N
<i>Draba asterophora</i> var. <i>macrocarpa</i>	Cup Lake draba	Steep, gravelly or rocky slopes; 8,500-10,900 ft.	X	N	N
<i>Draba cruciata</i>	Mineral King draba	Subalpine gravelly or rocky slopes, ridges, crevices, cliff ledges, sink holes, boulder and small drainage edges; 8,000-10,100 ft.	Known only from herbarium or text records	N	N
<i>Erigeron miser</i>	starved daisy	Granitic rock outcrops; 6,000-7,600 ft.	Suitable habitat only	N	N
<i>Eriogonum luteolum</i> var. <i>saltuarium</i>	goldencarpet buckwheat	Sandy granitic flats and slopes, sagebrush communities, montane conifer woodlands; 5,500-8,000 ft.	Suitable habitat only	N	N
<i>Eriogonum umbellatum</i> var. <i>torreyanum</i>	Donner Pass buckwheat	Dry gravelly or stony sites; often on harsh exposures (e.g. ridge tops, steep slopes); 6,800- 8,000 ft.	Suitable habitat only	N	N

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Scientific Name	Common Name	Suitable habitat characteristics	Known on LTBMU	Habitat in Project Area	Found in Project Area
<i>Helodium blandowii</i>	Blandow's bog-moss	Bogs, fens, wet meadows, and along streams under willows.	X	N	N
<i>Hulsea brevifolia</i>	short-leaved hulsea	Red fir forest, but also in mixed conifer forests; found on gravelly soils; 4,900-9,000 ft.	Suitable habitat only	N	N
<i>Ivesia sericoleuca</i>	Plumas ivesia	Vernally wet portions of meadows and alkali flats, vernal pools within sagebrush scrub or lower montane coniferous forest; on volcanic soils; 4,200-7,700 ft.	X	Y	N
<i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i>	Kellogg's lewisia	Ridge tops or flat open spaces with widely spaced trees and sandy granitic to erosive volcanic soil; 5,900-7,100 ft.	Suitable habitat only	N	N
<i>Lewisia kelloggii</i> ssp. <i>kelloggii</i>	Kellogg's lewisia	Ridge tops or flat open spaces with widely spaced trees and sandy granitic to erosive volcanic soil; 4,400-7,800 ft.	Suitable habitat only	N	N
<i>Lewisia longipetala</i>	long-petaled lewisia	North-facing slopes and ridge tops where snow banks persist throughout the summer; often found near snow bank margins in wet soils; 8,000-9,600 ft.	X	N	N
<i>Meesia uliginosa</i>	broad-nerved hump-moss	Bogs and fens, but also very wet meadows.	X	N	N
<i>Orthotrichum praemorsum</i>	orthotrichum moss	Shaded, moist habitats of east side of Sierra Nevada rock outcrops; up to 8,200 ft.	Known only from herbarium or text records	N	N
<i>Peltigera gowardii</i>	Goward's water fan	Cold unpolluted streams in mixed conifer forests.	X	N	N
<i>Pinus albicaulis</i>	whitebark pine	Subalpine and at timberline on rocky, well-drained granitic or volcanic soils; 6,500-12,200 ft.	X	N	N
<i>Rorippa subumbellata</i>	Tahoe yellow cress	Endemic to the shore zone of Lake Tahoe, typically in back beach areas between 6,200 and 6,330 ft.	X	Y	Y

Botanical species includes vascular and non-vascular plants, lichen, and fungi. This list includes all R5 Sensitive botanical species with known sub-occurrences or known suitable habitat on LTBMU.

4.3 ANALYSIS METHODOLOGY AND ASSUMPTIONS

The analysis of effects on TEPCS botanical species was a three-step process (FSM 2672.43; USDA 2005). In the first step, all TEPCS species that were known or were believed to have potential to occur in the analysis area were identified. This list was developed by reviewing the following resources:

- USFS Geographic Information System (GIS) data for TESP/IP occurrences on LTBMU managed lands (USFS 2023);
- Records search of the California Natural Diversity Database (CDFW 2023);
- Calflora records search (Calflora 2023);

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- US Fish and Wildlife National Wetlands Inventory (2021);
- LTBMU Rare Botanical Species Monitoring Report (2016);
- Burke Creek Highway 50 Crossing and Realignment Project
 - Botanical Reconnaissance Field Report (Wood Rogers, 2015)
 - Invasive Plant Risk Assessment (Wood Rogers, 2015)
 - Biological Assessment (LTBMU 2015)

The second step was field reconnaissance surveys. In 2023, field surveys were conducted on approximately 274 acres within the botany analysis area. Additional surveys were conducted in these areas in 2021. Species occurrence information was also compiled using CNDDDB (2023) and NNHP (2023) database records, LTBMU TESP species records, LTBMU invasive plant species records, and past survey reports.

Field surveys were designed around the flowering period and ecology of the TESP identified in step one. For each TESP occurrence found, information was collected that described the size of the occurrence and habitat characteristics and identified any existing or potential threats. Location information was collected using a Global Positioning System (GPS).

All of this information was used in step three of the analysis—effects analysis. TESP and project activity data were imported into a Geographic Information System (GIS) and used to analyze proximity to the proposed activities, identify direct and indirect effects, and develop resource protection measures. For species with known occurrences in the analysis area, their existing environment is described in detail. However, for species with suitable habitat but no known occurrences in the analysis area, their existing environment is not described in detail, due to the very limited scope of potential effects; rather, these species are aggregated by habitat type and the indirect effects to these habitat types are discussed. Conflict determinations are provided for all species known to occur or have suitable habitat impacted by proposed activities.

4.4 HABITAT ANALYSIS

To assess existing habitat conditions for species addressed in this BE, plant communities in the Project area were identified in the field. During the surveys, land cover type, vegetation composition and structure, hydrologic characteristics, and habitat suitability for sensitive species in the project area were assessed.

The observed vegetation types were classified using the California Wildlife Habitat Relationships (CWHR) system (Model Version 10, CDFW 2021) and mapped on aerial imagery. The potential effects of the Project on FSS species were identified by overlaying the GIS layer of the grading disturbance areas for each Sub-Project Area on the layers of mapped CWHR types, sensitive species locations, and invasive plant infestations. The analysis assumes that areas with proposed grading disturbance will be directly impacted by Project implementation and that sensitive plants or suitable habitat located within these areas would be directly impacted.

5 EXISTING CONDITIONS

5.1 HYDROLOGY AND RESTORATION HISTORY

The Burke Creek watershed is approximately 1,600 acres and drains a small portion of the Carson Range in Nevada, flowing southwest to west into Lake Tahoe (see **Figure 1**). Hydrology in the watershed is snow-melt dominated and peak flows occur during the snow-melt season (March through June), during rain-on-snow events, or from runoff from summer thunderstorms. The headwaters are located north of Kingsbury Grade near Castle Rock and Burke Creek passes through multiple culverts in two neighborhoods before it reaches the highly developed Highway 50 corridor.

Burke Creek and Rabe Meadow were significantly impacted during urbanization of the Tahoe Basin. The watershed was logged extensively during the Comstock Era of the late 1800s and Rabe Meadow was used for livestock grazing until the 1970s. There were multiple developments in the 1960s and 70s including development of Sky Harbor Airport, followed by redevelopment of the airport into Tahoe Shores Mobile Home Park. The mobile home park has been redeveloped and replaced by the Tahoe Beach Club. These changes have impaired the hydrological connection between Burke Creek and the surrounding meadow and decreased the overall area of healthy wetlands. Increased recreational use over the past two decades has resulted in an expansive network of user-created trails and an overall increase of bare soil within the meadow. As a result of these uses, Rabe Meadow and Burke Creek have degraded water quality and lower quality aquatic and terrestrial habitat. Restoration of the watershed is needed to expand the riparian areas, increase channel length, improve habitat, reduce soil erosion, and improve water quality.

The US Forest Service acquired most of the land encompassing Rabe Meadow and the lower Burke Creek watershed in 1978. Multiple restoration projects have been implemented since the acquisition. A 1981 restoration created Jennings Pond and routed Burke Creek through the pond and a channel originating at Folsom Spring. A restoration in 1992 created a secondary outlet of Burke Creek at Lake Tahoe by re-routing the creek from the Kahle Ditch and into a series of box culverts in Nevada Beach Campground. An urban stormwater treatment basin (Kahle Drive basin) was also built in 1992 that collects stormwater flows from Kahle Drive into Kahle Ditch.

Most recently, a multi-year restoration completed in 2018 restored a portion of Burke Creek on the upstream side of US 50 and routed the creek through a new larger culvert under the highway into Jennings Pond. The purpose of the larger culvert was to improve drainage along the corridor and reduce the frequency of flooding of the highway. The Burke Creek channel downstream of the new culvert was also restored in 2018 to improve aquatic habitat and channel stability conditions. Stormwater treatment improvements were also installed to prevent pollutants from US 50 and adjacent commercial parking lots from entering Burke Creek.

5.2 HABITAT TYPES/LAND COVER

Plant communities present in the Project area were identified in the field and these vegetation types were classified using the California Wildlife Habitat Relationships (CWHR) system. **Figure 8** shows the distribution and acreages of the 9 CWHR habitat types mapped within the Project Area.

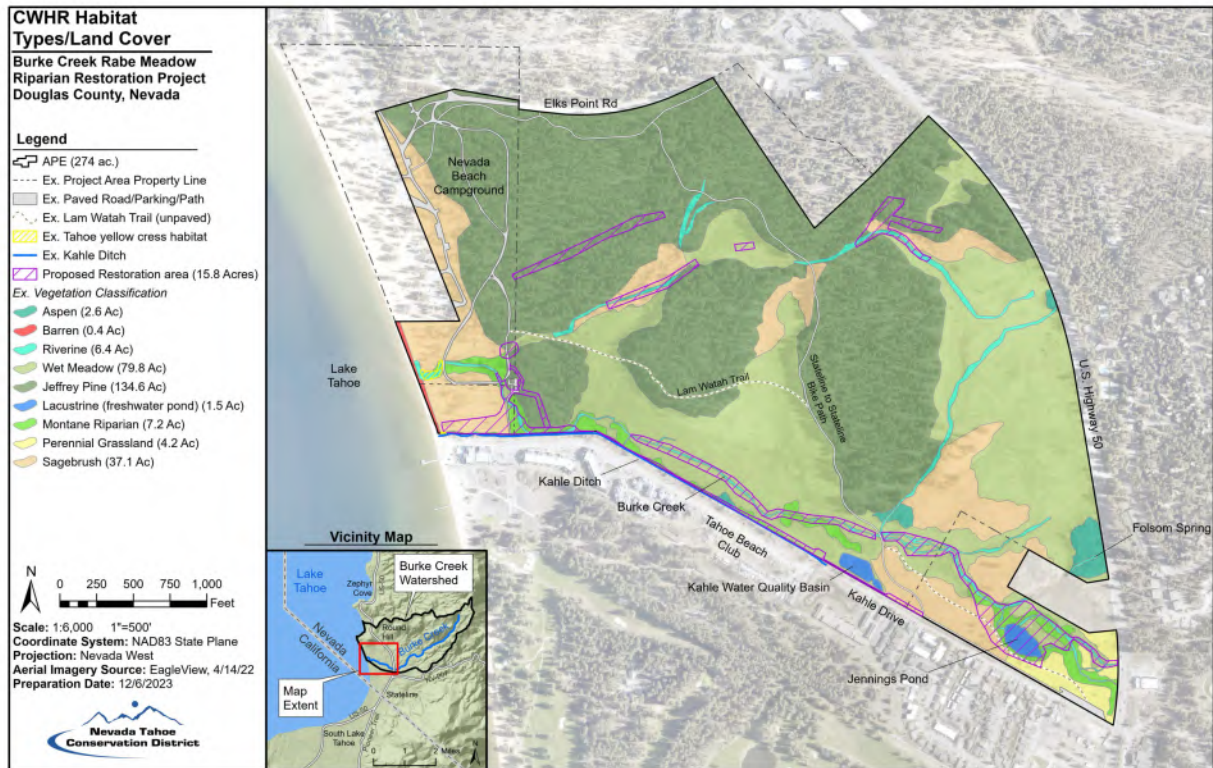


Figure 8. Map of California Wildlife Habitat Relationships (CWHR) habitat types within the Project Area

Table 2 lists the acreage of each habitat type and the amount and percentage of those habitats where restoration activities will occur. Each CWHR type is briefly described in order of prevalence within the Area.

Table 2. Acreages of habitat types in the Project Area and percent potentially impacted

	Total in Project Area	Area with restoration activities	Habitat potentially impacted
Habitat Type	Acres	Acres	Percent
Aspen	2.6	0.07	2.7
Barren	0.4	0.02	5.0
Jeffrey Pine	134.6	3.00	2.2
Lacustrine (freshwater pond)	1.5	0.86	55.7
Montane Riparian	7.2	2.80	39.1

	Total in Project Area	Area with restoration activities	Habitat potentially impacted
Habitat Type	Acres	Acres	Percent
Perennial Grassland	4.2	0.17	4.2
Riverine	6.4	2.38	37.1
Sagebrush	37.1	2.68	7.2
Wet Meadow	79.8	3.88	4.9
Total	273.8	15.8	1.5

Jeffrey pine

The upland forest of open Jeffrey pine (*Pinus jeffreyi*) occupies 135 acres, or almost 50% of the Project Area. Within the Project, this habitat has an understory dominated by bitterbrush (*Purshia tridentata*) with occasional big sage (*Artemisia tridentata*) and pinemat manzanita (*Arctostaphylos nevadensis*). The sparse grass layer includes species such as Lemmon’s needle grass (*Stipa lemmonii*) and squirrel tail (*Elymus elymoides*). Common forbs include lupine (*Lupinus sp.*), kelloggia (*Kelloggia galioides*), and groundsmoke (*Gayophytum sp.*).

Wet meadow

The complex of wet meadow occupies 80 acres (30%) in the Project Area and includes habitat throughout Rabe meadow that is saturated all year long. The habitat supports species like Mountain bog bulrush (*Scirpus microcarpus*) and a high diversity of sedges and rushes such as Sierra rush (*Juncus nevadensis*), Nebraska sedge (*Carex nebrascensis*), and large leaf sedge (*C. amplifolia*). Showy plants like bigleaf avens (*Geum macrophyllum*) and Oregon checkerbloom (*Sidalcea oregano*) also occur in very wet areas. Many types of grasses like tufted hairgrass (*Deschampsia cespitosa*) occur in the meadow along with a rich array of forbs including willowherbs (*Epilobium sp.*) and sticky cinquefoil (*Drymocallis glandulosa*).

Rabe meadow provides potentially suitable habitat for several species of *Botrychium*. *B. crenulatum* and *minganense* both have the potential to occur in lower montane meadow habitat. *B. ascendens* and *montanum* are unlikely to occur, based on their association with incense cedar on the LTBMU. These species were not observed during field surveys in 2015 for the Burke Creek Highway 50 Project and Realignment, or in the 2021 and 2023 project field surveys, however, *Botrychium* species do not emerge every year and there were drought conditions in 2015 and 2021 survey years. There were wet conditions during the 2023 survey, a year when several new *Botrychium* sp occurrences were detected elsewhere in the Lake Tahoe Basin.

Sagebrush

Sagebrush scrub habitat (37 acres) is found throughout the beach portion of Nevada Beach Campground and a few higher elevation disturbed areas around the Lam Watah trailhead between the Kahle Basin and Jennings Pond. Sage predominates on a few edges portions of the meadow that are drying, likely as a result of the diversion of water caused by the remnant irrigation ditches.

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Montane riparian

The riparian habitat along portions of the Burke Creek stream channel and around Jennings Pond occupies less than 3% of the Project area and supports a dense overstory of trees comprised of willow (*Salix sp.*), mountain alder (*Alnus incana ssp. tenuifolia*), aspen (*Populus tremuloides*) and some black cottonwood (*P. fremontii*). Kahle Ditch also has a well-developed riparian overstory. The 7 acres of montane riparian vegetation provide potentially suitable habitat for *Botrychium* species. *B. crenulatum* and *minganense* both have the potential to occur in montane riparian habitat. *B. ascendens* and *montanum* are unlikely to occur, based on their association with incense cedar on the LTBMU. These species were not observed during field surveys, however, *Botrychium* species do not emerge every year.

Riverine

The channels of Burke Creek and Kahle Ditch comprise the main riverine habitat. The perennial channels of Burke Creek originate at the culvert at Highway 50 (enlarged during the 2018 restoration) and at Folsom Spring. The channels are shallow and support a diverse assemblage of obligate wetland plants such as American brooklime (*Veronica americana*), watercress (*Nasturtium officinale*), and seep monkeyflower (*Erythranthe gutattus*). Both channels in these areas have a riparian overstory. In the central part of Rabe Meadow, there is no riparian overstory along Burke Creek except to the east of the pedestrian bridge. While the overall condition of the creek in this area is hydrologically stable in accordance with the objectives of the previous restorations, several areas of head cutting, bank erosion and incision exist.

In the lowest reach, Burke Creek outlets directly to Lake Tahoe only during higher flow years and when lake level is high. Under low flows (and lake level) a berm forms at the mouth, stranding the creek and forming a pool that becomes stagnant. On the way to the lake, Burke Creek passes through three box culverts installed during the 1992 restoration. The upper two of these culverts have accumulated substantial amounts of sediment and exhibit substantial backwatering even during times of low flow. A small ephemeral channel originating in the north part of Rabe Meadow conveys stormwater into the creek just north of the middle box culvert. These higher flows lead to substantial flooding in this area that adversely affects water quality and the infrastructure and operations of Nevada Beach Campground.

Kahle Ditch is an intermittent channel that conveys stormwater flows from Kahle Drive and the water quality basin. The channel increases in size as it gets closer to Lake Tahoe and outlets to the lake only during high flows (and high lake levels). During low flows, water sits stagnantly in the ditch. At the far eastern edge of the meadow Burke Creek and Kahle Ditch have parallel flow in a straight line. However, Kahle Ditch is the low point in Rabe Meadow and thus much of the flow from Burke Creek ends up in the ditch. The 1992 restoration unsuccessfully attempted to disconnect Burke Creek from Kahle Ditch in this area, but the ditch remains the low point.

Lacustrine

Freshwater pond habitat is found in Jennings Pond and the Kahle water quality basin. Cattail (*Typha sp.*) is the primary emergent species within the Kahle Basin. Golden sedge (*C. aurea*) and other sedges are found on the periphery. Jennings Pond also supports a variety of emergent sedges and rushes.

Perennial grassland

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The areas mapped as perennial grassland are located near the Lam Watah trailhead and at the culvert from Highway 50. These areas were re-vegetated with species such as blue wildrye (*Elymus glaucus*) at the completion of the 2018 restoration.

Aspen

The largest mature stand of aspen is located at Folsom Spring and is outside of the Project Area. The stand located just east of the Stateline-to-Stateline bike path receives overland flow from a northern arm of Burke creek that originates at a second culvert at Highway 50. This stand is within Sub-Project Area 4, but no activities are proposed within the stand. A few clusters of aspen are also located along Kahle Ditch.

Barren

The sandy beach areas at the outlets of Burke Creek and Kahle Ditch at Lake Tahoe support Tahoe yellow cress (TYC). The species is discussed in detail in section 5.3.1 below.

Invasive plants

Occurrences of 11 species on the LTBMU 2023 Invasive Plant List have been mapped within the Project Area. Invasive plants are addressed in the Invasive Plant Risk Assessment.

5.3 SPECIES HABITATS AND OCCURRENCES

Table 3 summarizes the status and habitat characteristics of plants species with the potential to occur within the Project Area.

Table 3. Forest Service Region 5 Sensitive Plant Species Occurrence Summary for the Burke Creek Rabe Meadow Restoration Project.

Species	Status*	Habitat Characteristics	Potential to occur in the Analysis Area
<i>Botrychium ascendens</i>	S, 2B.3	Suitable habitat for upswept moonwort includes the wet edges of streams or meadows in open habitats. On the LTBMU, this species has been found on shady streams with dense cover among incense cedar (<i>Calocedrus decurrens</i>); 5,000-10,500 ft.	Unlikely; There are 6 known occurrences from the LTBMU (Rowe and Stevens, 2016). Burke Creek and Kahle Ditch provide potentially suitable habitat, however shade cover is limited and no incense cedar is present.
<i>Botrychium crenulatum</i>	S, 2B.2	Suitable habitat for scalloped moonwort includes meadows, fens, and seeps in montane conifer forest. Often found in dense herbaceous vegetation and in partial shade to heavily shaded sites; 4,900 to 10,800 ft.	May occur; There are 4 known occurrences from the LTBMU (Rowe and Stevens, 2016). Rabe meadow provides potentially suitable habitat.

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Species	Status*	Habitat Characteristics	Potential to occur in the Analysis Area
<i>Botrychium minganense</i>	S, 2B.2	Suitable habitat for Mingan moonwort includes fens, seeps, and meadows or riparian corridors in conifer forest; 5,100 to 10,300 ft.	May occur; There are 2 known occurrences from the LTBMU (Rowe and Stevens, 2016). Rabe meadow and the riparian corridors of Burke Creek and Kahle Ditch provide potentially suitable habitat.
<i>Botrychium montanum</i>	S, 2B.1	Suitable habitat for western goblin includes meadows, seeps and riparian corridors in montane conifer forest; 3,200 to 9,000 ft. On the LTBMU, this species has only been found in seasonally wet areas among incense cedar.	Unlikely; There are 3 known occurrences from the LTBMU (Rowe and Stevens, 2016). Rabe meadow and the riparian corridors of Burke Creek and Kahle Ditch provide potentially suitable habitat, however, the occurrence of this species is unlikely based on a lack of incense cedar.
<i>Bruchia bolanderi</i>	S, 4.2	This bryophyte occurs in disturbed areas and openings on the edges of meadows and stream banks; 5,500 to 9,200 ft. Bolander’s candle moss is also found on bare, slightly eroding soil where competition is minimal.	May occur; There are 8 known occurrences from the LTBMU (Rowe and Stevens, 2016). Burke Creek provides potentially suitable habitat.
<i>Ivesia sericoleuca</i>	S, 1B.2	Known from the Sierra Nevada from Plumas south to El Dorado County. Associated with seasonally wet meadows, meadow ecotones, terraces and toe slopes in conifer forest; 4,200-7,600 feet. Primarily occurs on soils which are volcanic in origin.	Unlikely; There are 4 known occurrences from the LTBMU in California State Parks on the west and south shore (Calflora 2022). The plant has not been located on granitic soils like those present in the analysis area.
<i>Rorippa subumbellata</i>	S, SI, SE, 1B.1	Known only from the sandy shores of Lake Tahoe below the high-water line of 6,229 feet.	Present; there are 2 known occurrences in the analysis area at the outlet of Burke Creek and Kahle Ditch. Please see section 5.2 for more details.

Source: USDA Forest Service, List of Sensitive Species of the LTBMU 2013; Tahoe Regional Planning Agency, Environmental Thresholds. CNDDDB, March 2021;

* Status Codes:

CNPS 1B, 2, 3 = Plants listed as rare, threatened or endangered in California and elsewhere by the California Native Plant Society. Plants on this list meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.

S = U.S. Forest Service LTBMU Sensitive Species, Regional Forester’s Sensitive Species List, Amended 2013

SI = TRPA Special Interest Species, TRPA Regional Plan (2012)

SE = State Endangered in California and/or Nevada

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	2002	2003	2004	2005	2006	2007	2008	2009	2011	2012
	6224	6224	6223	6225	6228	6226	6224	6223	6228	6226
Tahoe Beach Club	104	77	33	28	5	111	337	237	27	150
Nevada Beach	1	1	1	78	82	761	751	703	15	140
	2014	2016	2017	2018	2019	2020	2022	2023		
	6223	6223	6228	6228	6228	6227	6224	6228		
Tahoe Beach Club	120	46	71	4	10	138	82	444		
Nevada Beach	62	63	60	393	136	560	209	640		

During a rain on snow event in winter 2022/23, the Douglas County Sewer Authority took emergency actions to prevent stormwater from overflowing the pump station at Nevada Beach. These actions resulted in damage to the fencing around the existing outlet of Burke Creek which was repaired in spring 2023. The storm deposited sediment in occupied TYC habitat at the outlets of Burke Creek and Kahle Ditch that was removed by hand in spring 2023, prior to emergence. The extent of impacts to TYC from these actions is unknown, but are likely limited to potential fragmentation and displacement of rhizomes within the site. Plants were apparently able to vigorously recover as the fall 2023 lake wide monitoring results showed a record high count of TYC at the Tahoe Beach Club and fifth highest count on record at Nevada Beach.

In general, Tahoe yellow cress habitat is reduced in high lake level years due to inundation, which can result in lower counts at some sites. However, at Nevada Beach and Tahoe Beach Club, high lake level years such as 1986, 1988, and 2023 have been some of the highest plant count years. Lake levels of 6,227 and 6,228 are considered high, lake levels of 6,223 and 6,224 are low, and 6,225 and 6,226 are transitional. Burke Creek and Kahle Ditch outlet directly to Lake Tahoe only during higher flow years and when lake level is high. Under low flows (and lake level) a barrier beach forms at the outlets, stranding the creeks and forming pools. TYC stems may emerge successively along the edges of these pools as water recedes during the growing season.

Nevada Beach is designated one of the 6 ‘Core’ sites in the TYC Conservation Strategy (Pavlik et al. 2002, Stanton et al. 2015) and Tahoe Beach Club is ranked as one of the 11 ‘High priority’ sites. The ranking system is quantitative and based on stem counts and persistence across the long-term dataset. Core sites have the highest conservation priority because they support the most persistent occurrences of TYC and tend to have higher stem counts. All Core sites and high priority sites are located at the mouths of creeks where seasonal flooding and scouring provides favorable habitat conditions across a wide range of lake levels. The periodic scouring decreases competition with other plants and also lowers the distance needed for TYC roots to access the Lake Tahoe water table. These dynamic processes play an important role in maintaining the species because TYC is a poor competitor and not able to tolerate drought (Stanton et al. 2015).

The beach between the enclosure at Burke Creek and boundary of the Tahoe Beach Club is the ‘dog beach’ portion of Nevada Beach and is very heavily used. No occupied TYC habitat is currently present along this stretch, due to the heavy use. Recreation poses the greatest threat to TYC abundance at these sites, especially under high lake levels when use is concentrated on a small amount of shoreline (Stanton et al. 2015). Trampling—resulting from human foot traffic and dogs—may directly destroy plants, roots, and/or seeds and inhibit germination and recruitment of seedlings. The permanent fencing maintained at Nevada Beach has allowed TYC to persist at the outlet of Burke Creek despite the intense recreational pressure.

6 EFFECTS OF THE PROPOSED PROJECT

6.1 SPECIES WITH SUITABLE HABITAT, BUT NO KNOWN OCCURRENCES

6.1.1 Direct Effects

Direct effects of the proposed restoration include excavation, grading, fill, and placement of woody structures that could remove or damage the suitable habitat and unknown occurrences of several sensitive plants. The restoration activities will occur in the wet meadow and montane riparian corridors along Burke Creek and Kahle Ditch that provide potential habitat for *Botrychium crenulatum*, *B. manganense*, *B. ascendens*, *B. montanum*, *Ivesia sericolueca*, and *Bruchia bolanderi* as described in **Table 3**.

In Sub-Project Area 1-3, the backfilling of Kahle Ditch and re-alignment of the channel of Burke Creek will remove any occurrences and temporarily eliminate suitable habitat. The installation of Beaver Dam Analogues (BDAs) within Burke Creek could also damage occurrences. The remnant ditches in Rabe meadow are very dry and shallow in all but the wettest years, and therefore unlikely to support *Botrychium* or *Bruchia* under most conditions. The decommissioning of these ditches is intended to correct the diversion of water at the periphery of the meadow and is expected to improve habitat quality within Rabe meadow by increasing meadow wetness and channel complexity.

Field surveys did not detect the three species with the highest potential to occur (*Botrychium crenulatum*, *B. manganense*, and *Bruchia bolanderi*), however, *Botrychium* species do not emerge every year. Therefore, undetected occurrences could be damaged or removed during Project implementation. *B. ascendens* and *B. montanum* are unlikely to occur because known occurrences of both species within the LTBMU are associated with incense cedar (Rowe and Stevens, 2016), which is absent from the suitable meadow habitat present in the Project area. *Ivesia sericolueca* has been found in several California State Parks on the west shore (Calflora 2023), but the plant has only been found on volcanic soils and the soils in the analysis area are granitic.

If sensitive species are observed within any Sub-Project Area during Project implementation, ground disturbing activities in that area will stop until the LTBMU Forest Botanist is notified and appropriate avoidance or mitigation actions are agreed on (see RPMs in Section 7). Therefore, direct effects of the Project on these species is unlikely to occur due to a lack of known occurrences within the Project Area and the implementation of pre-construction inventory and protection measures for individuals that could be present.

The amount of suitable habitat within the Project Area for the three species listed above includes approximately 3.5 acres of wet meadow, 2.6 acres of montane riparian corridor, and 6.4 acres of riverine (Table 2). The proportion of these areas that would be impacted by Project restoration activities is estimated as 4.4% of the wet meadow, 36% of the montane riparian corridor, and 39% of the riverine present within the Project Area. The total area of impact represents a moderate amount of suitable habitat within the project area but a negligible amount of suitable habitat for the species analyzed in the context of the LTBMU. This direct disturbance of suitable meadow/riparian habitat would be short term, with an expected vegetation recovery period of 3 years. As described in the indirect effects below, the Project is expected to result in the long-term improvement of hydrological conditions and meadow/riparian habitat quality.

6.1.2 Indirect Effects

The restoration activities in the wet meadow of Rabe meadow and montane riparian and riverine corridor along Burke Creek have been designed to improve the hydrological connection between Burke Creek and the surrounding meadow. The Project will increase channel length and expand the riparian habitat and is anticipated to reduce soil erosion and improve water quality and aquatic and terrestrial habitat. The elimination of the remnant ditches in Rabe meadow is intended to correct the diversion of water at the periphery of the meadow and is expected to improve habitat quality within Rabe meadow. As a result, suitable habitat for the 4 species of *Botrychium* analyzed and the bryophyte *Bruchia bolanderi* is expected to expand and may increase the likelihood of these species occurring. Therefore, the indirect effects of the Project are likely to be beneficial.

Indirect effects of the Project on *Ivesia sericoleuca* are very unlikely to occur because the plant has only been found on volcanic soils that are not present in the analysis area.

6.2 TAHOE YELLOW CRESS

6.2.1 Direct Effects

As shown in **Figure 9**, TYC stems occur at the outlet of Burke Creek downstream of the culvert at the campground road. This occurrence has been monitored and managed by the FS for almost 40 years. In contrast, the TYC occurrence at the outlet of Kahle Ditch is mostly on private property and has not been managed by the FS. Despite ownership, this analysis assesses the effect of Project activities at both locations because a goal of the restoration is to improve hydrologic function and reduce flooding within the area, in part to expand and improve TYC habitat quality along the newly created channel.

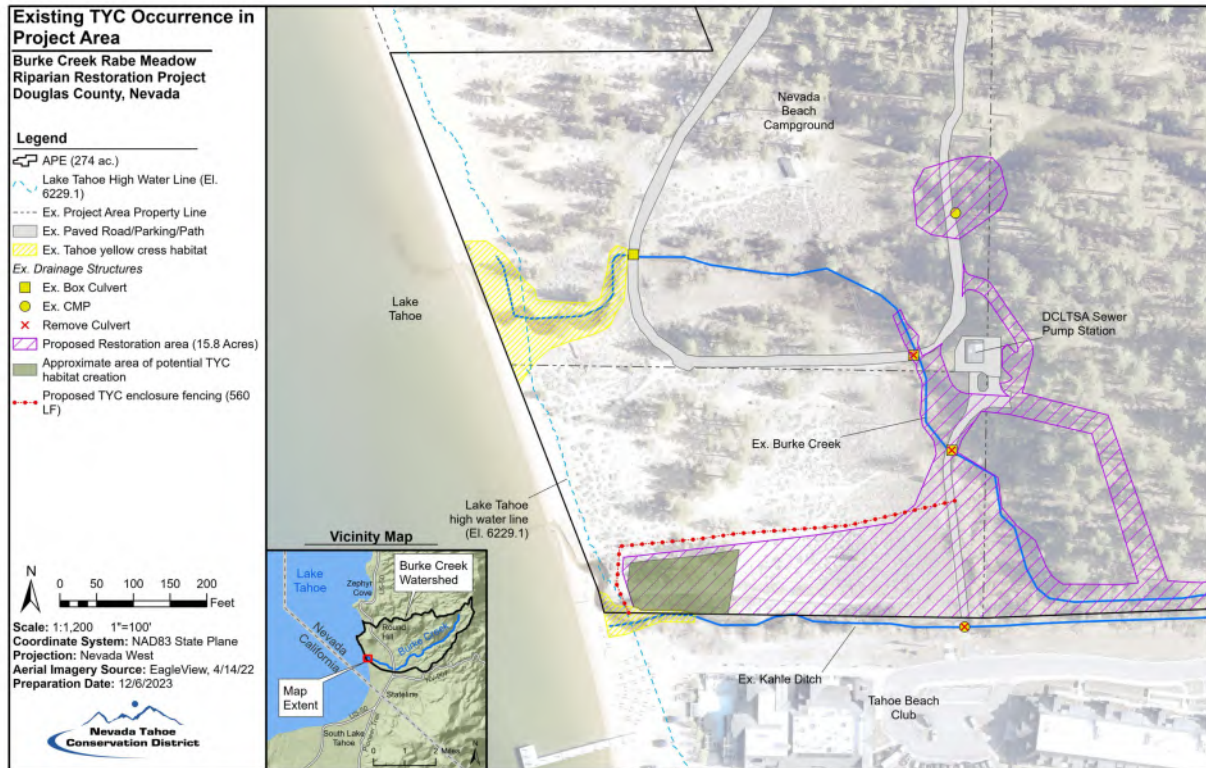


Figure 9. Tahoe yellow cress occurrences within the Project Area

The project will create a new alignment of Burke Creek to the north of the Kahle Ditch that will end in a new outlet of the creek to Lake Tahoe. Kahle Ditch will be filled with native material and become a portion of the new alignment’s floodplain. The existing channel of Burke Creek will be filled upstream of the second culvert and fill of Kahle Ditch will only occur above the high-water line of 6,229.1 feet lake elevation. TYC does not typically occur above this elevation, but it is possible that TYC could emerge in an area planned to be filled or used for access.

Monitoring will occur within Sub-Project Area 1 during periods of active ground disturbance throughout the TRPA approved survey period from June 15- September 30th. If operations begin prior to June 15th, surveys and avoidance flagging will be completed prior to filling the lower section of Kahle Ditch. TYC stems that emerge at the outlet of Burke Creek will be flagged and avoided for the duration of the Project. TYC present on the beach in the vicinity of the Kahle Ditch outlet will also be flagged and avoided to the extent feasible. Any weed removal that occurs will avoid TYC stems. Any TYC that could be buried or damaged during construction will be translocated to suitable habitat prior to disturbance as described in the RPMs in Section 7. Therefore, direct effects on extant TYC will be mitigated.

6.2.2 Indirect Effects

Burke Creek will no longer flow through the three box culverts in Nevada Beach Campground after project completion. The upstream 2 culverts will be removed and a short segment of the existing channel will be partially filled downstream of the second culvert. The downstream culvert at the campground road will remain in place to allow for upland meadow drainage. However, the remaining channel will likely only convey water in response to storm events. The stream flow that supports TYC

and its habitat at the existing creek mouth will cease after Project completion and TYC habitat at this site will become more dependent on lake level for suitable substrate moisture. The drying of this area is expected to decrease TYC habitat suitability over time through encroachment of upland species and insufficient moisture for reproductive establishment. However, the fence would be maintained as long as TYC continues to persist. Stems and seed from this area represent the closest source of propagules that could be transported via wind or water (via flooding or lake level rise) to colonize the newly created channel.

Filling Kahle Ditch above the high waterline will completely eliminate flows and the remaining habitat will become unsuitable in subsequent years without the creation of a new channel. Additionally, the removal of the existing fencing around the outlet of Kahle Ditch will remove the protection of this occurrence from recreational pressure which will likely result in the loss of habitat suitability. Individuals growing at the outlet of Kahle Ditch during project implementation in this area will be transplanted to either the floodplain of the newly created channel of Burke Creek or the existing outlet of Burke Creek to minimize short term loss of individuals. The floodplain of the newly created channel at the outlet of Burke Creek is anticipated to encompass this location and provide suitable habitat for TYC. The channel of the new outlet for Burke Creek will not be confined by culverts that accumulate substantial amounts of sediment and cause backwatering and flooding within the campground. Instead, the design is intended to facilitate overbanking under high flows, which in turn creates a wider floodplain and eliminates the existing stabilized upland. Over time, the improved hydrology is expected to create a more dynamic stream mouth with a higher quality habitat for TYC than is currently present in the existing outlets of Burke Creek or Kahle Ditch.

The new channel could provide expanded habitat as soon as the first year after construction. For instance, TYC was observed to rapidly colonize an area of beach adjacent to Edgewood Golf Course that collapsed after intense storms in January 2006 (Stanton and Pavlik 2007). Likewise, TYC rapidly colonized the rock-lined outfall of a storm drain that was built for the Bijou Area Erosion Control Project implemented by the City of South Lake Tahoe in 2013 and 2014. Both actions provided low elevation habitat that made it easier for the developing roots of potentially colonizing TYC to more easily access the water table of Lake Tahoe needed to facilitate establishment and growth.

Resource protection barriers will be constructed and maintained at the new outlet to protect TYC from recreational trampling. The permanent fencing maintained at the existing outlet of Burke Creek has allowed TYC to persist for decades despite the intense recreational pressure. Although fencing at the new outlet of Burke Creek may be removed in the future, it would only be removed as long as post-removal monitoring demonstrated that the natural barriers installed during this project were effective at protecting stem abundance from recreational pressure.

TYC habitat quality and plant abundance will be monitored in Sub-Project Area 1 following 2015 Conservation Strategy survey protocols (pg. 64) for 3-years post-project or until performance criteria are met. If TYC stem counts decline from the baseline count (from encroachment of upland vegetation species or recession of soil moisture) translocation or out planting to the newly constructed habitat would occur to meet performance criteria.

Please see Section 7 for the full list of Resource Protection Measures for TYC. The following performance criteria is proposed:

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- A baseline of 330 stems +/- 10% for the Sub-Project 1 area provides a performance target that integrates long-term survey data. This target represents the combined average stem count at both sites (230 stems at Burke Creek and 100 at Kahle Ditch) during the survey period from 2000-2023. Surveys during that period were conducted under a balanced number of high (8 years), low (9 years), and transitional lake levels (4 years), meaning it has relatively low bias.
- If the baseline target stem count of 330 stems +/-10%, is not achieved within Sub-Project Area 1 through translocation and natural processes of persistence of existing habitat and colonization of the new channel within 3-years post-project, the difference may be mitigated by a 2:1 planting of container-grown TYC in created habitat. This ratio is based on survival rates of > 50% from past plantings at this location (Stanton and Pavlik 2006).
- Propagation and out planting will follow Best Management Practices in the 2015 TYC Conservation Strategy.

6.3 CUMULATIVE EFFECTS

Private, State and local government projects that are within or in the vicinity of the Action Area that are reasonably certain to occur are analyzed below to evaluate the cumulative effects of those projects when combined with the Burke Creek Rabe Meadow Riparian Restoration Project.

Barton Healthcare System owns approximately 7.5 acres of land located at 168 Highway 50 that lies adjacent to the Action Area to the south east. This site is the previous location of the Lakeside Inn Casino. Demolition of the casino building and ancillary structures commenced in 2022 and was completed in 2023. Barton Healthcare System is likely to propose a new medical campus in this location although no permits have been issued by local jurisdictions for such a facility. There's potential for commercial, public service and other mixed-uses to be implemented on the site. Any construction activity onsite would be required to comply with Tahoe Regional Planning Agency Code of Ordinances that require impacts to biological resources and water quality to be mitigated. Stormwater generated from the site would be required to be treated onsite, benefitting water quality as urban runoff would be intercepted and contained.

Local and State government projects include the Kahle Complete Streets Project. This project is currently going through the planning phases and will result in reconstruction of Kahle Drive that borders the action area to the south. This project will include street improvements that include drainage improvements, landscaping and stormwater interception and treatment, and will require minor dewatering into Rabe Meadow during construction. This project is expected to commence in 2023 and will result in an overall increase in water quality in the area.

Work continues on the Tahoe Beach Club private residences that border the Action Area to the south at the end of Kahle Drive. This private residential area is in process of implementing later phases of buildout, that will result a total of 48 condominium units together with the clubhouse. This construction of the residential units will not impact the project as measures have been taken to eliminate impacts to biological resources. Additionally, Tahoe Beach Club LLC owns small portions of the project restoration stie and is required by TRPA Conditional Permit to contribute to the restoration of Rabe Meadow and Burke Creek.

Similar concurrent projects in the Lake Tahoe Basin with shore zone and meadow components include the Taylor and Tallac Restoration Project and the Meeks Bay Restoration Project. These projects have potential short-term impacts to TYC that are being mitigated through similar methods as proposed here. These projects also have similar goals to improve aquatic and wetland habitat ecosystem functions. Implementation of these projects is expected to result in a net increase in suitable TYC habitat and wetland habitat availability and quality from current conditions. Temporary impacts during construction will result, however the benefits of the project far outweigh the impacts during implementation.

For the reasons above, the Burke Creek Rabe Meadow Riparian Restoration Project is expected to contribute to a positive cumulative effect on biological resources within the LTBMU.

6.4 DETERMINATIONS

The Burke Creek Rabe Meadow Riparian Restoration Project (Project) includes suitable meadow and riparian habitat for the following Forest Service Region 5 Sensitive Plant species: *Botrychium ascendens*, *Botrychium crenulatum*, *Botrychium minganense*, *Botrychium montanum*, *Bruchia bolanderi*, and *Ivesia sericolueca*.

It is my determination that the Project **will not affect** *Botrychium ascendens*, *Botrychium montanum*, or *Ivesia sericolueca*. This determination is based on a) no occurrences were detected within the Project Area during pre-implementation surveys; b) suitable riparian and meadow habitat for *B. ascendens* and *B. montanum* did not contain incense cedar, which is a component of suitable habitat on the LTBMU; and c) volcanic soils, which are characteristic of suitable habitat for *Ivesia sericolueca*, are not present.

It is my determination that the Project **may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability** of the following 3 species: *Botrychium crenulatum*, *B. minganense*, and *Bruchia bolanderi*. This determination is based on a) the lack of known occurrences within the Project Area; b) impacted suitable meadow/riparian habitat would have an expected vegetation recovery period of 3 years; c) the Project is expected to result in the long-term improvement of hydrological conditions and meadow/riparian habitat quality; and d) the implementation of pre-construction inventory and protection measures for individuals that could be present.

It is my determination that the Project **may affect individuals, but is not likely to result in a trend toward Federal listing or a loss of viability** for Tahoe yellow cress (*Rorippa subumbellata*; TYC). This determination is based on a) direct impacts to extant TYC stems in the existing outlet of Burke Creek and Kahle Ditch would be avoided during project construction; b) indirect effects from change in habitat condition at the outlet of Kahle Ditch would be mitigated by the translocation of those stems and/or planting of container-grown TYC; c) translocation and out planting have been successfully utilized at this location in the past; d) the creation of a new alignment of Burke Creek is anticipated to result in a net gain of high-quality habitat for TYC which would mitigate the removal of habitat from Kahle Ditch and potential loss of habitat quality in the existing mouth of Burke Creek; e) the improved habitat conditions will increase the probability that TYC can persist over the long term under changing lake levels; f) resource protection barriers will provide protection from recreation impacts at the new channel; and g) post-project monitoring and management will ensure that TYC can continue to persist in this location in the future.

6.5 OTHER BOTANICAL RESOURCES

Other botanical resources, such as specially designated management areas, unique plant communities, special habitat, and LTBMU Watch List species, are addressed in the Assessment of Other Botanical Resources in **Appendix C**.

7 RESOURCE PROTECTION MEASURES

The following resource protection measures (RPMs) have been incorporated into project design to minimize impacts to species in the project area. RPMs were developed using the guidance provided in the Forest Service Manual and the LTBMU Land and Resource Management Plan.

BOT-1 Sensitive Plants (not including Tahoe yellow cress)

No sensitive plant species (other than Tahoe yellow cress) were documented within the Project Area during field surveys.

- If sensitive species are observed within any Sub-Project Area during Project implementation, ground disturbing activities in that area will stop until the LTBMU Forest Botanist is notified and appropriate avoidance or mitigation actions are agreed on. If feasible, identified occurrences would be avoided with a protective buffer from restoration activities and protected *in situ*.

BOT-2 Revegetation

- Ground and vegetation disturbance shall be minimized to the areas necessary for construction. Seed and plant mixes must be approved by the Forest Botanist or their designated appointee who has knowledge of local flora. Non-native invasive species will not be intentionally used in revegetation. Seed lots will be tested for weed seed and test results will be provided to the Forest Botanist or their designated appointee. Persistent non-natives, such as timothy (*Phleum pretense*), orchardgrass (*Dactylis glomerata*), ryegrass (*Lolium spp.*), or crested wheatgrass (*Agropyron cristatum*) will not be used in revegetation.
- Seed and plant material will be sourced from species native to the Lake Tahoe Basin. As a general rule, plant and seed material shall be collected from local genetic sources within the USFS Provisional Seed Zone of the disturbed area and within 500 – 1,000 ft. elevation of the site.

BOT-3 Tahoe yellow cress

Baseline and Inventory

- Monitoring will occur in TYC habitat within Sub-Project Area 1 during periods of active ground disturbance throughout the TRPA approved survey period from June 15- September 30th. The monitoring will be conducted by a botanist approved by the LTBMU Forest Botanist and should occur within 14 days prior to projected disturbance. During the inventory, the botanist will count TYC “stems”, described as the above-ground leafy rosette that results from either seed germination or vegetative reproduction. Stems appear on the soil surface to be individuals, but may be connected below the surface by an extensive system of lateral and vertical roots

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(Stanton et al. 2015, pg. 17). The stem count will include an estimate of the percentage that are vegetative, flowering, and fruiting.

- During the inventory, the botanist will consult with the Project Managers to determine which stems, if any, will be directly impacted by the construction.

Avoidance

- TYC stems that will not be impacted will be flagged in blue and fluorescent orange and avoided for the duration of the Project.

Translocation

- TYC stems that may be indirectly impacted by Project activities will be translocated between June 15-September 30, 2024.
- Translocation methods shall follow Best Management Practices specified in the 2015 TYC Conservation Strategy (Stanton et al. 2015).
- The translocation may take several approaches which shall be determined in consultation with the LTBMU Forest Botanist:
 - 1) All extant stems may be immediately translocated to a receptor location (on-site or off) that will be determined based on site conditions or
 - 2) All (or some portion) of the stems selected for translocation may be moved to potting tubes in a greenhouse for planting at a later date.

Seed collection

- Propagation of container-grown TYC in a greenhouse for out planting in subsequent years may be implemented if necessary to meet performance criteria. Seed collection would be conducted following standard USFS protocols and 2015 Conservation Strategy Best Management Practices (pg. 90).

Resource Protection Barriers

- New resource protection barriers in the form of large logs produced from meadow restoration activities and fencing will be installed surrounding the new channel location and outlet of Burke Creek for sustained protection of newly created TYC habitat from high intensity recreation impacts. Fencing would be designed in coordination with public services staff to maintain public access to the lake shore.
- Existing fencing at Burke Creek outlet will be maintained as long as TYC are present, or at least 3-years post-project.

Revegetation

- Revegetation treatments applied to the newly created channel of Burke Creek will be designed in coordination with Forest Botanist to minimize introduction of competitive pressure on TYC.

Post-project monitoring

- TYC habitat quality and plant abundance will be monitored in Sub-Project Area 1 following 2015 Conservation Strategy survey protocols (pg. 64) for 3-years post-project or until performance criteria are met.
- If TYC stem counts decline from the baseline count (from encroachment of upland vegetation species or recession of soil moisture) translocation or out planting to the newly constructed habitat would occur to meet performance criteria.

The following performance criteria is proposed:

- A baseline of 330 stems +/- 10% for the Sub-Project 1 area provides a performance target that integrates long-term survey data. This target represents the combined average stem count at both sites (230 stems at Burke Creek and 100 at Kahle Ditch) during the survey period from 2000-2023. Surveys during that period were conducted under a balanced number of high (8 years), low (9 years), and transitional lake levels (4 years), meaning it has relatively low bias.
- If the baseline target stem count of 330 stems +/-10%, is not achieved within Sub-Project Area 1 through natural processes of persistence of existing habitat and colonization of the new channel within 3-years post-project, the difference may be mitigated by a 2:1 planting of container-grown TYC in created habitat. This ratio is based on survival rates of > 50% from past plantings at this location (Stanton and Pavlik 2006).
- Propagation and out planting will follow Best Management Practices in the 2015 TYC Conservation Strategy.

BOT – 4 Salvaged Sod

Sod will be harvested and salvaged in disturbance areas (except where weeds are present), watered until re-planted, and used for revegetation of disturbed surfaces.

8 COMPLIANCE WITH MANAGEMENT DIRECTION

Proposed action can be implemented in a manner that is consistent with the Forest Plan as amended (USDA 1988; USDA 2004). Threatened, Endangered, and Sensitive botanical species are protected as needed to maintain viability.

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Appendix A Burke Creek Rabe Meadow plant species list

APPENDIX B Burke Creek Rabe Meadow Riparian Restoration Project PLant List

	A	B	C	D
1	Family	Scientific Name	Common Name	
2	Apiaceae	<i>Allium campanulatum</i>	dusky onion	
3	Apiaceae	<i>Berula erecta</i>	cutleaf waterparsnip	
4	Apiaceae	<i>Heracleum maximum</i>	cow parsnip	
5	Apiaceae	<i>Perideridia parishii</i>	Sierra yampah	
6	Apocynaceae	<i>Apocynum androsaemifolium</i>	spreading dogbane	
7	Asteraceae	<i>Achillea millefolium</i>	common yarrow	
8	Asteraceae	<i>Agoseris glauca</i>	pale agoseris	
9	Asteraceae	<i>Ambrosia acanthicarpa</i>	sand bursage	
10	Asteraceae	<i>Anaphallis margaritaceae</i>	pearly everlasting	
11	Asteraceae	<i>Arnica lanceolata ssp. prima</i>	streamside arnica	
12	Asteraceae	<i>Arnica longifolia</i>	seep spring arnica	
13	Asteraceae	<i>Arnica mollis</i>	soft arnica	
14	Asteraceae	<i>Artemesia tridentata ssp. vaseyana</i>	mountain sagebrush	
15	Asteraceae	<i>Artemisia douglasiana</i>	mugwort	
16	Asteraceae	<i>Centaurea stoebe ssp. micranthus</i>	spotted knapweed	
17	Asteraceae	<i>Cichorium intybus</i>	chicory	
18	Asteraceae	<i>Cirsium vulgare</i>	bull thistle	
19	Asteraceae	<i>Ericameria nauseosa ssp. nauseosa</i>	rubber rabbitbrush	
20	Asteraceae	<i>Erigeron canadensis</i>	Canadian horseweed	
21	Asteraceae	<i>Erigeron coulteri</i>	Coulter's daisy	
22	Asteraceae	<i>Erigeron filifolius</i>	threadleaf fleabane	
23	Asteraceae	<i>Gnaphalium palustre</i>	lowland cudweed	
24	Asteraceae	<i>Grindelia squarrosa var. serrulata</i>	curlycup gumweed	
25	Asteraceae	<i>Helenium bigelovii</i>	Bigelow sneeze weed	
26	Asteraceae	<i>Lactuca serriola</i>	prickly lettuce	
27	Asteraceae	<i>Leucanthemum vulgare</i>	oxeye daisy	
28	Asteraceae	<i>Madia glomerata</i>	mountain tarweed	
29	Asteraceae	<i>Matricaria discoidea</i>	pineapple weed	
30	Asteraceae	<i>Senecio integerrimus</i>	single stemmed groundsel	
31	Asteraceae	<i>Senecio triangularis</i>	arrowleaf groundsel	
32	Asteraceae	<i>Solidago canadensis</i>	Canada goldenrod	
33	Asteraceae	<i>Sonchus asper</i>	spiny sowthistle	
34	Asteraceae	<i>Stephanomeria lactucina</i>	wire lettuce	
35	Asteraceae	<i>Symphyotrichum ascendens</i>	western aster	
36	Asteraceae	<i>Symphyotrichum bracteolatum</i>	western aster	
37	Asteraceae	<i>Symphyotrichum spathulatum var. spathulatum</i>	western mountain aster	
38	Asteraceae	<i>Taraxacum officinale</i>	common dandelion	
39	Asteraceae	<i>Tragopogon dubius</i>	salsify	
40	Asteraceae	<i>Wyethia mollis</i>	wooly mule's ears	
41	Betulacaceae	<i>Alnus incana ssp. tenuifolia</i>	mountain alder	
42	Boraginaceae	<i>Cryptantha affinis</i>	quill cryptantha	
43	Boraginaceae	<i>Cryptantha intermedia</i>	common cryptanth	
44	Boraginaceae	<i>Cryptantha simulans</i>	pine cryptantha	
45	Boraginaceae	<i>Phacelia hastata var. hastata</i>	mountain phacelia	
46	Boraginaceae	<i>Phacelia heterophylla ssp. virgata</i>	varileaf phacelia	
47	Boraginaceae	<i>Plagiobothrys sp.</i>	plagiobothrys	
48	Boraginaceae	<i>Symphytum officinale</i>	comfrey	
49	Brassicaceae	<i>Barbarea orthoceras</i>	winter cress	
50	Brassicaceae	<i>Boechera pinetorum</i>	woodland rockcress	
51	Brassicaceae	<i>Boechera platysperma</i>	pioneer rockcress	
52	Brassicaceae	<i>Boechera platysperma</i>	pioneer rockcress	

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	A	B	C	D
1	Family	Scientific Name	Common Name	
53	Brassicaceae	<i>Boechera rectissima</i>	bristle leaf rockcree	
54	Brassicaceae	<i>Cardamine brewerii</i>	Brewer's bittercress	
55	Brassicaceae	<i>Descurainia californica</i>	Sierra tansymustard	
56	Brassicaceae	<i>Descurainia incisa ssp. incisa</i>	mountain tansy mustard	
57	Brassicaceae	<i>Descurainia pinnata</i>	yellow tansy mustard	
58	Brassicaceae	<i>Descurainia sophia</i>	herb sophia	
59	Brassicaceae	<i>Draba verna</i>	spring draba	
60	Brassicaceae	<i>Erysimum capitatum</i>	western wallflower	
61	Brassicaceae	<i>Lepidium densiflorum</i>	common pepper grass	
62	Brassicaceae	<i>Lepidium virginicum</i>	Virginia pepperweed	
63	Brassicaceae	<i>Nasturtium officinale</i>	watercress	
64	Brassicaceae	<i>Rorippa curvisiliqua</i>	curvepod yellow cress	
65	Brassicaceae	<i>Rorippa subumbellata</i>	Tahoe yellow cress	
66	Brassicaceae	<i>Sisymbrium altissimum</i>	tall tumble mustard	
67	Caprifoliaceae	<i>Lonicera involucrata var. involucrata</i>	twinberry	
68	Caprifoliaceae	<i>Symphoricarpos mollis</i>	creeping snowberry	
69	Caryophyllaceae	<i>Cerastium fontanumssp.vulgare</i>	nouse-ear chickweed	
70	Caryophyllaceae	<i>Dianthus armeria ssp. armeria</i>	grass pink	
71	Caryophyllaceae	<i>Stellaria longipes</i>	long stalked starwort	
72	Chenopodiaceae	<i>Chenopodium album</i>	lambsquarters	
73	Convolvulaceae	<i>Convolvulus arvensis</i>	field bindweed	
74	Cornaceae	<i>Cornus sericea ssp. sericea</i>	western dogwood	
75	Cupressaceae	<i>Calocedrus decurrens</i>	incense cedar	
76	Cyperaceae	<i>Carex amplifolia</i>	big-leaf sedge	
77	Cyperaceae	<i>Carex aquatilis</i>	short-scale sedge	
78	Cyperaceae	<i>Carex arthrostachya</i>	Slender leaved sedge	
79	Cyperaceae	<i>Carex douglasii</i>	Douglas' sedge	
80	Cyperaceae	<i>Carex fracta</i>	fragile-sheathed sedge	
81	Cyperaceae	<i>Carex illiota</i>	sheep sedge	
82	Cyperaceae	<i>Carex integra</i>	early sedge	
83	Cyperaceae	<i>Carex lenticularis</i>	lakeshore sedge	
84	Cyperaceae	<i>Carex nebrascensis</i>	Nebraska sedge	
85	Cyperaceae	<i>Carex pellita</i>	woolly sedge	
86	Cyperaceae	<i>Carex rossii</i>	Ross' sedge	
87	Cyperaceae	<i>Carex vesicaria</i>	Whitney's sedge	
88	Cyperaceae	<i>Scirpus microcarpus</i>	smallfruit bulrush	
89	Dennstaedtiaceae	<i>Pteridium aquilinum var. pubescens</i>	western brackenfern	
90	Dipsacaceae	<i>Dipsacus fullonum</i>	wild teasel	
91	Equisetaceae	<i>Equisetum arvense</i>	field horsetail	
92	Equisetaceae	<i>Equisetum laevigatum</i>	smooth scouring rush	
93	Ericaceae	<i>Arctostaphylos patula</i>	green-leaf manzanita	
94	Ericaceae	<i>Chimaphila menziesii</i>	little prince's pine	
95	Ericaceae	<i>Eriogonum nudum</i>	naked buckwheat	
96	Ericaceae	<i>Eriogonum umbellatum</i>	sulfur buckwheat	
97	Ericaceae	<i>Eriogonum wrightii var. subscaposum</i>	Wright's buckwheat	
98	Ericaceae	<i>Orthilia secunda</i>	sidebells wintergreen	
99	Ericaceae	<i>Pterospora andromedea</i>	woodland pinedrops	
100	Ericaceae	<i>Pyrola asarifolia ssp. asarifolia</i>	bog wintergreen	
101	Ericaceae	<i>Sarcodes sanguinea</i>	snow plant	
102	Fabaceae	<i>Acmispon americanus var. americanus</i>	Spanish clover	
103	Fabaceae	<i>Lathyrus lanszwertii</i>	everlasting pea	

APPENDIX B Burke Creek Rabe Meadow Riparian Restoration Project PLant List

	A	B	C	D
1	Family	Scientific Name	Common Name	
104	Fabaceae	<i>Lathyrus latifolius</i>	everlasting pea	
105	Fabaceae	<i>Lupinus argenteus</i>	silvery lupine	
106	Fabaceae	<i>Lupinus breweri</i>	Brewer's lupine	
107	Fabaceae	<i>Lupinus grayi</i>	Gray's lupine	
108	Fabaceae	<i>Lupinus latifolius</i>	broad leaf lupine	
109	Fabaceae	<i>Lupinus polyphyllus</i>	bigleaf lupine	
110	Fabaceae	<i>Medicago lupulina</i>	black medic	
111	Fabaceae	<i>Melilotus albus</i>	white sweetclover	
112	Fabaceae	<i>Melilotus officinalis</i>	sweetclover	
113	Fabaceae	<i>Trifolium dubium</i>	shamrock	
114	Fabaceae	<i>Trifolium longipes</i>	long stalked clover	
115	Fabaceae	<i>Trifolium monanthum</i>	carpet clover	
116	Fabaceae	<i>Trifolium pratense</i>	red clover	
117	Fagaceae	<i>Chrysolepis sempervirens</i>	bush chinquapin	
118	Gentianaceae	<i>Centaurium tenuiflorum</i>	slender centaury	
119	Gentianaceae	<i>Zelterna venusta</i>	charming centaury	
120	Geraniceae	<i>Erodium cicutarium</i>	filaree	
121	Grimmiaceae	<i>Grimmia alpestris</i>	moss	
122	Grossulariaceae	<i>Ribes inerme var. inerme</i>	white-stemmed	
123	Grossulariaceae	<i>Ribes nevadense</i>	Sierra currant	
124	Grossulariaceae	<i>Ribes roezlii var. roezlii</i>	Sierra gooseberry	
125	Grossulariaceae	<i>Ribes viscosissimum</i>	sticky currant	
126	Hypericaceae	<i>Hypericum anagaloides</i>	creeping St. Johnswort	
127	Hypericaceae	<i>Hypericum formosum</i>	Scouler's St. Johnswort	
128	Hypericaceae	<i>Hypericum perforatum</i>	Klamathweed	
129	Iridaceae	<i>Iris missouriensis</i>	Rocky Mountain iris	
130	Juncaceae	<i>Juncus balticus</i>	Baltic rush	
131	Juncaceae	<i>Juncus bufonius</i>	common toad rush	
132	Juncaceae	<i>Juncus capillaris</i>	hairy stem dwarf rush	
133	Juncaceae	<i>Juncus effusus</i>	common bog rush	
134	Juncaceae	<i>Juncus ensifolius</i>	sword leaf rush	
135	Juncaceae	<i>Juncus nevadensis</i>	Sierra rush	
136	Juncaceae	<i>Juncus occidentalis</i>	common western rush	
137	Juncaceae	<i>Juncus oxymeris</i>	pointed rush	
138	Lamiaceae	<i>Agastache urticifolia</i>	giant hyssop	
139	Lamiaceae	<i>Mentha arvensis</i>	wild mint	
140	Lamiaceae	<i>Monardella lanceolata</i>	western pennyroyal	
141	Lamiaceae	<i>Prunella vulgaris var. lanceolata</i>	mountain selfheal	
142	Lamiaceae	<i>Scutellaria californica</i>	California skullcap	
143	Lamiaceae	<i>Stachys ajugoides</i>	hedgenettle	
144	Lemnaceae	<i>Lemna sp.</i>	duckweed	
145	Linaceae	<i>Linum perrene</i>	blue flax	
146	Loaseaceae	<i>Mentzelia dispersa</i>	Nevada stickleaf	
147	Malvaceae	<i>Sidalcea oregana</i>	Oregon checkermallow	
148	Menyanthaceae	<i>Menyanthes trifoliata</i>	buckbean	
149	Monotropaceae	<i>Pleuricospora fimbriolata</i>	fringed pinesap	
150	Monotropaceae	<i>Pleuricospora fimbriolata</i>	fringed pinesap	
151	Montiaceae	<i>Montia linearis</i>	narrowleaf minerslettuce	
152	Onagraceae	<i>Chamerion angustifolium ssp. circumvagum</i>	fireweed	
153	Onagraceae	<i>Circaea alpina ssp. pacifica</i>	enchanter's nightshade	
154	Onagraceae	<i>Epilobium brachycarpum</i>	tall annual willowherb	

APPENDIX B Burke Creek Rabe Meadow Riparian Restoration Project PLant List

	A	B	C	D
1	Family	Scientific Name	Common Name	
155	Onagraceae	<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	fringed willowherb	
156	Onagraceae	<i>Epilobium ciliatum</i> ssp. <i>glandulosum</i>	sticky willowherb	
157	Onagraceae	<i>Epilobium glaberrimum</i>	smooth stemmed willowherb	
158	Onagraceae	<i>Epilobium oregonense</i>	Oregon willowherb	
159	Onagraceae	<i>Gayophytum diffusum</i>	spreading groundsmoke	
160	Onagraceae	<i>Gayophytum humile</i>	dwarf groundsmoke	
161	Onagraceae	<i>Kelloggia galioides</i>	milk kelloggia	
162	Onagraceae	<i>Oenothera elata</i> ssp. <i>Hirsutissima</i>	Hooker's evening primrose	
163	Orchidaceae	<i>Platanthera dilatata</i> var. <i>eucochachys</i>	bog orchid	
164	Orchidaceae	<i>Platanthera leucostachys</i>	rein orchid	
165	Orchidaceae	<i>Spiranthes romanzoffiana</i>	ladies tresses	
166	Paeoniaceae	<i>Paeonia brownii</i>	Brown's peony	
167	Papaveraceae	<i>Eschscholzia californica</i>	California poppy	
168	Phrymaceae	<i>Erythranthe primuloides</i>	primrose monkeyflower	
169	Phrymaceae	<i>Erythranthe guttata</i>	yellow monkey flower	
170	Pinaceae	<i>Abies concolor</i>	white fir	
171	Pinaceae	<i>Pinus contorta</i>	lodgepole pine	
172	Pinaceae	<i>Pinus jeffreyi</i>	Jeffrey pine	
173	Plantaginaceae	<i>Collinsia parviflora</i>	blue-eyed Mary	
174	Plantaginaceae	<i>Penstemon gracilentus</i>	slender beardtongue	
175	Plantaginaceae	<i>Penstemon rydbergii</i> var. <i>oreocharis</i>	meadow penstemon	
176	Plantaginaceae	<i>Penstemon speciosus</i>	showy penstemon	
177	Plantaginaceae	<i>Penstemon strictus</i>	Rocky Mountain penstemon	
178	Plantaginaceae	<i>Plantago lanceolata</i>	narrowleaf plantain	
179	Plantaginaceae	<i>Plantago major</i>	common plantain	
180	Plantaginaceae	<i>Veronica americana</i>	American brooklime	
181	Plantaginaceae	<i>Veronica anagallis-aquatica</i>	water speedwell	
182	Plantaginaceae	<i>Veronica scutella</i>	marsh speedwell	
183	Poaceae	<i>Agropyron cristatum</i>	crested wheatgrass	
184	Poaceae	<i>Agrostis exerata</i>	spike bentgrass	
185	Poaceae	<i>Agrostis idahoensis</i>	Colonial bentgrass	
186	Poaceae	<i>Agrostis stolonifera</i>	creeping bentgrass	
187	Poaceae	<i>Alopecurus aequalis</i>	Short-awn foxtail	
188	Poaceae	<i>Apera interrupta</i>	dense silkybent	
189	Poaceae	<i>Avena sativa</i>	common oat	
190	Poaceae	<i>Bromus carinatus</i>	California brome	
191	Poaceae	<i>Bromus inermis</i>	smooth brome	
192	Poaceae	<i>Bromus tectorum</i>	cheatgrass	
193	Poaceae	<i>Dactylis glomerata</i>	orchard grass	
194	Poaceae	<i>Deschampsia cespitosa</i>	tufted hairgrass	
195	Poaceae	<i>Deschampsia danthonioides</i>	annual hairgrass	
196	Poaceae	<i>Elymus cinereus</i>	Great Basin wildrye	
197	Poaceae	<i>Elymus elymoides</i>	squirreltail	
198	Poaceae	<i>Elymus glaucus</i>	blue wildrye	
199	Poaceae	<i>Elymus hispidus</i>	intermediate wheatgrass	
200	Poaceae	<i>Elymus trachycaulus</i>	slender wheatgrass	
201	Poaceae	<i>Festuca idahoensis</i>	Idaho fescue	
202	Poaceae	<i>Glyceria elata</i>	tall manna grass	
203	Poaceae	<i>Hordeum brachyantherum</i>	meadow barley	
204	Poaceae	<i>Hordeum jubatum</i>	foxtail barley	
205	Poaceae	<i>Hordeum marinum</i> ssp. <i>gussoneum</i>	Mediterranean barley	

APPENDIX B Burke Creek Rabe Meadow Riparian Restoration Project PLant List

	A	B	C	D
1	Family	Scientific Name	Common Name	
206	Poaceae	<i>Leymus triticoides</i>	creeping wildrye	
207	Poaceae	<i>Muhlenbergia filiformis</i>	slender muhly	
208	Poaceae	<i>Poa annua</i>	annual blue grass	
209	Poaceae	<i>Poa bulbosa</i>	bulbous bluegrass	
210	Poaceae	<i>Poa fendleriana</i>	Fendler's bluegrass	
211	Poaceae	<i>Poa palustris</i>	fowl bluegrass	
212	Poaceae	<i>Poa pratensis ssp. pratensis</i>	Kentucky bluegrass	
213	Poaceae	<i>Poa secunda</i>	Sandberg bluegrass	
214	Poaceae	<i>Poa wheeleri</i>	Wheeler's poa	
215	Poaceae	<i>Stipa occidentalis var. californica</i>	California needle grass	
216	Polemoniaceae	<i>Leptosiphon ciliatus</i>	whiskerbrush	
217	Polemoniaceae	<i>Phlox difussa</i>	spreading phlox	
218	Polemoniaceae	<i>Phlox gracilis</i>	graceful phlox	
219	Polemoniaceae	<i>Polemonium californicum</i>	Jacob's ladder	
220	Polemoniaceae	<i>Polemonium occidentale</i>	great polemonium	
221	Polygonaceae	<i>Bistorta bistortoides</i>	bisort	
222	Polygonaceae	<i>Eriogonum umbellatum</i>	sulphur flower	
223	Polygonaceae	<i>Persicaria hydropiper</i>	common smartweed	
224	Polygonaceae	<i>Polygonum aviculare</i>	yard knotweed	
225	Polygonaceae	<i>Rumex acetosella</i>	common sheep sorrel	
226	Polygonaceae	<i>Rumex crispus</i>	curly dock	
227	Polygonaceae	<i>Rumex salicifolius</i>	willow dock	
228	Ranunculaceae	<i>Delphinium glaucum</i>	Sierra larkspur	
229	Ranunculaceae	<i>Geum macrophyllum</i>	big-leaf avens	
230	Ranunculaceae	<i>Myosurus sp.</i>	mousetail	
231	Ranunculaceae	<i>Ranunculus alsimifolius</i>	common water plantain	
232	Ranunculaceae	<i>Thalictrum fendleri</i>	meadow rue	
233	Rhamnaceae	<i>Ceanothus cordulatus</i>	mountain whitethorn	
234	Rhamnaceae	<i>Ceanothus prostratus</i>	mahala mat	
235	Rhamnaceae	<i>Ceanothus velutinus</i>	tobacco brush	
236	Rosaceae	<i>Drymocallis glandulosa</i>	sticky cinquefoil	
237	Rosaceae	<i>Fragaria virginiana</i>	mountain strawberry	
238	Rosaceae	<i>Geum macrophyllum</i>	big leaf avens	
239	Rosaceae	<i>Holodiscus discolor</i>	creambush	
240	Rosaceae	<i>Potentilla flabellifolia</i>	fan leaved cinquefoil	
241	Rosaceae	<i>Potentilla gracilentus var. fastigata</i>	slender cinquefoil	
242	Rosaceae	<i>Potentilla recta</i>	sulfur cinquefoil	
243	Rosaceae	<i>Prunus emarginata</i>	bitter cherry	
244	Rosaceae	<i>Purshia tridentata</i>	antelope bitterbrush	
245	Rosaceae	<i>Rosa woodsii ssp. ultramontana</i>	Wood's rose	
246	Rosaceae	<i>Rubus parviflorus</i>	western thimbleberry	
247	Rubiaceae	<i>Galium aparine</i>	goose grass	
248	Rubiaceae	<i>Galium bifolium</i>	low mountain bedstraw	
249	Rubiaceae	<i>Galium trifidum</i>	threepetal bedstraw	
250	Rubiaceae	<i>Galium triflorum</i>	Sweet-scented bedstraw	
251	Rubiaceae	<i>Kelloggia galiodes</i>	milk kelloggia	
252	Ruscaceae	<i>Maianthemum stellatum</i>	false Solomon's seal	
253	Salicaceae	<i>Populus tremuloides</i>	quaking aspen	
254	Salicaceae	<i>Populus trichocarpa</i>	black cottonwood	
255	Salicaceae	<i>Salix exigua</i>	coyote willow	
256	Salicaceae	<i>Salix lasiandra var. caudata</i>	Pacific willow	

APPENDIX B Burke Creek Rabe Meadow Riparian Restoration Project PLant List

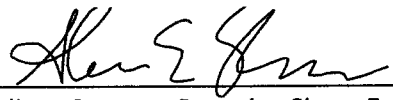
	A	B	C	D
1	Family	Scientific Name	Common Name	
257	Salicaceae	<i>Salix lasiolepis</i>	arroyo willow	
258	Salicaceae	<i>Salix lemmonii</i>	Lemmon's willow	
259	Salicaceae	<i>Salix scouleriana</i>	Scouler's willow	
260	Saxifragaceae	<i>Micranthes oregana</i>	bog saxifrage	
261	Scrophulariaceae	<i>Verbascum thapsus</i>	woolly mullein	
262	Typhaceae	<i>Typha sp.</i>	cattail	
263	Urticaceae	<i>Urtica dioica</i>	stinging nettle	
264	Violaceae	<i>Viola adunca</i>	Western dog violet	
265	Violaceae	<i>Viola glabella</i>	stream violet	
266	Violaceae	<i>Viola macloskeyi</i>	Macloskey's violet	
267	Viscaceae	<i>Arceuthobium campylopodum</i>	Western dwarf mistletoe	

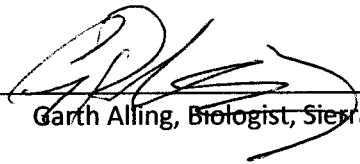
Appendix B Invasive Plant Risk Assessment

**INVASIVE PLANT RISK ASSESSMENT
BURKE CREEK RABE MEADOW
RIPARIAN RESTORATION PROJECT**

**LAKE TAHOE BASIN MANAGEMENT UNIT
USDA FOREST SERVICE**

March 2024

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Appendix A Invasive Plants of Management Concern on the Lake Tahoe Basin Management Unit

1 INTRODUCTION

The United States Forest Service (USFS) has identified invasive species as one of four critical threats to the nation's ecosystems. Invasive plants pose a significant threat to ecological function due to their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure. Infestations can also reduce the recreational or aesthetic value of native habitats.

Forest management activities can contribute to the introduction and spread of invasive plants by creating suitable environmental conditions for establishment and by acting as vectors for spread. The following risk assessment has been prepared to evaluate the risk associated with invasive plant introduction and spread as a result of the project.

1.1 ANALYSIS FRAMEWORK: PERTINENT LAWS, POLICIES, AND DIRECTION

A comprehensive summary of principal statutes governing the management of invasive plants on the National Forest System is available in FSM 2900. A brief summary of the pertinent laws, policies, and direction is provided below.

1.1.1 *Federal Laws and Executive Orders*

Executive Order 13112 (1999)—directs federal agencies to prevent the introduction of invasive species; detect and respond rapidly to control such species; and to minimize the economic, ecological, and human health impacts from invasive species on public lands.

1.1.2 *Forest Service Policies and Direction*

Forest Service Manual 2080 (1995)—Was replaced by FSM 2900 in 2011. FSM 2080 revised USFS national policy on noxious weed management to emphasize integrated weed management, which includes prevention and control measures, cooperation, and information collection and reporting.

Forest Service Manual 2900 (2011)—directs the Forest Service to manage invasive species with an emphasis on integrated pest management and collaboration with stakeholders, to prioritize prevention and early detection and rapid response actions, and ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the National Forest System (NFS) lands or to adjacent areas.

Forest Service Manual 2070 (2008)—provides guidelines for the use of native material on NFS lands. It restricts the use of persistent, non-native, non-invasive plant materials and prohibits the use noxious weeds for revegetation, rehabilitation and restoration projects. It also requires that all revegetation projects be reviewed by a trained or certified plant material specialist for consistency with national, regional, and forest policies for the use of native plant materials.

The Forest Service National Strategic Framework for Invasive Species Management (2011)—provides a consistent, agency-wide approach to the prevention, detection, and control of invasive insects, pathogens, plants, wildlife, and fish. The Framework provides broad and consistent strategic direction across all Forest Service Deputy Areas and agency programs. It also describes how National and Regional Invasive Species Issue Teams (NISIT and RISIT) will coordinate activities with the Forest Service and with Federal, State, and local partners. National priorities will be reviewed at least once every 5 years and

adjusted as needed. RISITs will assess and adjust their regional invasive species priorities for their respective ecosystems at least once every 5 years. The Framework incorporates the Invasive Species Systems Approach (ISSA) developed by the Forest Service to respond to threats over the next 5 to 10 years and supersedes the National Strategy and Implementation Plan for Invasive Species Management (2004). The ISSA identifies the elements and actions of the Framework that all programs and units within the National Forest System, Research and Development and State and Private Forestry should take, as appropriate, in addressing invasive species.

Region 5 Noxious Weed Management Strategy and Action Plan (USDA Forest Service 2000)—in response to national direction and regional needs, the region has developed this plan that is tiered to the national strategy. The Regional strategy emphasizes actions necessary to: promote the overall management of noxious weeds; to prevent the spread of weeds; control existing stands of weed infestations; promote the integration of weed issues into all Forest Service (FS) activities.

Sierra Nevada Forest Plan Amendment (USDA 2004)—Establishes the following invasive plant management prioritization: 1) prevent the introduction of new invaders; 2) conduct early treatment of new infestations; 3) contain and control established infestations. It also requires forests to conduct an invasive plant risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of management activities and develop mitigation measures for high and moderate risk activities with reference to the weed prevention practices in the Regional Noxious Weed Management Strategy. The 2016 LMP standards and guidelines included below supersede those Sierra Nevada Forest Plan Amendment plan components, however this invasive plant risk assessment has been prepared with guidance from the Sierra Nevada Forest Plan Amendment.

1.1.3 Forest Plan Direction

LTBMU Land Management Plan (LMP) (USDA 2016). The plan provides Standards and Guidelines regarding Invasive Species Management and directs the FS to incorporate prevention and control measures into project planning, management activities and operations to prevent new introductions or contribute to spreading of invasive species, and reduce impacts from existing infestations on NFS lands, or to adjacent lands and water bodies.

The LMP specifically addresses invasive plants through the development of desired conditions:

DC69. Invasive species do not adversely affect native species, human health, ecosystem processes, or other NFS resources.

DC70. Aquatic and terrestrial ecosystems are self-sustaining and resistant to the establishment of invasive species.

DC71. Invasive species management prioritizes prevention and early detection and rapid response actions.

The LMP also addresses Invasive Species Management Strategies for both aquatic and terrestrial species. Please refer to Standards and Guidelines below:

SG73. Incorporate prevention and control measures into project planning, management activities and operations to prevent new introductions or contribute to spreading of invasive species, and reduce impacts from existing infestations on NFS lands, or to adjacent lands and water bodies. [Standard]

SG74. When feasible, employ the following control measures, such as: [Guideline]

- a) Use contract and permit clauses to require that the activities of contractors and permittees (including but not limited to special use permits, utility permits, pack stock operators) are

conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species.

- b) Include invasive species prevention and control measures in mining plans of operation and reclamation plans.
- c) When working in known invasive species infestations during project implementation, equipment and vehicles shall be cleaned before moving to other NFS lands.
- d) Support partner agencies and their programs.
- e) Use on-site materials where feasible, unless contaminated with invasive species.

SG75. Gravel, fill, topsoil, mulch, and other materials should be free of invasive species. [Guideline]

SG76. New infestations are inventoried, and known infestations are prioritized and contained, controlled, or eradicated using an integrated management approach. [Standard]

Aquatic

SG77. Ensure that all motorized watercraft launching from staffed Forest Service facility have required documentation of AIS inspection. [Standard]

SG78. All equipment and vehicles (Forest Service and contracted) used in a waterbody during project implementation shall be inspected and free of invasive species prior to implementation. [Guideline]

SG79. Take actions as needed to minimize the risk of spreading Bd fungus and other potential aquatic pathogens and/or diseases through aquatic systems. [Guideline]

SG80. Ensure that field gear (waders, float tubes, etc.) is cleaned, decontaminated, and/or fully dried prior to entering or moving between aquatic habitats. [Guideline]

SG81. Establish non-motorized watercraft risk screening for AIS at staffed entry points for both Forest Service boat launches and recreation facilities adjacent to Lake Tahoe water bodies, including campgrounds, resorts, and day use areas. [Guideline]

SG82. Following emergency response guidelines, implement prevention measures to decrease the potential for aquatic invasive species transference during [Guideline]

Terrestrial

SG83. For projects involving ground disturbance, inventory project areas and adjacent areas (particularly access routes) for invasive plants. [Guideline]

SG84. If supplemental fodder (such as hay, straw, or silage) is required for permitted livestock, including horses and other pack animals, it shall be weed-free as certified by state or local certification programs. [Standard]

SG85. Screen plant materials used in revegetation, rehabilitation, and restoration (seed, cuttings, whole plants) for invasive plant risks. Avoid the use of persistent non-native plants unless justified in project documentation. [Guideline]

SG86. All equipment and vehicles (Forest Service and contracted) used off-road during project implementation shall be cleaned and free of invasive plant material before moving into the project area. [Guideline]

SG87. Following emergency response guidelines, utilize washing stations at staging areas, base camps, or other incident locations, to clean soil, seeds, vegetative material, or other debris that could contain invasive plant material from off-road equipment and vehicles. [Guideline]

SG88. Avoid locating landings or staging areas within areas infested by invasive plants, including during project implementation, fire management activities, and other ongoing management and maintenance activities. If infested areas are the only feasible landing/staging areas, then treat infestations prior to use, except in emergency situations. [Guideline]

SG89. Minimize the size of staging and construction areas. Where feasible, reestablish vegetation on disturbed bare ground to reduce invasive species establishment. [Guideline]

2 PROJECT DESCRIPTION

2.1 LOCATION AND EXTENT

The Burke Creek Rabe Meadow Riparian Restoration Project (Project), is located primarily on land managed by the US Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) in Stateline, Douglas County, Nevada (**Figure 1- Project Location and Vicinity**). The Project study area is 274 acres and includes the lowest reach of Burke Creek west of Highway 50, Rabe Meadow, a small parcel of private property owned by the Tahoe Beach Club, and a small part of the USFS Nevada Beach campground.

The Project area is bordered by Kahle Drive to the south, US Highway 50 to the east, Lake Tahoe to the west, and Nevada Beach Campground and Elks Point Road to the north. The project area includes the Lam Watah Trail and the Stateline-to-Stateline bike trail. The trailhead facilities are located at the corner of Kahle Drive and US Highway 50. The Project is located with the USGS South Lake Tahoe Quadrangle in T13N R 18E Sec 22.



Figure 1. Project Vicinity Map

2.2 PROJECT OVERVIEW AND PLANNED ACTIVITIES

The Burke Creek Rabe Meadow Riparian Restoration (Project) is being designed and managed by the Nevada Tahoe Conservation District (NTCD) under a cooperative agreement with the LTBMU. A small part of the Project would occur on adjacent private property owned by the Tahoe Beach Club. The purpose of the Project is to implement restoration to improve water quality and restore riparian and meadow vegetation to improve aquatic and terrestrial habitats. A central component of the Project is to re-align Burke Creek into a new high-sinuosity channel with a new outlet to Lake Tahoe and create a restored floodplain within Rabe meadow to create a more natural hydrology. The Project will also restore several man-made features including the Kahle Ditch, Jennings Pond, and remnant ditches. Other Project components include a new stormwater retention basin, construction of utility infrastructure with new access routes, and recreational improvements.

The Project includes 5 major components and has been divided into 5 Sub-Project areas as shown on the aerial imagery (**Figure 2- Project Overview and Project Sub-Project area locations**).

1. Burke Creek realignment and Kahle Ditch outlet restoration
2. Kahle Ditch restoration above new pump station access road
3. Restoration of Burke Creek alignment in the center of Rabe Meadow
4. Jennings Pond restoration and recreation improvements
5. Rabe Meadow ditches decommissioning

Project activities for the restoration include the following:

- Earthwork including excavation, fill, grading and utility trenching
- Dewatering of portions of Burke Creek, Jennings Pond, and Kahle ditch
- Salvage and relocation onsite of aquatic organisms within Burke Creek, Jennings Pond and Kahle ditch prior to dewatering activities
- Treatment and removal of invasive species within Rabe Meadow, Burke Creek, and Kahle Ditch.
 - Surveys for aquatic invasive species will be performed prior to any ground disturbance. Removal of aquatic invasive plant species shall be performed prior to dewatering, filling or disturbance. Methods of removal may vary and shall be determined on a case-by-case basis (e.g. hand pulling, suction dredging, placement of benthic barriers)
- Temporary access routes to portions of the restoration area
- Removal of conifers encroaching into meadow areas
- Revegetation using native seed, aspen plugs, and willow and sod transplanting
- Modify existing or obtain new special use permits with Nevada Energy, Southwest Gas, Douglas County, and the Douglas County Lake Tahoe Sewer Authority
- Decommission user-created trails and reconstruct trails and crossings that are causing resource damage.

Restoration will include a variety of techniques with the goals of improved water quality, erosion control, more natural hydrology, and robust riparian and meadow vegetation which in turn provide improved aquatic and terrestrial habitat for plants and animals. Restoration techniques utilized in each sub-project area will vary depending on observed existing conditions and machinery access to each area and will range from significant realignments of the creek and floodplain grading in some areas to smaller process-based restoration techniques in other areas. A project overview map of the project activities is attached for reference.

For a detailed project description of the proposed action please refer to the 2023 Burke Creek Rabe Meadow Riparian Project BE prepared for the project submitted to the USDA Lake Tahoe Basin Management Unit Forest Service Supervisors Office with this report.

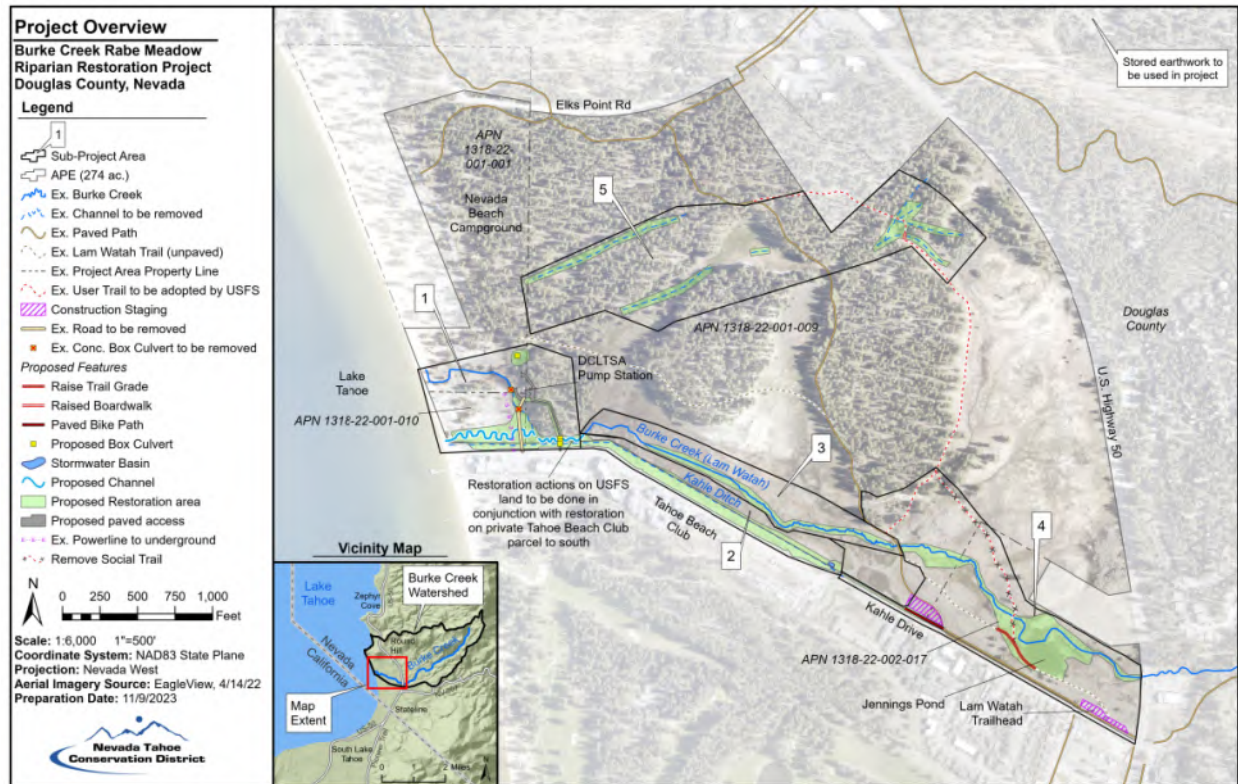


Figure 2. Project Overview and Sub-Project Area Locations Map

3 NON-PROJECT DEPENDENT FACTORS

3.1 INVENTORY

3.1.1 Surveys and Existing Data

The LTBMU Invasive Plants of Management Concern list (**Appendix A**) and spatial data of the most recent invasive plant surveys (LTBMU GIS for IPS) were reviewed prior to field surveys. For the purposes of the survey, it was assumed that there was potential for all terrestrial invasive plant species on this list within the project area.

In 2023, field surveys were conducted during multiple visits in June-July on approximately 16 acres within the botany analysis area where activities are planned. Additional surveys were conducted in these areas in 2021. For those areas outside of the surveyed areas, but within the botany analysis area, species occurrence information was compiled using LTBMU invasive plant species records and past survey reports.

Field surveys were designed around the flowering period and ecology of the invasive plants on the management list. Survey methodology consisted of a combination of general and intuitive controlled pedestrian surveys conducted along trails, parking areas, upland, riparian and meadow habitats targeted for Project activities. Staging areas and access routes were also surveyed. For each invasive species found, information was collected that described the size and extent of the infestation and mapped using a Global Positioning System (GPS).

3.1.2 Assessment Summary

Pre-implementation surveys and the current LTBMU invasive plant GIS database provides sufficient data to complete the risk assessment.

3.2 KNOWN INVASIVE PLANTS IN THE PROJECT AREA

Figure 3 provides the locations of known invasive plant infestations within the Project Area boundary.

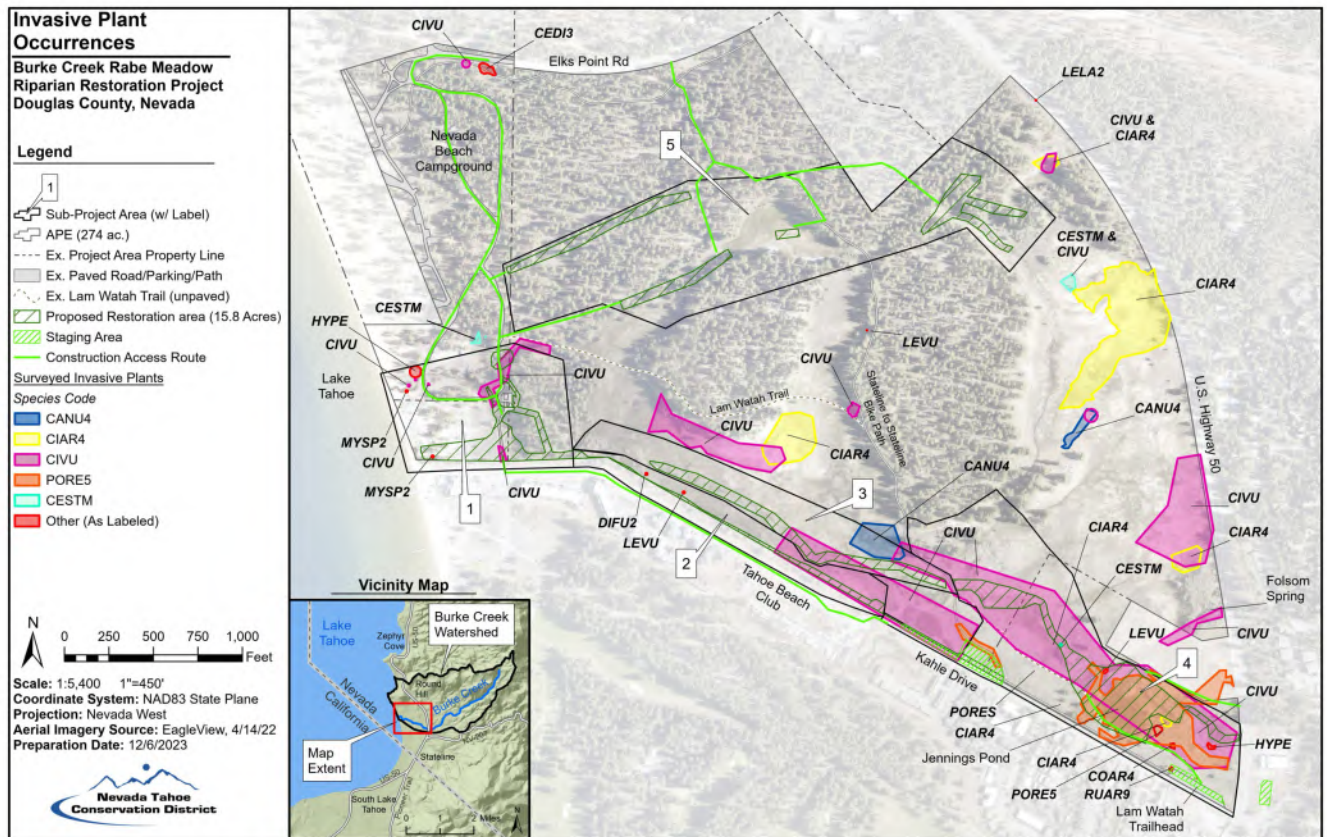


Figure 3. Location of known invasive plant infestations within the Project Area boundary.

Table 1 provides the LTBMU Invasive Plants of Management Concern known or with potential to occur in the Project Area. Infestation ID information is included for the 9 species mapped in the area.

Table 1: LTBMU Invasive Plants of Management Concern known or with potential to occur in the Project Area.

Scientific Name	Common Name	USDA Plant Code	Found?	Infestation Site ID
<i>Acroptilon repens</i>	Russian knapweed	ACRE3	No	
<i>Ailanthus altissima</i>	tree of heaven	AIAL	No	
<i>Bromus tectorum</i>	cheatgrass	BRTE	Yes	
<i>Carduus nutans</i>	nodding plumeless thistle	CANU4	Yes	0519436A, 0519885D
<i>Centaurea calcitrapa</i>	purple starthistle	CECA2	No	
<i>Centaurea diffusa</i>	diffuse knapweed	CEDI3	Yes	0519595B
<i>Centaurea solstitialis</i>	yellow starthistle	CESO3	No	
<i>Centaurea stoebe ssp. micranthos</i>	spotted knapweed	CESTM	Yes	0519885C, 0519129
<i>Centaurea virgata ssp. squarrosa</i>	squarrose knapweed	CEVIS2	No	
<i>Chondrilla juncea</i>	rush skeletonweed	CHJU	No	
<i>Cirsium arvense</i>	Canada thistle	CIAR4	Yes	519437, 519465A, 519885A, 519712 519709, 519877, 519223B, 05191746
<i>Cirsium vulgare</i>	bull thistle	CIVU	Yes	05191104, 0519130, 0519131, 0519132 05191854, 05191855, 0519219, 0519451A, 0519595A, 0519598 0519622, 0519921, 0519964, 05191745 05191755, 05191756, 05191797 0519183, 05191855
<i>Conium maculatum</i>	poison hemlock	COMA2	No	
<i>Cytisus scoparius</i>	Scotch broom	CYSC4	No	
<i>Dipsacus fullonum</i>	teasel	DIFU2	No	
<i>Dittrichia graveolens</i>	stinkwort	DIGR3	No	
<i>Elymus caput-medusae</i>	Medusa head	TACA8	No	
<i>Elymus repens</i>	quackgrass	ELRE4	No	
<i>Hydrilla verticillata</i>	hydrilla	HYVE3	No	
<i>Hypericum perforatum</i>	common St. Johnswort	HYPE	Yes	0519282, 519912, 05191742
<i>Isatis tinctoria</i>	dyer's woad	ISTI	No	
<i>Lepidium appelianum</i>	hairy whitetop	CAPU6 or LEAP7	No	

<i>Lepidium draba</i>	whitetop	CADR or LEDR	No	
<i>Lepidium latifolium</i>	perennial pepperweed	LELA2	Yes	0519793
<i>Leucanthemum vulgare</i>	oxeye daisy	LEVU	Yes	519461, 0519857, 05191748
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	LIDAD	No	
<i>Linaria vulgaris</i>	yellow toadflax	LIVU2	No	
<i>Lythrum salicaria</i>	purple loosestrife	LYSA2	No	
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	MYSP2	No	
<i>Onopordum acanthium</i>	Scotch thistle	ONAC	No	
<i>Potamogeton crispus</i>	curly pondweed	POCR3	No	
<i>Potentilla recta</i>	sulfur cinquefoil	PORE5	Yes	519609, 519338, 05191747, 05191837
<i>Rubus armeniacus</i>	Himalayan blackberry	RUAR5	No	
<i>Tamarix chinensis</i> , <i>T. ramosissima</i> , and <i>T. parviflora</i>	tamarisk	TACH2, TARA and TAPA4	No	

A number of the mapped occurrences are located within Project Areas. Sub-Project Area 1 contains bull thistle (*Cirsium vulgare*) along the existing access road and the channel and outlet of Burke creek. Diffuse knapweed (*Centaurea diffusa*), Canada thistle (*Cirsium arvense*), and St. John's wort (*Hypericum perforatum*) also occur in this area. Eurasian watermilfoil (*Myriophyllum spicatum*) occurs at the outlets of Kahle Ditch and Burke Creek. Sub-Project Area 2 and 3 contain a patch of teasel (*Dipsacus fullonum*) and a small infestation of oxeye daisy (*Leucanthemum vulgare*) near Kahle Ditch and larger infestations of bull thistle and Italian thistle in the meadow. Sub-Project Area 4 contains the greatest concentration of invasive plants. Spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), Canada thistle, nodding plumeless thistle (*Carduus nutans*), and sulphur cinquefoil (*Drymocallis glandulosa*) infestations have been documented within the planned grading area.

Two other species were detected that have invasive potential. A few large shrub-like comfrey plants (*Symphytum officinale*) were found within and adjacent to the Burke Creek channel near Jennings Pond, mainly within the arm of the creek coming from Folsom Spring which is outside of Sub-Project Area 4. These plants were treated in 2022 (E. Williams, pers. Comm.). Smooth brome (*Bromus inermis*) was found along the existing sewer pump station access road. No infestations are mapped within Sub-Project Area 5.

The extent and number of infestations in the Project Area pose a high risk to spread.

3.3 HABITAT VULNERABILITY

General Disturbance: Burke Creek and Rabe Meadow were significantly impacted during urbanization of the Tahoe Basin. The watershed was logged extensively during the Comstock Era of the late 1800s and

Rabe Meadow was used for livestock grazing until the 1970s. There were multiple developments in the 1960s and 70s including development of Sky Harbor Airport, followed by redevelopment of the airport into Tahoe Shores Mobile Home Park. The mobile home park has been redeveloped and replaced by the Tahoe Beach Club. These changes have impaired the hydrological connection between Burke Creek and the surrounding meadow and degraded water quality and aquatic and terrestrial habitats. The degraded conditions increase the vulnerability to weeds.

Recreation: Increased recreational use over the past two decades has resulted in an expansive network of user-created trails and an overall increase of bare soil throughout Rabe meadow. The area at the Lam Watah trailhead is heavily infested by non-natives and the trails throughout the Project Area have the greatest vulnerability to common weeds that are transported on human shoes and pets. The open habitat and bare areas in Nevada Beach campground in the vicinity of the mouth of Burke Creek are also highly vulnerable to weed introduction and spread.

Hydrology: The riparian plant communities of Burke Creek and Kahle Ditch and portions of Rabe meadow are susceptible to invasive species that require mesic conditions such as oxeye daisy and Sulphur cinquefoil, and also to facultative species like the thistles that thrive in meadow habitats. The wettest parts of Rabe meadow are not generally accessed by humans or pets and are relatively resistant to many introduced plants. Although, there are many areas of erosion that create bare ground where non-native plants may establish.

3.3.1 Habitat Vulnerability assessment

Within Sub-Project Areas 1 and 4, recreation intensity is very high, non-native weeds are prevalent, there is erosion and bare ground, therefore, habitat vulnerability is assessed as very high. Sub-Project Areas 2-3 (except for the part of 3 that includes trail) have limited use and habitat vulnerability is assessed as low. A small part of Sub-Project Area 5 is on a user-trail, however, there is little reason to stray from the trail in the area and the vulnerability of the surrounding forest is assessed as low. The overall vulnerability of habitat within the Project Area is assessed as high because the risk of spread in localized areas is very high.

3.4 NON-PROJECT DEPENDENT VECTORS

Recreation: The multiple walking and bike trails, including the Lam Watah trailhead, are heavily used and are the primary vectors of weed seed being transported on human shoes and pets throughout the Project Area. Nevada Beach campground is heavily used and also provides a source of weeds in the vicinity of the mouth of Burke Creek through the summer months.

Water: The Burke Creek channel can transport non-natives through the Project Area and into Lake Tahoe. Roadside ditches adjacent to Kahle Drive and the culverts in US Highway 50 convey stormwater and may be a source of non-native plants.

Other Factors: Fire risk is very high in the area with the high risk of ignitions from Nevada Beach Campground. Fire suppression activities and fuels reduction could be a vector of weeds. The project area was historically grazed, but grazing has not occurred for decades and is no longer a source of invasive plants.

3.4.1 Non-Project Dependent Vector assessment

The risk of spread from non-project dependent vectors is very high due to the intensive recreation in the Project Area and ability of water to transport weeds through the Project Area. This high risk of spread is moderated by the small size and number of infestations of terrestrial invasive plants located within the Project Area. If the amount of weeds within the Project area increases, the risk of spread through recreation would also increase. For aquatic invasive plants, Lake Tahoe will remain a vector of Eurasian watermilfoil, and the new outlet of Burke Creek is likely to become infested after the Project is complete, due to the proximity of other infestations and high amount of visitor use.

4 PROJECT DEPENDENT FACTORS

4.1 HABITAT ALTERATION

The Project will implement ground disturbing actions including excavation and grading with heavy equipment. Project implementation will result in a high degree of habitat modification with the objective to restore the riparian corridor of Burke Creek and adjacent wetland habitats. The overall amount of these habitats is expected to increase as a result of the Project and the created habitat is expected to be of higher quality than existing conditions.

4.2 INCREASED VECTORS AS A RESULT OF PROJECT CONSTRUCTION

Construction: As shown in **Figure 3**, project activities and disturbance will occur within a total area of 15.8 acres out of the 247-acre analysis area. Invasive plant occurrences were found or are known to occur within areas that will be disturbed. In 2023, infestations listed in table 1 were revisited and treated. Infestations that persist in grading areas will be flagged on the ground prior to implementation, and treated if timing is appropriate, however it is unlikely extant infestations will be avoidable. Where infestations were not treated or re-occur during the construction season, project activities could expose and/or transport invasive plant propagules within and between Sub-Project Areas. The very high amount of habitat alteration and disturbance will occur within Sub-Project Area 4, the area that is the most heavily infested. Most of the disturbance in Sub-Project Area 1 will avoid infested areas.

Equipment and Access Routes: Construction equipment would move along access routes to Sub-Project Areas. The majority of the access routes do not have known infestations, however, the access routes in Sub-Project Areas 1 and 4 have known infestations.

Materials: The Project may utilize erosion control materials, road base, and a variety of fill. The majority of fill will be native soil sourced through Project implementation, although fill may be brought in from outside weed-free sources, as needed. Native fill from excavation in Sub-Project Area 1 will be used in Sub-Project Area 4 and could spread bull thistle, along with many other non-native weedy species. Sub-Project Area 2 does not have mapped occurrences, but fill from this area will be moved to fill Jennings Pond. Off-site fill is proposed for use that was sourced from the 2016 Kahle Basin Implementation Project. The fill is currently stored off-site on Sewer Plant Road and covered with protective tarps. The fill pile was surveyed in 2023 and *Bromus tectorum* and *Melilotus albus* were detected in the vicinity. These species are already present throughout the proposed grading areas. The risk of introducing new infestations through proposed fill material is low.

Roads & trails: The Project includes improvements to existing trails and will not create additional trails. An access road will be replaced and may result in a very minor increase in the amount of road within Nevada Beach Campground.

Utility Corridors: Bull thistle and many other non-native weedy species are located along the existing access road in Sub-Project Area 1 where utilities will be undergrounded. These infrastructure modifications will occur within the existing right-of way and would not expand the amount of utility corridors present in the Project Area.

Traffic/visitor use: The project includes recreation improvements within the Burke Creek/Rabe Meadows complex and Nevada Beach campground that are intended to rectify existing issues with access and concentrate use. Visitor use is expected to remain high, but is not expected to increase as a result of the improvements.

The temporary and potential long-term increase in vectors listed above will be addressed through the Management Measures described in the next section.

4.3 MANAGEMENT MEASURES

The following resource protection measures (RPMs) are proposed for the Burke Creek Rabe Meadow Riparian Restoration Project to minimize and avoid potential project-related effects on botanical resources. The following measures are designed to minimize risk of new weed introductions, minimize the spread of weeds within project areas, and minimize the spread of weeds between project areas. Measures INV-01-08 directly incorporate the Standards and Guidelines from the LTBMU Land and Resource Management Plan (USFS 2016) and INV-09 has species-specific measures. NTCD is responsible for the implementation of applicable RPMs and BMPs and will incorporate them into the final design plans and any plans required for permitting.

INV-01 Inventory

- Before the onset of construction activities, each Sub-Project Area, associated access routes, material source sites, and staging areas will be inventoried for invasive plants.
- Infestations discovered prior to or during project implementation will be flagged and reported to the Forest Botanist or their designated appointee for prioritization and assessment for treatment. If infestations cannot be avoided or treated, a barrier will be installed to prevent the spread of non-native invasive plants to new areas within the project area or off site. Appropriate barrier areas and methods will be established in coordination with the Forest Botanist.

INV-02 Equipment Cleaning

- All equipment and vehicles used for project implementation must be free of plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or steam-cleaning facility before the equipment and vehicles enter the project area.
- When working in known invasive plant infestations or designated weed areas, equipment shall be cleaned before moving to un-infested areas of the project and other National Forest Service system lands. These areas will be flagged on the ground and identified on project maps.

INV-03 Staging areas

- Equipment, materials, or crews will not be staged in invasive plant-infested areas, wherever feasible. If staging within existing infestations cannot be avoided, the invasive species would be treated/removed, then a barrier will be installed to prevent the spread of non-native invasive plants to new areas within the project area or off site. Appropriate barrier areas and methods will be established in coordination with the Forest Botanist.

INV-04 Control Areas

- Where feasible, invasive plant infestations on the LTBMU priority ranking list will be designated as Control Areas in coordination with the Forest Botanist. Equipment, traffic and soil-disturbing project activities would be excluded in Control Areas and will be identified on project maps and delineated in the field with orange 'noxious weed' flagging. Where Control Areas cannot be avoided, and risk of spread of a priority management species to new areas is high, invasive plants will be treated/removed and appropriate barriers will be installed, if feasible, and equipment will be washed on site before moving to a new sub-project area.

INV-05 Project-related disturbance

- The amount of ground and vegetation disturbance in staging and construction areas will be minimized to the extent possible. Where feasible, vegetation will be reestablished on disturbed bare ground to reduce invasive species establishment; revegetation is especially important in staging areas. Where soil compaction has occurred to an extent that would inhibit native plant establishment (including all access routes, staging and storage sites), disturbed areas should be de-compacted by scarifying and mulched prior to seeding. Revegetation activities in areas with existing infestations will be designed to favor native species establishment over non-native invasive species growth and spread.

INV-06 Post Project Monitoring

- After the project is completed, the Forest Botanist will be notified so that the project area can be monitored and treated for invasive plants for a minimum of three years after project implementation to mitigate project related introduction and spread of these species.

INV-07 Gravel, fill, and other materials

- Gravel, fill, or other imported materials will be required to be determined as a suitable or conditional weed-free source by the LTBMU weed free material program. Onsite sand, gravel, rock, or organic matter will be used when possible. If conditional sources are used, early detection rapid response (EDRR) monitoring of application sites will be conducted for two growing seasons following implementation.
- Off-site fill is proposed for use that was sourced from the 2016 Kahle Basin Implementation Project. The fill is currently stored off-site on Sewer Plant Road and covered with protective tarps. The stock pile will be surveyed for invasive plants prior to movement to the Project area.

INV-08 Mulch and topsoil

- North American Invasive Species Management Association (NAISMA) certified weed-free mulch will be used if chipped material is not available on site. Topsoil will be salvaged from the project area for use in onsite revegetation, unless contaminated with invasive species.

INV-9 Species-Specific Management Measures

See Table 2 below

<p align="center">Table 2 Species-Specific Management Measures</p>		
Scientific Name	Common Name	Treatment
<i>Bromus tectorum</i>	Cheatgrass	<ul style="list-style-type: none"> • Flag and avoid where feasible. • Minimize disturbance in infested areas. • Use barriers to prevent spread from staging areas or constructed access routes.
<i>Cirsium arvense</i>	Canada thistle	<ul style="list-style-type: none"> • Flag and avoid all existing infestations • Chemically treat infestations with Aminopyralid in rosette to early flowering stages.
<i>Cirsium vulgare</i>	Bull thistle	<ul style="list-style-type: none"> • Remove plants by digging out the rosette and entire tap root, securely bag plants, and dispose offsite; • If present, remove flowering heads before seed set and dispose of off-site. • Pulled plants may be left on-site to desiccate if they are in rosette stage with no signs of bud or flower development.
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted knapweed	<ul style="list-style-type: none"> • Flag and avoid ground disturbance in all existing infestations • Remove plants by digging out the rosette and entire tap root, securely bag plants, and dispose offsite; if present, remove flowering heads before seed set and dispose of off-site. • Pulled plants may be left on-site to desiccate if they are in rosette stage with no signs of bud or flower development.
<i>Centaurea diffusa</i>	Diffuse knapweed	
<i>Hypericum perforatum</i>	Klamath weed	<ul style="list-style-type: none"> • The deep taproots can regenerate, so hand pulling or digging is only effective for small isolated infestations. • Flag and avoid all existing infestations

Table 2 Species-Specific Management Measures		
Scientific Name	Common Name	Treatment
		<ul style="list-style-type: none"> Chemically treat infestations with Aminopyralid.
<i>Lepidium latifolia</i>	Perennial pepperweed	<ul style="list-style-type: none"> Seedlings are easily controlled by hand-pulling, but mature plants will re-sprout. Flag and avoid all existing infestations. Chemically treat infestations with Chlorsulfuron.
<i>Leucanthemum vulgare</i>	Oxeye daisy	<ul style="list-style-type: none"> Dig out plants if the soil is moist and loose enough to remove the entire shallow root-system with hand tools digging more than 6 inches deep. Dispose of off-site. For larger stands, Aminopyralid would be applied in the spring during the seedling to pre-bud stage.
<i>Potentilla recta</i>	Sulphur cinquefoil	<ul style="list-style-type: none"> Verify species identification during pre-implementation surveys and flag occupied areas for avoidance or as control areas. Dig out plants if the soil is moist and loose enough to remove the entire woody root. Dispose of off-site. For larger stands, Aminopyralid would be applied in the spring during the rosette to pre-bud stage. Wash equipment on site prior to moving to other project areas
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	<ul style="list-style-type: none"> Manual removal of plants and roots. Disposed of off-site. Post-project monitoring of the new outlet of Burke Creek will be needed to detect and address new infestations.

4.3.1 Assessment summary

The risk of weed introduction and spread will be minimized by inventorying each Sub-Project Area prior to construction related disturbance, whenever feasible, and cleaning all construction equipment before entering the Project area or moving between areas. Staging in infested areas will be avoided to the extent feasible or appropriate protective barriers will be installed. Gravel, fill and revegetation materials will be screened for invasive species before use. Control Areas for construction exclusion will be designated, if appropriate, and infestations will be treated when feasible. These measures will be taken in coordination with the Forest Botanist and will avoid or reduce existing infestations and minimize the risk of spread. Post –project monitoring will reduce the long-term impacts of the Project. The consequences of not using these measures will result in increased risk of invasive plant infestations in the Project area and result in the degradation of sensitive resources. The resource protection measures listed above directly incorporate the Standards and Guidelines from the LTBMU Land and Resource Management Plan (USFS 2016) and are designed to minimize risk of new weed introductions, minimize the spread of weeds within units, and minimize the spread of weeds between units. These measures will be incorporated into Project designs.

5 ANTICIPATED WEED RESPONSE TO PROJECT

The overall risk of invasive weed spread and establishment as a result of Project implementation is moderate. This determination is based on the following and summarized in **Table 3**:

1. Invasive plants occur in the Project area;
2. Soil disturbance will occur within potentially infested riparian and meadow habitat;
3. Construction equipment and activities could import and spread weed propagules; and
4. The risk of transport of weed propagules through non-project dependent factors such as recreation and waterways is very high.

Table 3. Summary of Risk Factors

	Factor	Risk	Assessment summary
NON-PROJECT DEPENDENT FACTORS	Inventory	N/A	Pre-implementation surveys were completed in 2023 and the current LTBMU database of invasive plants is sufficient to complete the risk analysis.
	Known invasive plants	High	There are many known invasive plant occurrences within and around the Project area.
	Habitat vulnerability	High	Sub-Project Areas 1 and 4 are very vulnerable due to high recreation intensity. Sub-Project Areas 2-3 and 5 are low due to low accessibility and low levels of infestation.
	Non-project dependent vectors	Very High	Recreation intensity is very high within the Project Area and water and Lake Tahoe can also transport invasive plant propagules.
PROJECT-DEPENDENT FACTORS	Habitat alteration expected as a result of project	High	Project activities include excavation and grading to restore riparian corridor and wetland habitats. Although the created habitat is expected to be higher quality, a high degree of habitat modification will occur.
	Increased vectors as a result of project implementation	Low	Implementation of Management Measures are intended to reduce the temporary increase in potential

	Factor	Risk	Assessment summary
			weed spread from machinery and materials. Long-term increases in vectors are not expected.
	Management measures	Moderate	Standard management measures will be incorporated through design features to reduce invasive plant introduction and spread.
ANTICIPATED WEED RESPONSE		High	High levels of current infestation and high risk of spread.

6 REFERENCES

United States Department of Agriculture (USDA). 2016. Lake Tahoe Basin Management Unit Land and Resource Management Plan. USDA Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

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USDA. 2004a. National Strategy and Implementation Plan for Invasive Species Management. USDA Forest Service, Washington Office, Washington D.C.

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USDA. 2005. Pacific Northwest Region, Invasive Plant Program; Preventing and Managing Invasive Plants. U.S.D.A. Forest Service. Final Environmental Impact Statement.

APPENDIX A. Invasive Species of Management Concern on the Lake Tahoe Basin Management Unit

Table 1: 2023 Invasive Plants of Management Concern. All species from the Terrestrial Invasive Plant Species (TIPS) Environmental Assessment (EA) (2010) are included in this list regardless of observations in the on LTBMU. Species in bold are not included in the TIPS EA (2010) and therefore their treatment options on LTBMU land may be limited.

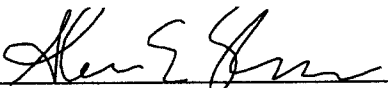
Scientific Name	Common Name	USDA Plant Code	LTBMU Priority	NDA	CDFA	Cal-IPC	LTBWCG
<i>Acroptilon repens</i>	Russian knapweed	ACRE3	Medium	B	A	Moderate	Group 1
<i>Ailanthus altissima</i>	tree of heaven	AIAL	High		C	Moderate	Group 1
<i>Berteroa incana</i>	Hoary alyssum	BEIN2	High		B	Watch	
<i>Bromus tectorum</i>	cheatgrass	BRTE	Low			High	
<i>Carduus nutans</i>	nodding plumeless thistle	CANU4	High	B	A	Moderate	Group 1
<i>Centaurea calcitrapa</i>	purple starthistle	CECA2	Medium	A	B	Moderate	Group 1
<i>Centaurea diffusa</i>	diffuse knapweed	CEDI3	High	B	A	Moderate	Group 1
<i>Centaurea solstitialis</i>	yellow starthistle	CESO3	Medium	A	C	High	Group 1
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	CESTM	High		A	High	Group 2
<i>Centaurea virgata</i> ssp. <i>squarrosa</i>	squarrose knapweed	CEVIS2	High	A	A	Moderate	
<i>Chondrilla juncea</i>	rush skeletonweed	CHJU	High	A	A	Moderate	Group 1
<i>Cirsium arvense</i>	Canada thistle	CIAR4	High	C	B	Moderate	Group 1
<i>Cirsium vulgare</i>	bull thistle	CIVU	Low		C	Moderate	Group 2
<i>Conium maculatum</i>	poison hemlock	COMA2	Low	C		Moderate	
<i>Convolvulus arvensis</i>	Common bindweed	COAR4	Low		C		
<i>Cytisus scoparius</i>	Scotch broom	CYSC4	Medium		C	High	Group 2
<i>Dipsacus fullonum</i>	teasel	DIFU2	Low			Moderate	Group 1
<i>Dittrichia graveolens</i>	stinkwort	DIGR3	Low			Moderate ; Alert	Group 1
<i>Elymus caput-medusae</i>	Medusa head	TACA8	High			High	Group 1
<i>Elymus repens</i>	quackgrass	ELRE4	Low		B		
<i>Hydrilla verticillata</i>	hydrilla	HYVE3		A	A	High	
<i>Hypericum perforatum</i>	common St. Johnswort	HYPE	Medium	A	C	Limited	Group 2
<i>Isatis tinctoria</i>	dyer's woad	ISTI	High	A	B	Moderate	Group 1
<i>Lepidium appelianum</i>	hairy whitetop	CAPU6 or LEAP7	Medium		B		Group 1
<i>Lepidium draba</i>	whitetop	CADR or LEDR	Medium		B	Moderate	Group 1
<i>Lepidium latifolium</i>	perennial pepperweed	LELA2	High	C	B	High	Group 2
<i>Leucanthemum vulgare</i>	oxeye daisy	LEVU	Low			Moderate	Group 2
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	LIDAD	High	A	A	Moderate	Group 2
<i>Linaria vulgaris</i>	yellow toadflax	LIVU2	High	A		Moderate	Group 2
<i>Lythrum salicaria</i>	purple loosestrife	LYSA2	High	A	B	High	Group 1
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	MYSP2		A		High	
<i>Onopordum acanthium</i>	Scotch thistle	ONAC	High	B	A	High	Group 1
<i>Phalaris arundinacea</i>	Reed canary grass	PHAR3	Low				
<i>Potamogeton crispus</i>	curly pondweed	POCR3				Moderate	
<i>Potentilla recta</i>	sulfur cinquefoil	PORE5	Medium	A			Group 1
<i>Rubus armeniacus</i>	Himalayan blackberry	RUAR5	Medium			High	
<i>Tamarix chinensis</i> , <i>T. ramosissima</i> , and <i>T. parviflora</i>	tamarisk	TACH2, TARA and TAPA4	High	C		High	Group 1


Appendix C Assessment of Other Botanical Resources

ASSESSMENT OF OTHER BOTANICAL RESOURCES
Burke Creek Rabe Meadow Riparian Restoration Project

LAKE TAHOE BASIN MANAGEMENT UNIT
USDA FOREST SERVICE

March 2024

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1 WATCH LIST

1.1 INTRODUCTION

The USDA Forest Service Pacific Southwest Region 5 Sensitive Plant List (USDA Forest Service 2013) includes a Watch List of botanical species (plants, lichen, and fungi) that are of conservation concern, but have not been designated as ‘Sensitive’ by the Regional Forester. This list includes species that are: 1) newly described; 2) locally rare; 3) range extensions or disjunct populations; 4) plants of specific public interest; or 5) species with too little information to determine their appropriate status. The purpose of this assessment is to document the consideration of LTBMU Watch List species that may be impacted by proposed project activities.

The Burke Creek Rabe Meadow Riparian Restoration Project (Project), is located primarily on land managed by the US Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) in Stateline, Douglas County, Nevada. The Project study area is 274 acres and includes the lowest reach of Burke Creek west of Highway 50, Rabe Meadow, a small parcel of private property owned by the Tahoe Beach Club, and a small part of the USFS Nevada Beach campground. The Project is being designed and managed by the Nevada Tahoe Conservation District (NTCD) under a cooperative agreement with the LTBMU. The purpose of the Project is to implement restoration to improve water quality and restore riparian and meadow vegetation to improve aquatic and terrestrial habitats. A central component of the Project is to re-align Burke Creek into a new high-sinuosity channel with a new outlet to Lake Tahoe and create a restored floodplain within Rabe meadow to create a more natural hydrology. For a full description of the project, see the Biological Evaluation that accompanies this report.

1.2 SUMMARY OF ANALYSIS PROCEDURE

The analysis of effects on Lake Tahoe Basin Management Unit (LTBMU) Watch List botanical species was a three-step process (FSM 2672.43; USDA 2005). In the first step, all Region 5 Watch List species that were known or were believed to have potential to occur in the analysis area were identified. The LTBMU Watch List includes 14 species for the region (**Table 1**).

The second step was field reconnaissance surveys. In 2023, field surveys were conducted on approximately 16 acres within the botany analysis area where activities are proposed. Additional surveys were conducted in these areas in 2021. For those areas outside of the surveyed areas, but within the botany analysis area, species occurrence information was compiled using CNDDDB (2023) and NNHP (2023) database records, LTBMU TESP/IP species records, and past survey reports.

Field surveys were designed around the flowering period and ecology of the Watch List species identified in step one. For each Watch List occurrence found, information was collected that described the size of the occurrence and habitat characteristics and identified any existing or potential threats. Location information was collected using a Global Positioning System (GPS). All of this information was used in step three of the analysis—effects analysis.

No species from the LTBMU Watch List were observed. The Watch List species with potential to occur are found in habitats that do not occur in the botany analysis area. If sensitive Watch List species are observed within any Sub-Project Area during Project implementation, ground disturbing activities in that

area will stop until the LTBMU Forest Botanist is notified and appropriate avoidance or mitigation actions are agreed on (see Resource protection measures in Appendix C of Biological Evaluation).

Table 1. LTBMU Watch List Plant Species

Scientific Name	Common Name	Habitat characteristics	Known on LTBMU	Known in project area	Suitable habitat in project area
<i>Astragalus austinae</i>	Austin's milkvetch	Exposed areas near ridgelines in El Dorado, Placer and Nevada Counties in the Sierra Nevada	Y	N	N
<i>Boechea rectissima</i> (<i>Arabis rectissima</i> var. <i>simulans</i>)	bristlyleaf rock cress	Dry, sandy, granitic or andesitic soil on mostly gentle slopes of all aspects, in full or filtered sunlight of thinly-littered openings in mature, open Jeffrey pine and white fir; 6,000-7,400 ft.	Y	N	N
<i>Carex davyi</i>	Davy's sedge	Subalpine coniferous forest, Upper montane coniferous forest	Y	N	N
<i>Chaenactis douglasii</i> var. <i>alpina</i>	alpine dusty maidens	Alpine boulder and rock field (granitic)	Y	N	N
<i>Claytonia megarhiza</i>	fell fields claytonia	Alpine boulder and rock field (granitic)	Y	N	N
<i>Cryptantha crymophila</i>	subalpine cryptantha	Subalpine coniferous forest (volcanic, rocky)	Suitable habitat only	N	N
<i>Epilobium palustre</i>	marsh willowherb	Fens, wet meadows and seeps(mesic): 6,400-7,800 ft. In the LTBMU it is known from fen habitat at Grass Lake	Y	N	N
<i>Meesia longiseta</i>	meesia moss	Coniferous forests, streambanks, wet meadows, fens	Known only from herbarium or text records	N	N
<i>Myurella julacea</i>	myurella moss	Seep like granitic rock walls; on soil over rocks or in crevices in alpine boulder and rock fields; subalpine coniferous forest on damp soil over rocks; 8,800-9,900 ft.	Suitable habitat only	N	N
<i>Orthotrichum holzingeri</i>	Holzinger's orthotrichum moss	Seasonally wet rocks in small streams of dry montane forests; 1000--2000 m	Suitable habitat only	N	N
<i>Orthotrichum spjutii</i>	Spjut's orthotrichum moss	Volcanic rock walls; Continually misted, shaded granitic rock faces at high elevations near Sonora Pass.	Suitable habitat only	N	N
<i>Pohlia tundrae</i>	tundra pohlia moss	Gravelly, damp soils of alpine boulder and rock fields; 8,800-9,900 ft.	Known only from herbarium	N	N

Scientific Name	Common Name	Habitat characteristics	Known on LTBMU	Known in project area	Suitable habitat in project area
			or text records		
<i>Sphagnum spp.</i>	sphagnum moss	Wet meadows, bogs, fens; sea-level to subalpine.	Y	N	N
<i>Tomentypnum nitens</i>	tomentypnum moss	Forming lawns and hummocks in calcareous, mesotrophic fens in association with other calciphiles, usually found with hypnaceous moss, such as <i>Paludella squarrosa</i> and <i>Aulacomnium spp.</i>	Suitable habitat only	N	N

1.3 PROJECT COMPLIANCE

The LTBMU Forest Management Plan (USDA Forest Service 2016) includes the following Standard for the Conservation of Species and Habitat: SG44. During project development, evaluate the project area, including any designated critical habitat, for the habitat suitability and/or occurrence of TEPCS species. Watch List species must be considered during project planning with corresponding documentation maintained in the planning file. **Table 2** provides the indicators that are used to determine and describe direct and indirect effects to Watch List Species. No Watch List plants are known from the Project area and therefore, no adverse direct or indirect effects on Watch List plants are anticipated from implementation of the Burke Creek Rabe Meadow Riparian Restoration Project.

Table 2. Indicators of Effect to Watch List Species

Analysis Component	Yes	No	Not applicable
1. Were surveys conducted for Watch List species within the project area?	X		
2. Were Watch List species found within the project area?		X	
3. Is there the potential for negative impacts to Watch List species from project implementation?		X	
4. Were protection measures included in the project documentation?	X		

2 UNCOMMON PLANT COMMUNITIES

2.1 INTRODUCTION

The Tahoe Regional Planning Agency (TRPA) strives for “non-degradation of the natural qualities of any plant community that is uncommon to the Basin or of exceptional scientific, ecological, or scenic value” (TRPA 2012). TRPA direction to manage uncommon plant communities to preserve their natural characteristics, specifically applies but is not limited to: deep-water plants of Lake Tahoe; Grass Lake;

Osgood Swamp; Hell Hole; Upper Truckee Marsh; Taylor Creek Marsh; Freel Peak Cushion Plant Community; and Pope Marsh.

The 2016 Land Management Plan for the LTBMU (USDA Forest Service 2016) identifies meadows as one of the major vegetation types in the LTBMU and includes a set of Desired Conditions that describe the desired structure DC45, function DC46-47, and composition DC48, of meadow systems on the landscape scale of the Lake Tahoe Basin. Additional Desired Conditions (DC49- 54) provide specific management direction to maintain habitat quality and abundance to support native species and habitat on the LTBMU. The Forest Plan also sets forth strategies and objectives for achieving or maintaining these Desired Conditions and identifies montane meadows as one of the most vulnerable and impacted habitat types of the Sierra Nevada. Meadow ecosystems are an important focus area for restoration efforts in the Lake Tahoe Basin and the Forest Plan contains the following list of strategies for watershed restoration:

- In general, where stream characteristics are outside the natural range of variability in the area of a proposed project/activity, implement mitigation measures and short-term restoration actions to prevent further declines or cause an upward trend in conditions.
- Reconnect floodplains with stream channels to enhance treatment of nutrients and contaminants, and improve channel geomorphic function to reduce in-channel sediment sources and increase in-channel sediment storage.
- Design projects to maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features. Implement restoration projects to attenuate peak flows and promote water storage in SEZs.
- Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in-stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.
- Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.
- Design projects to maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features. During project analysis, roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths should be identified and corrective actions planned and implemented where necessary to restore connectivity.

The Standards and Guideline (SG14-18) in the Forest Plan that address Stream Environment Zones include the following:

- **SG14.** Apply appropriate Best Management Practices (BMPs) and project design to reduce, as much as possible, (1) the risk of activity-related sediment entering aquatic systems, and (2) impacts to habitat for aquatic- or riparian-dependent plant and animal species. [Guideline]
- **SG15.** Prescribe project-specific buffers around water bodies and SEZs, including meadows, bogs, fens, springs, and other wetlands as needed to maintain water quality and the physical and biological integrity of SEZs. [Guideline]
- **SG16.** Prohibit disturbance of vegetation and soil in the unstable area of the shorezone, except as necessary for public safety or to provide for uses that by their nature require location within the shorezone. (The unstable area of the shorezone is where littoral and/or wave action processes have their greatest influence. The area may vary considerably in width). [Guideline]

- **SG17.** Avoid or mitigate activities that adversely affect the water flow, water quality, or water temperature critical to sustaining groundwater-dependent ecosystems. [Guideline]

2.2 PROJECT COMPLIANCE

During field surveys in 2021 of Burke Creek and Rabe meadow, no fen habitat was found, and none of the TRPA identified Uncommon Plant Communities are in the Project vicinity. Therefore, the Rabe Meadow Burke Creek Riparian Restoration Project will have no effects on the listed uncommon plant communities. The Project is in compliance with the strategies listed above for watershed restoration because it is specifically designed to address identified deficiencies in the meadow and stream ecosystems and bring the hydrologic characteristics back into the normal range of variation. The implementation of the Project includes Resource Protection Measures, including BMPs, designed to minimize adverse impacts and comply with the Standards and Guidelines for SEZs.

3 SPECIAL MANAGEMENT DESIGNATIONS

3.1 INTRODUCTION

National Forest System lands are generally available for a variety of multiple uses, although not all uses are suitable for all areas. Section 6 (g) of the Resource Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA) ((16 U.S.C. 1600)), requires "the identification of the suitability of lands for resource management"(RPA 1974, pp. 4-9). Suitability is defined as "The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of economic and environmental consequences and the alternative uses forgone. A unit of land may be suitable for a variety of individual or combined management practices" (36 CFR 219.3). Suitability is expressed as suitable, not suitable, or with restriction. Restrictions have several sources depending on the legal, policy or permitting language that applies to the activity.

As part of land management planning, LTBMU has designated certain areas for special management and recommended other areas for consideration for special management.

3.1.1 *Special Interest Areas*

Special Areas are NFS lands designated as such because of their unique or special characteristics. Special Areas include special interest areas (SIAs), research natural areas (RNA), Nationally Designated Trails, and other specially designated sites. Special Areas will continue to be managed consistent with preservation of the values for which each Special Area was designated, as described below.

Special interest areas can be designated to recognize a broader range of values than research natural areas, including botanical resources. The management goal of Special Interest Areas is to protect special recreational or scientific values, such as unique scenic, historical, geological, botanical, zoological, or paleontological characteristics. These areas are then available for public study, use, or enjoyment as appropriate.

There is one SIA on LTBMU—the Tallac Historic Site. However, LTBMU has identified four areas under consideration for SIA designation and requires interim management of these areas to monitor their use, note any destructive practices, and modify management to protect their special features from adverse impacts (USDA Forest Service 1988). These areas are Emerald Bay, Osgood Bog, Freel Peak Cushion Plant

Community, and Taylor Creek Wetlands. LTBMU also recognizes the unique characteristics of the following areas: Grass Lake Moss Bog; Hell Hole; Floating Island Lake; Pope and Baldwin Marshes; Cave Rock, Glacial Moraine Deposits, and Ward and Blackwood Canyons (USDA Forest Service 1988).

3.1.2 Research Natural Areas

The intent of the Research Natural Area (RNA) System is to preserve a representative array of all significant natural ecosystems and their inherent processes as baseline areas. For lands in the RNA System or those recommended to the regional RNA committee for inclusion in the system, LTBMU strives to maintain natural conditions and limit uses to research, study, observation, monitoring, and educational activities which are nondestructive and non-manipulative (USDA Forest Service 1988). There is one RNA on LTBMU—Grass Lake RNA (306 acres). The Grass Lake Research Natural Area was established in 1991 and is administered jointly by the USDA Forest Service Pacific Southwest Research Station and Pacific Southwest Region.

3.2 PROJECT COMPLIANCE

Based upon a review of LTBMU GIS data, the Proposed Project is neither within, near, or meaningfully connected to any areas with special management designations or under consideration for designation. Implementation of the Burke Creek Rabe Meadow Riparian Restoration Project will not result in adverse impacts to any areas with special management designations or under consideration for designation.

4 REFERENCES

National Forest Management Act (NFMA); 16 § 1600-1687.

Tahoe Regional Planning Agency. 2012. Code of Ordinances. South Lake Tahoe, CA:

U.S. Department of Agriculture (USDA), Forest Service (USFS). 1988. Land and Resource Management Plan. USDA Forest Service, Pacific Southwest Region, Lake Tahoe Basin Management Unit.

USDA Forest Service. 2013. Sensitive Plant List, Pacific Southwest Region, Region 5. Letter from Regional Forester More. File Code: 2670. Dated July 3, 2013

USDA Forest Service. 2016. Lake Tahoe Basin Management Unit Land Management Plan. South Lake Tahoe, CA: USDA Forest Service Pacific Southwest Region, Lake Tahoe Basin Management Unit. July 2016.

Exhibit D

PROJECT PERMITS



**Nevada Division of Environmental Protection
Clean Water Act Section 401 Water Quality Certification**

The Nevada Division of Environmental Protection submits this 401 Water Quality Certification (Certification) for:

Burke Creek and Rabe Meadow Riparian Restoration (NV-401-23-011; SPK-2022-00075) proposed by Nevada Tahoe Conservation District.

This project is located within Rabe Meadow and Burke Creek, a perennial tributary to Lake Tahoe, in Douglas County, Nevada and proposes work in waters of the United States that are within the State of Nevada’s jurisdiction. This Certification is formatted as follows:

- A.** Proposed Project General Information
- B.** General Conditions (including statutory citations)
- C.** Special Conditions (including statutory citations)
- D.** Condition Statements of Necessity

Nevada Division of Environmental Protection has examined the information furnished by the applicant and certifies that there is reasonable assurance that discharge from the proposed project will comply with water quality requirements (Nevada Revised Statute (NRS) Chapter 445A, Nevada Administrative Code (NAC) Chapter 445A, and Clean Water Act Sections 301, 302, 303, 306, and 307) as proposed, provided that the project proponent complies with all Certification conditions listed in Sections B, C, and D. All Certification conditions contained herein shall be incorporated into the federal license or permit for the proposed project and are enforceable by the federal permitting agency (40 CFR §121.10). All exceptions and conditions are justified as required by 40 CFR §121.7(d), with statements justifying why an exception or condition is necessary to assure that the discharge from a proposed project will comply with water quality requirement(s) and citations to appropriate federal and/or State water quality law that authorizes the condition.

A. Proposed Project General Information

Project Number:	NV-401-23-011; SPK-2022-00075
Project Name:	Burke Creek and Rabe Meadow Riparian Restoration
Project Proponent:	Nevada Tahoe Conservation District
Project Proponent Address:	P.O. Box 915 Zephyr Cove, Nevada 89448
Federal Permit Description:	Nationwide Permit 27 - Aquatic Habitat Restoration, Enhancement, and Establishment Activities
Pre-Filing Meeting Request Date:	6/17/2022
Certification Request Date:	3/31/2023
Reasonable Period of Time Deadline:	5/31/2023
NDEP Certification Determination:	Certification with Conditions
Date Certification Determination Submitted to Federal Agency:	5/25/2023

Amount of fill or excavation in waters of the U.S. (linear feet, acres, and/or cubic yards):	Temporary:	Permanent:
	14 yd ³ (temporary coffer dams)	980 yd ³ (excavation) 7,990 yd ³ (fill)
Amount of dredge material in waters of the U.S. (linear feet, acres, and/or cubic yards):	Temporary:	Permanent:
	0 yd ³	0 yd ³
Total impact to waters of the U.S. (linear feet, acres, and/or cubic yards):	56.7 acres	
Project scope of work summary:	<p>The purpose of this project is to improve water quality, restore riparian and meadow vegetation, and improve aquatic and terrestrial habitats by restoring hydrologic and ecologic function to degraded portions of Burke Creek and Rabe Meadow in Douglas County, Nevada. This project will utilize Nationwide Permit 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities) to realign Burke Creek incorporating a new channel with a restored floodplain within Rabe Meadow and a new outlet to Lake Tahoe. Restoration techniques will include construction of a new high-sinuosity channel and a new creek outlet to Lake Tahoe, removal of meadow fill to expand the riparian area, native plant revegetation, removal of several historic ditches and an artificial pond, construction of improvements to existing pedestrian trails in riparian areas, construction of stormwater improvements for Kahle Drive, and installation of beaver dam analogs (BDA), post-assisted log structures (PALS), and similar in-channel structures. This project will result in a net increase of 1.5 acres of aquatic resources upon project completion. A Dewatering and Diversion Plan has been developed for the project to describe the methods of managing stream flows, groundwater flows, and seepage flows to maintain surface water quality during project implementation. All erosion control measures shall meet or exceed the requirements of the Tahoe Regional Planning Agency (TRPA). The project is anticipated to take place May 1 through October 15, 2023, and May 1 – July 1, 2024.</p>	

A detailed project description, including measures to ensure that discharges to waters of the U.S. do not significantly impact water quality, is included in the Certification Request and in additional information attached to the Certification Request.

B. General Conditions

Condition Number	Condition Title	Condition Description and Reference to Federal Law, and/or State, and/or Water Quality Standard
1	Permits and Licenses	All other required federal and State permits or licenses must be obtained prior to construction commencement to ensure compliance with all federal and State regulations (NRS 445A.300 - 445A.730; NAC 445A.228).
2	Pre-Construction Inspection	Prior to initial operation under a federal license or permit which NDEP has issued Certification, NDEP shall be allowed to review the manner in which the facility or activity shall be operated or conducted for the purposes of assuring that applicable effluent limitations or other applicable water quality requirements will not be violated (40 CFR §121.11; NRS 445A.655).
3	Water Quality Standards/Beneficial Uses	Any point source discharge associated with the proposed project shall not exceed State water quality standards or impair the beneficial uses of any water of the State. Beneficial uses define the water quality criteria required to protect the uses of a waterbody and exceedances are a violation of State law. No exceedances of water quality standards or impairment of beneficial uses of the waterbody are permitted (NRS 445A.520; NRS445A.720; NAC 445A.118 - 445A.2234).

4	High Quality Waters	Any surface waters of the State whose quality is higher than the applicable water quality standards, as of the date when those standards become effective, must be maintained in their higher quality. No discharges of a pollutant from a point source may be made which will result in lowering the quality of these waters (NRS 445A.565).
5	Waters with Approved TMDLs and 303(d) Listed Waters	If the proposed project would discharge from a point source into a waterbody listed as impaired and on the current 303(d) list or has an approved TMDL, no discharges of a pollutant from a point source may be made which will result in further degradation of these waters without approval by NDEP. For the most current list of approved TMDLs for Nevada, please refer to NDEP’s Water Quality Integrated Report (https://ndep.nv.gov/uploads/water-wqm-docs/IR2022FINAL_Report.pdf). Waters listed as impaired or with approved TMDLs are not meeting the requirements for their designated beneficial uses and NDEP requires review to ensure the proposed project will not exceed numeric or narrative water quality criteria for the waterbody and that BMPs for the project adhere to suggested BMPs outlined in applicable TMDLs (NRS 445A.520; NRS 445A.720; NAC 445A.228).
6	Best Management Practices (BMPs)	Work in or adjacent to waters of the State shall be performed in such a way that minimizes point source discharges of pollutants to the receiving waterbody. Best Management Practices to control and mitigate inputs of pollutants must be implemented and functional prior to commencement of work and shall be maintained and modified throughout the duration of work performed to assure that State water quality standards are met. Pollutants are defined as artificially made or induced alterations to the physical, chemical, or biological integrity of the water (NRS 445A.525; NAC 445A.121).
7	Equipment Use	<ul style="list-style-type: none"> a. Equipment used during project implementation must be in proper working condition and free from leaks to prevent discharge of debris, oil, grease, scum, and other floating materials to waters of the State which could have adverse effects on the chemical, physical, or biological function of the waterbody (NAC 445A.121). b. Equipment fueling, staging, maintenance, and repair must be conducted in an upland position where discharge of pollutants, incidental to these activities, do not have the potential to pollute waters of the State (NAC 445A.121). c. Equipment operation shall be conducted in a manner that minimizes impacts to waters of the State (NAC 445A.121).
8	Construction	Except those authorized by this Certification, no pollutants associated with this project shall be discharged from a point source or allowed to remain in a position where a pollutant can be carried to waters of the State by any means. Material permitted to enter waters of the State must be stabilized in position to prevent excessive erosion. Pollutants are defined as artificially made or induced alterations to the physical, chemical, or biological integrity of the water. Pollutants can include, but are not limited to soil, sand, silt, rock, dredge material, chemical waste, biological material, heat, concrete, concrete washings, and discarded equipment (NRS 445A.400; NRS 445A.465).
9	Concrete	Wet and uncured concrete shall not be allowed to enter waters of the State. Impermeable covers must be placed over concrete not poured into forms to prevent degradation of waters of the State through seepage and leaching of uncured concrete (NRS 445A.465).
10	Linear Distance Requirement	No proposed project will exceed 300 linear feet of dredge or fill material in waters of the State without approval by NDEP. Projects exceeding 300 linear feet cannot be guaranteed to have minimal single or cumulative adverse effects on the aquatic environment without a review of the proposed project by NDEP (NAC 445A.228; NRS 445A.720; NRS 445A.530).
11	Invasive Species Management	If BMPs incorporate natural materials, such as seeds, mulch, straw bales, or coir logs, they shall be certified as weed free. Certified weed free materials used in BMPs are

		necessary to prevent the spread of invasive species throughout the State (NRS 555.010; NRS 555.150).
12	Revegetation and Site Restoration	Disturbance of native vegetation shall not exceed the minimum necessary to complete the project. If revegetation is proposed to restore and stabilize areas affected during construction, site-appropriate plant materials shall be used with an emphasis on native and/or adapted perennial vegetation. Site stabilization is necessary to prevent erosion, decrease sediment inputs into waters of the State, and reduce encroachment of invasive species in denuded areas since invasive species are associated with modified hydrologic regimes and deleterious impacts to the aquatic environment (NRS 445A.305).
13	Post-Construction	Upon completion of the project, all temporary and excess materials and installments used during construction must be removed from the site to prevent pollutants from entering waters of the State by any means and affected areas must be returned to pre-construction elevations and contours (NRS 445A.465).

C. Special Conditions

Condition Number	Condition Title	Condition Description and Reference to Federal Law, and/or State Law, and/or Water Quality Standard
14	Clean Water Diversion	Impacts to water quality due to excessive sedimentation and/or turbidity shall be minimized through the proposed construction of temporary clean water diversions to bypass live stream flows around construction areas. This condition is necessary to ensure point source discharges of sediment to waters of the U.S. are minimized to the maximum extent practical and will not result in an exceedance of State water quality standards associated with Lake Tahoe Tributaries. Waters must be free from materials from controlled sources in amounts sufficient to change the existing color, turbidity, or other conditions in the receiving stream to such a degree as to create a public nuisance or in amounts sufficient to interfere with any beneficial uses of the water (NRS 445A.720; NRS 445A.530; NRS 445A.525; NAC 445A.1628; NAC 445A.1239; NAC 445A.121).

D. Condition Statements of Necessity

The conditions above assure minimal individual and cumulative adverse effects on the aquatic environment and the continued use and enjoyment of Nevada’s water resources for future generations (NRS 445A.720). The State has an obligation to protect the beneficial uses of waterbodies across its jurisdiction through the development of water quality standards and criteria (NRS 445A.530; NAC 445A.118 - 445A.2234). Projects which require a federal license or permit must first receive certification from the state in which the discharge originates, or will originate, to verify that any proposed activity complies with federal, State, and local regulation (40 CFR §121; NRS 445A.620; NRS 445A.720). The conditions above have been developed for the proposed project because these activities have been determined to have an increased potential to pollute waters of the State and steps must be taken to reduce the risks associated with these activities (NRS 445A.525; NRS 445A.565). The State must develop limitations necessary to meet water quality standards, treatment standards, and schedules of compliance established pursuant to the laws of this State and any other federal law or regulation and is required to implement any applicable water quality standard established pursuant to NRS 445A.300 to 445A.730, inclusive, such limitations shall be established and enforced (NRS 445A.530; NAC 445A.118 - 445A.2234).

Pursuant to 40 CFR §121.7(d), narrative statements justifying the conditions listed by number follows below:

1. Water Quality Certification does not negate the requirement for applicants to obtain all other required federal, State, and local permits, licenses, and authorizations prior to construction commencement which ensures compliance with all applicable regulations (NRS 445A.300 - 445A.730; NAC 445A.228).

2. NDEP reserves the right to inspect any activity or facility that requires the use of a federal license or permit prior to initial commencement to ensure that applicable effluent limitations or other applicable water quality requirements will not be violated (40 CFR §121.11; NRS 445A.655).
3. To protect Nevada's water resources, any point source discharge associated with a project occurring in waters of the State shall not exceed State water quality standards or impair the beneficial uses for the applicable waterbody (NRS 445A.520). Beneficial uses define the water quality criteria required to support the existing uses of a waterbody and exceedances are a violation of State law. No exceedances of water quality standards or impairment of beneficial uses of the waterbody are permitted (NRS 445A.520; NRS 445A.720; NAC 445A.118 - 445A.2234).
4. To protect the continued attainment of high-quality waterbodies, no discharges of a pollutant from a point source may be made which will result in lowering the quality of these waters. NDEP requires review to ensure the proposed project will not exceed applicable numeric or narrative water quality standards for the waterbody and that BMPs promote the chemical, physical, and biological integrity of these waters (NRS 445A.565; NRS 445A.720; NAC 445A.228).
5. To prevent further degradation of 303(d) listed waterbodies and waterbodies with an approved TMDL, no discharges of a pollutant from a point source may be made which will result in further degradation of these waters. For the most current list of approved TMDLs for Nevada, please refer to NDEP's Water Quality Integrated Report (https://ndep.nv.gov/uploads/water-wqm-docs/IR2022FINAL_Report.pdf). NDEP requires review to ensure the proposed project will not exceed applicable numeric or narrative water quality standards for the waterbody and that BMPs promote the chemical, physical, and biological integrity of these waters (NRS 445A.720; NAC 445A.228).
6. Best Management Practices are effective measures to control and mitigate point source inputs of pollutants into a waterbody. Prior to commencement of any work in waters of the State, BMPs designed for the project must be in place and shall be maintained throughout the duration of the project to ensure no more than minimal effects to the aquatic environment (NRS 445A.525; NAC 445A.121). A list of BMPs recommended by NDEP are available on the BWQP website: <https://ndep.nv.gov/water/rivers-streams-lakes/nonpoint-source-pollution-management-program/best-management-practices-toolbox>.
7. Equipment used in waters of the State must be in proper working condition and free from leaks. Any maintenance, repair, or staging of this equipment must be completed in an upland position to prevent discharge of debris, oil, grease, scum, and other floating materials to waters of the State which could have adverse effects on the aquatic environment (NRS 445A.520; NAC 445A.121.2).
8. Except those authorized by this Certification, no pollutants associated with this project will be discharged from a point source or allowed to remain in a position where a pollutant can be carried to waters of the State by any means and material permitted to enter waters of the State must be stabilized in a way that prevents excessive erosion. Adherence to this condition prevents violations of water quality standards and State law (NRS 445A.400).
9. Wet and uncured concrete negatively impacts the chemical and physical integrity of water if allowed to enter a waterbody and poses a serious hazard to aquatic life. No wet or uncured concrete shall be allowed to enter water of the State by any means, and impermeable covers shall be placed over any wet or uncured concrete to prevent leaching of this pollutant into a waterbody (NRS 445A.465).
10. No proposed project will exceed 300 linear feet of dredge or fill material in waters of the State since projects of this size cannot be guaranteed to have minimal single or cumulative adverse effects on the aquatic environment. Projects proposing impacts greater than 300 linear feet require review and approval by NDEP prior to project commencement (NRS 445A.530; NRS 445A.720; NAC 445A.228).

11. If BMPs incorporate natural materials, such as seeds, mulch, straw bales, or coir logs, they shall be certified as weed free to prevent the spread of invasive species which are associated with modified hydrologic regimes and deleterious impacts to the aquatic environment (NRS 555.010; NRS 555.150).
12. Disturbance of native vegetation shall not exceed the minimum necessary to complete the project. If revegetation is proposed to restore and stabilize areas affected during construction, site-appropriate plant materials shall be used with an emphasis on native and/or adapted perennial vegetation. Site stabilization is necessary to prevent erosion, decrease sediment inputs into waters of the State, and reduce encroachment of invasive species in denuded areas since invasive species are associated with modified hydrologic regimes and deleterious impacts to the aquatic environment (NRS 445A.305).
13. All temporary and excess materials and installments used during construction shall be removed from the site upon project completion to prevent pollutants from entering waters of the State by any means. Affected areas must be returned to pre-construction elevations and contours to prevent unauthorized alterations to a waterbody once a project is complete (NRS 445A.465).
14. Impacts to water quality due to excessive sedimentation and/or turbidity shall be minimized through the proposed construction of temporary clean water diversions to bypass live stream flows around construction areas. This condition is necessary to ensure point source discharges of sediment to waters of the U.S. are minimized to the maximum extent practical and will not result in an exceedance of State water quality standards associated with Lake Tahoe Tributaries. Waters must be free from materials from controlled sources in amounts sufficient to change the existing color, turbidity, or other conditions in the receiving stream to such a degree as to create a public nuisance or in amounts sufficient to interfere with any beneficial uses of the water (NRS 445A.720; NRS 445A.530; NRS 445A.525; NAC 445A.1628; NAC 445A.1239; NAC 445A.121).