Staff Report

TO: Board of Directors

FROM: Keane Sommers, P.E., Director of Power Systems
Trevor Moore, Hydroelectric Compliance Technician

DATE: August 23, 2023

SUBJECT: **Grant Authorizations - Quagga and Zebra Mussel Infestation Prevention Grant Tier 2 – Implementation Projects – Scotts Flat and Rollins Reservoirs; Combie and Deer Creek Diversion**

HYDROELECTRIC

RECOMMENDATION:
Adopt the following two resolutions:

- A Resolution (Authorizing the Acceptance and Execution of Grant Funds for the Quagga and Zebra Mussel Infestation Prevention Grant Tier 2 – Implementation Project – Scotts Flat and Rollins reservoirs for the amount of $49,541.96)

- A Resolution (Authorizing the Acceptance and Execution of Grant Funds for the Quagga and Zebra Mussel Infestation Prevention Grant Tier 2 – Implementation Project – Combie and Deer Creek Diversion reservoirs for the amount of $32,905.56)

BACKGROUND:
On May 18th, 2023 NID submitted, under the approval of the General Manager, two applications to the California State Parks – Division of Boating and Waterways (DBW) Quagga and Zebra Mussel Infestation Prevention Grant Program requesting funding for the implementation of monitoring and prevention efforts at the Scotts Flat, Rollins, Combie, and Deer Creek Diversion Reservoirs. One of the applications requested funding for the project at Scotts Flat and Rollins reservoirs, while the other application covered the project at Combie and Deer Creek Diversion reservoirs. The DBW anticipates offering awards to selected applicants in September through October of 2023, and requires the attached Board Resolutions in order to accept and execute grant funding should NID be selected for an award.

Both the Scotts Flat and Rollins Reservoir Tier 2 Implementation project and the Combie and Deer Creek Diversion Reservoir project propose to utilize grant funding in support of the implementation of early-detection Quagga and Zebra mussel monitoring at their respective reservoirs. Quagga and Zebra mussels are two species of freshwater mussels native to Europe, that were introduced to the Great Lakes region in 2007. Since their introduction to the Great Lakes, the mussels have

continued to spread westward, causing significant damage to recreation and infrastructure due to their proclivity to forming dense colonies on submerged surfaces. Early-detection monitoring for the invasive Quagga and Zebra Mussel species is required for all managers/owners of publicly accessible reservoirs in accordance with Fish and Game Code § 2302. NID currently monitors its reservoirs based on the protocol established in the NID's California Department of Fish and Wildlife (CDFW) approved *Vulnerability Assessment, Prevention, and Monitoring Plan*.

The primary objective of both projects is to provide funding for the increases in the monitoring frequency based on the 2023 CDFW-mandated updates to NID's *Quagga and Zebra Vulnerability Assessment, Prevention, and Monitoring Plan.* The additional monitoring will allow NID to better assess the reservoir's vulnerability to Quagga and Zebra mussel infestation and adjust preventative measures if changes in conditions are observed. Additional objectives of the project at Rollins and Scotts Flat include supporting prevention efforts by acquiring a mobile decontamination unit for use on district vehicles and equipment. The mobile decontamination unit consists of a heated pressure washer on a trailer that can be used to help ensure that NID vehicles and vessels used in our reservoirs are not transporting aquatic invasive species. An additional objective of the Combie and Deer Creek Diversion project involves the acquisition of a sonde meter used to take the water chemistry spot samples required for monitoring. Both projects also include the purchase of water quality grab samples used to assess additional water quality parameters.

BUDGETARY IMPACT:
If awarded and accepted, expenditures and revenues will be part of a FY 2023 and 2024 Budget Amendment as needed.

Funding amount requested:
Rollins and Scotts Flat Project:
$49,541.96 (NID staff field work and administrative work estimated at $24,601.96; mobile decontamination unit $22,000; miscellaneous supplies and grab sample analysis $2,940)

Combie and Deer Creek Diversion Project:
$32,905.56 (NID staff field work and administrative work estimated at $12,925.66; sonde water quality monitoring meter approximately $18,000; miscellaneous supplies and grab sample analysis $1,980)

Total Project Cost including in-kind:
Rollins and Scotts Flat Project: $49,541.96 (Grant does not require any in-kind funding)

Combie and Deer Creek Diversion $32,905.56 (Grant does not require any in-kind funding)

Schedule: The proposed projects would be funded over a 2-year period. If selected for grant awards, grant agreement execution should be complete before the end of

2023. Project implementation for both grants will occur concurrently from December 2023 through December 2025.

KS & TM

Attachments (4)

- Resolution No. 2023-34 (Authorizing the Acceptance and Execution of Grant Funds for the Quagga and Zebra Mussel Infestation Prevention Grant Tier 2 – Implementation Project – Scotts Flat and Rollins Reservoirs)
- ResolutionNo. 2023-35 (Authorizing the Acceptance and Execution of Grant Funds for the Quagga and Zebra Mussel Infestation Prevention Grant Tier 2 – Implementation Project – Combie and Deer Creek Diversion Reservoir)
- Rollins and Scotts Flat Grant application package
- Combie and Deer Creek Diversion Grant application package

RESOLUTION NO. 2023-34

OF THE BOARD OF DIRECTORS OF THE NEVADA IRRIGATION DISTRICT

Quagga and Zebra Mussel Infestation Prevention Grant Program Tier 2 – Implementation Project - Scotts Flat and Rollins

WHEREAS, prior to the State of California, Department of Parks and Recreation Division of Boating and Waterways' (DBW) approval of an executed Grant Agreement, said Nevada Irrigation District Board of Directors is required to pass a resolution, authorizing a designated representative(s) to execute said Application, Grant Agreement, amendments, and certifications, designating a representative to approve claims for reimbursement, designating a representative to sign the Reimbursement Claim Form and Quarterly Progress Reports, designating a representative to sign Project Completion Certification, and designating a representative to sign the Contractor's Release Form (as applicable); and

WHEREAS, Nevada Irrigation District has the legal authority to manage the water, construct, operate, and maintain infrastructure, post signage, prepare Prevention Plan documentation, monitor for water chemistry and quagga and zebra mussels, conduct and monitor boater inspections and decontamination activities, and conduct public outreach for Scotts Flat and Rollins; and to apply to DBW for a grant up to the amount of $49,541.96 for the Quagga and Zebra Mussel Infestation Prevention Grant Program; and

WHEREAS, Nevada Irrigation District desires to develop or implement a plan for the prevention of an infestation of the quagga and zebra mussel for Scotts Flat and Rollins Reservoirs; and

WHEREAS, Nevada Irrigation District pursuant and subject to all of the terms and provisions of the Quagga and Zebra Mussel Infestation Prevention Grant Program, application is hereby made to DBW for funding.

NOW THEREFORE BE IT RESOLVED that the General Manager, Director of Power Systems, and Finance Director of said Nevada Irrigation District are hereby authorized and directed to do the following acts, including but not limited to:

1. Cause the necessary data to be prepared and application to be signed and filed with DBW; and
2. Sign the DBW Quagga and Zebra Mussel Infestation Prevention Grant Agreement and any amendments thereto; and
3. Approve Claims for Reimbursement; and
4. Execute the Budget and Expenditure Summary; and
5. Sign the Contractor's Release Form; as applicable; and
6. Certify that the project is complete, and ready for final inspection, as applicable.

*** * * * ***

PASSED AND ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting held on the 23rd day of August 2023, by the following vote:

AYES:	Directors:
NOES:	Directors:
ABSENT:	Directors:
ABSTAINS:	Directors:

_____
President of the Board of Directors

Attest:

_____
Secretary to the Board of Directors

RESOLUTION NO. 2023-35

OF THE BOARD OF DIRECTORS OF THE NEVADA IRRIGATION DISTRICT

Quagga and Zebra Mussel Infestation Prevention Grant Program Tier 2 – Implementation Project – Combie and Deer Creek Diversion

WHEREAS, prior to the State of California, Department of Parks and Recreation Division of Boating and Waterways' (DBW) approval of an executed Grant Agreement, said Nevada Irrigation District Board of Directors is required to pass a resolution, authorizing a designated representative(s) to execute said Application, Grant Agreement, amendments, and certifications, designating a representative to approve claims for reimbursement, designating a representative to sign the Reimbursement Claim Form and Quarterly Progress Reports, designating a representative to sign Project Completion Certification, and designating a representative to sign the Contractor's Release Form (as applicable); and

WHEREAS, Nevada Irrigation District has the legal authority to manage the water, construct, operate, and maintain infrastructure, post signage, prepare Prevention Plan documentation, monitor for water chemistry and quagga and zebra mussels, conduct and monitor boater inspections and decontamination activities, and conduct public outreach for Combie and Deer; and to apply to DBW for a grant up to the amount of $32,905.56 for the Quagga and Zebra Mussel Infestation Prevention Grant Program; and

WHEREAS, Nevada Irrigation District desires to develop or implement a plan for the prevention of an infestation of the quagga and zebra mussel for Combie and Deer Creek Diversion Reservoirs; and

WHEREAS, Nevada Irrigation District pursuant and subject to all of the terms and provisions of the Quagga and Zebra Mussel Infestation Prevention Grant Program, application is hereby made to DBW for funding.

NOW THEREFORE BE IT RESOLVED that the General Manager, Director of Power Systems, and Finance Director of said Nevada Irrigation District are hereby authorized and directed to do the following acts, including but not limited to:

1. Cause the necessary data to be prepared and application to be signed and filed with DBW; and
2. Sign the DBW Quagga and Zebra Mussel Infestation Prevention Grant Agreement and any amendments thereto; and
3. Approve Claims for Reimbursement; and
4. Execute the Budget and Expenditure Summary; and
5. Sign the Contractor's Release Form; as applicable; and
6. Certify that the project is complete, and ready for final inspection, as applicable.

*** * * * ***

PASSED AND ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting held on the 23rd day of August 2023, by the following vote:

AYES:	Directors:
NOES:	Directors:
ABSENT:	Directors:
ABSTAINS:	Directors:

_____
President of the Board of Directors

Attest:

_____
Secretary to the Board of Directors

Executive Summary

Tier 2 Implementation Project – Scotts Flat and Rollins Reservoirs
Quagga Zebra Mussel Monitoring Program

The attached documents provide information for a project at Scotts Flat and Rollins reservoirs that we are seeking to fund via support from the State of California Department of Boating and Waterways (DBW) Quagga Zebra Grant. The project involves monitoring our reservoirs for vulnerability to Quagga Zebra Mussel introduction. This monitoring involves water quality analysis, surface surveys, and substrate monitoring to ensure that our lakes are uninfested with the invasive mussel. Quagga Zebra mussels are native to Europe, and since their introduction in the Great Lakes they have begun spreading west. The mussels can cause serious damage to infrastructure by growing in dense colonies on surfaces including the inside of pipes and on vessels. These monitoring requirements are in accordance with Fish and Game Code 2302 that requires waterbody managers/owners to assess for vulnerability to dreissenid mussels (i.e., quagga and zebra mussels) in their water bodies and to develop a prevention and monitoring program.

Grant funding for this monitoring project at Scotts Flat and Rollins would be used to fund personnel time devoted to the implementation and administration of this effort for approximately two (2) years. Additionally, the grant would be used to fund the acquisition of a mobile decontamination trailer for district use. The unit is a heated pressure washer on a trailer, that can be used to ensure that NID vehicles and vessels used in the reservoir are not transporting aquatic invasive species.

The following table provides a basic overview of the project budget:

Scotts Flat & Rollins - Grant 1			
Budget Item	**Hourly Rate (including benefits)/Cost Per Unit**	**Hours/Qntys**	**Amount**
Personnel			
Hydroelectric Compliance Tech	$ 57.85	222	$ 12,842.70
Senior Hydrographer	$ 88.69	84	$ 7,449.96
Hydroelectric Compliance Analyst	$ 93.68	30	$ 2,810.40
Director of Power Systems	$ 149.89	10	$ 1,498.90
Total Personnel Expenses:			$ 24,601.96
Equipment			
Decontamination Trailer	$ 22,000.00	1	$ 22,000.00
Services			
Grab Sample Laboratory Analysis	$ 70.00	42	$ 2,940.00
Total Non-Personnel:			$ 24,940.00
Total Expenses:			$ 49,541.96

The attached documents provide additional information on the project. Please review and if approved, sign the attached Approval Letter. This will act as internal approval to apply in accordance with NID grant policy. However, adoption of the attached draft Resolution by the Board of Directors will be required prior to entering into a grant agreement if awarded. Applicants are estimated to be notified by the DBW in September 2023 of acceptance or denial.

Attachments:

1. **Approval Letter**
2. **Draft Resolution (Adoption required prior to acceptance of awarded grant)**
3. **Scope of Work & Table of Deliverables**
4. **Budget Line Item**
5. **Implementation Project Narrative**

Nevada Irrigation District

May 18, 2023 *Electronically Filed*

To Whom it May Concern
California State Parks – Division of Boating and Waterways
PO Box 942896
AIS/QZ Unit, Floor 12
Sacramento, CA 94296

SUBJECT: Letter of Approval – Quagga and Zebra Mussel Infestation Prevention Grant Program Tier 2 – Implementation Project - Scotts Flat and Rollins

1. Prior to the State of California Department of Parks and Recreation Division of Boating and Waterways' (DBW) approval of an Application, said Nevada Irrigation District is required to:

   Provide approval, authorizing designated representatives to execute the Application, Grant Agreement, amendments, and certifications, designating a representative to approve claims for reimbursement, designating a representative to sign the Reimbursement Claim Form and Quarterly Progress Reports, designating a representative to sign Project Completion Certification.

2. Nevada Irrigation District has the legal authority to carry out all of the following actions at Scotts Flat and Rollins Reservoirs: manage the water, construct, operate, and maintain infrastructure, post signage, prepare Prevention Plan documentation, monitor for water chemistry and quagga and zebra mussels, conduct and monitor boater inspections and decontamination activities, and conduct public outreach for Scotts Flat and Rollins Reservoirs; and apply to DBW for a grant up to the amount of $49,541.96 for the Quagga and Zebra Mussel Infestation Prevention Grant Program; and

3. Nevada Irrigation District desires to develop or implement a plan for the prevention of an infestation of the quagga and zebra mussel for Scotts Flat and Rollins Reservoirs; and

4. Nevada Irrigation District pursuant and subject to all of the terms and provisions of the Quagga and Zebra Mussel Infestation Prevention Grant Program, application is hereby made to DBW for QZ grant funding.

   The General Manager, Director of Power Systems, and Finance Director of said Nevada Irrigation District are hereby authorized and directed to do all of the following, including but not limited to:

   - Cause the necessary data to be prepared and application to be signed and filed with DBW; and
   - Sign the DBW Quagga and Zebra Mussel Infestation Prevention Grant Agreement and any amendments thereto; and
   - Approve Claims for Reimbursement; and

- Execute the Budget and Expenditure Summary; and
- Certify that the project is complete, and ready for final inspection, as applicable.

Sincerely,

DocuSigned by:
Jennifer Hanson
C319E970BA65462...

Jennifer Hanson
General Manager
Nevada Irrigation District
1036 W. Main Street, Grass Valley, CA 95945

cc: Central Files, NID

RESOLUTION NO. 2023-XX

OF THE BOARD OF DIRECTORS OF THE NEVADA IRRIGATION DISTRICT

Quagga and Zebra Mussel Infestation Prevention Grant Program Tier 2 – Implementation Project - Scotts Flat and Rollins

WHEREAS, prior to the State of California, Department of Parks and Recreation Division of Boating and Waterways' (DBW) approval of an executed Grant Agreement, said Nevada Irrigation District Board of Directors is required to pass a resolution, authorizing a designated representative(s) to execute said Application, Grant Agreement, amendments, and certifications, designating a representative to approve claims for reimbursement, designating a representative to sign the Reimbursement Claim Form and Quarterly Progress Reports, designating a representative to sign Project Completion Certification, and designating a representative to sign the Contractor's Release Form (as applicable); and

WHEREAS, Nevada Irrigation District has the legal authority to manage the water, construct, operate, and maintain infrastructure, post signage, prepare Prevention Plan documentation, monitor for water chemistry and quagga and zebra mussels, conduct and monitor boater inspections and decontamination activities, and conduct public outreach for Scotts Flat and Rollins; and to apply to DBW for a grant up to the amount of $49,541.96 for the Quagga and Zebra Mussel Infestation Prevention Grant Program; and

WHEREAS, Nevada Irrigation District desires to develop or implement a plan for the prevention of an infestation of the quagga and zebra mussel for Scotts Flat and Rollins Reservoirs; and

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2. Sign the DBW Quagga and Zebra Mussel Infestation Prevention Grant Agreement and any amendments thereto; and
3. Approve Claims for Reimbursement; and
4. Execute the Budget and Expenditure Summary; and
5. Sign the Contractor's Release Form; as applicable; and
6. Certify that the project is complete, and ready for final inspection, as applicable.

* * * * *

PASSED AND ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting held on the 23rd day of August 2023, by the following vote:

AYES: Directors:
NOES: Directors:
ABSENT: Directors:
ABSTAINS: Directors:

_____
President of the Board of Directors

Attest:

_____
Secretary to the Board of Directors

Tier 2 Implementation Project – Scotts Flat and Rollins Reservoirs
Quagga Zebra Mussel Monitoring Program

Scope of Work

Purpose

The purpose of this project is to implement the improvements in the early-detection monitoring protocol developed in the 2023 updates made to Nevada Irrigation District's (NID or the District) *Quagga/Zebra Mussel Vulnerability Assessment, Prevention, and Monitoring Plan* (QZ Plan). The plan updates were made in consultation with the California Department of Fish and Wildlife (CDFW) and received final approval for the updates from the CDFW in May 2023. The updated protocol increases the required frequency of monitoring at both NID Managed Scotts Flat and Rollins reservoirs. The new monitoring protocol proposed for implementation in the project would provide the District with additional time to detect changes in vulnerability and ultimately reduce the likelihood of Quagga or Zebra Mussel (dreissenid mussel) infestation of NID managed waterways.

The Project includes the implementation of the early-detection mussel monitoring procedure for Scotts Flat and Rollins reservoirs, as well as the purchase of a mobile decontamination unit for cleaning NID owned vehicles and equipment.

Task 1.0 Implement early-detection mussel monitoring at Rollins and Scotts Flat Reservoirs as required in the 2023 QZ Plan update.

Deliverables: Provide both the CDFW and the California Division of Boating and Waterways (DBW) with monitoring data within the required time-frames listed in the Table of Deliverables. Additionally, provide a log of the recorded personnel time spent monitoring or administering the early-detection mussel monitoring.

Task 2.0 Procure a mobile decontamination unit.

2.1 Collect quotes for a mobile decontamination unit capable of meeting the temperature and pressure thresholds established in the CDFW guidelines for Quagga and Zebra decontamination unit.

Deliverables: Provide DBW with photos of the purchased meter and invoices with evidence of purchase. Data collected with the meter will be submitted along with Task 1.0 monitoring deliverables.

Task 3.0 Complete the Final Project Report

Details of the final report should include but are not limited to: mussel prevention measures (installation of equipment, construction, inspection, monitoring, outreach and education, etc.); description of the project, performance, success, and shortcomings; lessons learned; project cost and actual cost of the project; and identify next steps. Consult the grant agreement for the requirements.

Deliverables: Final Project Report

Tier 2 – Table of Deliverables

PART A – SCOPE OF WORK TO BE PERFORMED			
SECTION 1 – GENERAL COMPLIANCE REQUIREMENTS			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Final Resolution from NID Board of Supervisors	Prior to grant execution	Provide to DBW Grant Administrator
2.	Evidence of Insurance with endorsement.	Prior to grant execution	
3.	Early-Detection Mussel Monitoring Data: Report data with each Quarterly Progress Report submission during the grant term. (Refer to the Grant Agreement Exhibit A, Section A, subsections 4-5 for the frequency of data collection and protocol.)	Due date is the same as the Quarterly Progress Reports, the Annual Report, and Draft Final Project/Final Project Reports	Provide with each Quarterly Progress Report, the Annual Report and the Draft Final/Final Report
4.	Photo Proof of DBW Funding Sign Installed	Due date is the same as the Annual Report	Provide with the Annual Report
5.	Proof of DBW Funding Language on Grantee's Website. The required contents of the sign (logo and statement) shall be posted on the Grantee's website or on any of the Grantee's web page(s) associated with the Project (per Exhibit A, Section A, Number 9(d)).	Due date is the same as the Annual Report	Provide with the Annual Report
SECTION 2 – PROJECT SPECIFIC REQUIREMENTS			
Outreach Survey			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Survey Plan	The approved survey plan is due with the Annual Report	Provide in the Annual Report
2.	Survey Results	Due date is the same as the Draft Final Project Reports	Provide in the Draft Final Project Report
Outreach Events			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Press Release and social media outreach discussing the threats of QZ infestation at	06/2024	Quarterly Progress Report,

	Rollins and Scotts Flat and NID's role in prevention. Target content to boaters and how they can help prevent the spread.		as applicable, and Draft Final Project Report, as applicable
2.	Set up booth at Scotts Flat to help spread awareness of prevention measures. Will also provide general information on QZ prevention and biology.	08/2024	Quarterly Progress Report, as applicable, and Draft Final Project Report, as applicable
3.	Set up booth at Rollins to help spread awareness of prevention measures that can be taken when fishing to reduce the chances of spreading QZ mussels. Will also provide general information on QZ prevention and biology.	08/2025	Quarterly Progress Report, as applicable, and Draft Final Project Report, as applicable
Project Tasks from Scope of Work			
Item	**Description**	**Due Date**	**Information Reporting**
1.	**Task 1:** Implement early-detection mussel monitoring at Rollins and Scotts Flat Reservoirs as required in the 2023 QZ Plan update.	Due date is the same as the Quarterly Progress Reports, the Annual Report, and Draft Final Project/Final Project Reports	Provide with each Quarterly Progress Report, the Annual Report and the Draft Final/Final Report
2.	**Task 2.0** Procure a mobile decontamination unit.	03/2024	Quarterly Progress Report
3.	**Task 3.0** Complete the Final Project Report	10/2024	Provide to DBW
PART B – INVOICING, BUDGET DETAIL, AND REPORTING PROVISIONS			
SECTION 1 – INVOICING			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Payment Requests: A Payment Request must reflect the same reporting period as the corresponding Quarterly Progress Report	Provide within 30 days of the due date of the corresponding Quarterly Progress Report	Provide to DBW Grant Administrator
2.	Final Payment Request/Final Invoicing	(DBW to insert)	Provide to DBW Grant Administrator

SECTION 2 – REPORTS			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Quarterly Progress Reports	(DBW to insert)	Provide to DBW Grant Administrator
2.	Annual Report	(DBW to insert)	
3.	Draft Final Project Report	(DBW to insert)	
4.	Final Project Report	(DBW to insert)	
5.	Final Project Summary	(DBW to insert)	
6.	Final Project Inspection and Project Completion Certification.	(DBW to insert)	

	Line Item	Qty	Rate	UOM	Total	DBW QZ Grant Funding
1	**Personnel (Nevada Irrigation District)**					
	1. Senior Hydrographer	84	$ 88.69	Pay Rate/hour (includes benefits, no overhead)	$ 7,449.96	$ 7,449.96
	2. Hydroelectric Compliance Technician	222	$ 57.85	Pay Rate/hour (includes benefits, no overhead)	$ 12,842.70	$ 12,842.70
	3. Hydroelectric Compliance Analyst	30	$ 93.68	Pay Rate/hour (includes benefits, no overhead)	$ 2,810.40	$ 2,810.40
	4. Director of Power Systems	10	$ 149.89	Pay Rate/hour (includes benefits, no overhead)	$ 1,498.90	$ 1,498.90
2	**Equipment (Nevada Irrigation District)**					
	1. Mobile Decontamination Unit	1	$ 22,000.00	# of Units	$ 22,000.00	$ 22,000.00
3	**Materials / Supplies (Nevada Irrigation District)**					
	1. Grab Sample Laboratory Analysis	42	$ 70.00	Cost per grab sample	$ 2,940.00	$ 2,940.00
				Totals	$ 49,541.96	$ 49,541.96

Budget Summary

	Category	Total	DBW QZ Grant Funding	Narrative
1	Personnel (Nevada Irrigation District)	$ 24,601.96	$ 24,601.96	NID personnel will conduct monitoring, project administration, and data analysis
2	Equipment (Nevada Irrigation District)	$ 22,000.00	$ 22,000.00	Water quality sonde meter will be utilized to during QZ monitoring of Scotts Flat and Rollins.
3	Materials / Supplies (Nevada Irrigation District)	$ 2,940.00	$ 2,940.00	Water quality grab samples examine parameters essential to assessing reservoir vulnerability, such as calcium concentration.
	Totals	$ 49,541.96	$ 49,541.96	

Nevada Irrigation District

TIER 2 – IMPLEMENTATION PROJECT NARRATIVE

QUAGGA ZEBRA PREVENTION AND MONITORING PROGRAM

Scotts Flat and Rollins Reservoirs

MAY 18, 2023

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Section A – Reservoir Project Area Descriptions and Management Activities.

Section A. 1. Reservoir and Project Area Description.

This proposed Tier-2 Implementation Project Area includes two reservoirs managed by the Nevada Irrigation District (NID or the District): Scotts Flat and Rollins Reservoir. Brief descriptions of the reservoirs are provided below.

Scotts Flat Reservoir is located on Deer Creek at an elevation of 3,100 feet above mean sea level and approximately 5 miles east of Nevada City in Nevada County. The reservoir has a storage capacity of 49,000 AF of water, a surface area of 750 acres, and 8.7 miles of shoreline.

Scotts Flat reservoir is the highest impoundment within the Deer Creek Watershed. The Deer Creek Diversion Dam, also managed by NID, is located approximately 0.5 miles downstream of Scotts Flat on the Deer Creek. Scotts Flat reservoir was assessed for vulnerability to Quagga and Zebra mussel infestation with grant funding provided by the DBW in the 2014-15, see Table 1 below for details.

Rollins Reservoir is created by Rollins Dam and impounds Greenhorn Creek, Steephollow Creek, and the Bear River. The reservoir is at an elevation of 2,171 feet, is located between Interstate 80 and State Highway 174, and covers portions of both Nevada and Placer Counties.

Rollins Reservoir is one of the larger reservoirs within NID's Yuba-Bear Project and has a usable storage capacity of 65,989 AF of water, a surface area of 825 acres and approximately 19 miles of shoreline. The Reservoir is located approximately 6 miles downstream on the Bear River of the NID managed Dutch Flat Afterbay and approximately 9 miles upstream of the NID managed Lake Combie. This reservoir was assessed for vulnerability to Quagga and Zebra mussel infestation with grant funding provided by the DBW in the 2014-15, see Table 1 below for details.

Table 1. DBW QZ Grant Funded Projects

Year Funded	Project Description	Amount Funded	Grant #
2014/15	The project completed a Vulnerability Assessment and Prevention Plan for NID's lower elevation reservoirs: Rollins, Scotts Flat, and Combie.	$ 54,564.65	Grant Agreement No. C4123107

Section A. 2. Description of the Recreational Activities and Risk for Quagga and/or Zebra Mussel Introduction.

Both Rollins and Scotts Flat have similar levels of risk for the introduction of Quagga and/or Zebra mussels, as they experience similar levels of recreation activities from the public. The two reservoirs are the most heavily utilized by the public that the District manages. In 2022, NID's Recreation Department counted 4,377 boat launches at Rollins and 1,643 launches at Scotts Flat. Neither of those figures included launches from the season pass holders. Additional details on each reservoir's recreational activities and associated risk for Quagga and/or Zebra introduction are provided below.

Scotts Flat Reservoir

Water stored in Scotts Flat is used for irrigation and domestic supply year-round with appurtenant uses of hydroelectric generation and recreation. Recreational facilities consist of two campgrounds, a developed 2 lane boat ramp, store, marina, and a day use area along the north side of the lake, which is accessible

from Nevada City via State Hwy 20. A second developed boat ramp, parking lot, and day use area is located on the south side of the lake and is accessible from Nevada City via Red Dog Road to Pasquale Road. The boat ramp on the south side of the lake is primarily used by residents of Cascade Shores, a rural community of approximately 1,000 residents. Common recreational activities conducted on the reservoir include boating (both motorized and small non-motorized vessels), fishing (from shore and boat), watersports, camping, hiking, picnicking, wildlife watching, and swimming.

Scotts flat reservoir is populated with a variety of fish species. The lake hosts a large amount of fish species due to its size and location within the Deer Creek Watershed. The relatively cold water makes the reservoir known for its population of rainbow trout, brown trout, and kokanee. Largemouth and smallmouth bass are also among the commonly encountered species on the reservoir. The California Department of Fish and Wildlife (CDFW) is the only agency that conducts routine stocking of fish into NID managed reservoirs. Records of stocking provided by the CDFW indicate that rainbow trout are planted into the reservoir on a roughly annual basis. Kokanee fingerlings have been planted sporadically in the past, but not on a regular basis. Live bait is permitted on NID managed waterbodies.

Each campground has an entrance kiosk, facilities staff, and a camp host; access to NID staff 24 hours per day during the recreation season of approximately May through September, or during work hours in off-peak season. See Table 2 for a breakdown of the usage allowed at each of the reservoir's boat launches. Within a ten (10) mile radius surrounding the Scotts Flat reservoir there are approximately six (6) boat launching facilities, all of which are located on NID managed waterbodies. Four (4) of the boat launches are located at Rollins, and the other two (2) are undeveloped and located at the Dutch Flat Afterbay and the Deer Creek Diversion Reservoir. The nearest infested reservoir is located more than 160 miles southwest at San Justo Reservoir in Santa Clara County.

Based on the assessment of Scotts Flat reservoir in the 2023 Quagga Zebra Vulnerability Assessment, Prevention, and Monitoring Plan the reservoir is considered low risk for the introduction of dreissenid mussels. This conclusion was primarily based upon the reservoir's current and historic water quality conditions. Average calcium concentrations for the reservoir have not exceeded 5 mg/L since regular monitoring began in 2018, well below the 12 mg/L minimum threshold established by CDFW guidelines.

Rollins Reservoir

Rollins was constructed in 1965 for irrigation and domestic use, with appurtenant uses of hydroelectric generation and recreation. There are four developed 2-lane boat launch facilities at Rollins: Greenhorn, Long Ravine, Orchard Springs, and Peninsula. Greenhorn is the only launch area managed by a private entity with the rest managed by the Nevada Irrigation District. Other facilities at the reservoir include three small marinas with stores, eatery, fuel, boat rentals, mooring docks and dry storage. Camping facilities consist of tent sites and recreational vehicle and trailer camp sites. Day use facilities include a picnic area with barbecue grills, picnic tables and a beach. Common recreational activities conducted on the reservoir include boating (both motorized and small non-motorized vessels), fishing (from shore and boat), watersports, camping, hiking, picnicking, wildlife watching, and swimming.

Fishing on Rollins is a common activity year-round on the reservoir. Due to the lake's relatively large capacity and warmer water the reservoir hosts a variety of fish species. 15 fish species have been identified in conducted surveys. Smallmouth bass are likely the most common species, with bluegill being the second most abundant. Other warm water fishes included black crappie, green sunfish, redear sunfish, and

largemouth bass. Ictalurids are represented by channel catfish, white catfish, and brown bullhead catfish. Salmonids present in the reservoir includes both brown trout and rainbow trout. Forage fish species include pond smelt and gold shiner. Native Sacramento pikeminnow and Sacramento sucker are also present in the reservoir. The CDFW is the only agency that conducts routine stocking of fish into NID managed reservoirs. Records of stocking provided by the CDFW indicate that rainbow trout are planted into the reservoir on a roughly annual basis. Brown trout and Kokanee have been planted in the reservoir sporadically in the past. Live bait is permitted on NID managed waterbodies.

Each campground has an entrance kiosk, facilities staff, and a camp host; access to NID staff 24 hours per day during the recreation season of approximately May through September, or during work hours in off-peak season. See Table 2 for a breakdown of the usage allowed at each of the reservoir's boat launches. Within a ten (10) mile radius surrounding Rollins there are four (4) boat launches with full public access, all on NID managed waterbodies. Two (2) of the launches are located at Scotts Flat reservoir, with the other two (2) located on the Deer Creek Diversion and the Dutch Flat Afterbay respectively. Additionally, Combie Lake and Lake of the Pines are located approximately 10 miles from Rollins reservoir. Combie is managed by NID, however no public campgrounds or launch facilities are present. Approximately 130 private docks are present on the private properties surrounding the lake. Lake of the Pines is similarly open only to residents and guests living within the homeowner's association that owns the lake. More than 250 properties are located along the reservoir's five-mile-long shoreline. The nearest infested reservoir is located more than 160 miles southwest at San Justo Reservoir in Santa Clara County.

Based on the assessment of Rollins reservoir in the 2023 Quagga Zebra Vulnerability Assessment, Prevention, and Monitoring Plan the reservoir is considered low risk for the introduction of dreissenid mussels. This conclusion was primarily based upon the reservoir's current and historic water quality conditions. Average calcium concentrations for the reservoir have not exceeded 7 mg/L since regular monitoring began in 2018, well below the 12 mg/L minimum threshold established by CDFW guidelines.

Table 2. Rollins and Scotts Flat Usage Table

Name/Location of Launch Site	Motorized Vessels Allowed: (Yes/No)	Non-Motorized Vessels Allowed: (Yes/No)	Public Outside Usage: (Yes/No)	Private Outside Usage: (Yes/No)	Activities (i.e., boating, fishing etc.)
Scotts Flat – North Shore Boat Launch	Yes	Yes	Yes	No	Boating, Fishing, Camping, Hiking
Scotts Flat - South Shore, Cascade Shores Boat Launch	Yes	Yes	Yes	No	Boating, Fishing, day use
Rollins – Greenhorn	Yes	Yes	Yes	No	Boating, Fishing, Hiking, Camping
Rollins – Long Ravine	Yes	Yes	Yes	No	Boating, Fishing, Hiking, Camping
Rollins – Orchard Springs	Yes	Yes	Yes	No	Boating, Fishing, Hiking, Camping
Rollins - Peninsula	Yes	Yes	Yes	No	Boating, Fishing, Hiking, Camping

Section A. 3. Description of Management Activities including Prevention Program/Plan.

NID's recreation staff currently manages the permitted recreational activities at the District facilities on Rollins and Scotts Flat reservoir. Rollins and Scotts Flat reservoir both have the same permitted activities, save that personal watercraft are prohibited from Scotts Flat but not Rollins. Hunting and the use of any firearms/guns are prohibited on all NID property. Fishing is allowed at the reservoirs, but recreators must adhere to local, state, and federal codes and regulations. Fishing is prohibited on or around docks, boat slips, and public beach areas. Swimming is prohibited around boat launching and marina dock areas, and no lifeguards are on duty at either of the reservoirs. Designated camping sites are available at both reservoirs; however, overnight boat camping is prohibited. Both metal detection and the use of drones are prohibited on NID property. See Table 3 for more information on prohibited activities at each of the reservoirs.

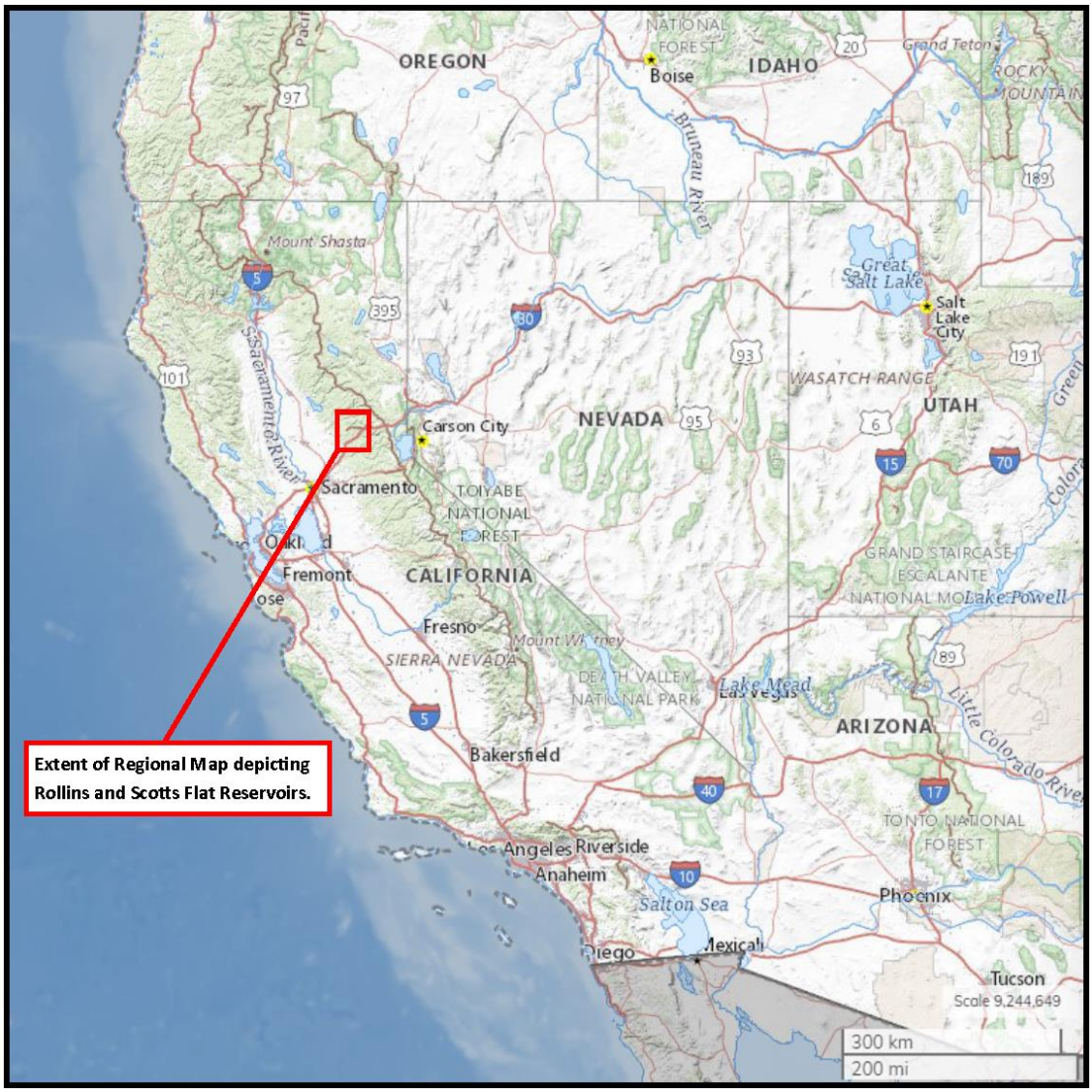
Table 3. Reservoirs Restrictions

Reservoir(s) Name	Season Dates	Motorized	Non-Motorized	Live Bait	Fishing	Body Contact with Water	Personal Watercraft	Other
Rollins		X	X		X			X
Scotts Flat		X	X		X		X	X
All checked boxes indicate some level of restrictions at the corresponding reservoir.								

Prevention Program and Plan

In 2014, NID received a grant from the California Division of Boating and Waterways (DBW) for development of the *Western Nevada County Regional Prevention/Monitoring Program* for Scotts Flat, Rollins, and Combie Reservoirs with the plan being finalized in 2018 (Grant Agreement No. C4123107). NID's Vulnerability, Prevention, and Monitoring Plan was recently expanded and updated in 2022-23 to include 10 additional reservoirs that were not assessed in the initial 2018 Plan: Jackson Meadows, Milton, Jackson, French, Faucherie, Sawmill, Bowman, Dutch Flat Forebay and Afterbay, and the Deer Creek Diversion reservoirs. Updates to the monitoring locations, frequency, and outreach was made in cooperation with the CDFW, with final approval from the CDFW for the update including the additional reservoirs being received in May 2023. The Plan includes monitoring at all 13 reservoirs utilizing a combination of surface surveys, water chemistry grab samples, water chemistry spot sampling, and substrate surveys with varying frequencies. Surveys are conducted based on the survey protocols developed by the CDFW, and consistent with the resources provided in the *California Natural Resources Agency – Invasive Mussel Guidebook for Recreational Water Managers and Users*.

Additionally, the plan assesses the reservoir for vulnerability to infestation based on a number of potential vectors. All reservoirs managed by NID and covered in the plan have been assessed to be low risk for dreissenid mussel introduction due to the low calcium concentration found in NID managed waterbodies. Despite the relatively low risk, the District implements a number of strategies to further minimize the chance of introduction. These strategies primarily involve mandatory self-inspections required at both Scotts Flat and Rollins reservoirs and public outreach to provide information regarding the threat of introducing invasive Quagga and/or Zebra mussels to uninfected waterways. Recreation staff are trained to understand the policies and procedures outlined in the District's Prevention Plan.



Nevada Irrigation District

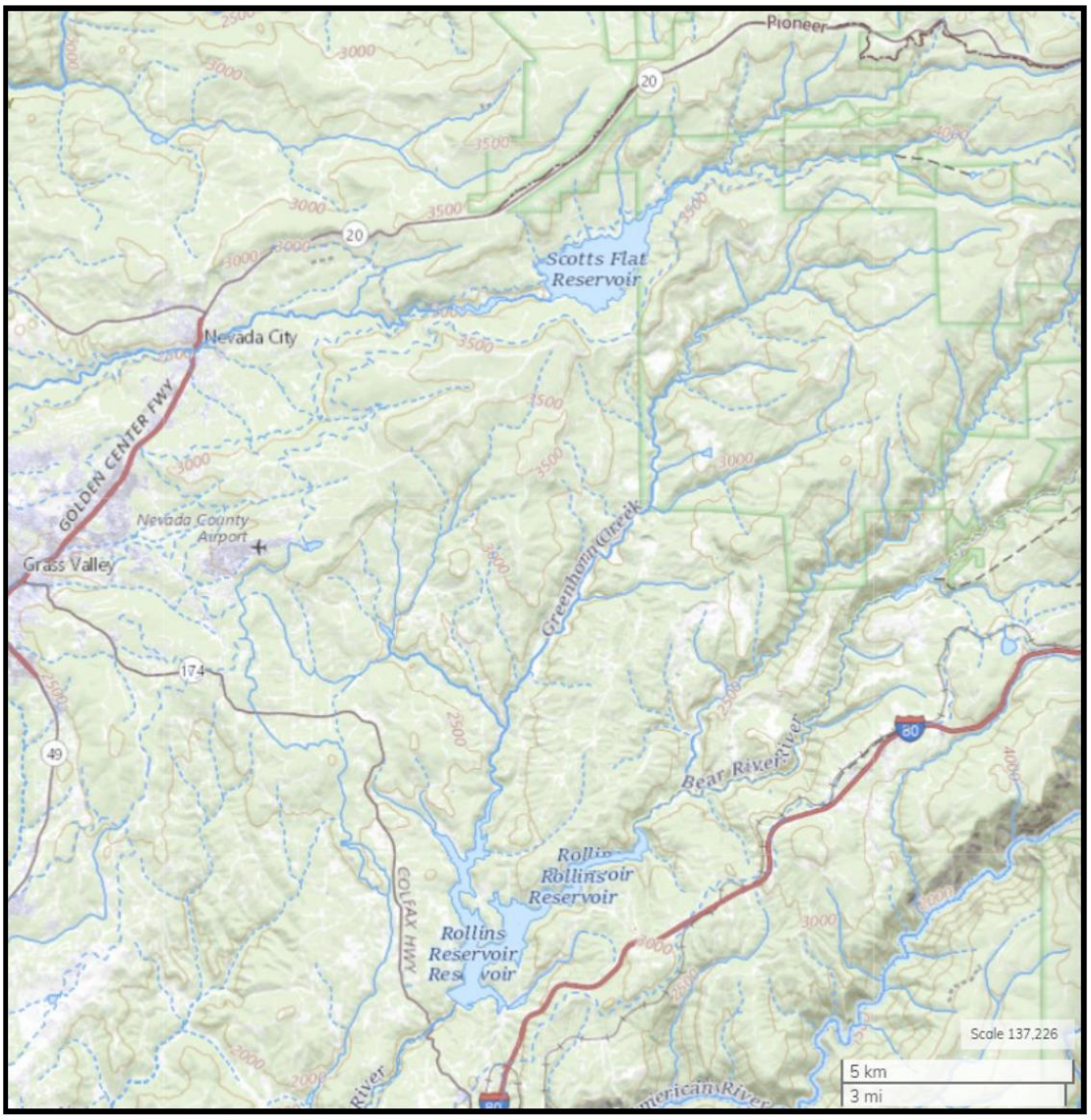
Quagga/Zebra Mussel Prevention and Monitoring Program

Tier 2—Implementation Project
Scotts Flat and Rollins Reservoirs

Nevada Irrigation District
28311 Secret Town Rd
Colfax, Ca 95713
(530) 273-8571

Reservoir Overview Map

Figure 1. Scotts Flat and Rollins Overview Map



Nevada Irrigation District

Quagga/Zebra Mussel Prevention and Monitoring Program

Tier 2—Implementation Project
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Regional Reservoir Map

N

Figure 2. Scotts Flat and Rollins Regional Map

Section B – Project Description.

The proposed project seeks funding to support the implementation of early-detection mussel monitoring based on the 2023 updates to the Quagga Zebra monitoring and prevention program at Scotts Flat and Rollins reservoirs. The project will provide funding to support the NID staff members involved in conducting the additional monitoring at the greater frequency required at Scotts Flat and Rollins Reservoirs. This increase in monitoring frequency at both Scotts Flat and Rollins is in direct response to the changes implemented in the 2023 update to our Monitoring and Prevention Plan. See Table 4 for an outline of Rollins and Scotts Flat monitoring frequencies.

In order to facilitate the increased monitoring frequency, this project will seek funding to support the personnel time requirements as well as monitoring supplies and equipment. The project will involve early-detection monitoring via water quality grab samples at a variety of locations at both reservoirs on a quarterly basis. Surface surveys, substrate surveys, and water quality spot sampling will be conducted at the reservoirs monthly.

In addition, this project seeks to acquire a mobile decontamination trailer. The trailer would be used to support NID's Recreation Department, by allowing for increased operational flexibility and reducing the likelihood of spreading AIS between NID managed reservoirs. NID policy currently requires staff to decontaminate equipment before use in another waterbody. However, vehicle cleaning stations with adequate pressure and heat are not available at all reservoirs. Purchasing a mobile decontamination unit that meets CDFW established decontamination protocol thresholds for pressure and temperature would allow staff members to clean vehicles and equipment at Rollins and Scotts Flat Reservoir, and significantly reduce the risk of introducing or spreading dreissenid mussels as well as other aquatic invasive species.

The proposed project's primary goal is to provide funding for additional monitoring at Scotts Flat and Rollins reservoir as prescribed by the CDFW in NID's updated Quagga Zebra Vulnerability Assessment, Prevention and Monitoring Plan. The increase in monitoring provided for in this project will ensure that the most up-to-date information regarding infestations and the potential for infestations are available to NID staff. Accurate data on water quality parameters provides information vital to NID's effort in preventing the introduction of dreissenid mussels. In the event that water quality conditions change to become more suitable for dreissenid colonization, NID staff will have more time to respond by adjusting policy accordingly. Therefore, the monitoring conducted as a part of this proposed project is vital in developing the prevention programs at both reservoirs and in minimizing the risk of mussel introduction.

The proposed project will continue after funding from this grant ends, with all funding provided directly by NID funds collected from water rate payers and hydroelectric revenue.

Table 4. Monitoring Frequency Table

Reservoir:	Facility Code:	Location:	Water Quality Monitoring Frequency		Shoreline/Launch Survey Frequency		
			Grab/Chem Samples	WQ Sonde	Surface Survey	Substrate	Boat Launch
Rollins	57401	L = Long Ravine	3x per year	Monthly	Monthly	Y	Y
		O = Orchard Springs	3x per year	Monthly	Monthly	Y	Y
		B = Bear River Inlet	3x per year	3x per year	N	N	N
		G = Greenhorn Access	3x per year	Monthly	Monthly	Y	Y
Scotts Flat	57901	R = Recreation Gate	3x per year	Monthly	Monthly	Y	Y
		C = Cascade Shores	3x per year	Monthly	Monthly	Y	Y
		M = Middle Lake near Ditch Tender House	3x per year	3x per year	N	N	N

Section C – Regional Impacts from a Potential Quagga and/or Zebra Mussel Infestation.

In terms of ecological and economic impacts, quagga and zebra mussels are two of the most devastating aquatic species to invade North American fresh waters. The arrival of these species to a water system brings the potential to extend devastating impacts. The spread of quagga and/or zebra mussels threatens the natural environment, water delivery systems, hydroelectric facilities, agriculture, and recreational boating and fishing.

Both species of non-native aquatic mollusks wreak havoc on the environment by disrupting the natural food chain and can contribute to the release of harmful bacteria that affect other aquatic species. Quagga and zebra mussels are filter feeders that consume large portions of the microscopic plants and animals that form the base of the food web. Their consumption of significant amounts of phytoplankton from the water decreases zooplankton and can cause disruption to the ecological balance of entire bodies of water.

The mussels can displace native species, further upsetting the natural food web. In addition to devastating the natural environment, quagga and zebra mussels pose an economic threat to California. The greatest impact will be on infrastructure and water conveyances. Mussels attach to surfaces such as piers, pilings, water intakes and fish screens. These invasives spawn multiple times a year and, as a result, intake structures can become clogged, hampering the flow of water threatening municipal water supply, agricultural irrigation, and power plant operations. Both Rollins and Scotts Flat Reservoirs have hydroelectric generation facilities downstream of the reservoirs that would adversely impacted by the introduction of dreissenid mussels.

Section D – Technical and Feasibility Approach.

The monitoring procedure implemented in this proposed project was developed in cooperation with the CDFW as a part of the approved 2023 update to our Monitoring and Prevention Plan. NID's monitoring can be broken into three data collection methods: surface surveys, artificial substrate monitoring, and water chemistry sampling. Surface survey and artificial substrate monitoring follows the published Surface Survey and Substrate Monitoring Protocol developed by the CDFW in 2021. See the following link for reference to the CDFW resources utilized in the development of the monitoring protocol frequency and locations at Rollins and Scotts Flat: Quagga / Zebra Mussel Prevention Programs (ca.gov)

Surface surveys are planned to be conducted on a monthly basis at the majority of the monitoring sites at each reservoir, Artificial substrate monitoring is conducted at less sites, as they require a structure in the reservoir to suspend the substrate from into the water column. Some of the substrates are affixed to docks that can be accessed throughout the year. However, the installed substrates at Long Ravine and Orchard Springs on Rollins reservoir can only be accessed via a boat, and will only be monitored three times per year (estimated to be approximately April, August, and October).

Water chemistry measurements are taken via a sonde meter in conjunction with the other monitoring surveys and measure a number of parameters including turbidity, conductivity, pH, dissolved oxygen, depth, salinity, and temperature. Grab samples requiring laboratory analysis are taken three times per year (during the spring, summer, and fall), but provide additional information regarding calcium concentration, magnesium concentration, hardness, and several other water chemistry metrics that require laboratory analysis. Calcium concentrations could be a factor limiting dreissenid densities in some parts of the West based on current scientific literature examining the topic. Large populations of zebra mussels are not expected where calcium levels are less than 25 mg/L (Hincks and Mackie). Cohen and Weinstein (2001) found little evidence that Zebra mussels can become established at ambient calcium concentrations below about 20 mg/L. It should be noted that calcium may be elevated near concrete structures (Cohen and Weinstein 2001). There are also cases where dreissenid populations have become established in calcium-limited waterbodies at locations that have input from other water sources with higher calcium levels (Cohen and Weinstein 2001). Therefore, water chemistry measurement can provide reservoir managers with additional information to inform management decisions and policy.

The mobile decontamination unit proposed as a component of this project will meet the CDFW guidelines for temperature and pressure set to effectively decontaminate Quagga and Zebra mussels. The CDFW decontamination guidelines can be found at the following link: CDFW Decontamination Protocol

Cohen, A.N., Weinstein, A. 2001. *Zebra Mussel's Calcium Threshold and Implications for its Potential Distribution in North America. San Francisco Estuary Institute*. [Online]. Available at: https://www.sfei.org/sites/default/files/biblio_files/2001-Zebramusselcalcium356.pdf.

Hinks and Mackie. September 1997. *Effects of pH, calcium, alkalinity, hardness, and chlorophyll on the survival, growth, and reproductive success of zebra mussel (Dreissena polymorpha) in Ontario lakes*. [Online]. Available at: https://www.researchgate.net/publication/237373473_Effects_of_pH_calcium_alkalinity_hardness_and_chlorophyll_on_the_survival_growth_and_reproductive_success_of_zebra_mussel_Dreissena_polymorpha_in_Ontario_lakes.

The proposed project will be consistent with Fish and Game Code § 2302 and California Code of Regulations, Title 14, Section 672.1 (b), as the project directly adheres to the protocol developed as a component of NID's CDFW approved monitoring program. The data gathered in this project's monitoring procedure will inform the implementation of both recreation management policies and public outreach.

Section E – Performance Monitoring (Tracking of the Project)

Project performance monitoring is essentially built into the procedure developed in NID's 2023 QZ Vulnerability Assessment, Prevention, and Monitoring Plan. Results from the monthly monitoring will be submitted to the CDFW before the end of the following month. This data is compiled in an annual tracking spreadsheet. Additionally, personnel hours spent on the project are to be logged on a weekly basis.

The material acquisition component of the project will be monitored and tracked in a similar method. With a tracking spreadsheet outlining the mobile decontamination unit and component parts. NID utilizes Central Square financial software to manage purchase requisitions, and will be used to maintain records of supply purchases including quotes and invoices. A summary of the progress and collected data will be provided on a quarterly basis to California State Parks Division of Boating and Waterways (DBW).

Section F – Early-Detection Quagga and Zebra Mussel Monitoring.

The data collected over the course of this project will satisfy the Early Detection Mussel Monitoring Data requirements of this grant. Subsequently Quarterly Progress reports will be submitted to the DBW, as the primary objective of the proposed project is to implement the monitoring procedure developed in NID's 2023 QZ Vulnerability Assessment, Prevention, and Monitoring Plan. NID's monitoring can be broken into three data collection methods: surface surveys, artificial substrate monitoring, and water chemistry sampling. See Table 4 for a detailed description of the monitoring frequency for each location.

All early-detection monitoring is undertaken solely by the NID staff, save for sporadic supplemental surveys undertaken by the CDFW. The data collected by NID is shared with the CDFW on a monthly basis. Additionally, the data is analyzed and aggregated for an annual report of monitoring efforts that is also submitted to the CDFW. Data from the monitoring is used to inform the public of each reservoirs vulnerability to infestation. Any increase in vulnerability identified as a result of the early-detection monitoring would require an immediate change in the public outreach strategy. This would likely include an increase in the frequency of outreach events as well as revised messaging conveying the increased susceptibility and risk to a public reservoir.

Section G – Education and Outreach.

This proposed Project does not include an education or an outreach component, however education and outreach activities are included in NID's Prevention Program. Outreach and education at both Rollins and Scotts Flat reservoirs are conducted by NID, with the CDFW providing some support for outreach materials in the form of posters and fliers. The primary objective of NID's QZ education and outreach program is to reduce the probability of the public introducing dreissenid mussels to Scotts Flat or Rollins reservoir.

Currently, informational signage is posted at the boat launches at the Scotts Flat and Rollins boat launches. The signs include consistent use of the USFWS "Clean, Drain, and Dry" messaging, as well as information on identifying dreissenid mussels and decontaminating boats and trailers. Flyers are regularly made available to recreators that enter through NID staffed recreation facilities, regardless of if they are boaters

or not. The flyers include information on quagga and zebra mussels and the prevention of their introduction.

Information is also available on NID's website, including facts on dreissenid mussel biology and identification and details on the Prevention efforts undertaken by NID. In recent years, NID has published press releases spreading dreissenid mussel awareness along with its annual recreation announcements. In addition, efforts have been made to post informational posters that were prepared and provided by the CDFW around recreation facilities at Rollins and Scotts Flat reservoirs. Mandatory self-inspection forms are provided to boaters launching from NID managed boat launches. Inspection forms include information on the conducting inspections on watercraft and are returned to NID staff upon completion. The data is then aggregated and used as another source of data regarding boaters entering Rollins and Scotts Flat reservoir.

Section H – Key Officers and Oversight Bodies

Nevada Irrigation District is a public agency formed in 1921 pursuant to California State Law (Water Code § 20500 *et seq.*) and is an independent California special district. NID is governed by a five-member Board of Directors, elected to four-year terms by the District's voters. The Board is the District's policy-making body and policy is carried out by approximately 200 full- and part-time employees. The organizational chart provided below provides an overall view of the key officers responsible for the management and operation of facilities at both Scotts Flat and Rollins Reservoirs. Under the General Manager the Director of Power Systems and the Director of Recreation manage the departments responsible for the operations and maintenance of both the dam's infrastructure and recreation facilities respectively (See Table 5 for contact information). Additional information on NID's organizational structure can be found on the District's website at: Nevada Irrigation District (nidwater.com)

Figure 3. Rollins and Scotts Flat Org Chart

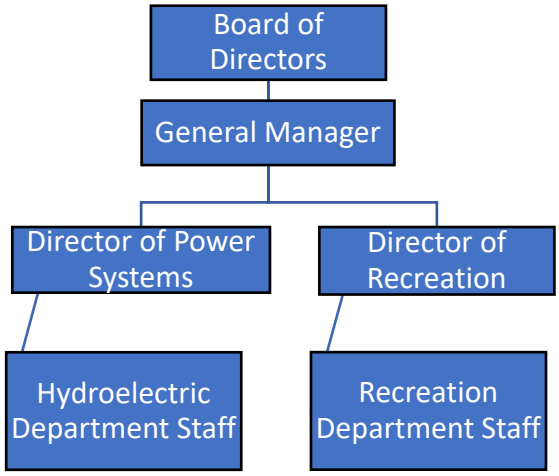

Table 5. Rollins and Scotts Flat Key Officers

Name	Title	Role	Contact Information
Jennifer Hanson	General Manager	Manages the more than 200 District employees.	Office Phone: (530) 271-6824 Email: admindepartment@nidwater.com
Keane Sommers	Director of Power Systems	Oversees Hydroelectric staff responsible for the operations and maintenance of the dams and hydroelectric facility infrastructure.	Office Phone: (530) 271-6741 Email: hydrodepartment@nidwater.com
Monica Reyes	Director of Recreation	Oversees the Recreation staff responsible for the maintenance and operation of recreation facilities on the reservoirs.	Office Phone: (530) 271-6710 Email: recdepartment@nidwater.com

Section I – Project Member/Entities, Administration and Partners.

The following table outlines the individual project members involved in administering the proposed Project and in carrying out the field work involved in its implementation. All project members are Nevada Irrigation District staff:

Table 6. Project Members

Project Members	Position	Project Role	Experience/Expertise/Education
Keane Sommers	Director of Power Systems	Administration	22+ years of service in the fields of dam safety, water resources, hydraulics, and hydropower. CA Registered Civil Engineer #C64960 B.S. Civil Engineering; M.S. Civil and Environmental Engineering
Tina Konkle	Hydroelectric Compliance Analyst	Administration	6 years Hydroelectric Compliance working with CDFW and QZ Monitoring A.S. Environmental Science, A.S. Natural Sciences; In Progress B.S. Environmental Science at Oregon State University
Ashley Vander Meer	Senior Hydrographer	Field Work/Administration	9 years experience in Hydrology, B.S. Biology, B.A. Outdoor Adventure Leadership and Environmental Science
Trevor Moore	Hydroelectric Compliance Technician	Field Work/Administration	5 years experience in Natural Resources B.S. Biology, Minor Chemistry
Sandra Dunlap	Director of Finance	Financial Administration	15+ years accounting experience B.S. – Concentration Accounting

Section J – Readiness to Proceed.

NID is fully ready to begin implementation of the Project's additional monitoring outlined in the CDFW approved 2023 update to the District's Quagga Zebra Vulnerability Assessment, Prevention and Monitoring Plan. NID staff has already started implementing the revised monthly monitoring procedure outlined in that plan at both Rollins and Scotts Flat Reservoir. All necessary data collection was conducted during the

course of developing the 2023 update to the District's Quagga Zebra Vulnerability Assessment, Prevention and Monitoring Plan. Funding from additional sources outside of the DBW will not be required for the implementation of the proposed Project.

Executive Summary

Tier 2 Implementation Project – Combie and Deer Creek Diversion Reservoirs Quagga Zebra Mussel Monitoring Program

The attached documents provide information for a project at Combie and Deer Creek Diversion reservoirs that we are seeking to fund via support from the State of California Department of Boating and Waterways (DBW) Quagga Zebra Grant. The project involves monitoring our reservoirs for vulnerability to Quagga Zebra Mussel introduction. This monitoring involves water quality analysis, surface surveys, and substrate monitoring to ensure that our lakes are uninfested with the invasive mussel. Quagga Zebra mussels are native to Europe, and since their introduction in the Great Lakes they have begun spreading west. The mussels can cause serious damage to infrastructure by growing in dense colonies on surfaces including the inside of pipes and on vessels. These monitoring requirements are in accordance with Fish and Game Code 2302 that requires waterbody managers/owners to assess for vulnerability to dreissenid mussels (i.e., quagga and zebra mussels) in their water bodies and to develop a prevention and monitoring program.

Grant funding for this monitoring project at Combie and Deer Creek Diversion would be used to fund personnel time devoted to the implementation and administration of this effort for approximately two (2) years. Additionally, the grant would be used to fund the acquisition of a Sonde meter used to take water chemistry spot samples required for monitoring, and the installation of an informational sign at the Deer Creek Diversion.

The following table provides a basic overview of the project budget:

Deer Creek & Combie - Grant 2			
Budget Item	**Hourly Rate (including benefits)/Cost Per Unit**	**Hours/Qntys**	**Amount**
Personnel			
Hydroelectric Compliance Tech	$ 57.85	156	$ 9,024.60
Senior Hydrographer	$ 88.69	18	$ 1,596.42
Hydroelectric Compliance Analyst	$ 93.68	15	$ 1,405.20
Director of Power Systems	$ 149.89	6	$ 899.34
Total Personnel Expenses:			$ 12,925.56
Equipment			
EXO1 Sonde Meter - YSI	$ 18,000.00	1	$ 18,000.00
Supplies			
QZ Signage	$ 300.00	1	$ 300.00
Services			
ɔ Sample Laboratory Analysis	$ 70.00	24	$ 1,680.00
Total Non-Personnel:			$ 19,980.00
Total Expenses:			$ 32,905.56

The attached documents provide additional information on the project. Please review and if approved, sign the attached Approval Letter. This will act as internal approval to apply in accordance with NID grant policy. However, adoption of the attached draft Resolution by the Board of Directors will be required prior to entering into a grant agreement if awarded. Applicants are estimated to be notified by the DBW in September 2023 of acceptance or denial.

Attachments:

1. **Approval Letter**
2. **Draft Resolution (Adoption required prior to acceptance of awarded grant)**
3. **Scope of Work & Table of Deliverables**
4. **Budget Line Item**
5. **Implementation Project Narrative**

Nevada Irrigation District

May 18, 2023 *Electronically Filed*

To Whom it May Concern
California State Parks – Division of Boating and Waterways
PO Box 942896
AIS/QZ Unit, Floor 12
Sacramento, CA 94296

SUBJECT: Letter of Approval – Quagga and Zebra Mussel Infestation Prevention Grant Program Tier 2 – Implementation Project – Combie and Deer Creek Diversion

1. Prior to the State of California Department of Parks and Recreation Division of Boating and Waterways' (DBW) approval of an Application, said Nevada Irrigation District is required to:

   Provide approval, authorizing a designated representative(s) to execute the Application, Grant Agreement, amendments, and certifications, designating a representative to approve claims for reimbursement, designating a representative to sign the Reimbursement Claim Form and Quarterly Progress Reports, designating a representative to sign Project Completion Certification.

2. Nevada Irrigation District has the legal authority to carry out all of the following actions at Combie and Deer Creek Diverison Reservoirs: manage the water, construct, operate, and maintain infrastructure, post signage, prepare Prevention Plan documentation, monitor for water chemistry and quagga and zebra mussels, conduct and monitor boater inspections and decontamination activities, and conduct public outreach for Combie and Deer Creek Diversion Reservoirs; and apply to DBW for a grant up to the amount of $32,905.56 for the Quagga and Zebra Mussel Infestation Prevention Grant Program; and

3. Nevada Irrigation District desires to develop or implement a plan for the prevention of an infestation of the quagga and zebra mussel for Combie and Deer Creek Diversion Reservoirs; and

4. Nevada Irrigation District pursuant and subject to all of the terms and provisions of the Quagga and Zebra Mussel Infestation Prevention Grant Program, application is hereby made to DBW for QZ grant funding.

   The General Manager, Director of Power Systems, and Finance Director of said Nevada Irrigation District are hereby authorized and directed to do all of the following, including but not limited to:

   - Cause the necessary data to be prepared and application to be signed and filed with DBW; and

- Sign the DBW Quagga and Zebra Mussel Infestation Prevention Grant Agreement and any amendments thereto; and
- Approve Claims for Reimbursement; and
- Execute the Budget and Expenditure Summary; and
- Certify that the project is complete, and ready for final inspection, as applicable.

Sincerely,

DocuSigned by:
Jennifer Hanson
C319E970BA65462...

Jennifer Hanson
General Manager
Nevada Irrigation District
1036 W. Main Street, Grass Valley, CA 95945

cc: Central Files, NID

RESOLUTION NO. 2023-XX

OF THE BOARD OF DIRECTORS OF THE NEVADA IRRIGATION DISTRICT

Quagga and Zebra Mussel Infestation Prevention Grant Program Tier 2 – Implementation Project – Combie and Deer Creek Diversion

WHEREAS, prior to the State of California, Department of Parks and Recreation Division of Boating and Waterways' (DBW) approval of an executed Grant Agreement, said Nevada Irrigation District Board of Directors is required to pass a resolution, authorizing a designated representative(s) to execute said Application, Grant Agreement, amendments, and certifications, designating a representative to approve claims for reimbursement, designating a representative to sign the Reimbursement Claim Form and Quarterly Progress Reports, designating a representative to sign Project Completion Certification, and designating a representative to sign the Contractor's Release Form (as applicable); and

WHEREAS, Nevada Irrigation District has the legal authority to manage the water, construct, operate, and maintain infrastructure, post signage, prepare Prevention Plan documentation, monitor for water chemistry and quagga and zebra mussels, conduct and monitor boater inspections and decontamination activities, and conduct public outreach for Combie and Deer; and to apply to DBW for a grant up to the amount of $32,905.56 for the Quagga and Zebra Mussel Infestation Prevention Grant Program; and

WHEREAS, Nevada Irrigation District desires to develop or implement a plan for the prevention of an infestation of the quagga and zebra mussel for Combie and Deer Creek Diversion Reservoirs; and

WHEREAS, Nevada Irrigation District pursuant and subject to all of the terms and provisions of the Quagga and Zebra Mussel Infestation Prevention Grant Program, application is hereby made to DBW for funding.

NOW THEREFORE BE IT RESOLVED that the General Manager, Director of Power Systems, and Finance Director of said Nevada Irrigation District are hereby authorized and directed to do the following acts, including but not limited to:

1. Cause the necessary data to be prepared and application to be signed and filed with DBW; and
2. Sign the DBW Quagga and Zebra Mussel Infestation Prevention Grant Agreement and any amendments thereto; and
3. Approve Claims for Reimbursement; and
4. Execute the Budget and Expenditure Summary; and
5. Sign the Contractor's Release Form; as applicable; and
6. Certify that the project is complete, and ready for final inspection, as applicable.

* * * * *

PASSED AND ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting held on the 23rd day of August 2023, by the following vote:

AYES:	Directors:
NOES:	Directors:
ABSENT:	Directors:
ABSTAINS:	Directors:

_____
President of the Board of Directors

Attest:

_____
Secretary to the Board of Directors

Tier 2 Implementation Project – Combie and Deer Creek Diversion Reservoirs
Quagga Zebra Mussel Monitoring Program

Scope of Work

Purpose

The purpose of this project is to implement the improvements in the early-detection monitoring protocol developed in the 2023 updates made to Nevada Irrigation District's (NID or the District) *Quagga/Zebra Mussel Vulnerability Assessment, Prevention, and Monitoring Plan* (QZ Plan). The plan updates were made in consultation with the California Department of Fish and Wildlife (CDFW) and received final approval for the updates from the CDFW in May 2023. The updated protocol increases the required frequency of monitoring at both NID Managed Combie and Deer Creek reservoirs. The new monitoring protocol proposed for implementation in the project would provide the District with additional time to detect changes in vulnerability and ultimately reduce the likelihood of Quagga or Zebra Mussel (dreissenid mussel) infestation of NID managed waterways.

The Project includes the implementation of the early-detection mussel monitoring procedure for Combie and Deer Creek Diversion reservoirs, as well as the purchase of a sonde meter for water quality spot sampling as a component of the early-detection mussel monitoring.

Task 1.0 Implement early-detection mussel monitoring at Combie and Deer Creek Reservoirs as required in the 2023 QZ Plan update.

Deliverables: Provide both the CDFW and the California Division of Boating and Waterways (DBW) with monitoring data within the required time-frames listed in the Table of Deliverables. Additionally, provide a log of the recorded personnel time spent monitoring or administering the early-detection mussel monitoring.

Task 2.0 Procure a water quality sonde meter for use in early-detection mussel monitoring.

- **2.1** Collect quotes for a sonde meter capable of measuring the water quality parameters of pH, Temperature/Conductivity, Turbidity, and Dissolved oxygen.
- **2.2** Purchase the most appropriate sonde meter according to the Task 1.0 requirements outlined in the QZ Plan covering Combie and Deer Creek Diversion reservoirs.

Deliverables: Provide DBW with photos of the purchased meter and invoices with evidence of purchase. Data collected with the meter will be submitted along with Task 1.0 monitoring deliverables.

Task 3.0 Complete the Final Project Report

Details of the final report should include but are not limited to: mussel prevention measures (installation of equipment, construction, inspection, monitoring, outreach and education, etc.); description of the project, performance, success, and shortcomings; lessons learned; project cost and actual cost of the project; and identify next steps. Consult the grant agreement for the requirements.

Deliverables: Final Project Report

Tier 2 – Table of Deliverables

PART A – SCOPE OF WORK TO BE PERFORMED			
SECTION 1 – GENERAL COMPLIANCE REQUIREMENTS			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Final Resolution from NID Board of Supervisors	Prior to grant execution	Provide to DBW Grant Administrator
2.	Evidence of Insurance with endorsement.	Prior to grant execution	
3.	Early-Detection Mussel Monitoring Data: Report data with each Quarterly Progress Report submission during the grant term. (Refer to the Grant Agreement Exhibit A, Section A, subsections 4-5 for the frequency of data collection and protocol.)	Due date is the same as the Quarterly Progress Reports, the Annual Report, and Draft Final Project/Final Project Reports	Provide with each Quarterly Progress Report, the Annual Report and the Draft Final/Final Report
4.	Photo Proof of DBW Funding Sign Installed	Due date is the same as the Annual Report	Provide with the Annual Report
5.	Proof of DBW Funding Language on Grantee's Website. The required contents of the sign (logo and statement) shall be posted on the Grantee's website or on any of the Grantee's web page(s) associated with the Project (per Exhibit A, Section A, Number 9(d)).	Due date is the same as the Annual Report	Provide with the Annual Report
SECTION 2 – PROJECT SPECIFIC REQUIREMENTS			
Outreach Survey			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Survey Plan	The approved survey plan is due with the Annual Report	Provide in the Annual Report
2.	Survey Results	Due date is the same as the Draft Final Project Reports	Provide in the Draft Final Project Report
Outreach Events			
Item	**Description**	**Due Date**	**Information Reporting**

1.	Press release and social media outreach discussing the threats of QZ infestation and NID's and the public's role in prevention.	10/2024	Quarterly Progress Report, as applicable, and Draft Final Project Report, as applicable
2.	Set up an outreach booth at the Combie lake Rod and Gun Club to spread awareness of the threat of QZ mussels. Target boaters and fishermen as the primary audience.	04/2024	Quarterly Progress Report, as applicable, and Draft Final Project Report, as applicable
3.	Set up press release and social media outreach discussing effective decontamination methods, aimed at the small watercraft that typically are used on Deer Creek Diversion.	08/2025	Quarterly Progress Report, as applicable, and Draft Final Project Report, as applicable
Project Tasks from Scope of Work			
Item	**Description**	**Due Date**	**Information Reporting**
1.	**Task 1:** Implement early-detection mussel monitoring at Combie and Deer Creek Diversion Reservoirs as required in the 2023 QZ Plan update.	Due date is the same as the Quarterly Progress Reports, the Annual Report, and Draft Final Project/Final Project Reports	Provide with each Quarterly Progress Report, the Annual Report and the Draft Final/Final Report
2.	**Task 2.0** Procure a water quality sonde meter for use in early-detection mussel monitoring.	03/2024	Quarterly Progress Report
3.	**Task 3.0** Complete the Final Project Report	10/2024	Provide to DBW
PART B – INVOICING, BUDGET DETAIL, AND REPORTING PROVISIONS			
SECTION 1 – INVOICING			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Payment Requests: A Payment Request must reflect the same reporting period as the corresponding Quarterly Progress Report	Provide within 30 days of the due date of the corresponding Quarterly Progress Report	Provide to DBW Grant Administrator

2.	Final Payment Request/Final Invoicing	(DBW to insert)	Provide to DBW Grant Administrator
SECTION 2 – REPORTS			
Item	**Description**	**Due Date**	**Information Reporting**
1.	Quarterly Progress Reports	(DBW to insert)	Provide to DBW Grant Administrator
2.	Annual Report	(DBW to insert)	
3.	Draft Final Project Report	(DBW to insert)	
4.	Final Project Report	(DBW to insert)	
5.	Final Project Summary	(DBW to insert)	
6.	Final Project Inspection and Project Completion Certification.	(DBW to insert)	

	Line Item	Qty	Rate	UOM	Total	DBW QZ Grant Funding
1	**Personnel (Nevada Irrigation District)**					
	1. Senior Hydrographer	18	$ 88.69	Pay Rate/hour (includes benefits, no overhead)	$ 1,596.42	$ 1,596.42
	2. Hydroelectric Compliance Technician	156	$ 57.85	Pay Rate/hour (includes benefits, no overhead)	$ 9,024.60	$ 9,024.60
	3. Hydroelectric Compliance Analyst	15	$ 93.68	Pay Rate/hour (includes benefits, no overhead)	$ 1,405.20	$ 1,405.20
	4. Director of Power Systems	6	$ 149.89	Pay Rate/hour (includes benefits, no overhead)	$ 899.34	$ 899.34
2	**Equipment (Nevada Irrigation District)**					
	1. EXO1 Sonde Meter - YSI	1	$ 18,000.00	# of Units	$ 18,000.00	$ 18,000.00
3	**Materials / Supplies (Nevada Irrigation District)**					
	1. Quagga Zebra Sign	1	$ 300.00	Cost per sign	$ 300.00	$ 300.00
	2. Laboratory Analysis of Grab Samples	24	$ 70.00	Cost per grab sample	$ 1,680.00	$ 1,680.00
				Totals	$ 32,905.56	$ 32,905.56

Budget Summary

	Category	Total	DBW QZ Grant Funding	Narrative
1	Personnel (Nevada Irrigation District)	$ 12,925.56	$ 12,925.56	NID personnel will conduct monitoring, project administration, and data analysis
2	Equipment (Nevada Irrigation District)	$ 18,000.00	$ 18,000.00	Decontamination Unit will be utlized to internally clean NID owned equipment and vessels.
3	Materials / Supplies (Nevada Irrigation District)	$ 1,980.00	$ 1,980.00	Water quality grab samples examine parameters essential to assessing reservoir vulnerability, such as calcium concentration.
	Totals	$ 32,905.56	$ 32,905.56	

Nevada Irrigation District

TIER 2 – IMPLEMENTATION PROJECT NARRATIVE

QUAGGA ZEBRA PREVENTION AND MONITORING PROGRAM

Combie and Deer Creek Diversion Reservoirs

MAY 18, 2023

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Section A – Reservoir Project Area Descriptions and Management Activities.

Section A. 1. Reservoir and Project Area Description.

This proposed Tier-2 Implementation Project Area includes two reservoirs managed by the Nevada Irrigation District (NID or the District): Combie and Deer Creek Diversion Reservoir. Brief descriptions of the reservoirs are provided below.

Combie Reservoir is an impoundment on the Bear River and is located approximately 12 miles downstream of Rollins Reservoir and 3.4 miles upstream of the State Highway 49 crossing. Several residential developments exist around the reservoir. The reservoir has a storage capacity of 5,555 acre-feet (AF), a surface area of 276 acres, and 9.1 miles of shoreline.

Lake Combie is located roughly 12 miles downstream of Rollins Reservoir and approximately 16 miles from Campfar West. Combie reservoir was assessed for vulnerability to Quagga and Zebra mussel infestation with grant funding provided by the DBW in the 2014-15, see Table 1 below for details.

Deer Creek Diversion Reservoir is located on Deer Creek approximately 0.5 miles downstream of Scotts Flat Dam and 4.0 miles east of the community of Nevada City. The dam is located at latitude 39.2694, longitude -120.9538. Deer Creek Diversion Dam is a concrete arch dam that was originally constructed in 1928 and has a height of 92 feet and a crest length of 334 feet. The impoundment is known as Lower Scotts Flat Lake and has a maximum water surface elevation of 2,898.6 feet and a maximum reservoir capacity of 1,400 AF. This reservoir was assessed for vulnerability to Quagga and Zebra mussel infestation in the 2023 update to NID's QZ Monitoring and Prevention plan.

Table 1. DBW QZ Grant Funded Projects

Year Funded	Project Description	Amount Funded	Grant #
2014/15	The project completed a Vulnerability Assessment and Prevention Plan for NID's lower elevation reservoirs: Rollins, Scotts Flat, and Combie.	$ 54,564.65	Grant Agreement No. C4123107

Section A. 2. Description of the Recreational Activities and Risk for Quagga and/or Zebra Mussel Introduction.

Both Combie and Deer Creek Diversion have similar levels of risk for the introduction of Quagga and/or Zebra mussels, as they experience similar levels of recreation activities from the public. Both are relatively small reservoirs that have low levels of exposure to the public due to geography and access. NID does not maintain any recreational facilities on either reservoir, and therefore does not have sufficient information to determine the exact number of recreators that visit each of the reservoirs. Additional details on each reservoir's recreational activities and associated risk for Quagga and/or Zebra introduction are provided below.

Combie Reservoir

Combie Reservoir is a recreational area, primarily for residents who live along the shoreline. There are no formally established campgrounds/recreation areas. Approximately 120 private properties immediately surround the reservoir. The reservoir is primarily used by property owners surrounding the lake, many of which are in gated communities. There are no public boat launches on the reservoir, however a privately

operated Rod and Gun club maintains a boat launch that is open to members and their guests. Common recreational activities conducted on the reservoir include boating (both motorized and small non-motorized vessels), fishing (from shore and boat), watersports, camping, hiking, picnicking, wildlife watching, and swimming.

Within a ten (10) mile radius surrounding Combie reservoir there are four (4) boat launches with full public access, all on the NID managed Rollins reservoir. Additionally, Combie Lake and Lake of the Pines are located approximately 1 mile apart from eachother. Approximately 130 private docks are present on the private properties surrounding the Lake of the Pines. Lake of the Pines is similarly open only to residents and guests living within the homeowner's association that owns the lake. More than 250 properties are located along the reservoir's five-mile-long shoreline. The nearest infested reservoir is located more than 160 miles southwest at San Justo Reservoir in Santa Clara County.

Formal surveys on the fish species occupying Combie reservoir have not been conducted recently. However, based on anecdotal reports and information available from Rollins Reservoir, located upstream within the same Bear River watershed, it is assumed the two waterbodies have a similar fish species composition. 15 fish species have been identified in surveys conducted at Rollins. Smallmouth bass are likely the most common species, with bluegill being the second most abundant. Other warm water fishes likely include black crappie, green sunfish, redear sunfish, and largemouth bass. Ictalurids are likely represented by channel catfish, white catfish, and brown bullhead catfish. Salmonids present in the reservoir likely include both brown trout and rainbow trout. Forage fish species may include pond smelt and gold shiner. Native Sacramento pikeminnow and Sacramento sucker are also potentially present in the reservoir based on information from Rollins. There are no records indicating that Combie has been stocked with fish by either NID or outside agencies.

Based on the most recent assessment of Combie reservoir in the 2023 Quagga Zebra Vulnerability Assessment, Prevention, and Monitoring Plan the reservoir is considered low risk for the introduction of dreissenid mussels. This conclusion was primarily based upon the reservoir's current and historic water quality conditions. Average calcium concentrations for the reservoir have not exceeded 8 mg/L since regular monitoring began in 2018, well below the 12 mg/L minimum threshold established by CDFW guidelines.

Deer Creek Diversion

The Deer Creek Diversion impoundment's primary use is water storage. Secondarily, it is open to the public and recreation activities include camping, boating, fishing, and swimming. No public campgrounds or official boat launch facilities exist on the reservoir. Only one parking location and informal boat launch/shore access exists on the reservoir at the end of Scotts Flat Dam Road. Within a ten (10) mile radius surrounding the Deer Creek Diversion reservoir there are approximately six (7) boat launching facilities, all of which are located on NID managed waterbodies. Four (4) of the boat launches are located at Rollins, and the other two (2) are located on Scotts Flat Reservoir. An additional undeveloped launch is located at the Dutch Flat Afterbay. The nearest infested reservoir is located more than 160 miles southwest at San Justo Reservoir in Santa Clara County.

Fishing on the Deer Creek Diversion is a relatively common activity year-round on the reservoir, and is populated with a variety of fish species. The lake hosts a large number of fish species due to its location within the Deer Creek Watershed just below the relatively large Scotts Flat reservoir. The cold water makes the reservoir known for its population of rainbow trout, brown trout. Largemouth and smallmouth bass

are also among the commonly encountered species on the reservoir. The California Department of Fish and Wildlife (CDFW) is the only agency that conducts routine stocking of fish into NID managed reservoirs. Records of stocking provided by the CDFW indicate that rainbow trout had been stocked on a roughly annual basis, with fingerling brown trout being stocked annually in recent years.

Based on the assessment of Deer Creek Diversion reservoir in the 2023 Quagga Zebra Vulnerability Assessment, Prevention, and Monitoring Plan the reservoir is considered low risk for the introduction of dreissenid mussels. This conclusion was primarily based upon the reservoir's current and historic water quality conditions. Based on several grab samples taken since 2022, average calcium concentrations for the reservoir have not exceeded 5 mg/L since regular monitoring began in 2018, well below the 12 mg/L minimum threshold established by CDFW guidelines.

Table 2. Combie and Deer Creek Diversion Usage Table

Name/Location of Launch Site	Motorized Vessels Allowed: (Yes/No)	Non-Motorized Vessels Allowed: (Yes/No)	Public Outside Usage: (Yes/No)	Private Outside Usage: (Yes/No)	Activities (i.e., boating, fishing etc.)
Deer Creek Diversion – Scotts Flat Road	Yes	Yes	Yes	No	Boating, Fishing, Camping, Hiking
Combie Reservoir – Approximately 120 Private Properties	Yes	Yes	No, restricted to owners/guests	No, restricted to owners/guests	Boating, Fishing, Hiking

Section A. 3. Description of Management Activities including Prevention Program/Plan.

NID's recreation staff currently manages the permitted recreational activities at the District facilities on Combie and Deer Creek Diversion reservoirs. Both of the reservoirs have the same permitted activities, however motorized vehicles are limited to 10 MPH on the Deer Creek Diversion. Hunting and the use of any firearms/guns are prohibited on all NID property. Fishing is allowed at the reservoirs, but recreators must adhere to local, state, and federal codes and regulations. Fishing is prohibited on or around docks, boat slips, and public beach areas. There are no designated camping sites available at either of the reservoirs. Both metal detection and the use of drones are prohibited on NID property. See Table 3 for more information on prohibited activities at each of the reservoirs.

Table 3. Reservoirs Restrictions

Reservoir(s) Name	Season Dates	Motorized	Non-Motorized	Live Bait	Fishing	Body Contact with Water	Personal Watercraft	Other
Combie		X	X		X		X	X
Deer Creek Diversion		X	X		X		X	X
All checked boxes indicate some level of restrictions at the corresponding reservoir.								

Prevention Program and Plan

In 2014, NID received a grant from the California Division of Boating and Waterways (DBW) for development of the *Western Nevada County Regional Prevention/Monitoring Program* for Scotts Flat, Rollins, and Combie Reservoirs with the plan being finalized in 2018 (Grant Agreement No. C4123107). NID's Vulnerability, Prevention, and Monitoring Plan was recently expanded and updated in 2022-23 to include 10 additional reservoirs that were not assessed in the initial 2018 Plan: Jackson Meadows, Milton, Jackson, French, Faucherie, Sawmill, Bowman, Dutch Flat Forebay and Afterbay, and the Deer Creek Diversion reservoirs. Updates to the monitoring locations, frequency, and outreach was made in cooperation with the CDFW, with final approval from the CDFW for the update including the additional reservoirs being received in May 2023. The Plan includes monitoring at all 13 reservoirs utilizing a combination of surface surveys, water chemistry grab samples, water chemistry spot sampling, and substrate surveys with varying frequencies. Surveys are conducted based on the survey protocols developed by the CDFW, and consistent with the resources provided in the *California Natural Resources Agency – Invasive Mussel Guidebook for Recreational Water Managers and Users*.

Additionally, the plan assesses the reservoir for vulnerability to infestation based on a number of potential vectors. All reservoirs managed by NID and covered in the plan have been assessed to be low risk for dreissenid mussel introduction due to the low calcium concentration found in NID managed waterbodies. Despite the relatively low risk, the District implements a number of strategies to further minimize the chance of introduction. These strategies primarily involve mandatory self-inspections, required at Combie reservoir but not the Deer Creek Diversion, and public outreach to provide information regarding the threat of introducing invasive Quagga and/or Zebra mussels to uninfected waterways. Recreation staff are trained to understand the policies and procedures outlined in the District's Prevention Plan.

Nevada Irrigation District

Quagga/Zebra Mussel Prevention and Monitoring Program

Tier 2—Implementation Project
Combie and Deer Creek Diversion Reservoirs

Nevada Irrigation District
28311 Secret Town Rd
Colfax, Ca 95713
(530) 273-8571

Reservoir Overview Map

N

Figure 1. Combie and Deer Creek Diversion Overview Map

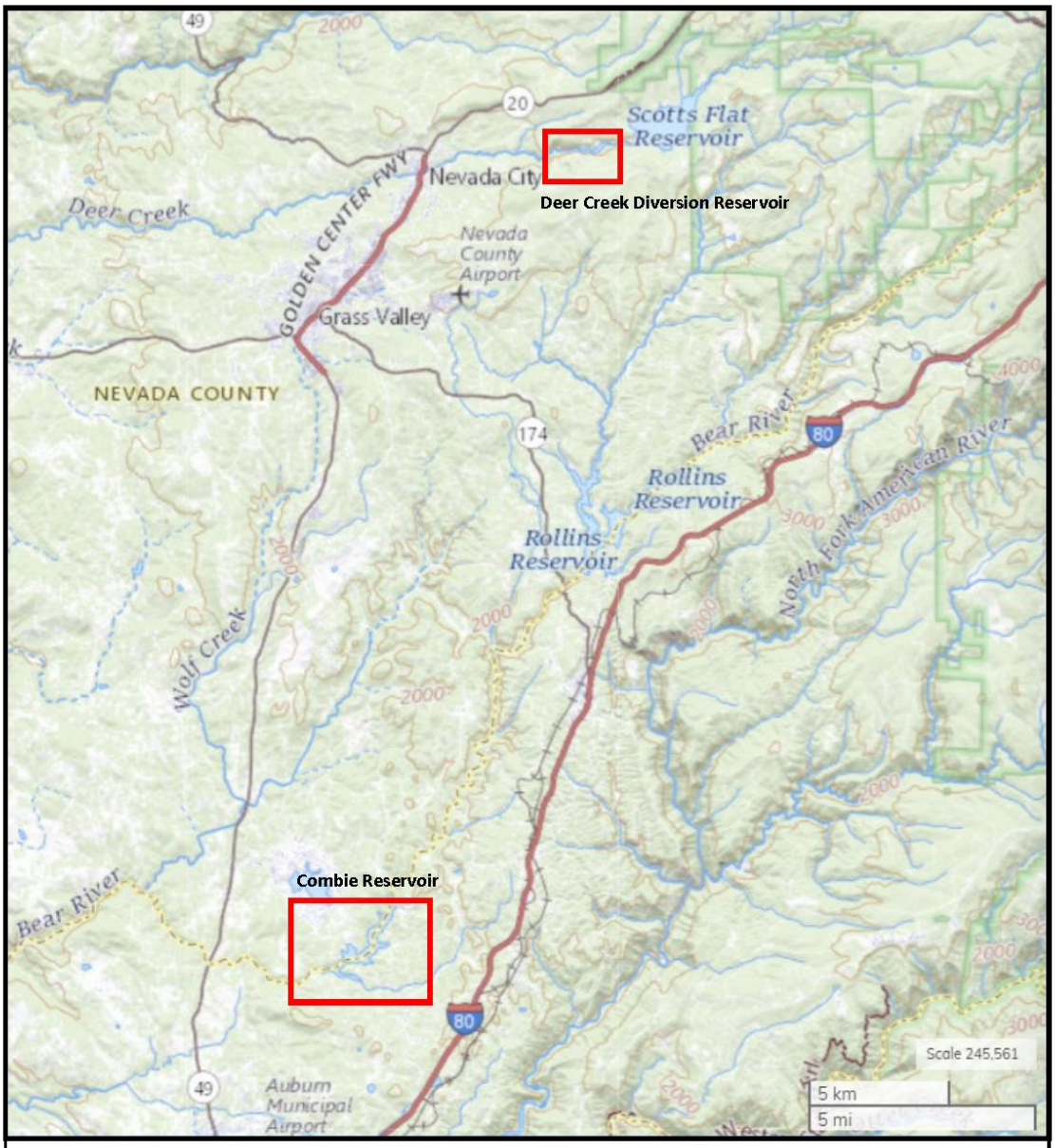

Figure 2. Combie and Deer Creek Diversion Regional Map

Section B – Project Description.

The proposed project seeks funding to support the implementation of early-detection mussel monitoring based on the 2023 updates to the Quagga Zebra monitoring and prevention program at Combie and Deer Creek Diversion reservoirs. The project will provide funding to support the NID staff members involved in conducting monitoring at the greater frequency required at Combie Reservoir and the addition of monitoring at the Deer Creek Diversion. This increase in monitoring frequency at Combie reservoir and the addition of monitoring at the Deer Creek Diversion is in direct response to the changes implemented in the 2023 update to our Monitoring and Prevention Plan. See Table 4 for an outline of Combie and Deer Creek Diversion monitoring frequencies.

In order to facilitate the increased monitoring frequency, this project will seek funding to support the personnel time requirements as well as monitoring requirements such as the laboratory analysis of grab samples. The project will involve early-detection monitoring via water quality grab samples at a variety of locations at both reservoirs on a quarterly basis. Surface surveys, substrate surveys, and water quality spot sampling will be conducted at the reservoirs monthly. The supplies and equipment requested to complete this monitoring includes the purchase of an additional Sonde Meter to enable the collection of water quality spot sampling. The additional Sonde Meter will provide redundancy in the event that our current meter experiences any down time from maintenance. Due to the sensitive nature of the meter's sensors, they can easily become damaged or degraded over time, and the newly increased monitoring frequency will increase chances of failure in the meter. Additionally, the current meter has been in regular use for more than five years and has experienced significant wear and tear from regular use. During that time period, there were several times that sensors replacements or maintenance resulted in the meter being unavailable for use and monitoring delayed. An additional meter would minimize the potential for data gaps in water quality sampling.

The proposed project's primary goal is to provide funding for additional monitoring at Combie and the addition of Deer Creek Diversion reservoir as prescribed by the CDFW in NID's updated Quagga Zebra Vulnerability Assessment, Prevention and Monitoring Plan. The increase in monitoring provided for in this project will ensure that the most up-to-date information regarding infestations and the potential for infestations are available to NID staff. Accurate data on water quality parameters provides information vital to NID's effort in preventing the introduction of dreissenid mussels. In the event that water quality conditions change to become more suitable for dreissenid colonization, NID staff will have more time to respond by adjusting policy accordingly. Therefore, the monitoring conducted as a part of this proposed project is vital in developing the prevention programs at both reservoirs and in minimizing the risk of mussel introduction.

The proposed project will continue after funding from this grant ends, with all funding provided directly by NID funds collected from water rate payers and hydroelectric revenue. However, it is unlikely that NID will be able to fund the acquisition of an additional meter.

Table 4. Monitoring Frequency Table

Reservoir:	Facility Code:	Location:	Water Quality Monitoring Frequency		Shoreline/Launch Survey Frequency		
			Grab/Chem Samples	WQ Sonde	Surface Survey	Substrate	Boat Launch
Combie	57701	B = Bear River Inlet	3x per year	Monthly	Monthly	N	Y
		D = Log Boom at Dam	3x per year	Monthly	Monthly	Y	N
		M = Middle Lake near 5 mph Buoy	3x per year	3x per year	N	N	N
Deer Creek Diversion	10353	B = Boat Launch Northern Shore	3x per year	Monthly	Monthly	N	Y

Section C – Regional Impacts from a Potential Quagga and/or Zebra Mussel Infestation.

In terms of ecological and economic impacts, quagga and zebra mussels are two of the most devastating aquatic species to invade North American fresh waters. The arrival of these species to a water system brings the potential to extend devastating impacts. The spread of quagga and/or zebra mussels threatens the natural environment, water delivery systems, hydroelectric facilities, agriculture, and recreational boating and fishing.

Both species of non-native aquatic mollusks wreak havoc on the environment by disrupting the natural food chain and can contribute to the release of harmful bacteria that affect other aquatic species. Quagga and zebra mussels are filter feeders that consume large portions of the microscopic plants and animals that form the base of the food web. Their consumption of significant amounts of phytoplankton from the water decreases zooplankton and can cause disruption to the ecological balance of entire bodies of water.

The mussels can displace native species, further upsetting the natural food web. In addition to devastating the natural environment, quagga and zebra mussels pose an economic threat to California. The greatest impact will be on infrastructure and water conveyances. Mussels attach to surfaces such as piers, pilings, water intakes and fish screens. These invasives spawn multiple times a year and, as a result, intake structures can become clogged, hampering the flow of water threatening municipal water supply, agricultural irrigation, and power plant operations. Combie reservoir has two hydroelectric generation facilities downstream of the reservoir that would adversely impacted by the introduction of dreissenid mussels.

Section D – Technical and Feasibility Approach.

The monitoring procedure implemented in this proposed project was developed in cooperation with the CDFW as a part of the approved 2023 update to our Monitoring and Prevention Plan. NID's monitoring can be broken into three data collection methods: surface surveys, artificial substrate monitoring, and water chemistry sampling. Surface survey and artificial substrate monitoring follows the published Surface Survey and Substrate Monitoring Protocol developed by the CDFW in 2021. See the following link for reference to the CDFW resources utilized in the development of the monitoring protocol frequency and locations at Combie and Deer Creek Diversion: Quagga / Zebra Mussel Prevention Programs (ca.gov)

Surface surveys are planned to be conducted on a monthly basis at the majority of the monitoring sites at each reservoir, Artificial substrate monitoring is conducted at only one site on Combie, as it requires a structure in the reservoir to suspend the substrate from into the water column. The substrate installed on the Combie reservoir log boom can only be accessed via a boat, and will only be monitored three times per year (estimated to be approximately April, August, and October).

Water chemistry measurements are taken via a sonde meter in conjunction with the other monitoring surveys and measure a number of parameters including turbidity, conductivity, pH, dissolved oxygen, depth, salinity, and temperature. Grab samples requiring laboratory analysis are taken three times per year (during the spring, summer, and fall), but provide additional information regarding calcium concentration, magnesium concentration, hardness, and several other water chemistry metrics that require laboratory analysis. Calcium concentrations could be a factor limiting dreissenid densities in some parts of the West based on current scientific literature examining the topic. Large populations of zebra mussels are not expected where calcium levels are less than 25 mg/L (Hincks and Mackie). Cohen and Weinstein (2001) found little evidence that Zebra mussels can become established at ambient calcium concentrations below about 20 mg/L. It should be noted that calcium may be elevated near concrete structures (Cohen and Weinstein 2001). There are also cases where dreissenid populations have become established in calcium-limited waterbodies at locations that have input from other water sources with higher calcium levels (Cohen and Weinstein 2001). Therefore, water chemistry measurement can provide reservoir managers with essential data to better inform management decisions and policy.

Cohen, A.N., Weinstein, A. 2001. *Zebra Mussel's Calcium Threshold and Implications for its Potential Distribution in North America. San Francisco Estuary Institute*. [Online]. Available at: https://www.sfei.org/sites/default/files/biblio_files/2001-Zebramusselcalcium356.pdf.

Hinks and Mackie. September 1997. *Effects of pH, calcium, alkalinity, hardness, and chlorophyll on the survival, growth, and reproductive success of zebra mussel (Dreissena polymorpha) in Ontario lakes*. [Online]. Available at: https://www.researchgate.net/publication/237373473_Effects_of_pH_calcium_alkalinity_hardness_and_chlorophyll_on_the_survival_growth_and_reproductive_success_of_zebra_mussel_Dreissena_polymorpha_in_Ontario_lakes.

The proposed project will be consistent with Fish and Game Code § 2302 and California Code of Regulations, Title 14, Section 672.1 (b), as the project directly adheres to the protocol developed as a component of NID's CDFW approved monitoring program. The data gathered in this project's monitoring procedure will inform the implementation of both recreation management policies and public outreach.

Section E – Performance Monitoring (Tracking of the Project)

Project performance monitoring is essentially built into the procedure developed in NID's 2023 QZ Vulnerability Assessment, Prevention, and Monitoring Plan. Results from the monthly monitoring will be submitted to the CDFW before the end of the following month. This data is compiled in an annual tracking spreadsheet. Additionally, personnel hours spent on the project are to be logged on a weekly basis.

The material acquisition component of the project will be monitored and tracked in a similar method. With a tracking spreadsheet outlining the Sonde meters various sensors and component parts. NID utilizes Central Square financial software to manage purchase requisitions, and will be used to maintain records of supply purchases including quotes and invoices. A summary of the progress and collected data will be provided on a quarterly basis to California State Parks Division of Boating and Waterways (DBW).

Section F – Early-Detection Quagga and Zebra Mussel Monitoring.

The data collected over the course of this project will satisfy the Early Detection Mussel Monitoring Data requirements of this grant. Subsequently Quarterly Progress reports will be submitted to the DBW, as the primary objective of the proposed project is to implement the monitoring procedure developed in NID's 2023 QZ Vulnerability Assessment, Prevention, and Monitoring Plan. NID's monitoring can be broken into three data collection methods: surface surveys, artificial substrate monitoring, and water chemistry sampling. See Table 4 for a detailed description of the monitoring frequency for each location.

All early-detection monitoring is undertaken solely by the NID staff, save for sporadic supplemental surveys undertaken by the CDFW. The data collected by NID is shared with the CDFW on a monthly basis. Additionally, the data is analyzed and aggregated for an annual report of monitoring efforts that is also submitted to the CDFW. Data from the monitoring is used to inform the public of each reservoirs vulnerability to infestation. Any increase in vulnerability identified as a result of the early-detection monitoring would require an immediate change in the public outreach strategy. This would likely include an increase in the frequency of outreach events as well as revised messaging conveying the increased susceptibility and risk to a public reservoir.

Section G – Education and Outreach.

This proposed Project does not include an education or an outreach component, however education and outreach activities are included in NID's Prevention Program. Outreach and education at both Combie and the Deer Creek Diversion reservoirs are conducted by NID, with the CDFW providing some support for outreach materials in the form of posters and fliers. The primary objective of NID's QZ education and outreach program is to reduce the probability of the public introducing dreissenid mussels to Combie and Deer Creek Diversion reservoir.

Currently, informational signage is posted at the boat launch at the private Rod and Gun Club located on Combie reservoir. The signs include consistent use of the USFWS "Clean, Drain, and Dry" messaging, as well as information on identifying dreissenid mussels and decontaminating boats and trailers. Signage consistent with the format used at existing NID reservoirs will be posted on an existing signpost at the Deer Creek Diversion informal parking area and boat ramp.

Information is also available on NID's website, including facts on dreissenid mussel biology and identification and details on the Prevention efforts undertaken by NID. In recent years, NID has published press releases spreading dreissenid mussel awareness along with its annual recreation announcements.

Mandatory self-inspection forms are provided to property owners with a dock permit and to the privately operated Rod and Gun Club. Inspection forms include information on the conducting inspections on watercraft and are returned to NID staff upon completion. The data is then aggregated and used as another source of data regarding boaters entering Combie reservoir.

Section H – Key Officers and Oversight Bodies

Nevada Irrigation District is a public agency formed in 1921 pursuant to California State Law (Water Code § 20500 *et seq.*) and is an independent California special district. NID is governed by a five-member Board of Directors, elected to four-year terms by the District's voters. The Board is the District's policy-making body and policy is carried out by approximately 200 full- and part-time employees. The organizational chart provided below provides an overall view of the key officers responsible for the management and operation of facilities at both Combie and Deer Creek Diversion Reservoirs. Under the General Manager the Director of Power Systems and the Director of Recreation manage the departments responsible for the operations and maintenance of both the dam's infrastructure and recreation facilities respectively (See Table 5 for contact information). Additional information on NID's organizational structure can be found on the District's website at: Nevada Irrigation District (nidwater.com)

Figure 3. Combie and Deer Creek Diversion Org Chart

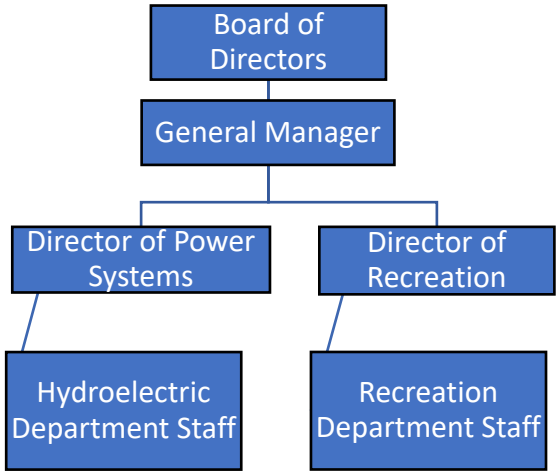

Table 5. Combie and Deer Creek Diversion Key Officers

Name	Title	Role	Contact Information
Jennifer Hanson	General Manager	Manages the more than 200 District employees.	Office Phone: (530) 271-6824 Email: admindepartment@nidwater.com
Keane Sommers	Director of Power Systems	Oversees Hydroelectric staff responsible for the operations and maintenance of the dams and hydroelectric facility infrastructure.	Office Phone: (530) 271-6741 Email: hydrodepartment@nidwater.com
Monica Reyes	Director of Recreation	Oversees the Recreation staff responsible for the maintenance and operation of recreation facilities on the reservoirs.	Office Phone: (530) 271-6710 Email: recdepartment@nidwater.com

Section I – Project Member/Entities, Administration and Partners.

The following table outlines the individual project members involved in administering the proposed Project and in carrying out the field work involved in its implementation. All project members are Nevada Irrigation District staff:

Table 6. Project Members

Project Members	Position	Project Role	Experience/Expertise/Education
Keane Sommers	Director of Power Systems	Administration	22+ years of service in the fields of dam safety, water resources, hydraulics, and hydropower. CA Registered Civil Engineer #C64960 B.S. Civil Engineering; M.S. Civil and Environmental Engineering
Tina Konkle	Hydroelectric Compliance Analyst	Administration	6 years Hydroelectric Compliance working with CDFW and QZ Monitoring A.S. Environmental Science, A.S. Natural Sciences; In Progress B.S. Environmental Science at Oregon State University
Ashley Vander Meer	Senior Hydrographer	Field Work/Administration	9 years experience in Hydrology, B.S. Biology, B.A. Outdoor Adventure Leadership and Environmental Science
Trevor Moore	Hydroelectric Compliance Technician	Field Work/Administration	5 years experience in Natural Resources B.S. Biology, Minor Chemistry
Sandra Dunlap	Director of Finance	Financial Administration	15+ year accounting experience B.S. – Concentration Accounting

Section J – Readiness to Proceed.

NID is fully ready to begin implementation of the Project's additional monitoring outlined in the CDFW approved 2023 update to the District's Quagga Zebra Vulnerability Assessment, Prevention and Monitoring Plan. NID staff has already started implementing the revised monthly monitoring procedure outlined in that plan at both Combie and the Deer Creek Diversion Reservoir. All necessary data collection was conducted during the course of developing the 2023 update to the District's Quagga Zebra Vulnerability Assessment, Prevention and Monitoring Plan. Funding from additional sources outside of the DBW will not be required for the implementation of the proposed Project.