



**RECLAMATION DISTRICT NO. 1000
BOARD OF TRUSTEES
REGULAR BOARD MEETING**

**FRIDAY, OCTOBER 9, 2020
8:00 A.M.**

WEB & TELEPHONE MEETING ONLY

MODIFIED BROWN ACT REQUIREMENTS IN LIGHT OF COVID-19

In Compliance with CA Executive Orders N-25-20 and N-29-20 members of the Board of Trustees and members of the public will participate in this meeting by teleconference. The call-in information for the Board of Trustees and the public is as follows:

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/273351061>

You can also dial in using your phone.

United States (Toll Free): [1 866 899 4679](tel:18668994679)

United States: [+1 \(571\) 317-3116](tel:+15713173116)

Access Code: 273-351-061

If you do not have the gotomeeting application downloaded, please allow yourself additional time prior to the meeting to install the free application on your computer, tablet or smartphone. The application is not required to participate via phone.

Any member of the public on the telephone may speak during Public Comment or may email public comments to kking@rd1000.org and comments will be read from each member of the public. During this period of modified Brown Act Requirements, the District will use best efforts to swiftly resolve requests for reasonable modifications or accommodations with individuals with disabilities, consistent with the Americans with Disabilities Act, and resolving any doubt whatsoever in favor of accessibility. Requests for reasonable modifications under the ADA may be submitted to the email address noted above, or by phone directly to the District.

All items requiring a vote of the Board of Trustees will be performed as a roll call vote to ensure votes are heard and recorded correctly. In addition, the meeting will be recorded and participation in the meeting via gotomeeting and/or phone will serve as the participants acknowledgment and consent of recordation.

AGENDA

1. PRELIMINARY

- 1.1. Call Meeting to Order
- 1.2. Roll Call
- 1.3. Approval of Agenda
- 1.4. Pledge of Allegiance
- 1.5. Conflict of Interest

(Any Agenda items that might be a conflict of interest to any Trustee should be identified at this time by the Trustee involved)

2. PRESENTATIONS

- 2.1. No Scheduled Presentations

3. PUBLIC COMMENT (NON-AGENDA ITEMS)

Any person desiring to speak on a matter which is not scheduled on this agenda may do so under the Public Comments section. Speaker times are limited to three (3) minutes per person on any matter within RD 1000's jurisdiction, not on the Agenda.

Public comments on agenda or non-agenda items during the Board of Trustees meeting are for the purpose of informing the Board to assist Trustees in making decisions. Please address your comments to the President of the Board. The Board President will request responses from staff, if appropriate. Please be aware the California Government Code prohibits the Board from taking any immediate action on an item which does not appear on the agenda unless the item meets stringent statutory requirements (see California Government Code Section 54954.2 (a)).

Public comments during Board meetings are not for question and answers. Should you have questions, please do not ask them as part of your public comments to the Board. Answers will not be provided during Board meetings. Please present your questions to any member of RD 1000 staff via e-mail, telephone, letter, or in-person at a time other than during a Board meeting.

4. INFORMATIONAL ITEMS

- 4.1. **GENERAL MANAGER'S REPORT:** Update on activities since the September 2020 Board Meeting.
- 4.2. **SUPERINTENDENT'S REPORT:** Update on activities since the September 2020 Board Meeting.
- 4.3. **DISTRICT COUNSEL'S REPORT:** Update on activities since the September 2020 Board Meeting.

5. CONSENT CALENDAR

The Board considers all Consent Calendar items to be routine and will adopt them in one motion. There will be no discussion on these items before the Board votes on the motion, unless Trustees, staff or the public request specific items be discussed and/or removed from the Consent Calendar.

- 5.1. APPROVAL OF MINUTES: Approval of Minutes from September 11, 2020 Regular Board Meeting.
- 5.2. TREASURER'S REPORT: Approve Treasurer's Report for September 2020.
- 5.3. EXPENDITURE REPORT: Review and Accept Report for September 2020.
- 5.4. BUDGET TO ACTUAL REPORT: Review and Accept Report for September 2020.

6. SCHEDULED ITEMS

- 6.1. PROFESSIONAL SERVICES AGREEMENT: Review and Consider Authorizing the General Manager to Execute a Professional Services Agreement with Civil Engineering Solutions, INC for Natomas Basin Hydraulic Model Project.
- 6.2. PROPERTY ACQUISITION: Review and Consider Authorizing the General Manager to Acquire Property (Lone Tree Canal).

7. BOARD OF TRUSTEE'S COMMENTS/REPORTS

7.1. BOARD ACTIVITY UPDATES:

7.1.1. RD 1000 Committee [Meetings](#) Since Last Board Meeting

- Executive Committee Meeting (Smith & Burns) September 30, 2020

8. CLOSED SESSION

No Closed Session Items

9. ADJOURN



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 4.1

TITLE: General Manager's Report – October 2020

SUBJECT: Update on activities since the September 2020 Board of Trustees Meeting

EXECUTIVE SUMMARY:

This Staff Report is intended to report the noteworthy activities and events of the District. Noteworthy activity from September included continued coordination on Natomas Levee Improvement Project with the United States Army Corps of Engineers, SAFCA and others, evaluation of a proposals for the Request for Qualifications for the Natomas Basin Hydraulic Model Project, FMAP Vegetation Removal Project kickoff, District election coordination and preparation, Steelhead Creek Cleanup with Central Valley Regional Water Quality Control Board and participation as a speaker for two sessions in the Flood Plain Management Association Annual Conference. In summary, the District had a productive and successful month. Our key activities and achievements are presented below:

BACKGROUND:

1. Administration Services

a. Comprehensive Financial Plan

- i. Working with NBS to prepare draft Comprehensive Financial Plan for review by Finance Committee. Draft report is anticipated in Fall 2020. The adopted Capital Improvement Plan was provided to NBS on September 4, 2020, for expenditures to be included into the Financial Plan.

b. District Election

- i. Coordination and preparation of the District's Election. Significant effort has been spent in consultation with District Counsel to prepare the election materials, including ballots, candidate statements, proxy forms and election guidelines.

2. District Operations

a. Routine Operations & Maintenance:

- i. District Crews continue to perform routine maintenance and operations of the District's infrastructure. See Agenda Item 4.2 (Superintendent's Report) for more information regarding activities performed in September 2020.
- ii. District Crews participated in the Annual Steelhead Creek Cleanup effort coordinated with the Central Valley Regional Water Quality Control Board.

3. Development Projects

a. Greenbriar

- i. Working with Developer to consider ownership of Lone Tree Canal post development. See Item 6.2.

b. Grand Park

- i. Working with Developer to update Project Review Processing and Funding Agreement.

4. Capital Improvement Projects

a. CIP Update

- i. District entered into Professional Services Agreement with KSN, Inc. on November 12, 2019. A kickoff meeting was held on December 2, 2019.
- ii. Condition Assessment and Facility Inventory finalized in December 2019.
- iii. KSN prepared Draft Final Report and presented the aforementioned report to the Board of Trustees on June 12, 2020.
- iv. On August 14, 2020, the Board of Trustees adopted the Capital Improvement Plan Update with minor revisions to the draft presented. The Final adopted CIP was provided to the Board on September 11, 2020.

5. Natomas Levee Improvement Projects

a. Reach A

- i. The Corps issued its 95% plans for this reach early in August and 100% plans are in progress. SAFCA is in the processing of acquiring necessary right of way including several homes.
- ii. Clearing of trees and relocation of utilities starts in winter 2021 Contract Award is scheduled for September 2021 with cutoff wall and adjacent levee construction starting in spring 2022.

b. Reach B

- i. This construction project contract was awarded in spring, 2020. Initial clearing and stripping as well as demolition of three houses has commenced. Cutoff wall construction, construction of the adjacent levee and seepage berm will commence next spring. Don Caldwell has been representing the District and working with the Corps' inspectors and resident engineers to provide project support.
- ii. The plans have been completed for the Reach B, I 5 Window closure project. The bidding on this project is being held, waiting for the result of negotiations with Caltrans on a framework agreement with DWR, SAFCA, and the Corps covering their review and processing of comments on the various NLIP projects where Caltrans permits are required.

TITLE: General Manager's Report – October 2020

- iii. Clearing and grubbing has commenced and full construction activity will commence in spring 2021. A separate project to close the I-5 window in Reach B at the crossing of the Sacramento River is scheduled for spring 2021.
- c. Reach C
 - i. The Reach C project was completed by SAFCA several years ago and the Districts' role is now providing annual maintenance activities in this reach.
- d. Reach D
 - i. The relocation of the Vestal Drain was completed in early summer 2020, however the project is still in the final acceptance phase. District staff and consultants maintain constant contact with the Corps' inspectors and Resident Engineers, lobbying for completion of the Districts' punch list of deficiencies prior to flood season. The plans for reconstruction of Pumping Plant 4 have been repackaged into a separate project – having been deleted from the earlier construction project due to delays resulting from PG&E conflicts. Project construction award is scheduled for end of calendar year 2020. District consultants M & H and staff have conducted a review and have commented on these plans.
 - ii. Bids will be solicited soon for reconstructing Pumping Plant 4 including new plant pumps, motors and other equipment purchased during the NCC levee and canal work contract which concluded this summer. The schedule is to award the Plant 4 work by the end of 2020.
- e. Reach E
 - i. Reach E extends along the Pleasant Grove Creek Canal from Sankey Road north to Howsley Road.
 - ii. The Corps of Engineers completed the 65% plans in July. Comments were due by August 28. The District submitted comments along with SAFCA and State DWR. The proposed project includes limited areas of a 50-foot-deep cut off wall and levee widening with 3:1 back slope and a landside levee patrol road for the entire length.
 - iii. Comments were submitted on the 65% plans. Proposed work includes levee widening and limited cut-off wall. SAFCA and State DWR are working on right of way acquisition. The 90% plans are due in January 2021 with Contract Award scheduled for July 2021.
 - iv. As part of the project, the existing five drainage culverts through the levee foundation will be replaced with reinforced concrete pipe from beyond the waterside levee toe through the existing levee and the new widened levee section.

TITLE: General Manager's Report – October 2020

- v. Current schedule is for contract award in July 2021 with construction complete by November 2022 (two construction seasons).
- f. Reach F
 - i. Reach F is along the Natomas East Main Drain Canal from Sankey Road to Elverta Road. It is being designed concurrently with Reach G
 - ii. The Corps of Engineers and non-federal sponsors (NFS) held the 10% design review in August. The Corps preliminary design does not include cut-off walls but does include levee widening—currently on both land and waterside. NFS are recommending no waterside fill and will have our geotechnical consultant review the design which may suggest some cutoff walls and consistent design with Reach G.
 - iii. The project team reviewed the preliminary design and provided input on the proposed design. Current plans propose levee widening and potentially limited cutoff walls. Current schedule is for 35% plans by January 2021 with Contract Award in spring 2022.
- g. Reach G
 - i. Reach G is along the Natomas East Main Drain Canal from Elverta Road to south of Elkhorn Blvd. It is being designed concurrently with Reach F.
 - ii. The Corps of Engineers and NFS held the 10% design review in August. The Corps preliminary design includes some limited cutoff walls and levee widening with landside slope flattening (3:1) and patrol road the entire length similar to Reach E.
 - iii. Next milestone is 35% plans in January 2021. Current schedule is for contract award in March 2022.
- h. Reach H
 - i. Levee cutoff walls, slope flattening and restoration of the levee section will be complete by November 1 of this year. Patrol / maintenance road grading may continue into 2021.
 - ii. Installation of raised discharge pipes for Pumping Plant 8 is scheduled for completion by November 1, 2020 but may need to be extended by a few weeks due to unforeseen difficulties with connections to the existing pipes.
- i. Reach I
 - i. Construction of the cutoff wall and levee slope flattening is essentially complete, requiring only repaving and stripping for contract completion.
 - ii. District staff, consultants, and project representative are winding down their project monitoring and support activities for this construction work.
 - iii. Construction of the cutoff wall is complete. A separate contract (Reach I

TITLE: General Manager's Report – October 2020

Contract 2) to construct a patrol / maintenance road and perform levee slope flattening is scheduled to be awarded in late 2021 for construction in 2022 pending right of way acquisition

6. Miscellaneous

a. DWR Flood Maintenance Assistance Program (FMAP)

- i. GM King received funding agreement for 2020/2021 FMAP application on December 4, 2019.
- ii. As authorized by the Board on August 9, 2019 (RD 1000 Resolution No. 2019-08-05) GM King signed the funding agreement in January and returned to DWR for signatures.
- iii. FMAP 2020/2021 Funding Agreement was executed in June 2020. District requested and received advance payment for the full grant amount.
- iv. Vegetation Removal Solicitation for Proposals was issued in August 2020.
- v. The District signed purchase order for the FMAP equipment purchases and anticipates delivery of said vehicles in mid October 2020.
- vi. District received one response to requests for bids for vegetation removal on September 1, 2020. General Manager King awarded contract to Emerald Services on September 9, 2020 as previously authorized by the Board of Trustees.
- vii. Emerald began vegetation removal on September 23, 2020.
- viii. District was notified by DWR of approval of FMAP funds for 2021/2022 and anticipates award of contract in early 2021. District will receive \$792K in award in FY 2021/2022. General Manager King has signed the FMAP 2021/2022 Funding Agreement and submitted to DWR on October 7, 2020.

b. Sacramento Area Flood Control Agency (SAFCA)

- i. Board Meeting – September 17, 2020 (Attachment No. 1)

c. System Wide Improvement Framework (SWIF)

- i. The District submitted a revised SWIF to the Central Valley Flood Protection Board and the United States Army Corps of Engineers on August 31, 2020, awaiting approval.

d. Natomas Basin Hydraulic Model

- i. The District issued a Request for Qualifications (RFQ) for the Natomas Basin Hydraulic Model Project on July 31, 2020.
- ii. District received two responses on August 31, 2020.
- iii. Respondent Interviews were conducted September 18, 2020. See Agenda Item 6.1 for more information.

TITLE: General Manager's Report – October 2020

e. AB 156 Annual Report

- i. GM King submitted the District's AB 156 Annual Report on September 30. (Attachment No. 2)

ATTACHMENTS:

1. SAFCA Board Meeting – September 17, 2020
2. AB 156 Annual Report 2019 – September 30, 2020

STAFF RESPONSIBLE FOR REPORT:



Kevin L. King, General Manager

Date: 10/01/2020



Board of Directors Action Summary of September 17, 2020 - 3:00 PM

WEBEX MEETING

Directors/Alternates Present: Avdis, Burns,
Conant, Harris, Hedges, Holloway, Jennings, Kennedy, Nava, Nottoli,
Peters, Shah

Directors Absent: Ashby

ROLL CALL

PUBLIC COMMENTS

EXECUTIVE DIRECTOR'S REPORT

- 1 [Information - Executive Director's Report for September 17, 2020 \(Johnson\)](#)

CONSENT MATTERS

Motion By Director Brian Holloway, seconded by Director Rick Jennings to approve Resolution Nos: 2020-096; 2020-097; 2020-098; and 2020-099 of Consent Matters

AYES: Avdis, Burns, Conant, Harris, Hedges, Holloway, Jennings,
Kennedy, Nava, Nottoli, Peters, and Shah

NOES: (None)

ABSTAIN: (None)

ABSENT: Ashby

RECUSAL: (None)

- 2 [Approving the Action Summary for August 20, 2020 \(Russell\)](#)

- 3 [Resolution No. 2020-096 - Authorizing the Executive Director to Execute Amendment No. 1 to Contract No. 1506 with Wood Rodgers, Inc., for Professional Engineering Services to Design Levee Improvements Along the North Beach Lake Levee and Morrison Creek \(Ghelfi\)](#)

- 4 [Resolution No. 2020-097 - Adoption of Addendum No. 7 to the Final Environmental Impact Report \(State Clearinghouse #2009112025\) on the American River Watershed Common Features Project/Natomas Post-Authorization Change Report/ Natomas Levee Improvement Program Phase 4b Landside Improvements Project \(November 2010\) and Approval of Modifications and Refinements to the Natomas Levee Improvement Program Phase 4b Project](#)
(Bardini)

- 5 [Resolution No. 2020-098 - Authorizing the Executive Director to Serve a Second Term on the Board of Directors of the National Waterways Conference \(Johnson\)](#)

- 6 [Resolution No. 2020-099 - Authorizing the Executive Director to Execute Amendment No. 3 to Contract No. 1446 with Larsen Wurzel & Associates, Inc. for Financial Management and General Engineering Support Services Related to State Funding Agreements for the Natomas Levee Improvement Project \(Bassett\)](#)

ADJOURN

Respectfully submitted,
Lyndee Russell

Reclamation District No. 1000

Annual Report (01/01/2020 - 10/01/2020)

Department of Water Resources
Division of Flood Management

Flood Project Inspection and Assessment Branch
Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
1	40442	All Units	Access Gates	Nothing to Report				
1	40443	All Units	Access Roads and Road Ramps	Landside Toe Access / Patrol Road	USACE's Natomas Levee Improvement Program will include access/patrol road at the levee toe for O&M activities and emergency response operations. No change for 2020			
1	40444	All Units	Accumulation of Drift, Trash or Debris	Accumulation of Drift, Trash Debris	District continues to struggle with adequate removal of trash and debris accumulation, particularly in areas where high densities of unauthorized encampments existing.			
1	40446	All Units	Barren Area/No Cover or Sod	Nothing to Report				
1	40447	All Units	Berm Erosion	Nothing to Report				
1	40448	All Units	Bridges and Crossings	Nothing to Report				
1	40449	All Units	Burrow Holes	Nothing to Report				
1	40450	All Units	Caving	Nothing to Report				
1	40451	All Units	Compaction/Loose Fill	Nothing to Report				
1	40452	All Units	Dredging	Nothing to Report				
1	40453	All Units	Encroachment	Nothing to Report				
1	40454	All Units	Flood Walls	Nothing to Report				
1	40456	All Units	In-Channel Vegetation	Nothing to Report				
1	40457	All Units	Levee Crown	Nothing to Report				
1	40458	All Units	Minor Settlement, Sloughing, or Loss of Grade	Nothing to Report				
1	40459	All Units	Other	Nothing to Report				
1	40460	All Units	Pipe Flap Gates/Gate Valves	Nothing to Report				

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Annual Report (01/01/2020 - 10/01/2020)

Department of Water Resources
Division of Flood Management

Flood Project Inspection and Assessment Branch
Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
1	40461	All Units	Pump Stations	Nothing to Report				
1	40462	All Units	Relief Wells/Piezometers	Nothing to Report				
1	40463	All Units	Revetment/Rip-Rap	Nothing to Report				
1	40464	All Units	Sediment Accumulation	Nothing to Report				
1	40465	All Units	Toe Drainage Systems	Nothing to Report				
1	40466	All Units	Unauthorized Grazing or Vehicle Traffic	Nothing to Report				
1	40467	All Units	Vegetation	Nothing to Report				
1	40469	Unit No. 01 Sacramento River	Pump Stations	Discharge Tunnels for Pumping Plant 1A	The discharge pipes/tunnels for the District's Pumping Plant 1A cross through the foundation of the levee to the Sacramento River. USACE is currently evaluating improvements to the existing tunnels and is working with the District and SAFCA on options to address any levee safety issues including abandonment/replacement/or rehabilitation.			
1	40470	Unit No. 03 Natomas East Canal	Vegetation	Land-side and Water-side Slope Vegetation	Existing trees and vegetation on the land-side and water-side of the levee slope impeded visual and physical access for inspection and monitoring. District received DWR Flood Maintenance Assistance Program funding (\$200K) for vegetation removal in 2020. The District, at the time of this report, is soliciting bids and plans to have the vegetation removed from the water-side slope from Truxel Road to Northgate Blvd before December 31, 2019. Tree Removal in the same area will be performed on the water-side slope in 2021, if the District is awarded additional FMAP funds, as applied for in 2020. District is working with USACE, SAFCA, CVFPB/DWR to resolve visual and physical access on the land-side slope with work beginning in 2020 and scheduled completion in			

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Annual Report (01/01/2020 - 10/01/2020)

Department of Water Resources
Division of Flood Management

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Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
1		Unit No. 03 Natomas East Canal	Vegetation	Land-side and Water-side Slope Vegetation	2020 along Reach H and I.			
2	40472	All Units	Burrow Holes	Noting to Report				
2	40473	All Units	Channel Migration	Noting to Report				
2	40474	All Units	Closure Structures	Noting to Report				
2	40475	All Units	Cracks	Noting to Report				
2	40476	All Units	Deficient Freeboard/Levee Crown Height	Noting to Report				
2	40477	All Units	Flood Walls	Noting to Report				
2	40478	All Units	Levee Erosion	Noting to Report				
2	40479	All Units	Major Settlement, Sloughing, or Loss of Grade	Noting to Report				
2	40480	All Units	Other	Unauthorized Encampments and Concealment of Levee	District spent significant time with CVFPB and others to introduce legislation (AB 1958-Cooper), to modify water code sections aimed at preventing concealment of levees in order to visually and physically inspect and monitor the levee system. AB 1958 was pulled by the bill author before the CA Senate Natural Resources, Parks and Wildlife Committee hearing after a 74-0 vote by the Assembly. District will be strongly advocating for a similar bill during the next legislative session. District strongly advocates for long term, state-wide solutions to this rapidly expanding problem.			
2	40481	All Units	Pipe Crossing	Noting to Report				
2	40482	All Units	Problems Identified on Adjacent Levees Protecting Same Area	Noting to Report				

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Department of Water Resources
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Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
2	40483	All Units	Sand Boils	Noting to Report				
2	40484	All Units	Seepage	Noting to Report				
2	40485	All Units	Sinkhole	Noting to Report				
2	40486	All Units	Subsidence	Noting to Report				
2	40487	Unit No. 01 Sacramento River	Deficient Freeboard/Levee Crown Height	Insufficient Free-Board @ 200 year Water Surface Elevation	Garden Highway: 300 feet south Interstate 5 (near Bayou Road). See 2015 Report, no change in 2020.			
2	40488	Unit No. 01 Sacramento River	Levee Erosion	Waterside Berm Erosion	7907 Garden Highway. District is closely monitoring berm erosion first noted in 2017 and coordinating with CVFPB and Property owner to address CVFPB NOV.			
2	40489	Unit No. 03 Natomas East Canal	Deficient Freeboard/Levee Crown Height	Deficient Levee Crown Height and Slope Stability	Previously reported deficiency in levee crown and slope stability to meet levee stability and 200-year Water Surface Elevation safety is currently under construction by USACE between Dry Creek and the American River (Reach H) and between Northgate and Truxel (Reach I), major work was completed by October 15, 2019 and Phase 2 will started in April 2020, with scheduled completion by December 1, 2020.			
3	40490	All Units	Active Ongoing Program in Place	Nothing to Report				\$ 0.00
3	40491	All Units	Encroachment Control	Nothing to Report				\$ 0.00
3	40492	All Units	Erosion Repair	Nothing to Report				\$ 0.00
3	40493	All Units	Gates	Nothing to Report				\$ 0.00
3	40494	All Units	Inspections	Nothing to Report				\$ 0.00
3	40495	All Units	Insurance and Dues	Nothing to Report				\$ 0.00

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Annual Report (01/01/2020 - 10/01/2020)

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PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
3	40496	All Units	Legal/Administrative/Man	Nothing to Report				\$ 0.00
			agement Services					
3	40498	All Units	Minor Structure	Nothing to Report				\$ 0.00
			Repair/Maintenance					
3	40499	All Units	Mobile Equipment Costs	Nothing to Report				\$ 0.00
3	40500	All Units	Office Overhead	Nothing to Report				\$ 0.00
3	40501	All Units	Other	Nothing to Report				\$ 0.00
3	40502	All Units	Patrolling	Nothing to Report				\$ 0.00
3	40503	All Units	Permitting	Nothing to Report				\$ 0.00
3	40504	All Units	Restoration	Nothing to Report				\$ 0.00
3	40505	All Units	Roadways	Road Maintenance	District adds new AB and grades access roads along levee crowns and land-side toe (where existing) as necessary to provide for all-weather access during flood season.			\$ 0.00
3	40506	All Units	Rodent Control/Bait and Traps	Rodent Control	D 1000 monitors levees for rodent activity. Bait stations are deployed in high infestation areas. Following baiting and observation of diminished activity, District crews fill holes with earthen materials and compacts. No update for 2020			\$ 0.00
3	40507	All Units	Rodent Control/Grouting	Nothing to Report				\$ 0.00
3	40508	All Units	Sediment Removal	Nothing to Report				\$ 0.00
3	40509	All Units	Seepage Control	Nothing to Report				\$ 0.00
3	40510	All Units	Slope Dragging	Nothing to Report				\$ 0.00
3	40511	All Units	Surveying and Engineering	Nothing to Report				\$ 0.00
3	40512	All Units	Telemetry Maintenance	Nothing to Report				\$ 0.00

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PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
3	40513	All Units	Vegetation Control/Burn	Nothing to Report				\$ 0.00
3	40514	All Units	Vegetation Control/Channel	Nothing to Report				\$ 0.00
3	40515	All Units	Vegetation Control/Mow	Vegetation Mowing	District performed vegetation mowing on levees. The District was slightly behind schedule due to prolonged precipitation in the spring coupled with District resources being redirected to remove unauthorized encampments and to repair the resultant damage to levee slope. Nevertheless, all levees were mowed at least once during 2020			\$ 0.00
3	40516	All Units	Vegetation Control/Other	Vegetation Control / Other Cut and Bale Vegetation	District contracted for the cutting and bailing of vegetation from the Natomas Cross Canal to south of Powerline Road along Garden Highway on the landside stability berm per agreement with SAFCA's NLIP project.			\$ 0.00
3	40518	All Units	Vegetation Control/Spray	Vegetation Control/Spray Herbicide Treatment	District performed herbicide applications in conjunction with mowing activities to control vegetative growth on levee and adjacent lands in 2020.			\$ 0.00
3	40519	All Units	Vegetation Control/Thin and Trim	Vegetation Trimming	District performed vegetation trimming and thinning as necessary to provide visual and physical access of the levee and adjacent lands in 2020.			\$ 0.00
3	40520	All Units	Vegetation Control/Tree Removal	Nothing to Report				\$ 0.00
4	40522	All Units	Active Ongoing Program in Place	Nothing to Report				\$ 0.00
4	40523	All Units	Encroachment Control	Nothing to Report				\$ 0.00
4	40524	All Units	Erosion Repair	Nothing to Report				\$ 144.00
4	40526	All Units	Gates	Nothing to Report				\$ 4,676.00
4	40527	All Units	Inspections	Nothing to Report				\$ 0.00
4	40528	All Units	Insurance and Dues	Nothing to Report				\$ 0.00

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PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
4	40529	All Units	Legal/Administrative/Management Services	Nothing to Report				\$ 0.00
4	40530	All Units	Minor Structure Repair/Maintenance	Nothing to Report				\$ 0.00
4	40531	All Units	Mobile Equipment Costs	Nothing to Report				\$ 0.00
4	40532	All Units	Office Overhead	Nothing to Report				\$ 0.00
4	40536	All Units	Other	Operations & Maintenance Budget	See Attached 2020/2021 District Budget			\$ 4,762,162.00
4	40537	All Units	Patrolling	Nothing to Report				\$ 76,387.00
4	40538	All Units	Permitting	Nothing to Report				\$ 0.00
4	40539	All Units	Restoration	Nothing to Report				\$ 0.00
4	40541	All Units	Roadways	Nothing to Report				\$ 0.00
4	40542	All Units	Rodent Control/Bait and Traps	Nothing to Report				\$ 0.00
4	40543	All Units	Rodent Control/Grouting	Nothing to Report				\$ 0.00
4	40544	All Units	Sediment Removal	Nothing to Report				\$ 1,531.00
4	40545	All Units	Seepage Control	Nothing to Report				\$ 0.00
4	40546	All Units	Slope Dragging	Nothing to Report				\$ 0.00
4	40547	All Units	Surveying and Engineering	Nothing to Report				\$ 0.00
4	40548	All Units	Telemetry Maintenance	Nothing to Report				\$ 0.00
4	40549	All Units	Vegetation Control/Burn	Nothing to Report				\$ 0.00
4	40551	All Units	Vegetation Control/Channel	Nothing to Report				\$ 0.00
4	40553	All Units	Vegetation Control/Mow	Nothing to Report				\$ 145,958.00

Reclamation District No. 1000

Annual Report (01/01/2020 - 10/01/2020)

Department of Water Resources
Division of Flood Management

Flood Project Inspection and Assessment Branch
Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
4	40554	All Units	Vegetation Control/Other	Nothing to Report				\$ 15,072.00
4	40555	All Units	Vegetation Control/Spray	Nothing to Report				\$ 51,433.00
4	40556	All Units	Vegetation Control/Thin and Trim	Nothing to Report				\$ 0.00
4	40557	All Units	Vegetation Control/Tree Removal	Nothing to Report				\$ 27,435.00
5	40558	All Units	Construction Drawings/As-Builts	Nothing to Report				
5	40559	All Units	Distress Information	Nothing to Report				
5	40560	All Units	Dump/Hazardous Waste Sites	Nothing to Report				
5	40561	All Units	Emergency Action Plan	Nothing to Report	No Update to the District's 2017 Emergency Action Plan			
5	40562	All Units	Emergency Operations Plan	Nothing to Report				
5	40564	All Units	Emergency Recovery Plan	Nothing to Report				
5	40565	All Units	Encroachments	Nothing to Report				
5	40566	All Units	Geotechnical Investigations	Nothing to Report				
5	40567	All Units	Historical Construction Issues	Nothing to Report				
5	40568	All Units	Historical Levee Distress Issues	Nothing to Report				
5	40570	All Units	New Construction Planned/Approved	Natomas Levee Improvement Project	Natomas Levee Improvement Projects a. Reach A: Sacramento River south of San Juan Road to I-5. The Corps issued its 95% plans for this reach early in August and 100% plans are in progress. SAFCA is in the processing of acquiring necessary right of way including several homes. Clearing of trees and relocation of utilities starts in winter 2021. Contract Award is scheduled for September 2021 with cutoff wall and adjacent levee construction starting in spring 2022.			

Reclamation District No. 1000

Annual Report (01/01/2020 - 10/01/2020)

Department of Water Resources
Division of Flood Management

Flood Project Inspection and Assessment Branch
Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
5		All Units	New Construction Planned/Approved	Natomas Levee Improvement Project	<p>b. Reach B: Sacramento River south of Powerline Road to San Juan Road Clearing and grubbing has commenced and full construction activity will commence in spring 2021. A separate project to close the I-5 window in Reach B at the crossing of the Sacramento River is scheduled for spring 2021.</p> <p>c. Reach D: Natomas Cross Canal; Pumping Plant 4. Bids will be solicited soon for reconstructing Pumping Plant 4 including new plant pumps, motors and other equipment purchased during the NCC levee and canal work contract which concluded this summer. The schedule is to award the Plant 4 work by the end of 2020</p> <p>d. Reach E: PGCC Howsley Road to Sankey Road Comments were submitted on the 65% plans. Proposed work includes levee widening and limited cut-off wall. SAFCA and State DWR are working on right of way acquisition. The 90% plans are due in January 2021 with Contract Award scheduled for July 2021.</p> <p>e. Reaches F and G: NEMDC Sankey Road to south of Elkhorn Blvd The project team reviewed the preliminary design and provided input on the proposed design. Current plans propose levee widening and potentially limited cutoff walls. Current schedule is for 35% plans by January 2021 with Contract Award in spring 2022.</p> <p>f. Reach H : NEMDC Northgate Blvd to south of Elkhorn Blvd Levee cutoff walls, slope flattening and restoration of the levee section will be complete by November 1 of this year. Patrol / maintenance road grading may continue into 2021. Installation of raised discharge pipes for Pumping Plant 8 is scheduled for completion by November 1, 2020 but may need to be extended by a few weeks due to unforeseen</p>			

Reclamation District No. 1000

Annual Report (01/01/2020 - 10/01/2020)

Department of Water Resources
Division of Flood Management

Flood Project Inspection and Assessment Branch
Local Maintaining Agency Assessment Section

PART#	ID	UNIT	CATEGORY	FEATURE/CONDITION DESCRIPTION	ADDITIONAL COMMENTS	SLM	ELM	ESTIMATED COST
5		All Units	New Construction Planned/Approved	Natomas Levee Improvement Project	difficulties with connections to the existing pipes. g. Reach I: American River Gateway Oaks to Northgate Blvd Construction of the cutoff wall is complete. A separate contract (Reach I Contract 2) to construct a patrol / maintenance road and perform levee slope flattening is scheduled to be awarded in late 2021 for construction in 2022 pending right of way acquisition. h. Other Natomas Levee Improvement Project features Miscellaneous projects to complete the NLIP program such as Highway 99 window closure on the Natomas Cross Canal and Reconstruction of Pumping Plant 5 will enter the design phase during 2021.			
5	40571	All Units	Other	System Wide Improvement Framework	See 2020 Report. No update, awaiting USACE approval			
5	40572	All Units	Permits/MOUs	Nothing to Report				
5	40574	All Units	Plate Maps	Nothing to Report				
5	40575	All Units	Reports/Studies	Nothing to Report				
5	40577	All Units	Right of Way/Easements	Nothing to Report				
5	40578	All Units	Slurry Walls	Nothing to Report				
5	40579	All Units	Well Logs	Nothing to Report				



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 4.2

TITLE: Superintendent's Report – October 2020

SUBJECT: Update on Activities Since the September 2020 Board of Trustees Meeting

EXECUTIVE SUMMARY:

This Staff Report is intended to inform the Board and serve as the official record of the activities the District's field staff engaged in for the month of September 2020. As well as provide information regarding District facility use and local weather impacts on District facilities and river levels.

The Superintendent report was created to provide monthly updates to the Board of Trustees on field related activities within the District boundaries, as well as provide a historical record. This allows for the District and the public the opportunity to refer back to data trends over time regarding the weather impact on District facilities, crew activities, and local river and canal conditions as well as general District activities from month to month.

RECOMMENDATION:

There are no staff recommendations, the information provided is strictly informational.

ATTACHMENTS:

1. Superintendent's Report Data Sheet

STAFF RESPONSIBLE FOR REPORT:

Donald Caldwell, Superintendent

Date: 10/01/2020

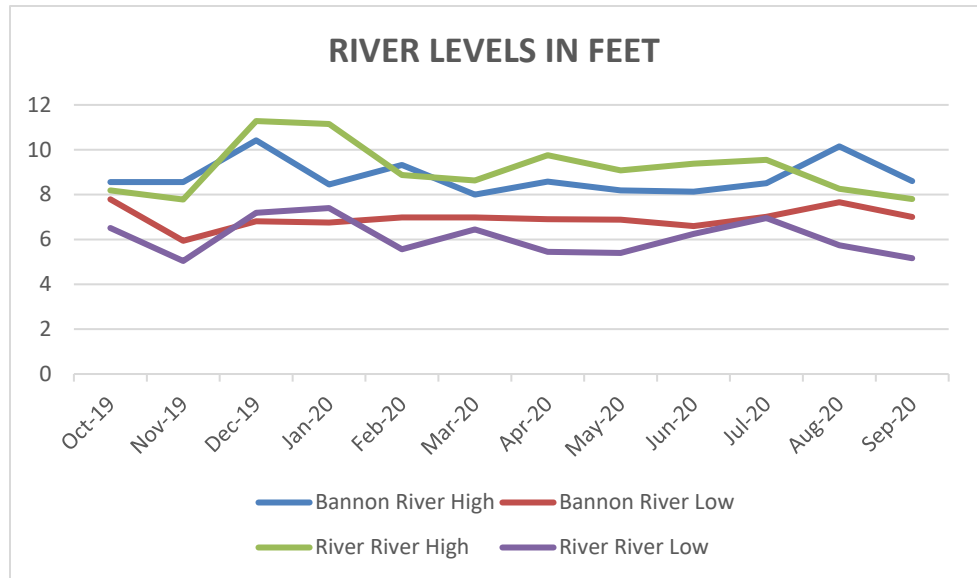
Kevin L. King, General Manager

Date: 10/01/2020



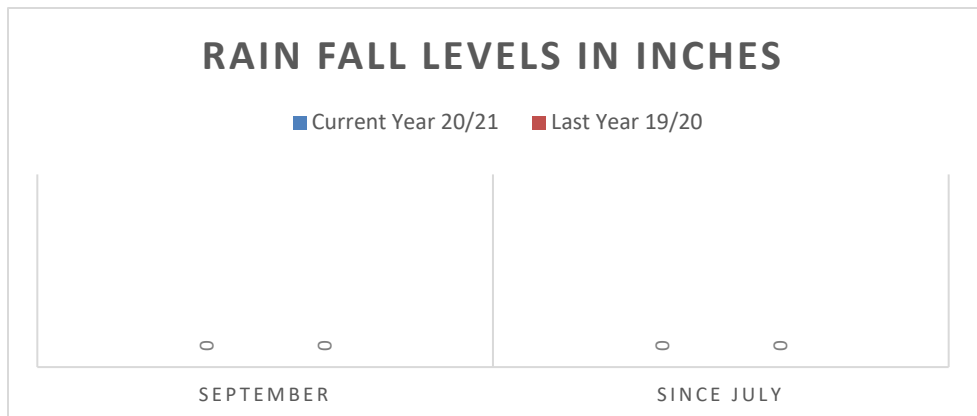
**Superintendent's Report
September 2020**

River Levels:
Bannon H: 8.6'
 L: 7'
River H: 7.8'
 L: 5.16'



Rain Fall Totals:
 September rain totals were 0"

Rain totals since July 1st were 0"



Safety Topics for the Month of September

Fire/Smoke Safety – What to do in an emergency fire situation, fire prevention and red flag days.

District Complaints

The District received 5 complaints since the September 11th Board Meeting. Two complaints were due to trash and debris on District property, we also received a related complaint to unauthorized access on the District's levee near Howsley and 99 often resulting in illegal dumping. The resident has requested we place a lock on the gates at this location to deter unauthorized vehicles. We also received 1 complaint from code enforcement for high weeds along Garden Highway where the Army Corps had recently finished construction. The area has since been mowed.

Superintendent's Report

The chart below represents various activities the field crew spent their time working on during the month of September 2020.

RD 1000 Field Crew	*Field Hours Worked	Activity
	186	Grounds
	150	Pump Plant Maintenance
	73	Pump Rounds
	43	Ditch Maintenance
	134	Garbage
	211	Weed Control
	88	Mowing
	148	Equipment Repair

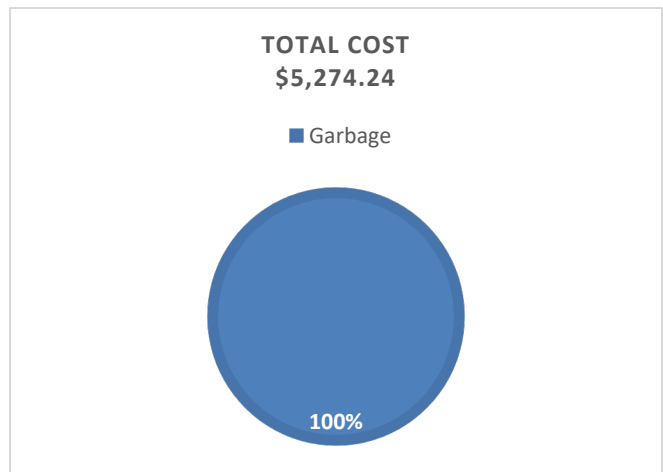
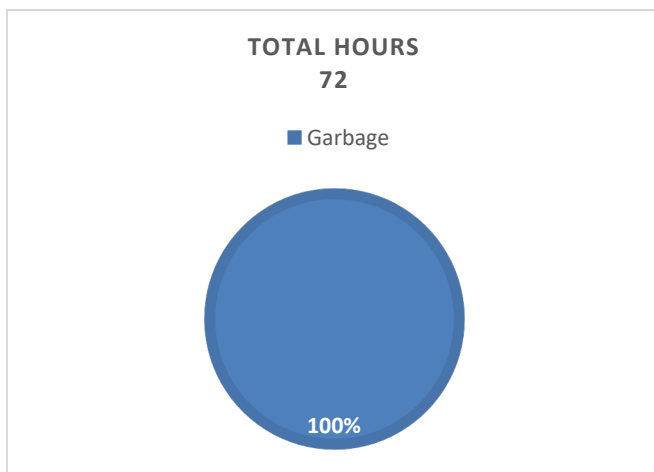
*Hours worked do not include the Superintendent's time.

Pumping

The District did some pumping in the month of September due to rice water releases.

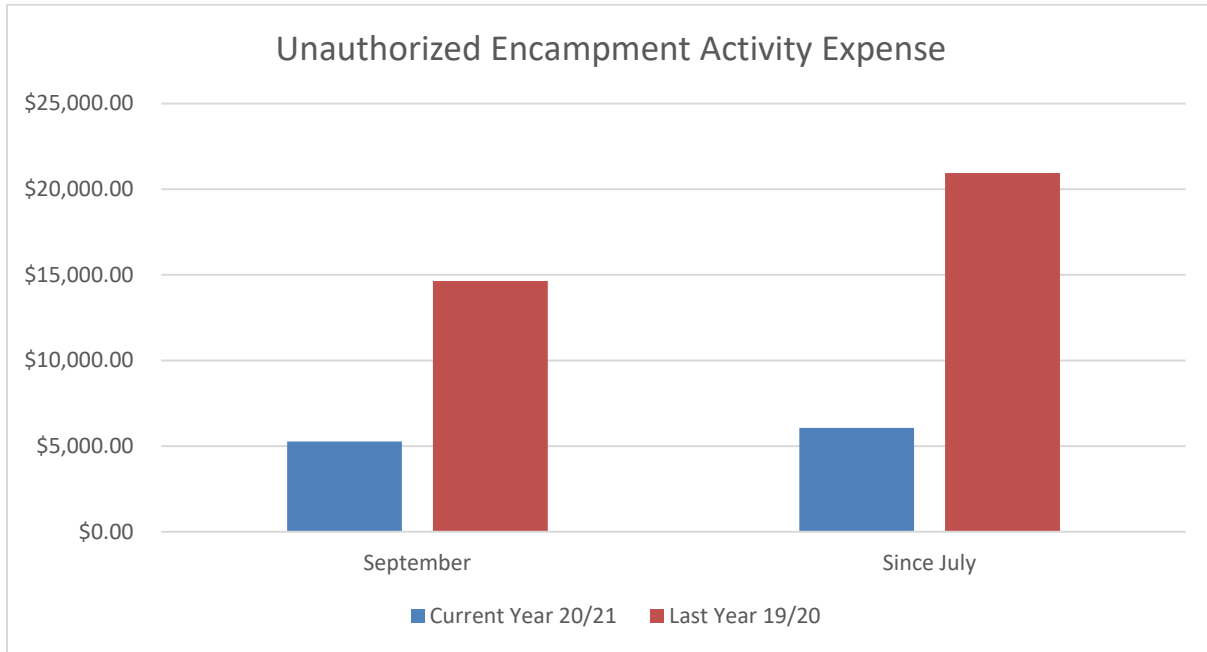
Pumping Plant	Pump	Hours and A/F
Plant 1-B	Pump # 2	357.5 hours and 3,503 A/F
	Pump # 4	6 hours and 58.8 A/F
	Pump # 6	130 hours and 1,274 A/F
Plant 2	Pump # 2	442.5 hours and 1,274 A/F
Plant 3	Pump # 1	49.3 hours and 182.41 A/F

Unauthorized Encampment Activity During the month of September, the District spent a total of 72 hours on unauthorized encampment related work for a total cost to the District of \$5,274.24. This total includes labor,* equipment costs, materials and dump fees.



Unauthorized Encampment Activity – Year to Date

This fiscal year to date the District spent a total of 84 crew hours on unauthorized encampments for a total cost to the district of \$6,063.12 This total includes labor,* equipment costs, materials and dump fees.





RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 4.3

TITLE: District Counsel's Report – October 2020

SUBJECT: Update on Activities Since the September 2020 Board of Trustees Meeting

EXECUTIVE SUMMARY:

Reclamation District 1000's (RD 1000; District) General Counsel, Rebecca Smith and/or Scott Shapiro to provide verbal report of work performed during the month of September 2020.

ATTACHMENTS:

None

STAFF RESPONSIBLE FOR REPORT:

Kevin L. King, General Manager

Date: 10/01/2020



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 5.1

TITLE: Approval of Minutes

SUBJECT: Approval of Minutes from September 11, 2020 Regular Board Meeting

EXECUTIVE SUMMARY:

This staff report is intended to serve as the official record of monthly meetings of the Board of Trustees. This document details meeting participants, proof of items discussed, summaries of board meeting discussion, and actions taken by the Board. Staff recommends Board approval of meeting minutes (Attachment 1) from the September 11, 2020, Regular Board Meeting.

BACKGROUND:

The Ralph M. Brown Act (Gov. Code §54950 et seq.) governs meetings by public commissions, boards and councils, and public agencies in California. The Act facilitates public transparency and public participation in local government decisions. The Act also contains specific exemptions from the open meeting requirements where governmental agencies have a demonstrated need for confidentiality. To further comply with transparency, Reclamation District No. 1000 documents meetings of the Board of Trustees through Board Minutes.

RECOMMENDATION:

Staff recommends the Board approve the Minutes from the September 11, 2020, Regular Board Meeting.

ATTACHMENTS:

1. September 11, 2020, Board Meeting Minutes

STAFF RESPONSIBLE FOR REPORT:



Joleen Gutierrez, Administrative Service Manager

Date: 10/01/2020



Kevin L. King, General Manager

Date: 10/02/2020



**RECLAMATION DISTRICT NO. 1000
BOARD OF TRUSTEES MEETING**

**SEPTEMBER 11, 2020
MEETING MINUTES**

In light of COVID-19 and in Compliance with CA Executive Orders N-25-20 and N-29-20, members of the Board of Trustees and members of the public participated in this meeting by teleconference. This meeting was recorded without objection. Present were: Board President Jeff Smith; Vice President Chris Burns; Trustee David Christophel; Trustee Elena Lee Reeder; Trustee Jag Bains (joined the meeting at 8:05 am); Trustee Thom Gilbert; Trustee Nick Avdis; General Manager Kevin King; Co-General Counsel Rebecca Smith; Co-General Counsel Scott Shapiro; Administrative Services Manager Joleen Gutierrez; Superintendent Don Caldwell; and Administrative Assistant Christina Forehand. District Engineering Consultant Scott Brown from Larsen Wurzel also attended the meeting.

1. PRELIMINARY

1.1. Call Meeting to Order

President Smith called the meeting to order.

1.2. Roll Call

Administrative Services Manager Gutierrez called the roll and established a quorum.

1.3. Approval of Agenda

MOVED/SECONDED: Trustee Christophel/Trustee Gilbert

AYES: Trustee Christophel, Trustee Bains, Trustee Lee Reeder, Trustee Smith, Trustee Avdis, Trustee Burns, Trustee Gilbert

NOES: None

ACTION: The September

1.4. Pledge of Allegiance

General Manager King led the Pledge of Allegiance.

1.5. Conflict of Interest

No conflicts of interest were identified.

2. PRESENTATIONS

2.1. No presentations were scheduled.

3. PUBLIC COMMENT (NON-AGENDA ITEMS)

There were no public comments.

4. INFORMATIONAL ITEMS

4.1. GENERAL MANAGER'S REPORT: Update on activities since the August 2020 Board Meeting.

General Manager King provided the Board with a written General Manager's report and also orally reported on the items below:

Staff Schedules

General Manager King updated the Board ongoing modified staff schedules due to Covid-19 related requirements and recent advice from legal counsel. He made known the District will have a Board of Trustees Election with five nomination petitions received.

Committee Meetings

With increased attendance at Committee meetings by non-committee members, turning them into Special Board Meetings, GM King inquired whether the Board prefers to have all items brought before the Board instead of committee meetings. GM King also asked whether non-committee member 'observers' should be paid regular meeting compensation. After discussion and Trustee comments, it was the desire of the Board to keep holding committee meetings as is the current practice. GM King will review the existing Trustee Compensation Policy and, if necessary, return to the Board for consideration of an updated policy.

District Equipment

GM King stated iPads for Trustees would be ordered and distributed once received. Legal counsel will prepare a form for acceptance of District equipment.

4.2. SUPERINTENDENT'S REPORT: Update on activities since the August 2020 Board Meeting.

There were no questions or comments on the Superintendent's Report.

4.3. DISTRICT COUNSEL'S REPORT: Update on activities since the August 2020 Board Meeting.

Co-General Counsel Rebecca Smith provided a brief verbal update of her activities during August 2020.

5. CONSENT CALENDAR

The Board considers all Consent Calendar items to be routine and will adopt them in one motion. There will be no discussion on these items before the Board votes on the motion, unless Trustees, staff or the public request specific items be discussed and/or removed from the Consent Calendar.

MOVED/SECONDED: Trustee Avdis/Trustee Lee Reeder

AYES: Trustee Christophel, Trustee Bains, Trustee Lee Reeder, Trustee Smith, Trustee Avdis, Trustee Burns, Trustee Gilbert

NOES: None

ACTION: A motion to approve Consent Calendar Items 5.1, 5.2, 5.3, 5.4, and 5.5 is approved.

5.1. APPROVAL OF MINUTES: Approval of Minutes from August 14, 2020 Regular Board Meeting.

5.2. TREASURER'S REPORT: Approve Treasurer's Report for August 2020.

5.3. EXPENDITURE REPORT: Review and Accept Report for August 2020.

5.4. BUDGET TO ACTUAL REPORT: Review and Accept Report for August 2020.

5.5. INSURANCE RENEWAL: Review and Consider Authorizing General Manager to Execute Annual Insurance Renewal.

6. SCHEDULED ITEMS

6.1. FISCAL YEAR 2020/2021 BUDGET AMENDMENT: Review and Consider Budget Amendment for Fiscal Year 2020/2021 – Operations Manager Position.

GM King stated there is a need to add a District Operations Manager Position. He explained several discussions over the past seven months took place to understand the position need, costs, and long-term implications associated with adding this position.

The Operations Manager will aid in succession planning, managing several projects from the Capital Improvement Program as the Board approves projects. Highlighted position responsibilities include: developing a field IIPP/Safety Manual, work on the Natomas Levee Improvement Projects, annual reporting to DWR and other agencies, O/M Budget development, project tracking and reporting, permitting, grant submittals, and System-Wide Improvement Framework (SWIF) Implementations and enforcement. The position will allow the District to offset costs currently paid to project management consultants.

Trustee Christophel believes this is an important step with consequences. He contemplates whether it makes more sense to contract out this work. He acknowledged the District has a full plate and resolves if the District is heading toward a proactive District instead of reactive, this is the right step.

Trustee Avdis stated that he does not take spending more money lightly. He acknowledges the level of service is higher, but he does not believe we have a succession plan in place that will serve the District. He states, over the long term, the District will save money, and that is in the best interest of our assessment payers.

Trustee Bains asked about the cost comparison spending and what the offsets are.

Trustee Burns commented he does not feel this position has been well thought out. He raised concern over the budget amendment for the Operations Manager position, as the District is already spending more money than it is taking in. He believes the Operations Manager position is only set up to succeed the general manager's position. He affirmed consultants could continue to cover the work. Trustee Burns made known there are many qualified people out of work right now. He would like to see someone hired based on experience and education, not a friend or family member per the District's Anti-Nepotism Policy. Trustee Burns would like to see the District hire a junior engineer. He wants to be sure the District advertises far and wide for the Operations Manager Position.

Trustee Smith asked GM King about the selection process for the Operations Manager Position. GM King sees the position advertised in BC Water Jobs and Cal Jobs; he would run the recruitment for 45-60 days, set up a selection panel, perform interviews, and then make a hiring decision.

MOVED/SECONDED: Trustee Christophel/Trustee Avdis

AYES: Trustee Christophel, Trustee Bains, Trustee Lee Reeder, Trustee Smith, Trustee Avdis, Trustee Gilbert

NOES: Trustee Burns

ACTION: A motion to approve the budget amendment and Operations Manager Position is approved.

Additional Comments

Trustee Avdis stated he would like to improve our relationship with the Natomas Mutual Water Company (NMWC) and increase meetings to a couple of times a year. Trustee Christophel made a similar request. He would like to see a preseason growers meeting. GM King will find some time to schedule a Fall meeting and begin working through any concerns.

Trustee Burns shared information that does not come up in the SAFCA's report. He stated there is \$131 million available for funding appropriations bill for the American River and Natomas Basin. Additionally, there is \$191 million available in competitive funding for flood control projects. Trustee Burns would like to see KSN prepare to request financing for Plant 8 and other District issues. He would like to see the District compete for federal funding instead of focusing on a tax increase during these economic times. He stated the District should get on the SACOG Infrastructure list and include its CIP projects. When federal stimulus funding is available, it will be helpful to be on the Sacramento region list.

Trustee Reeder expressed her appreciation for Trustee Burns sharing this information.

6.2. REVIEW AND CONSIDER ADOPTION OF OFFICIAL PAY RATE SCHEDULE FOR FISCAL YEAR 2020/2021: Review and Consider Adoption of Resolution No. 2020-09-01 Approving Official Pay Rate Schedule for Fiscal Year 2020/2021.

GM King made known that with the approval of the Operations Manager Position, CalPERS will require an Official Pay Rate Schedule that includes the new position. The schedule is available for review in the September 2020 Board Packet.

There were no public comments.

MOTION: Bains/Gilbert

AYES: Christophel, Bains, Lee Reeder, Smith, Avdis, Gilbert

NOES: Burns

ACTION: A motion to approve the Official Pay Rate Schedule for Fiscal Year 2020/2021 is approved.

7. **BOARD OF TRUSTEE'S COMMENTS/REPORTS**

7.1. BOARD ACTIVITY UPDATES:

7.1.1. RD 1000 Committee Meetings Since Last Bd Meeting

- Personnel Committee (Christophel, Avdis, & Burns) August 31, 2020
- Executive Committee Meeting (Smith & Burns) September 2, 2020

8. **CLOSED SESSION**

There were no closed session items

9. **ADJOURN**

The meeting is adjourned.



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 5.2

TITLE: Treasurer's Report

SUBJECT: Approve Treasurer's Report for September 2020

EXECUTIVE SUMMARY:

This Staff Report is intended to inform the Board of the current total funds in the District's checking and money market accounts, Sacramento County Treasurer Fund, State Treasurer Local Agency Investment Fund (LAIF), and the City of Sacramento Pooled Investment Fund.

The Staff Report attachment provides the monthly beginning and ending balances of its Operations and Maintenance cash flow. The report considers the current month's receipts, fund to fund transfers, accounts payable, and payroll.

Noteworthy fund and cash flow items during September 2020 are featured in the attached Treasurer's Report.

BACKGROUND:

Income and Cash

The District maintains funds in the California State Controller Local Agency Investment Fund (LAIF), the Sacramento County Treasurer, and Bank of the West.

The District's primary source of income is property assessments. Assessments are collected through respective Sacramento and Sutter County tax bills.

Annually, the Board of Trustees approves a Resolution designating officers and signatories to the Operations and Maintenance Fund held by the Sacramento County Treasurer. The District's Financial Reserve Policy guides current, future, and unexpected funding requirements. The District's Investment Policy guides investments made by the District of any surplus or reserve funds it may have.

RECOMMENDATION:

Staff recommends the Board approve the September 2020 Treasurer's Report.

FINANCIAL IMPACT:

None.

TITLE: Treasurer's Report – September 2020

ATTACHMENTS:

1. Treasurer's Report September 2020

STAFF RESPONSIBLE FOR REPORT:



Joleen Gutierrez, Administrative Services Manager

Date: 10/01/2020



Kevin L. King, General Manager

Date: 10/02/2020

Reclamation District 1000
Treasurer's Report
September 2020

Treasurer's Report for September 2020

September 2020	Ending Balance @ 9/30/20
Total Funds at 9/30/20	9,304,476.56
Bank of the West - Checking	105,566.59
Bank of the West - Money Market	150,670.74
Bank of the West FMAP	626,223.09
Sacramento County Treasurer	4,330,320.34
State Treasurer - Local Agency Investment Fund	1,933,841.93
City of Sacramento - Pool A	2,157,853.87

Included in O&M cash flow below
Included in O&M cash flow below

September 2020 - Operations and Maintenance Cash Flow	Money Market	Operating Checking	Combined O&M
Beginning Balance at 9/1/20	50,670.74	183,486.97	234,157.71
Transfers from money market to operating account	-400,000.00	400,000.00	0.00
Transfers from LAIF to money market account	500,000.00		500,000.00
Transfer from FMAP account		10,302.01	10,302.01
Current months receipts		570.52	570.52
Accounts Payable*		-398,830.14	-398,830.14
Payroll		-89,962.77	-89,962.77
Ending Balance at 9/30/20	150,670.74	105,566.59	256,237.33

*See Attached Check Register

Current months receipts are made up of the following:

Refund of bank fee from Bank of the West	40.00
Refund from Occupational Health Centers of CA	188.50
Scrap metal sales	322.02
Receipt for bid documents	20.00
	<u>570.52</u>



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 5.3

TITLE: Expenditure Report

SUBJECT: Review and Accept Report for September 2020

EXECUTIVE SUMMARY:

This Staff Report is intended to advise the Board of monthly expenditures and provide an explanation of any expenses outside of the usual course of business. Staff recommends the Board review and accept the Expenditure Report for September 2020.

Expenses

The Administrative Services Manager reviews and the General Manager approves expenditures. This activity is disclosed monthly as an attachment to this staff report. The Expenditure Report (Attachment 1) reveals typical District spending for the month. Items of note are a payment to SGS Colusa of \$83,583.72 for herbicides and the District's annual insurance expense of \$136,963.00 to Stratton Agency. Both are budgeted expenses.

RECOMMENDATION:

Staff recommends the Board review and accept the Expenditure Report for September 2020.

FINANCIAL IMPACT:

None.

ATTACHMENTS:

1. September 2020 Expenditure Report
2. Financial Expense Comparison Summary

STAFF RESPONSIBLE FOR REPORT:



Joleen Gutierrez, Administrative Services Manager

Date: 10/01/2020



Kevin L. King, General Manager

Date: 10/02/2020

September 2020 Expenditure Report

Type	Date	Num	Name	Memo	Amount	Balance
Cash and Investments						183,486.97
1010.00 - Bank of the West Checking Acct						183,486.97
Bill Pmt						
-Check	09/01/2020	1001646375	Cal Pers	457 Gutierrez	-914.09	182,572.88
General Journal	09/01/2020		Bank of the West	Service charge refund	40.00	182,612.88
Check	09/01/2020	EFT	Bank of the West		-40.00	182,572.88
Bill Pmt						
-Check	09/02/2020	50159	Airgas NCN	2140381	-379.58	182,193.30
Bill Pmt						
-Check	09/02/2020	50160	Hire Right Solutions, LLC	4427151774	-93.04	182,100.26
Bill Pmt						
-Check	09/02/2020	50161	Joleen Gutierrez	Mileage	-152.15	181,948.11
Bill Pmt						
-Check	09/02/2020	50162	Mead & Hunt	Inv 306795	-3,546.00	178,402.11
Bill Pmt						
-Check	09/02/2020	50163	Neat Freak Clean, LLC	Inv 2020-08-26	-375.00	178,027.11
Bill Pmt						
-Check	09/02/2020	50164	SGS Colusa	52118	-49.57	177,977.54
Bill Pmt						
-Check	09/02/2020	50165	Smile Business Products	103404	-141.13	177,836.41
Bill Pmt						
-Check	09/02/2020	1001647121	Cal Pers	Inv 16150204	-1,050.00	176,786.41
Bill Pmt						
-Check	09/02/2020	24703234295	PG&E	08262020	-17.93	176,768.48
Bill Pmt						
-Check	09/03/2020	50166	Big Valley Divers, Inc.	Trash Rack Repairs	-11,471.50	165,296.98
Bill Pmt						
-Check	09/03/2020	1001646373	Cal Pers	457	-350.00	164,946.98
Bill Pmt						
-Check	09/04/2020	1001648857	Cal Pers	457	-350.00	164,596.98
General Journal	09/04/2020			9/4/20 payroll activity – Taxes	-15,170.61	149,426.37
General Journal	09/04/2020			9/4/20 payroll activity - Wages	-33,675.45	115,750.92
Bill Pmt			A T.E.E.M. Electrical Engineering, Inc.			
-Check	09/09/2020	50167		Inv 1809a-17	-1,070.00	114,680.92
Bill Pmt						
-Check	09/09/2020	50168	Appeal - Democrat	Inv 00258438	-350.82	114,330.10
Bill Pmt						
-Check	09/09/2020	50169	AT&T	9391052144	-293.99	114,036.11
Bill Pmt						
-Check	09/09/2020	50170	SGS Colusa	Herbicides	-83,583.72	30,452.39
Bill Pmt						
-Check	09/09/2020	50171	Steve Yaeger Consulting	Inv 2020-8	-2,700.00	27,752.39
Bill Pmt						
-Check	09/09/2020	50172	The Sacramento Bee	Acct 339553	-597.74	27,154.65
Bill Pmt						
-Check	09/09/2020	50174	Valley Hydraulics & Machine, Inc.	INv 108563	-15.92	27,138.73
Bill Pmt						
-Check	09/09/2020	50175	Valley Tire Center, Inc.	218041	-2,236.03	24,902.70
Bill Pmt						
-Check	09/09/2020	50176	Woodland Motors	241312	-433.54	24,469.16
Bill Pmt						
-Check	09/09/2020	50177	US Bank Corp	Acct Ending 4049	-970.35	23,498.81
Bill Pmt						
-Check	09/09/2020	50178	National Fire Systems, Inc.	Inv 91418	-393.41	23,105.40
Bill Pmt			Berkshire Hathaway Homestate Companies			
-Check	09/09/2020	284948		REWC122900	-2,114.42	20,990.98
Bill Pmt						
-Check	09/09/2020	25360047937	City of Sacramento	Acct 7029676079	-4.65	20,986.33
Bill Pmt						
-Check	09/09/2020	8729388291	Comcast	8155600381146169	-270.01	20,716.32
Bill Pmt						
-Check	09/09/2020	09092020	Sacramento County Utilities		-227.40	20,488.92
Bill Pmt						
-Check	09/09/2020	80018338077	Waste Management of Sacramento		-503.20	19,985.72
General Journal	09/09/2020		Misc. receipts		386.52	20,372.24
Transfer	09/10/2020			Funds Transfer	100,000.00	120,372.24

Check Bill Pmt	09/11/2020	EFT	ADP		-97.22	120,275.02
-Check Bill Pmt	09/16/2020	09162020	Alhambra & Sierra Springs	33167566169212	-82.45	120,192.57
-Check Bill Pmt	09/16/2020	26048342828	PG&E	Acct 7682608878-3	-411.35	119,781.22
-Check Bill Pmt	09/16/2020	AOJZAZIT	Streamline	Inv 106948	-200.00	119,581.22
-Check Bill Pmt	09/16/2020	50179	ACWA JPIA	204	-1,829.14	117,752.08
-Check Bill Pmt	09/16/2020	50180	Blankinship & Associates, Inc.	Inv 7077	-2,903.98	114,848.10
-Check Bill Pmt	09/16/2020	50181	Carson Landscape Industries	1080	-730.00	114,118.10
-Check Bill Pmt	09/16/2020	50182	Chavez Accountancy Corporation	R11125	-1,487.50	112,630.60
-Check Bill Pmt	09/16/2020	50183	Downey Brand LLP		-3,116.50	109,514.10
-Check Bill Pmt	09/16/2020	50184	Enoven Truck Body & Equipment	32037 – Kits for new trucks	-12,642.52	96,871.58
-Check Bill Pmt	09/16/2020	50185	Grow West	105860	-288.65	96,582.93
-Check Bill Pmt	09/16/2020	50186	Interstate Oil Company	41-0068266	-2,944.09	93,638.84
-Check Bill Pmt	09/16/2020	50187	NBS	Inv 820000072	-2,787.50	90,851.34
-Check Bill Pmt	09/16/2020	50188	Smile Business Products	103404	-268.80	90,582.54
-Check General Journal	09/16/2020	50189	Yolo County Treasurer	APN 042-310-015-000	-4,847.00	85,735.54
General Journal	09/18/2020			9/18/20 payroll activity - Wages	-28,937.76	56,797.78
General Journal	09/18/2020			9/18/20 payroll activity - taxes	-12,178.95	44,618.83
Transfer General Journal	09/18/2020			Funds Transfer	100,000.00	144,618.83
General Journal	09/18/2020		Occupational Health Centers of CA	Refund from Occupational Health Centers	144.00	144,762.83
-Check Bill Pmt	09/21/2020	1001662767	Cal Pers	457	-350.00	144,412.83
-Check Bill Pmt	09/23/2020	50190	Big Valley Divers, Inc.	Inv 090320	-5,385.75	139,027.08
-Check Bill Pmt	09/23/2020	50191	Boutin Jones, Inc.	020773	-4,616.00	134,411.08
-Check Bill Pmt	09/23/2020	50192	Carson Landscape Industries	1080	-235.00	134,176.08
-Check Bill Pmt	09/23/2020	50193	Dollar Tow Company	Inv 12157	-100.00	134,076.08
-Check Bill Pmt	09/23/2020	50194	Loewen Pump Maintenance		-10,584.00	123,492.08
-Check Bill Pmt	09/23/2020	50195	MBK Engineers		-9,209.26	114,282.82
-Check Bill Pmt	09/23/2020	50196	Mead & Hunt	Inv 307637	-1,206.75	113,076.07
-Check Bill Pmt	09/23/2020	50197	Norstar Industries, Inc.	Inv 58476	-422.36	112,653.71
-Check Bill Pmt	09/23/2020	50198	Security & Asset Management, LP	4REC0003	-2,364.72	110,288.99
-Check Bill Pmt	09/23/2020	50199	Smile Business Products	103404	-163.60	110,125.39
-Check Bill Pmt	09/23/2020	50200	SMUD	7000000317	-43,736.06	66,389.33
-Check Bill Pmt	09/23/2020	50201	Terrapin Technology Group	Inv 20-1245	-1,201.19	65,188.14
-Check Bill Pmt	09/23/2020	1001665614	Cal Pers	Health	-17,454.92	47,733.22
-Check Bill Pmt	09/23/2020	616617618	Cal Pers	Pension	-13,247.27	34,485.95
-Check Bill Pmt	09/23/2020	2465162	Napa Auto Parts	20906137	-979.78	33,506.17
-Check Bill Pmt	09/23/2020	11023111699	The Home Depot	Inv 1023660	-191.49	33,314.68
-Check Bill Pmt	09/23/2020	1047432850	Verizon	972466087-00001	-487.86	32,826.82
-Check Bill Pmt	09/24/2020	50202	Stratton Agency	Insurance	-136,963.00	-104,136.18

Transfer	09/25/2020			Funds Transfer	200,000.00	95,863.82
Transfer	09/25/2020			Funds Transfer	10,302.01	106,165.83
Check Bill Pmt	09/25/2020	EFT	ADP		-81.47	106,084.36
-Check	09/29/2020	50203	The Sacramento Bee	Acct 339553	-517.77	105,566.59
Total 1010.00 · Bank of the West Checking Acct					<u>-77,920.38</u>	<u>105,566.59</u>
Total Cash and Investments					<u>-77,920.38</u>	<u>105,566.59</u>
					<u>-77,920.38</u>	<u>105,566.59</u>

Activity Summary

Transfers from money market account	400,000.00
Transfer from FMAP account	10,302.01
Refund of bank fee	40.00
Refund from Occupational Health Centers of CA	188.50
Scrap metal sales	322.02
Receipt for bid documents	20.00
Payroll disbursements	-89,962.77
Accounts payable disbursements	<u>-398,830.14</u>
 Net activity	 <u>-77,920.38</u>



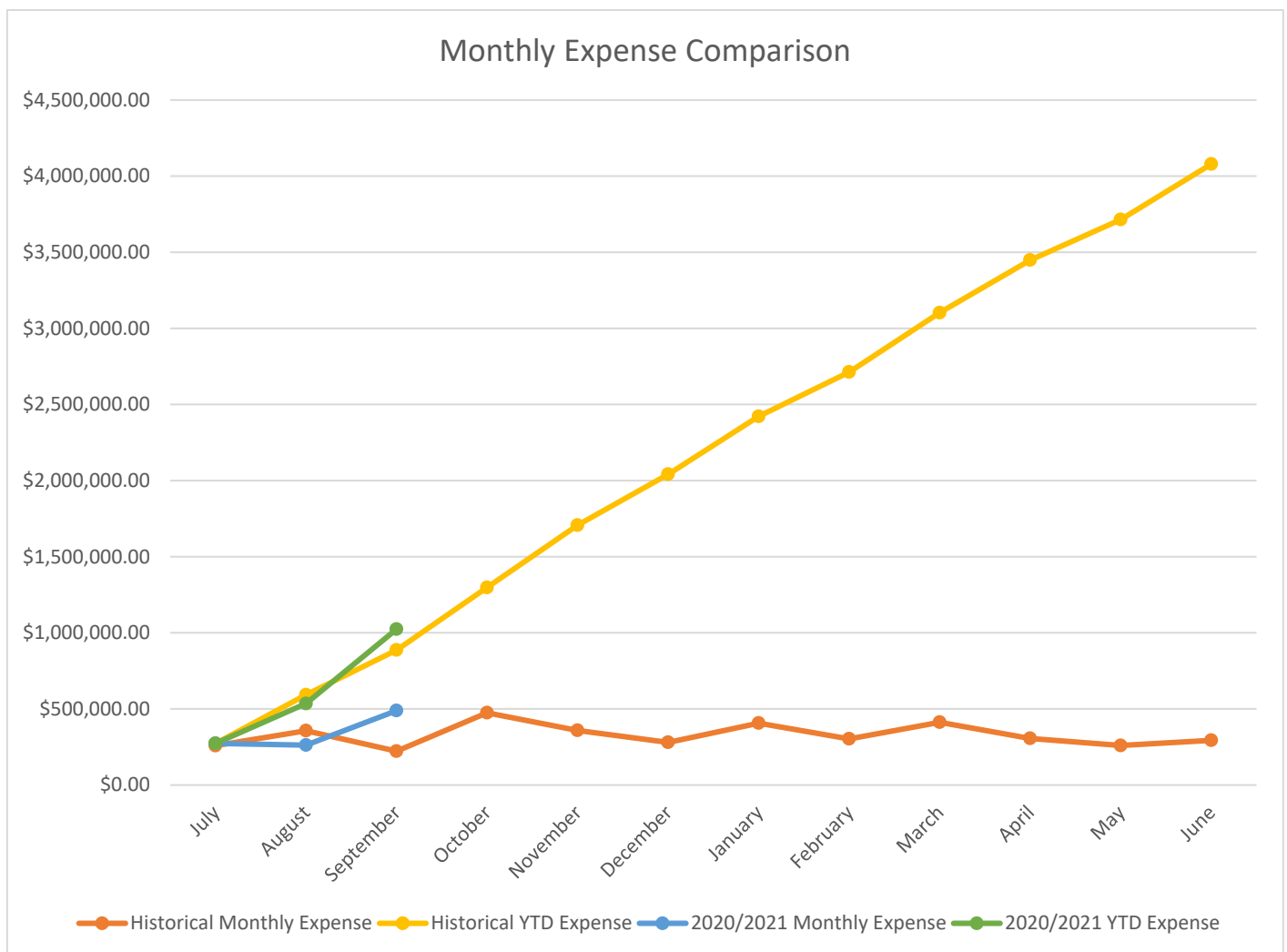
Monthly Historical Expense Comparison

The graph below compares current fiscal year monthly expenses as of September 2020 to historical monthly expense trends for the last four fiscal years. As of September 30, 2020, the District's expenses are trending slightly higher for the month and fiscal year. The increase is directly attributable to the District's annual insurance liability premium and annual herbicide purchase.

The graph also compares the cumulative year to date costs and historical year to date expense trends for fiscal year 2016/2017 through fiscal year 2019/2020.

Variations in the current month to month expenses compared to the historical month to month expenses are due to single expense budgeted items. This includes large equipment purchases and the District's annual insurance liability renewal in which remittance of payment can vary each year slightly.

When comparing year to date expenses to historical expenses, the District is trending slightly higher due to the costs mentioned above.





RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 5.4

TITLE: Budget to Actual Report

SUBJECT: Review and Accept Report for September 2020

EXECUTIVE SUMMARY:

This Staff Report is intended to provide a monthly budgetary snapshot of how well the District is meeting its set budget goals for the fiscal year. The monthly Budget to Actual Report contains a three-column presentation of actual expenditures, budgeted expenditures, and percentage of the Budget. Each line item compares budgeted amounts against actual to date expenses. Significant budgeted line item variances (if any) will be explained in the Executive Summary of this report.

Attachment 1 provides a year to date report for the month ending September 30, 2020. The report reveals the District is at 88% for Liability/Auto Insurance, this is due to the annual premium, and 76% for Herbicides. The District is also at 78% for mitigation land expenses due to payment of yearly property taxes. These are one-time annual expenses.

BACKGROUND:

The Board of Trustees adopts a budget annually in June. District staff prepares the Budget, which shows the current year budget versus expenditures and a proposed budget for the next year.

Three Board committees review the draft budget before being presented to the full Board for adoption in June. The Personnel Committee reviews the wage and benefits portion of the Budget. The Operations Committee reviews the Capital expenditures Budget. After the two committees review and make recommendations to the Budget, the final draft is prepared for the Finance Committee to consider. After review by the Finance Committee, the final Budget is presented to the Board for adoption at a regular Board meeting.

RECOMMENDATION:

Staff recommends the Board review and accept the Budget to Actual Report for September 2020.

ATTACHMENTS:

1. Budget to Actual Report September 2020

STAFF RESPONSIBLE FOR REPORT:



Joleen Gutierrez, Administrative Services Manager

Date: 10/01/2020



Kevin L. King, General Manager

Date: 10/02/2020

**Reclamation District No. 1000
Budget to Actual Comparison
July 1, 2020 to September 30, 2020 (Three Months Ending of Fiscal 2021)**

	Year to Date July 1, 2020 to September 30, 2020	Budget	Percent of Budget
Operation & Maintenance Income			
Property Assessments	3,181	2,250,000	0.14%
Rents	5,326	30,000	17.75%
Interest Income	5,732	95,000	6.03%
SAFCA - O/M Assessment	-	1,400,000	0.00%
Misc Income	342	-	Not Budgeted
FMAP Grant	636,400	601,337	105.83%
Annuitant Trust Reimbursement	-	70,000	0.00%
Security Patrol Reimbursement	-	45,000	0.00%
Development Impact Fees	-	1,400,000	0.00%
Total	650,981	5,891,337	11.05%
Restricted Fund			
Metro Airpark Groundwater Pumping	-	25,000	0.00%
Total Combined Income	650,981	5,916,337	11.00%
Administration, Operations and Maintenance - Expenses			
Administration			
Government Fees/Permits	-	12,500	0.00%
Legal	14,351	97,000	14.79%
Liability/Auto Insurance	132,670	150,000	88.45%
Office Supplies	198	5,500	3.60%
Computer Costs	4,556	24,000	18.98%
Accounting/Audit	3,685	47,050	7.83%
Admin. Services	6,362	17,000	37.42%
Utilities (Phone/Water/Sewer)	4,486	23,700	18.93%
Mit. Land Expenses	4,847	6,200	78.18%
Administrative Consultants	17,134	128,000	13.39%
Assessment/Property Taxes (SAFCA - CAD)	-	8,000	0.00%
Admin - Misc./Other Expenses	201	8,250	2.44%
Memberships	22,785	40,800	55.85%
Office Maintenance & Repair	3,385	27,000	12.54%
Payroll Service	547	6,000	9.12%
Public Relations	2,172	45,000	4.83%
Small Office & Computer Equipment	(364)	12,000	-3.03%
Election	3,644	39,000	9.34%
Conference/Travel/Professional Development	-	20,500	0.00%
Sub Total	220,659	717,500	30.75%
Personnel/Labor			
Wages	232,876	1,214,658	19.17%
Group Insurance	42,021	130,000	32.32%
Worker's Compensation Insurance	8,353	30,000	27.84%
OPEB - ARC	-	-	Not Budgeted
Dental/Vision/Life	7,317	25,887	28.27%
Payroll Taxes	17,402	91,000	19.12%
Pension	102,638	201,148	51.03%
Continuing Education	181	5,000	3.62%
Trustee Fees	6,525	40,000	16.31%
Annuitant Health Care	22,910	91,032	25.17%

Sub Total

440,223

1,828,725

24.07%

Operations			
Power	72,072	500,000	14.41%
Supplies/Materials	3,928	25,000	15.71%
Herbicide	91,576	120,000	76.31%
Fuel	8,034	50,000	16.07%
Field Services	3,371	63,100	5.34%
Field Operations Consultants	2,904	20,000	14.52%
Equipment Rental	-	5,000	0.00%
Refuse Collection	2,022	30,000	6.74%
Equipment Repair/Service	34	16,000	0.21%
Equipment Parts/Supplies	16,675	60,000	27.79%
Facility Repairs	32,845	211,000	15.57%
Shop Equipment (not vehicles)	-	5,000	0.00%
Field Equipment	-	14,000	0.00%
Misc/Other 2	-	500	0.00%
Utilities - Field	2,129	11,500	18.51%
Government Fees/Permits - Field	-	12,000	0.00%
FEMA Permits	-	1,500	0.00%
Sub Total	235,590	1,144,600	20.58%
Equipment			
Equipment	-	-	Not Budgeted
Sub Total	-	-	
Consulting/Contracts/Memberships			
Engineering/Technical Consultants	9,254	375,000	2.47%
Security Patrol	7,800	80,000	9.75%
Temporary Admin	14,250	15,000	95.00%
Sub Total	31,304	470,000	6.66%
FMAP Expenditures			
LOI/SWIF (Consultants)	9,851	-	Not Budgeted
Equipment	-	381,337	0.00%
Operations & Maintenance (Field)	-	220,000	0.00%
Administrative	-	-	Not Budgeted
Sub Total	9,851	601,337	1.64%
Total A, O & M Expenses	937,627	4,762,162	19.69%
Capital Expenses			
Capital Office Upgrades	-	20,000	0.00%
Capital RE Acquisition	-	50,000	0.00%
Capital Office Facility Repair	-	30,000	0.00%
Document Management	-	-	Not Budgeted
Capital - District Server	-	-	Not Budgeted
Capital Facilities (including SCADA)	1,757	2,700,000	0.07%
Sub Total	1,757	2,800,000	0.06%
Total All Expenditures	939,384	7,562,162	12.42%



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 6.1

TITLE: Professional Services Agreement

SUBJECT: Review and Consider Authorizing the General Manager to Execute a Professional Services Agreement with Civil Engineering Solutions, INC for Natomas Basin Hydraulic Model Project.

EXECUTIVE SUMMARY:

Reclamation District No. 1000 (RD 1000; District) has identified the need to update its Hydraulic Model for planning, development processing and operational needs. Knowing other regional flood plain managers within the Natomas Basin had similar needs, the District reached out to the City of Sacramento (City) and County of Sacramento (County) and developed a Request for Qualifications (RFQ) to update/develop a Natomas Basin Hydraulic Model (Attachment No. 1). The RFQ was released by the District on July 31, 2020. On August 31, 2020, the District received two responses (proposals) to the RFQ.

The District, along with representative from the City and County, evaluated the proposals, and conducted interviews on September 18, 2020. After careful consideration, the selection committee recommended entering into a Professional Services Agreement (Attachment No. 2) with Civil Engineering Solutions, INC. (CESI).

RECOMMENDATION:

Staff recommends the Board review and consider authorizing the General Manager to execute a Professional Services Agreement with Civil Engineering Solutions, INC for Natomas Basin Hydraulic Model Project. Staff further recommends the Board direct the General Manager to negotiation, independent, cost share agreements with the City and County.

FINANCIAL IMPACT:

The total project cost is \$388,566. The District budgeted \$200,000 in Fiscal Year 2020/2021. CESI split the tasks of the project into three (3) phases, each approximately \$130K. The City and County have verbally agreed to fund an equal share of the project; however, it may take each agency a couple months to enter into an agreement with the District.

TITLE: PSA – CESI Natomas Basin Hydraulic Model Project

ATTACHMENTS:

1. Request for Qualifications – Natomas Basin Hydraulic Model Project – July 31, 2020
2. Professional Services Agreement – Civil Engineering Solutions, Inc.

STAFF RESPONSIBLE FOR REPORT:



Kevin L. King, General Manager

Date: 10/01/2020

**RECLAMATION
DISTRICT
NO. 1000**

**REQUEST
FOR
QUALIFICATIONS**

**Natomas Basin
Hydraulic Model**



JULY 31, 2020



Reclamation District No. 1000

**1633 Garden Highway
Sacramento, CA 95833**

(916) 922-1449

www.rd1000.org

Reclamation District No. 1000

Request for Qualifications – Natomas Basin Hydraulic Model

TRUSTEES

JEFF SMITH – BOARD PRESIDENT
CHRIS BURNS – BOARD VICE PRESIDENT
NICK AVDIS – TRUSTEE
JAG BAINS – TRUSTEE
DAVID CHRISTOPHEL – TRUSTEE
THOMAS M. GILBERT – TRUSTEE
ELENA LEE REEDER – TRUSTEE

OFFICERS

KEVIN L. KING – GENERAL MANAGER
JOLEEN GUTIERREZ – BOARD SECRETARY/TREASURER
DOWNEY BRAND, LLP - ATTORNEYS

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Introduction

General

Reclamation District No. 1000 (RD1000; District) was organized on April 8, 1911, by special act of the California Legislature, and is governed by the Reclamation District Act (California Water Code sections 50,000 et. seq.). The District's affairs are governed by a seven-member Board of Trustees. At the time of formation, the District embarked on the largest privately funded reclamation project in the United States. What was accomplished by the District in the twentieth century was truly remarkable. Today, the District's perimeter levee system consists of 42.6 miles of project levees encircling the District's 55,000 acres. The District also operates and maintains an interior drainage system consisting of 30 miles of main drainage canals, approximately 150 miles of drainage ditches and two interior pumping stations. The drainage system collects agricultural tailwater, stormwater and drainage and delivers them to the pumping plants for disposal in the adjacent rivers and creeks.

RD 1000 perimeter levees are undergoing the largest rehabilitation since their original construction over a hundred years ago. The \$1.7 billion Natomas Levee Improvement Project (NLIP) which began in 2007 and will continue through 2025, will provide the Natomas Basin with two hundred-year flood protection when complete.

As the District moves into its second century, its public safety mission remains its first commitment. The District's sole purpose and function is to monitor, operate, and maintain the levees and flood control infrastructure protecting the more than one hundred thousand people in the Natomas Basin, ensuring that the system is ready for the next one hundred years.

Mission Statement

Reclamation District No. 1000's mission is flood protection for the Natomas Basin providing for the public's health and safety by operating and maintaining the levees, and the District's canals and pump stations in a safe, efficient and responsible manner.

Responsibility Statement

On behalf of and in communication with the residents of the Natomas Basin, the District meets its flood protection Mission by operating and maintaining:

- The perimeter levee system to prevent exterior floodwaters from entering the Natomas Basin.
- The District's interior canal system to collect the stormwater runoff and agricultural drainage from within the Natomas Basin.
- The District's pump stations to safely discharge interior stormwater and agricultural drainage out of the Natomas Basin.

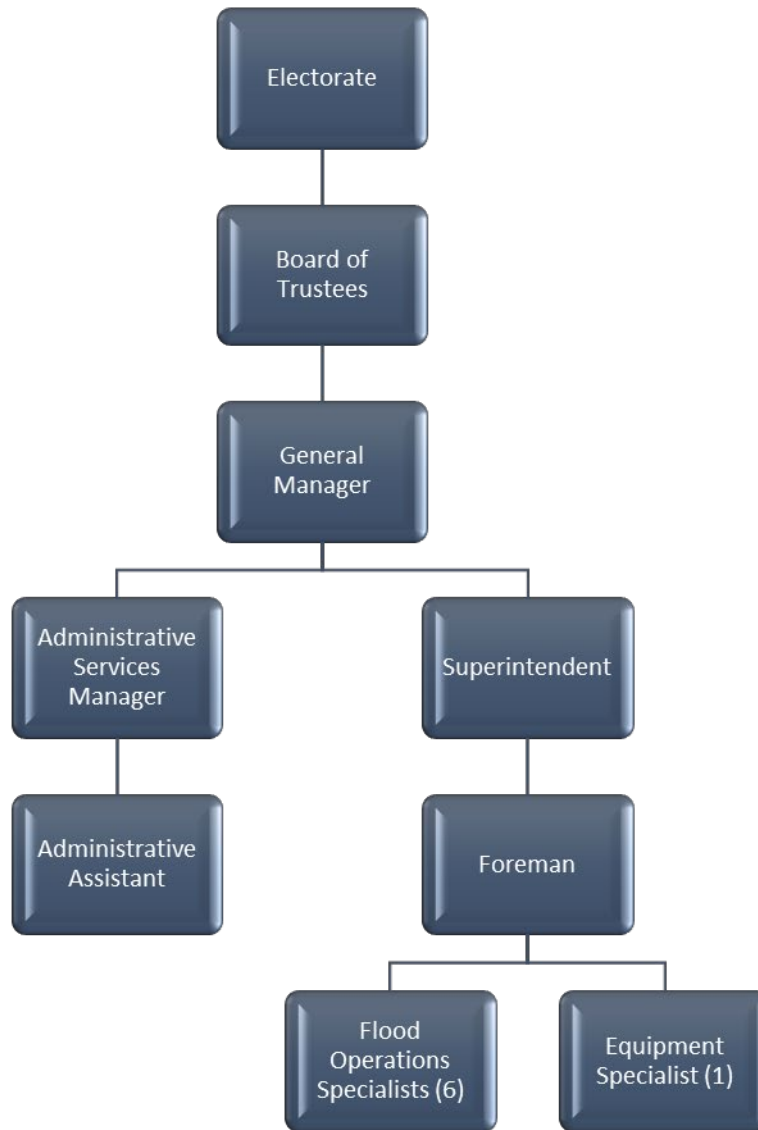
Vision Statement

In meeting its flood protection Mission, the District shall also:

- Carry out its responsibilities in a safe, professional, and accountable manner that adheres to the principles of good governance and transparency being sensitive to community interests and the environment.
- Continuously identify and implement operational, maintenance, structural and non-structural improvements that reduce flood risks in the Natomas Basin.
- Cooperate with private entities and public agencies (including the United States Army Corps of Engineers and the State Central Valley Flood Protection Board) with whom the District shares responsibilities, common goals, and objectives for flood protection in the Natomas Basin.
- Educate the public about the risks of flooding in the Natomas Basin and the District's efforts to minimize those risks.

Organizational Chart

RECLAMATION DISTRICT NO. 1000 ORGANIZATIONAL CHART



Request for Qualifications – Natomas Basin Hydraulic Model Project

Executive Summary

Reclamation District No. 1000 (RD 1000; District) is requesting qualification proposals for preparation of detailed hydrologic and hydraulic analyses, and floodplain mapping for the Natomas Basin (Natomas Basin Hydraulic Model), from interested and qualified water resources consultants with a minimum of 10 years' experience working with public agencies similar to Reclamation Districts, Water Districts and Irrigation Districts in the State of California. The Natomas Basin Hydraulic Model will be used as an operational tool for the District to evaluate the performance of the drainage system. The District expects the Natomas Basin Hydraulic Model to meet the requirements of the Federal Emergency Management Agency (FEMA), resulting in an approved Letter of Map Revision (LOMR).

In the early 1990's, the District's drainage system was modeled utilizing the Environmental Protection Agency (EPA) Stormwater Management Model (SWMM) software package. The model was calibrated to the 1986 event and was used to prepare a LOMR application in 1996. As part of the LOMR, a technical support data notebook (TSDN) was prepared to document as-built information and modeling assumptions. However due to the limitation of the EPA-SWMM modeling software, physical parameters were modified or exaggerated to develop model runs. To meet CA Senate Bill 5 requirements, in 2016 the EPA-SWMM model was converted to XP Solutions XP SWMM modeling software to develop 100-year and 200-year floodplains for urban areas. During the modeling conversion process, enhancements were made to optimize its performance of the model. However, the gross assumptions from the EPA SWMM model carried forward. In 2017, the County of Sacramento reviewed the XP SWMM model along with a consultant team and discovered input assumptions that are not suitable for floodplain management and land use planning.

The District proposes to select one qualified consultant to develop the Natomas Basin Hydraulic Model. The District reserves the right to reject any qualification proposals and full discretion as to the award or refusal to award any contract.

Description of Services / Scope of Work

The selected consultant will provide data and materials to support a LOMR request for the Natomas Basin internal floodplain as part of the exterior levee certification project. The study area encompasses the boundary of RD 1000 which includes portions of the County of Sacramento, City of Sacramento, and County of Sutter. During large, low-frequency storm events, additional flows enter the Natomas Basin through an opening in the levee at Sankey Rd. located at the northeast portion of the basin. All drainage exiting the basin is pumped into neighboring rivers and creeks.

A hydrology model shall be developed utilizing the City / County of Sacramento Hydrology Standards. The hydrologic characteristics in the Natomas Basin are unique to the region, with relatively low infiltration rates and extremely flat slopes. The consultant shall review the previous TSDN and XP SWMM model to capture assumptions used to address these issues and develop a strategy using the City /County Standards to calibrate the hydrology model. A model calibration effort shall be conducted to establish these assumptions. A system wide model for the Natomas Basin shall be developed for the 10-, 25-, 50-, 100-, 200-, and 500-year storms. The District will provide inflow hydrographs into the Natomas Basin from Sankey Road.

The consultant team shall propose to develop the (1D/2D) hydraulic model on either the United States Army Corps of Engineers HEC-RAS or XP SWMM software packages. Topographic data collected by the State of California under the Central Valley Flood Evaluation and Delineation (CVFED) program shall be utilized to generate the geometric information for the hydraulic model. As-built and other supporting information obtained from the District and other sources shall be used to augment the model. Additional survey may be required to supplement any missing data. The hydraulic model shall be calibrated to ensure reliable results. The 10-, 25-, 50-, 100-, 200-, and 500-year storms shall be evaluated.

The hydraulic model shall consider FEMA Levee Analysis and Mapping Process (LAMP) for embankments that do not meet 44 CFR 65.10 requirements. Consultant will submit the model to the City of Sacramento's FEMA MT-2 team for review and comment as part of an interior levee certification package and the Sacramento Area Flood Control Agency as part of an exterior levee certification package. Consultant will work with the District, the City of Sacramento and the City of Sacramento's consultants to resolve any comments from the MT-2 review. Consultant should anticipate coordinating with the City of Sacramento's consultant team on data needs for interior levee certification. These data needs include, but aren't limited to hydraulic grade lines, water surface profiles, progress updates, and coordination. Consultant should anticipate coordinating with the Sacramento Area Flood Control Agency and the District on data needs for the exterior levee certification.

The consultant team shall prepare materials to update the FEMA Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRM) for the Natomas Basin. The selected consultant should be familiar with the FEMA MT-2 Form application instructions which provide clear details of the documents needed to support the request for LOMR. The mapping for the annotated Work Maps shall be prepared in geographic information system (GIS) format suitable for FEMA's review. An updated TSDN shall be prepared to support the model, mapping, and levee certification.

All Standards relevant to this project are based on the latest version of FEMA Guidelines for Flood Risk Analysis and Mapping. The consultant team shall prepare all products to these standards and may utilize FEMA Technical Reference to assist developing project materials.

Qualification Proposal Deadline

All qualification proposals must be received by the District's office at 1633 Garden Highway, Sacramento, CA 95833, or via electronic submittal to kking@rd1000.org by **2:00 P.M. on August 31, 2020**. Submittals received after said time will not be considered.

Questions

Contact General Manager Kevin King at (916) 922-1449 or kking@rd1000.org with any questions regarding this Request for Qualifications.

Section A – MINIMUM QUALIFICATIONS

Minimum Qualifications – Natomas Basin Hydraulic Model Project

1. A description of the organization’s professional qualifications. Provide a description of your firm’s prior experience and qualifications in engineering, planning and environmental analysis. Also, please reference the experience of the firm in preparing hydrology and hydraulic models.
2. A statement indicating the number of employees, by level, which will perform the project and resumes for each employee who will be assigned to the District’s project, including but not limited to educational/professional credentials and previous relevant experience.
3. A listing of current and prior clients, including the types of services performed and client contact information so they may serve as references.
4. Indicate availability to proceed with work on or about September 21, 2020, and include a tentative schedule for completing the project.
5. A written work plan outlining how the consultant proposes to perform the project and any information pertaining to any area which is customarily reviewed during such a project which has not been mentioned in the “Scope of Work” section of this solicitation.

Section B – GENERAL TERMS AND CONDITIONS & SUBMITTAL REQUIREMENTS

Requirement to Meet All Provisions

Each consultant submitting qualifications (Consultant) shall meet all the terms, and conditions of the Request for Qualifications (RFQ). By virtue of its submittal, the Consultant acknowledges agreement with and acceptance of all provisions of the RFQ package.

Qualification Proposals

Each qualification proposal must be made on the form(s) provided and accompanied by any other required submittals or supplemental materials. Qualification proposals shall be enclosed in an envelope that shall be sealed and addressed to Reclamation District No. 1000, 1633 Garden Highway, Sacramento CA, 95833. Each qualification proposal shall include one electronic copy of the material in *Adobe Acrobat* format on Universal Serial Bus (USB) Flash Drive. In order to guard against premature opening, the qualification proposal should be clearly labeled with the title, name of Consultant, and date and time of opening. Alternatively, the proposal may be submitted electronically in *Adobe Acrobat* format to kking@rd1000.org using *Adobe Acrobat* share function. No FAX submittals will be accepted.

To guard against premature opening of hard copy submittals, each qualification proposal shall be submitted to the District in a sealed envelope plainly marked with the following:

- RFQ title (“Request for Qualifications – Natomas Basin Hydraulic Model”)
- Consultant name
- Time and date of the opening (“August 31, 2020 @ 2:00 pm”)

To guard against premature opening of electronic submittals, the proposal shall be submitted using *Adobe Acrobat* share function, which tracks file access, to kking@rd1000.org.

Insurance Certificate

Each qualification proposal must include a certificate of insurance showing:

- The insurance carrier and its A.M. Best rating.
- Scope of coverage and limits.
- Deductibles and self-insured retention.

The purpose of this submittal is to generally assess the adequacy of the Consultants insurance coverage during submittal evaluation; as discussed below, endorsements are not required until contract award. The District’s insurance requirements are detailed in Section F.

Submittal of References

Each proposer shall submit a statement of qualifications and references on the form provided in Section E of this RFQ.

Statement of Contract Disqualifications

Each proposer shall submit a statement regarding any past government disqualifications on the form provided in Section E of this RFQ.

Qualification Proposal Withdrawal and Opening

A Consultant may withdraw its qualification proposal, without prejudice prior to the time specified for the opening, by submitting a written request to the District General Manager for its withdrawal, in which event the submittal will be returned to the Consultant unopened. No submittal received after the time specified or at any place other than that stated in the RFQ will be considered. The opening of proposals in response to this RFQ is not subject to attendance by the general public. This restriction is necessitated by the fact that the contract award is subject to negotiations, and it would be unfair for competing Consultants to know the prices quoted by one another.

Communications

All timely requests for information submitted in writing will receive a written response from the District. Telephone communications with District staff are not encouraged but will be permitted. However, any such oral communication shall not be binding on the District.

Qualification Proposal Retention and Award

The District reserves the right to retain all qualification proposals for a period of 60 days for examination and comparison. The District also reserves the right to waive non-substantial irregularities in any qualification proposal, to reject any or all qualification proposals, to reject or delete one part of a qualification proposal and accept the other, except to the extent that proposals are qualified by specific limitations.

Competency and Responsibility of Firm

The District reserves full discretion to determine the competence and responsibility, professionally and/or financially, of Consultants. Consultants will provide, in a timely manner, all information that the District deems necessary to make such a decision.

Contract Requirement

The Consultant to whom award is made (if any) shall execute a written contract with the District within ten (10) calendar days after notice of the award has been sent. The contract shall be made in the form adopted by the District and incorporated in this RFQ.

Insurance Requirements

The Consultant shall provide proof of insurance in the form, coverages and amounts specified in Section F within 10 (ten) calendar days after notice of contract award as a precondition to contract execution.

Failure to Accept Contract

The following will occur if the Consultant to whom the award is made (if any) fails to enter into the contract: the award will be annulled; and an award may be made to the next highest ranked Consultant with whom a responsible compensation is negotiated, who shall fulfill every stipulation as if it were the party to whom the first award was made.

Section C – QUALIFICATION PROPOSAL CONTENT AND SELECTION PROCESS

Qualification Proposal Content

1. Submittal Forms

- a. Acknowledgement
- b. Certificate of Insurance
- c. References
- d. Statement of Past Disqualifications

2. Qualifications

- a. A detailed scope of services that reflects the Consultant’s understanding of the District’s requirements.
- b. Written responses to all the subject areas set forth in the “Minimum Qualifications” section, demonstrating the Consultant’s experience and expertise.
- c. Personnel Qualifications: The Proposal shall identify the individual who will be primarily responsible for providing the services required for the Natomas Basin Hydraulic Model Project. Please include the qualifications, training, and certifications of lead individual, and all other staff who will perform the services outlined herein.
- d. List of Clients: A list of major public agency clients for each the Consultant has provided similar services for during the last five (5) years, with contact information (i.e., name of the clients, addresses, phone numbers, and contact person). The District reserves the right to contact any of the references.
- e. Additional Consultant Information: The Proposal shall include the following: (a) Its scope of practice (national, regional, statewide, or local), and founding date; (b) Number of Consultant’s employees; (c) Location of primary office; (d) Number of Consultants clients.

3. Fee Schedule:

- a. The cost proposal, must include a not-to-exceed cost estimate adequate to cover the scope of the project. The cost proposal should be itemized by task and include a list of charge out rates related to the names of key personnel to be used by the Consultant during this project. Include time, materials, travel, and other expenses, which may be associated with the duties and obligations under this RFQ. All costs must be identified. A requested payment schedule should accompany the work schedule.

4. Qualification Proposal Length and Copies

- a. Qualification proposals should be the minimum length to provide the required information. Proposals shall not exceed 60 pages in length, including required forms.
- b. Five (5) copies of the qualification proposal must be submitted, this requirement is waived if submitting electronically.
- c. One PDF format electronic copy must be submitted on a USB Flash Drive, this requirement is waived if submitting electronically.

Qualification Proposal Evaluation and Consultant Selection

Qualification proposals will be evaluated by a review committee and contract award process as follows:

1. Written Proposal Review/Finalist Candidate Selection

Evaluation of the qualification proposals will be based on the following:

- a. The consultant's experience, stability and capability to complete all aspects of the work.
- b. Experience and qualifications of personnel assigned to this project and their availability.
- c. References from clients with similar projects.
- d. The availability of the consultant during the project period.
- e. The consultant's experience with the requirements of FEMA.
- f. Price proposal (including expenses) that assumes up to three in-person meetings with the District Staff and one meeting with the Board.

Qualification proposals will be reviewed by a selection committee and ranked in accordance with the above criteria. Where one qualification proposal is rated consistently higher than others, the consultant may be selected as the top ranked consultant for purposes of contract negotiation.

Alternatively, a group of finalist candidates (generally the top 3 to 5 five proposers) may be selected for follow-up interviews and presentations, or requests for additional clarifying information, before the final top ranked consultants for contract negotiation are determined.

2. Qualification Proposal Review and Award Schedule

The following is an outline of the anticipated schedule for qualification proposal review and contract award:

Issue RFQ: July 31, 2020

Last Day for Questions: August 21, 2020

Receive qualification proposals: August 31, 2020

Selection Committee: September 1 – September 10, 2020

- The Selection Committee will conduct a Level I review that will consist of evaluating the proposals for the purpose of establishing the most qualified consultants. The Selection Committee may decide on a recommendation for awarding the contract upon completion of the Level I review.
- If needed, the Selection Committee will conduct a Level II review. The Level II review will be conducted to select the finalist from a small pool of candidates. This level may include a request for a presentation from the finalists, proposal fact finding and negotiation of contract terms and conditions.

Complete evaluation: September 10, 2020

Award contract: September 11, 2020

Section D – FORM OF AGREEMENT

Agreement

THIS AGREEMENT is made and entered into in the City of Sacramento on [day, date, year] by and between RECLAMATION DISTRICT NO. 1000, a public entity of the State of California, hereinafter referred to as District, and [CONSULTANT'S NAME IN CAPITAL LETTERS], hereinafter referred to as Consultant.

WITNESSETH

WHEREAS, on July 31, 2020, the District requested qualification proposals for Natomas Basin Hydraulic Model Project.

WHEREAS, pursuant to said request, Consultant submitted a proposal that was accepted by District for said services.

NOW THEREFORE, in consideration of their mutual promises, obligations and covenants hereinafter contained, the parties hereto agree as follows:

- 1. Term.** The term of this Agreement shall be from the date this Agreement is made and entered, as first written above until Project Completion date _____.
- 2. Termination.** If, during the term of the contract, the District determines that the Consultant is not faithfully abiding by any term or condition contained herein, the District may notify the Consultant in writing of such defect or failure to perform. This notice must give the Consultant a 10 (ten) calendar day notice of time thereafter in which to perform said work or cure the deficiency.

If the Consultant has not performed the work or cured the deficiency within the ten days specified in the notice, such shall constitute a breach of the contract and the District may terminate the contract immediately by written notice to the Consultant to said effect. Thereafter, neither party shall have any further duties, obligations, responsibilities, or rights under the contract except, however, any and all obligations of the Consultant's surety shall remain in full force and effect, and shall not be extinguished, reduced, or in any manner waived by the termination thereof.

In said event, the Consultant shall be entitled to the reasonable value of its services performed from the beginning date in which the breach occurs up to the day it received the District's Notice of Termination, minus any offset from such payment representing the District's damages from such breach. "Reasonable value" includes fees or charges for goods or services as of the last milestone or task satisfactorily delivered or completed by the Consultant as may be set forth in

the Agreement payment schedule; compensation for any other work, services or goods performed or provided by the Consultant shall be based solely on the District's assessment of the value of the work-in-progress in completing the overall work scope.

The District reserves the right to delay any such payment until completion or confirmed abandonment of the project, as may be determined in the District's sole discretion, so as to permit a full and complete accounting of costs. In no event, however, shall the Consultant be entitled to receive in excess of the compensation quoted in its proposal.

The District also reserves the right to terminate the contract for convenience, providing a 30 (thirty) calendar day notice, at any time upon a determination by the General Manager that termination of the contract is in the best interest of the District. In this case the Consultant will be paid compensation due and payable to the date of termination.

- 3. Ability to Perform.** The Consultant warrants that it possesses, or has arranged through subcontracts, all capital and other equipment, labor, materials, and licenses necessary to carry out and complete the work hereunder in compliance with any and all applicable federal, state, county, city, and special district laws, ordinances, and regulations.
- 4. Sub-contract Provisions.** No portion of the work pertinent to this contract shall be subcontracted without written authorization by the District, except that which is expressly identified in the Consultant's qualification proposal. Any substitution of sub-consultants must be approved in writing by the District. For any sub-contract for services in excess of \$25,000, the subcontract shall contain all provisions of this agreement.
- 5. Contract Assignment.** The Consultant shall not assign, transfer, convey or otherwise dispose of the contract, or its right, title or interest, or its power to execute such a contract to any individual or business entity of any kind without the previous written consent of the District.
- 6. Inspection.** The Consultant shall furnish District with every reasonable opportunity for District to ascertain that the services of the Consultant are being performed in accordance with the requirements and intentions of this contract. All work done and all materials furnished, if any, shall be subject to the District's inspection and approval. The inspection of such work shall not relieve Consultant of any of its obligations to fulfill its contract requirements.
- 7. Record Retention and Audit.** For the purpose of determining compliance with various laws and regulations as well as performance of the contract, the Consultant and sub-consultants shall maintain all books, documents, papers, accounting records and other evidence pertaining to the performance of the contract, including but not limited to the cost of administering the contract.

Materials shall be made available at their respective offices at all reasonable times during the contract period and for three years from the date of final payment under the contract. Authorized representatives of the District shall have the option of inspecting and/or auditing all records.

- 8. Conflict of Interest.** The Consultant shall disclose any financial, business, or other relationship with the District that may have an impact upon the outcome of this contract, or any ensuing District project. The Consultant shall also list current clients who may have a financial interest in the outcome of this contract, or any ensuing District project which will follow. The Consultant staff shall provide a Conflict of Interest Statement where determined necessary by the District.

The Consultant covenants that it presently has no interest, and shall not acquire any interest—direct, indirect or otherwise—that would conflict in any manner or degree with the performance of the work hereunder. The Consultant further covenants that, in the performance of this work, no sub-consultant or person having such an interest shall be employed. The Consultant certifies that no one who has or will have any financial interest in performing this work is an officer or employee of the District.

- 9. Rebates, Kickbacks or Other Unlawful Consideration.** The Consultant warrants that this contract was not obtained or secured through rebates, kickbacks or other unlawful consideration, either promised or paid to any District employee. For breach or violation of the warranty, the District shall have the right in its discretion; to terminate the contract without liability; to pay only for the value of the work actually performed; to deduct from the contract price; or otherwise recover the full amount of such rebate, kickback or other unlawful consideration.

- 10. Covenant Against Contingent Fees.** The Consultant warrants by execution of this contract that no person or selling agency has been employed, or retained, to solicit or secure this contract upon an agreement or understanding, for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Consultant for the purpose of securing business. For breach or violation of this warranty, the District has the right to annul this contract without liability; pay only for the value of the work actually performed, or in its discretion, to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

- 11. Compliance with Laws and Wage Rates.** The Consultant shall keep itself fully informed of and shall observe and comply with all applicable state and federal laws and county and City of Sacramento ordinances, regulations and adopted codes during its performance of the work.

12. Payment of Taxes. The contract prices shall include full compensation for all taxes that the Consultant is required to pay.

13. Immigration Act of 1986. The Consultant warrants on behalf of itself and all sub-consultants engaged for the performance of this work that only persons authorized to work in the United States pursuant to the Immigration Reform and Control Act of 1986 and other applicable laws shall be employed in the performance of the work hereunder.

14. Consultant Non-Discrimination. In the award of subcontracts or in performance of this work, the Consultant agrees that it will not engage in, nor permit such sub-consultants as it may employ, to engage in discrimination in employment of persons on any basis prohibited by State or Federal law.

15. Indemnification for Professional Liability. To the fullest extent permitted by law, the Consultant shall indemnify, protect, defend and hold harmless the District and any and all of its officials, employees and agents (“Indemnified Parties”) from and against any and all losses, liabilities, damages, costs and expenses, including attorney’s fees and cost which arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.

16. Non-Exclusive Contract. The District reserves the right to contract for the services listed in this RFQ from other consultants during the contract term.

17. Release of Reports and Information. Any reports, information, data, or other material given to, prepared by or assembled by the Consultant as part of the work or services under these specifications shall be the property of District and shall not be made available to any individual or organization by the Consultant without the prior written approval of the District.

The Consultant shall not issue any news release or public relations item of any nature, whatsoever, regarding work performed or to be performed under this contract without prior review of the contents thereof by the District and receipt of the District’s written permission.

18. Consultant Invoices. The Consultant shall deliver a monthly invoice to the District, itemized by task. Invoice must include a breakdown of hours billed and miscellaneous charges and any sub-consultant invoices, similarly broken down, as supporting detail.

19. Payment. For providing services as specified in this Agreement, Consultant shall be reimbursed for hours worked at the hourly rates attached to this agreement. Hourly rates include direct salary costs, employee benefits, overhead and fee. In addition, the Consultant shall be reimbursed for direct costs other than salary and vehicle cost that have been identified and are attached to this

agreement. The Consultant's personnel shall be reimbursed for per diem expenses at a rate not to exceed that currently authorized for State employees under State Department of Personnel Administration rules.

20. Payment Terms. The District's payment terms are 30 days from the receipt and approval by the District of an original invoice and acceptance by the District of the services provided by the Consultant (Net 30).

21. Resolution of Disputes. Any dispute, other than audit, concerning a question of fact arising under this contract that is not disposed of by agreement shall be decided by a committee consisting of the District's General Manager and the District's Administrative Services Manager, who may consider written or verbal information submitted by the Consultant. Not later than thirty (30) days after completion of all deliverables necessary to complete the project, the Consultant may request review by the District Board of Trustees of unresolved claims or disputes.

Any dispute concerning a question of fact arising under an audit of this contract that is not disposed of by agreement, shall be reviewed by the District's Administrative Services Manager. Not later than thirty (30) days after issuance of the final audit report, the Consultant may request a review by the District's Administrative Services Manager of unresolved audit issues. The request for review must be submitted in writing.

Neither the pendency of a dispute, nor its consideration by the District will excuse the Consultant from full and timely performance in accordance with the terms of this contract.

22. Agreement Parties.

District: Kevin L. King
General Manager
Reclamation District No. 1000
1633 Garden Highway
Sacramento, CA 95833

Consultant:

All written notices to the parties hereto shall be sent by United States mail, postage prepaid by registered or certified mail addressed as shown above.

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- 23. Incorporation by Reference.** District Request for Qualifications – Natomas Basin Hydraulic Model Project and Consultant's qualification proposal, are hereby incorporated in and made a part of this Agreement.
- 24. Amendments.** Any amendment, modification or variation from the terms of this Agreement shall be in writing and shall be effective only upon approval by the District General Manager.
- 25. Working Out of Scope.** If, at any time during the project, the Consultant is directed to do work by persons other than the District General Manager and the firm believes that the work is outside of the scope of the original contract, the Consultant shall inform the General Manager immediately. If the General Manager and Consultant both agree that the work is outside of the project scope and is necessary to the successful completion of the task, then a fee will be established for such work based on Consultant's hourly billing rates or a lump sum price agreed upon between the District and the Consultant. Any extra work performed by Consultant without prior written approval from the District General Manager shall be at Consultant's own expense.
- 26. Complete Agreement.** This written agreement, including all writings specifically incorporated herein by reference, shall constitute the complete agreement between the parties hereto. No oral agreement, understanding or representation not reduced to writing and specifically incorporated herein shall be of any force or effect, nor shall any such oral agreement, understanding or representation be binding upon the parties hereto. For and in consideration of the payments and agreements hereinbefore mentioned to be made and performed by District, Consultant agrees with District to do everything required by this Agreement.
- 27. Authority to Execute Agreement.** Both District and Consultant do covenant that each individual executing this agreement on behalf of each party is a person duly authorized and empowered to execute Agreements for such party.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed the day and year first above written.

RECLAMATION DISTRICT NO. 1000:

CONSULTANT:

Name of Consultant By:

Kevin L. King, General Manager

Name of Principal, Its: Principal

APPROVED AS TO FORM:

Rebecca Smith, District Counsel

Section E – SUBMITTAL FORMS ACKNOWLEDGEMENT

The undersigned declares that she or he:

- Has carefully examined the Request for Qualifications – Natomas Basin Hydraulic Model Project
- Is thoroughly familiar with its content
- Is authorized to represent the proposing Consultant; and
- Agrees to perform the work as set forth in this qualification proposal.

Consultant Name and Address:		
Contact Name:		
Email:	Fax:	Phone:

Signature of Authorized Representative:	Date:
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Insurance Certificate

_____ Insurance Company's A.M. Best Rating

Certificate of insurance attached

Statement of Past Contract Disqualifications

The Consultant shall state whether it or any of its officers or employees who have a proprietary interest in it, has ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of the violation of law, a safety regulation, or for any other reason, including but not limited to financial difficulties, project delays, or disputes regarding work or product quality, and if so to explain the circumstances.

Do you have any disqualification as described in the above paragraph to declare?

Yes

No

If yes, explain the circumstances.

Executed on _____ at _____ under penalty of perjury of the laws of the State of California, that the foregoing is true and correct.

Signature of Authorized Consultant Representative

References

Number of years engaged in providing the services included within the scope of the specifications under the present business name: _

Describe fully the last three (3) contracts performed by Consultant that demonstrate the ability to provide the services included with the scope of the RFQ. Attach additional pages if required. The District reserves the right to contact each of the references listed for additional information regarding your qualifications.

Reference No. 1

Customer Name	
Contact Individual	
Telephone & Email	
Street Address	
City, State, Zip Code	
Date of Services	
Contract Amount	
Description of Services	
Project Outcome	

Reference No. 2

Customer Name	
Contact Individual	
Telephone & Email	
Street Address	
City, State, Zip Code	
Date of Services	
Contract Amount	
Description of Services	
Project Outcome	

Reference No. 3

Customer Name	
Contact Individual	
Telephone & Email	
Street Address	
City, State, Zip Code	
Date of Services	
Contract Amount	
Description of Services	
Project Outcome	

Section F – INSURANCE REQUIREMENTS: Consultant Services

The Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Consultants, its agents, representatives, employees or sub-consultants.

Minimum Scope of Insurance. Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence form CG 20 10 Prior to 1993 or CG 20 10 07 04 with CG 20 37 10 01 or the exact equivalent as determined by the District).
2. Insurance Services Office form number CA 0001 (Ed. 1/87) covering Automobile Liability, code 1 (any auto).
3. Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.
4. Errors and Omissions Liability insurance as appropriate to the consultant's profession.

Minimum Limits of Insurance. Consultant shall maintain limits no less than:

1. General Liability: \$1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability: \$1,000,000 per accident for bodily injury and property damage.
3. Employer's Liability: \$1,000,000 per accident for bodily injury or disease.
4. Errors and Omissions Liability: \$1,000,000 per occurrence.

Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the District. At the option of the District, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the District, its officers, officials, employees and volunteers; or the Consultant shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Other Insurance Provisions. The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The District, its officers, officials, employees, agents and volunteers are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Consultant; products and completed operations of the Consultant; premises owned, occupied or used by the Consultant; or automobiles owned, leased, hired or borrowed by the Consultant. The coverage shall contain no special limitations on the scope of protection afforded to the District, its officers, official, employees, agents or volunteers.

-
2. For any claims related to this project, the Consultant's insurance coverage shall be primary insurance as respects the District, its officers, officials, employees, agents and volunteers. Any insurance or self-insurance maintained by the District, its officers, officials, employees, agents or volunteers shall be excess of the Consultant's insurance and shall not contribute with it.
 3. The Consultant's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
 4. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the District. The Consultant agrees to notify the District in the event that the policy is suspended, voided or reduced in coverage or limits. A minimum of thirty (30) days prior written notice by certified mail, return receipt requested, will be provided.
 5. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII.

Verification of Coverage. Consultant shall furnish the District with a certificate of insurance showing maintenance of the required insurance coverage. Original endorsements effecting general liability and automobile liability coverage required by this clause must also be provided. The endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements are to be received and approved by the District before work commences.

Name of Project: Natomas Basin Hydraulic Model Project

RECLAMATION DISTRICT NO. 1000

AGREEMENT FOR PROFESSIONAL SERVICES

THIS AGREEMENT is made and entered into in the City of Sacramento on _____ by and between RECLAMATION DISTRICT NO. 1000, a public entity of the State of California, hereinafter referred to as District, and CIVIL ENGINEERING SOLUTIONS, INC, hereinafter referred to as Consultant.

WITNESSETH

WHEREAS, on July 31, 2020, the District requested qualification proposals for Natomas Basin Hydraulic Model Project.

WHEREAS, pursuant to said request, Consultant submitted a proposal that was accepted by District for said services.

NOW THEREFORE, in consideration of their mutual promises, obligations and covenants hereinafter contained, the parties hereto agree as follows:

- 1. Scope of Services.** The District hereby engages the Consultant, and the Consultant agrees to perform the services described in Exhibit A (the "Services"), in accordance with the terms of this Agreement. In case of conflict between this Agreement and any Exhibit hereto, this Agreement shall control over any Exhibit.
- 2. Compensation.** Compensation for the Services shall be as follows: Lump-sum fixed price of \$388,566 which includes labor, materials, equipment and supervision necessary to perform the work as described in Exhibit A. Additional services requested at the discretion of District for work not contemplated by this Agreement shall be billed on a time and materials basis per the rate schedule.
- 3. Term.** The term of this Agreement shall be from the date this Agreement is made and entered, as first written above until Project Completion date

_____.

4. Termination. If, during the term of the contract, the District determines that the Consultant is not faithfully abiding by any term or condition contained herein, the District may notify the Consultant in writing of such defect or failure to perform. This notice must give the Consultant a 10 (ten) calendar day notice of time thereafter in which to perform said work or cure the deficiency.

If the Consultant has not performed the work or cured the deficiency within the ten days specified in the notice, such shall constitute a breach of the contract and the District may terminate the contract immediately by written notice to the Consultant to said effect. Thereafter, neither party shall have any further duties, obligations, responsibilities, or rights under the contract except, however, any and all obligations of the Consultant's surety shall remain in full force and effect, and shall not be extinguished, reduced, or in any manner waived by the termination thereof.

In said event, the Consultant shall be entitled to the reasonable value of its services performed from the beginning date in which the breach occurs up to the day it received the District's Notice of Termination, minus any offset from such payment representing the District's damages from such breach. "Reasonable value" includes fees or charges for goods or services as of the last milestone or task satisfactorily delivered or completed by the Consultant as may be set forth in the Agreement payment schedule; compensation for any other work, services or goods performed or provided by the Consultant shall be based solely on the District's assessment of the value of the work-in-progress in completing the overall work scope.

The District reserves the right to delay any such payment until completion or confirmed abandonment of the project, as may be determined in the District's sole discretion, so as to permit a full and complete accounting of costs. In no event, however, shall the Consultant be entitled to receive in excess of the compensation quoted in its proposal.

The District also reserves the right to terminate the contract for convenience, providing a 30 (thirty) calendar day notice, at any time upon a determination by the General Manager that termination of the contract is in the best interest of the District. In this case the Consultant will be paid compensation due and payable to the date of termination.

5. Ability to Perform. The Consultant warrants that it possesses, or has arranged through subcontracts, all capital and other equipment, labor, materials, and licenses necessary to carry out and complete the work hereunder in compliance with any and all applicable federal, state, county, city, and special district laws, ordinances, and regulations.

- 6. Sub-contract Provisions.** No portion of the work pertinent to this contract shall be subcontracted without written authorization by the District, except that which is expressly identified in the Consultant’s qualification proposal. Any substitution of sub-consultants must be approved in writing by the District. For any sub-contract for services in excess of \$25,000, the subcontract shall contain all provisions of this agreement.
- 7. Contract Assignment.** The Consultant shall not assign, transfer, convey or otherwise dispose of the contract, or its right, title or interest, or its power to execute such a contract to any individual or business entity of any kind without the previous written consent of the District.
- 8. Inspection.** The Consultant shall furnish District with every reasonable opportunity for District to ascertain that the services of the Consultant are being performed in accordance with the requirements and intentions of this contract. All work done and all materials furnished, if any, shall be subject to the District’s inspection and approval. The inspection of such work shall not relieve Consultant of any of its obligations to fulfill its contract requirements.
- 9. Record Retention and Audit.** For the purpose of determining compliance with various laws and regulations as well as performance of the contract, the Consultant and sub-consultants shall maintain all books, documents, papers, accounting records and other evidence pertaining to the performance of the contract, including but not limited to the cost of administering the contract. Materials shall be made available at their respective offices at all reasonable times during the contract period and for three years from the date of final payment under the contract. Authorized representatives of the District shall have the option of inspecting and/or auditing all records.
- 10. Conflict of Interest.** The Consultant shall disclose any financial, business, or other relationship with the District that may have an impact upon the outcome of this contract, or any ensuing District project. The Consultant shall also list current clients who may have a financial interest in the outcome of this contract, or any ensuing District project which will follow. The Consultant staff shall provide a Conflict of Interest Statement where determined necessary by the District.

The Consultant covenants that it presently has no interest, and shall not acquire any interest— direct, indirect or otherwise—that would conflict in any manner or degree with the performance of the work hereunder. The Consultant further covenants that, in the

performance of this work, no sub-consultant or person having such an interest shall be employed. The Consultant certifies that no one who has or will have any financial interest in performing this work is an officer or employee of the District.

- 11. Rebates, Kickbacks or Other Unlawful Consideration.** The Consultant warrants that this contract was not obtained or secured through rebates, kickbacks or other unlawful consideration, either promised or paid to any District employee. For breach or violation of the warranty, the District shall have the right in its discretion; to terminate the contract without liability; to pay only for the value of the work actually performed; to deduct from the contract price; or otherwise recover the full amount of such rebate, kickback or other unlawful consideration.
- 12. Covenant Against Contingent Fees.** The Consultant warrants by execution of this contract that no person or selling agency has been employed, or retained, to solicit or secure this contract upon an agreement or understanding, for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Consultant for the purpose of securing business. For breach or violation of this warranty, the District has the right to annul this contract without liability; pay only for the value of the work actually performed, or in its discretion, to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.
- 13. Compliance with Laws and Wage Rates.** The Consultant shall keep itself fully informed of and shall observe and comply with all applicable state and federal laws and county and City of Sacramento ordinances, regulations and adopted codes during its performance of the work.
- 14. Payment of Taxes.** The contract prices shall include full compensation for all taxes that the Consultant is required to pay.
- 15. Immigration Act of 1986.** The Consultant warrants on behalf of itself and all sub-consultants engaged for the performance of this work that only persons authorized to work in the United States pursuant to the Immigration Reform and Control Act of 1986 and other applicable laws shall be employed in the performance of the work hereunder.
- 16. Consultant Non-Discrimination.** In the award of subcontracts or in performance of this work, the Consultant agrees that it will not engage in, nor permit such sub-consultants as

it may employ, to engage in discrimination in employment of persons on any basis prohibited by State or Federal law.

17. Indemnification for Professional Liability. To the fullest extent permitted by law, the Consultant shall indemnify, protect, defend and hold harmless the District and any and all of its officials, employees and agents (“Indemnified Parties”) from and against any and all losses, liabilities, damages, costs and expenses, including attorney’s fees and cost which arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.

18. Non-Exclusive Contract. The District reserves the right to contract for the services listed in this RFQ from other consultants during the contract term.

19. Release of Reports and Information. Any reports, information, data, or other material given to, prepared by or assembled by the Consultant as part of the work or services under these specifications shall be the property of District and shall not be made available to any individual or organization by the Consultant without the prior written approval of the District.

The Consultant shall not issue any news release or public relations item of any nature, whatsoever, regarding work performed or to be performed under this contract without prior review of the contents thereof by the District and receipt of the District’s written permission.

20. Consultant Invoices. The Consultant shall deliver a monthly invoice to the District, itemized by task. Invoice must include a breakdown of hours billed and miscellaneous charges and any sub-consultant invoices, similarly broken down, as supporting detail.

21. Payment. For providing services as specified in this Agreement, Consultant shall be reimbursed for hours worked at the hourly rates attached to this agreement. Hourly rates include direct salary costs, employee benefits, overhead and fee. In addition, the Consultant shall be reimbursed for direct costs other than salary and vehicle cost that have been identified and are attached to this agreement. The Consultant’s personnel shall be reimbursed for per diem expenses at a rate not to exceed that currently authorized for State employees under State Department of Personnel Administration rules.

22. Payment Terms. The District's payment terms are 30 days from the receipt and approval by the District of an original invoice and acceptance by the District of the services provided by the Consultant (Net 30).

23. Resolution of Disputes. Any dispute, other than audit, concerning a question of fact arising under this contract that is not disposed of by agreement shall be decided by a committee consisting of the District's General Manager and the District's Administrative Services Manager, who may consider written or verbal information submitted by the Consultant. Not later than thirty (30) days after completion of all deliverables necessary to complete the project, the Consultant may request review by the District Board of Trustees of unresolved claims or disputes.

Any dispute concerning a question of fact arising under an audit of this contract that is not disposed of by agreement, shall be reviewed by the District's Administrative Services Manager. Not later than thirty (30) days after issuance of the final audit report, the Consultant may request a review by the District's Administrative Services Manager of unresolved audit issues. The request for review must be submitted in writing.

Neither the pendency of a dispute, nor its consideration by the District will excuse the Consultant from full and timely performance in accordance with the terms of this contract.

24. Agreement Parties.

District:

Kevin L. King
General Manager
Reclamation District No. 1000
1633 Garden Highway
Sacramento, CA 95833

Consultant:

Thomas S. Plumber, P.E.
Project Director
Civil Engineering Solutions, Inc.
590 E. Street
Lincoln, CA 9564

All written notices to the parties hereto shall be sent by United States mail, postage prepaid by registered or certified mail addressed as shown above.

25. Incorporation by Reference. District Request for Qualifications – Natomas Basin Hydraulic Model Project and Consultant's qualification proposal, are hereby incorporated in and made a part of this Agreement.

26. Amendments. Any amendment, modification or variation from the terms of this Agreement shall be in writing and shall be effective only upon approval by the District General Manager.

27. Working Out of Scope. If, at any time during the project, the Consultant is directed to do work by persons other than the District General Manager and the firm believes that the work is outside of the scope of the original contract, the Consultant shall inform the General Manager immediately. If the General Manager and Consultant both agree that the work is outside of the project scope and is necessary to the successful completion of the task, then a fee will be established for such work based on Consultant's hourly billing rates or a lump sum price agreed upon between the District and the Consultant. Any extra work performed by Consultant without prior written approval from the District General Manager shall be at Consultant's own expense.

28. Complete Agreement. This written agreement, including all writings specifically incorporated herein by reference, shall constitute the complete agreement between the parties hereto. No oral agreement, understanding or representation not reduced to writing and specifically incorporated herein shall be of any force or effect, nor shall any such oral agreement, understanding or representation be binding upon the parties hereto. For and in consideration of the payments and agreements hereinbefore mentioned to be made and performed by District, Consultant agrees with District to do everything required by this Agreement.

29. Authority to Execute Agreement. Both District and Consultant do covenant that each individual executing this agreement on behalf of each party is a person duly authorized and empowered to execute Agreements for such party.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed the day and year first above written.

RECLAMATION DISTRICT NO. 1000:

CIVIL ENGINEERING SOLUTIONS, INC.

Kevin L. King, General Manager

Thomas, S. Plumber, Project Director

APPROVED AS TO FORM:

Rebecca Smith, District Counsel

"EXHIBIT A"

CESI TEAM STATEMENT OF QUALIFICATIONS

August 31, 2020



For:

REQUEST
FOR
QUALIFICATIONS

Natomas Basin
Hydraulic Model



JULY 31, 2020





**CIVIL ENGINEERING
SOLUTIONS, INC.**

590 E Street
Lincoln Ca. 95648
916.645-5700
Fax: 916.645-5706

August 31, 2020

Reclamation District No. 1000
Attr: Kevin King
1633 Garden Highway
Sacramento, CA 95833

Submitted via email: kking@rd1000.org

Subject: Statement of Qualifications – Natomas Basin Hydraulic Model

Dear Mr. King:

The CESI Team, Civil Engineering Solutions, Inc., GEI Consultants Inc, and RFE Consulting have reviewed the Reclamation District No. 1000 (RD1000) Request for Qualifications (RFQ) and prepared the enclosed Statement of Qualifications in accordance with the instructions. We are providing our expert qualifications for the following:

- Project Management and Coordination with similar projects
- Hydrologic and Hydraulic Modeling and Analysis for providing Letter of Map Revision (LOMR) approvals through the Federal Emergency Mapping Agency (FEMA)
- FEMA coordination and flood mapping
- Levee and channel condition assessments
- HEC-RAS 1D/2D and XPSWMM model evaluations
- Pump Station Evaluation for model calibration
- FEMA Floodplain Mapping and Mapping Information Platform (MIP)

We are confident that the RD1000 will find our qualifications exceptional. The GEI/Civil Engineering Solutions Team has worked on water resources projects throughout the Sacramento and San Joaquin Valley for federal, state and local agencies. The has a deep understanding of RD1000 flood and drainage system from previous studies. Our experience and qualifications are second to none and have been demonstrated in numerous successful projects for municipal clients throughout California.

We look forward to the opportunity to work with RD1000 on this important project. Please call me if you have any questions or require further information at 916.645.5700 (Thomas@civilsolutions.com) or Chris Ferrari at 916.631.4516 (cferrari@geiconsultants.com).

Sincerely,

Thomas S. Plummer, P.E., CFM
Project Director

Chris Ferrari, P.E., C.F.M.
Senior Engineer/Project Manager

Contents

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Fee Schedule..... 2

Appendix A – Staff Resumes

Appendix B – Assignment Agreement

Submitted Forms

This proposal prepared by the CESI Team which includes both GEI Consultants and RFE Engineering follows the layout as requested on page 11 in the Request for Qualifications dated July 31, 2020. Section 1 includes the Submittal Forms; Section 2 includes the qualifications; Section 3 includes the Fee Schedule.

The following is the required forms as requested:

- Acknowledgement
- Certificate of Insurance
- Statement of Past Disqualifications
- References for Civil Engineering Solutions, Inc. and GEI Consultants, Inc.

Section E – SUBMITTAL FORMS ACKNOWLEDGEMENT

The undersigned declares that she or he:

- Has carefully examined the Request for Qualifications – Natomas Basin Hydraulic Model Project
- Is thoroughly familiar with its content
- Is authorized to represent the proposing Consultant; and
- Agrees to perform the work as set forth in this qualification proposal.

Consultant Name and Address: Civil Engineering Solutions, Inc.		
590 E Street, Lincoln CA 95648		
Contact Name: Thomas S. Plummer P.E., CEM		
Email: thomas@civilsolutions.com	Fax:	Phone: 916 - 645 - 5700

Signature of Authorized Representative: Thomas Plummer <small>Digitally signed by Thomas Plummer DN: cn=Thomas Plummer, o=Civil Engineering Solutions, Inc, ou=CESI, email=thomasplummer@civilsolutions.org, c=US Date: 2020.08.28 15:35:05 -07'00'</small>	Date: 8/17/2020
--	---------------------------

Insurance Certificate

Insurance Company's A.M. Best Rating

Certificate of insurance attached

Statement of Qualifications for Natomas Basin Hydraulic Model



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
8/27/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Dealey, Renton & Associates P. O. Box 12675 Oakland CA 94604-2675		CONTACT NAME: Angela Borg PHONE (A/C, No, Ext): 510-465-3090 FAX (A/C, No): 510-452-2193 E-MAIL ADDRESS: certificates@dealeyrenton.com	
License#: 0020739 CIVIENG-13		INSURER(S) AFFORDING COVERAGE NAIC #	
INSURED Civil Engineering Solutions, Inc. 590 E Street Lincoln CA 95648		INSURER A : Berkley Insurance Company 32603 INSURER B : Sentinel Insurance Company 11000 INSURER C : Trumbull Insurance Company 27120 INSURER D : INSURER E : INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 1699385363 **REVISION NUMBER:**

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> YCS-XI dBSU <input checked="" type="checkbox"/> NYEYI <input checked="" type="checkbox"/> Contractual Liab <input type="checkbox"/> Included <input type="checkbox"/> UOObBSUUI OUBI O OOH BDBOOI OOI ae <input type="checkbox"/> ENOXÇ <input checked="" type="checkbox"/> BL No OUYI <input checked="" type="checkbox"/> ONY <input type="checkbox"/> NI OOI ae	Y	Y	57SBWBG8748	9/4/2020	9/4/2021	OBYONYYEII IOYO u 2,000,000 OUBOUIN NT OOI OU u 1,000,000 OOI OOH OI dL 1/3/62* u 10,000 OOU OEB d² \$ ±² * » @ ±² + u 2,000,000 OOI I NOBOSU BUE XOEI Ç u 4,000,000 UOOUI BBSUUI OUBI O u 4,000,000 OI NOEYII OYNOBIBB BSU u 4,000,000 u
B	<input type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> BOC BEIN <input type="checkbox"/> NE OOU <input checked="" type="checkbox"/> BEINI NOCÇ <input type="checkbox"/> OX OU <input type="checkbox"/> BEINI NOCÇ <input type="checkbox"/> I YPOUEOOU <input checked="" type="checkbox"/> BEINI <input type="checkbox"/> ONONNE OOU <input type="checkbox"/> BEINI NOCÇ	Y	Y	57SBWBG8748	9/4/2020	9/4/2021	YNOPXOU I XOU OOH dL 1/3/62* u 2,000,000 BNUOC XOEI Ç d» @ » @ ±² + u BNUOC XOEI Ç d» @ 1/3/62* u OI NDUI I Ç UBSUUI d» @ 1/3/62* u u
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> NYEYI <input type="checkbox"/> YCS-XI dBSU <input type="checkbox"/> OOU I OI OOI XOU u						OBYONYYEII IOYO u BSUUI OUBI O u u
C	<input type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY <input type="checkbox"/> BOCBI NBI XI NI NBI I OOI NOEYEII XOU <input type="checkbox"/> NUOXOI OOUOUI OYEY OOUA (Mandatory in NH) * \$» O/» 1/3/62* c²/» @ OOI YI XEI XONU NDUI BI XICI 1/2 * @		N/A	57WEGAG9L7Z	9/1/2020	9/1/2021	<input checked="" type="checkbox"/> OUI I I BI EI U <input type="checkbox"/> NI OOH OI OOUOBYONYYEII IOYO u 1,000,000 OOUOH OBI O OOH OUBONC OOU u 1,000,000 OOUOH OBI O OOH OYÇ OOH u 1,000,000
A	Professional Liability			AEC903939002	9/10/2020	9/10/2021	Per Claim \$2,000,000 Annual Aggregate \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
 *** SAMPLE ***

CERTIFICATE HOLDER	CANCELLATION 30 Day Notice of Cancellation
*** SAMPLE ***	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE

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POLICY NUMBER: 57SBWBG8748

BUSINESS LIABILITY COVERAGE
SS 00 08 04 05

ADDITIONAL COVERAGES BY WRITTEN CONTRACT, AGREEMENT OR PERMIT

This is a summary of the coverage provided under the following form (complete form available):

BUSINESS LIABILITY COVERAGE FORM SS 00 08 04 05

Additional Insured When Required by Written Contract, Written Agreement or Permit

WHO IS AN INSURED under Section C. is amended to include as an additional insured, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your acts or omissions or the acts or omissions of those acting on your behalf:

- (a) In the performance of your ongoing operations;
- (b) In connection with your premises owned by or rented to you; or
- (c) In connection with "your work" and included within the "products completed operations hazard", but only if
 - (i) The written contract or written agreement requires you to provide such coverage to such additional insured; and
 - (ii) This Coverage Part provides coverage for "bodily injury" or "property damage" included within the "products completed operations hazard".

The person(s) or organization(s) are additional insureds when you have agreed, in a written contract, written agreement or because of a permit issued by a state or political subdivision, that such person or organization be added as an additional insured on your policy, provided the injury or damage occurs subsequent to the execution of the contract or agreement, or the issuance of the permit.

A person or organization is an additional insured under the provision only for that period of time required by the contract, agreement or permit.

With respect to the insurance afforded to the additional insured, this insurance does not apply to: "Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or failure to render, any professional architectural, engineering or surveying services, including:

- (a) The preparing, approving, or failure to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, designs or drawings and specification; or
- (b) Supervisory, inspection, architectural or engineering activities.

The limits of insurance that apply to additional insureds are described in Section D. Limits Of Insurance.

How this insurance applies when other insurance is available to an additional insured is described in the Other Insurance Condition in Section E. Liability And Medical Expenses General Conditions.

No person or organization is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

Other Insurance

If other valid and collectible insurance is available for a loss we cover under this Coverage Part, our obligations are limited as follows:

When You Add Others As An Additional Insured To This Insurance: That is other insurance available to an additional insured. However, the following provisions apply to other insurance available to any person or organization who is an additional insured under this Coverage Part:

- (a) **Primary Insurance When Required By Contract:** This insurance is primary if you have agreed in a written contract, written agreement or permit that this insurance be primary. If other insurance is also primary, we will share with all that other insurance by the method described in c. below.
- (b) **Primary And Non-Contributory To Other Insurance When Required By Contract:** If you have agreed in a written contract, written agreement or permit that this insurance is primary and non-contributory with the additional insured's own insurance, this insurance is primary and we will not seek contribution from that other insurance.

BUSINESS LIABILITY COVERAGE FORM

Summary **SS 00 08 04 0**

Paragraphs (a) and (b) do not apply to other insurance to which the additional insured has been added as an additional insured.

c. Method Of Sharing

If all the other insurance permits contribution by equal shares, we will follow this method also. Under this approach, each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

Waiver of Subrogation

If you have waived any rights of recovery against any person or organization for all or part of any payment, including Supplementary Payments, we have made under this Coverage Part, we also waive that right, provided you waived your rights of recovery against such person or organization in a contract, agreement or permit that was executed prior to the injury or damage

**EXCERPT FROM Hartford Form SS 04 38 09 09
HIRED AUTO AND NON-OWNED AUTO**

B. With respect to the operation of a "non-owned auto", WHO IS AN INSURED is replaced by the following: The following are "insureds":

d. Anyone liable for the conduct of an "insured", but only to the extent of that liability

Statement of Past Contract Disqualifications

The Consultant shall state whether it or any of its officers or employees who have a proprietary interest in it, has ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of the violation of law, a safety regulation, or for any other reason, including but not limited to financial difficulties, project delays, or disputes regarding work or product quality, and if so to explain the circumstances.

Do you have any disqualification as described in the above paragraph to declare?

Yes

No

If yes, explain the circumstances.

Executed on AUGUST 17 at 1:30 PM under penalty of perjury of the laws of the State of California, that the foregoing is true and correct.

**Thomas
Plummer**

Digitally signed by Thomas Plummer
DN: cn=Thomas Plummer, o=Civil
Engineering Solutions, Inc, ou=CESI,
email=thomas.plummer@civilsolutio
ns.org, c=US
Date: 2020.08.28 15:35:39 -07'00'

Signature of Authorized Consultant Representative

References

Number of years engaged in providing the services included within the scope of the specifications under the present business name: _

Describe fully the last three (3) contracts performed by Consultant that demonstrate the ability to provide the services included with the scope of the RFQ. Attach additional pages if required. The District reserves the right to contact each of the references listed for additional information regarding your qualifications.

Statement of Past Contract Disqualifications

The Consultant shall state whether it or any of its officers or employees who have a proprietary interest in it, has ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of the violation of law, a safety regulation, or for any other reason, including but not limited to financial difficulties, project delays, or disputes regarding work or product quality, and if so to explain the circumstances.

Do you have any disqualification as described in the above paragraph to declare? Yes No

If yes, explain the circumstances.

Executed on 8/282020 at Rancho Cordova under penalty of perjury of the laws of the State of California, that the foregoing is true and correct.

Chris A. Jones

Signature of Authorized Consultant Representative

References

Number of years engaged in providing the services included within the scope of the specifications under the present business name: _

Describe fully the last three (3) contracts performed by Consultant that demonstrate the ability to provide the services included with the scope of the RFQ. Attach additional pages if required. The District reserves the right to contact each of the references listed for additional information regarding your qualifications.

CESI REFERENCE FORMS

Reference No. 1

Customer Name	Placer County Flood Control and Water Conservation District
Contact Individual	Brad Brewer
Telephone & Email	530 745 7592 bbrewer@placer.ca.gov
Street Address	3091 County Center Drive, Suite 220
City, State, Zip Code	Auburn CA, 95603
Date of Services	CESI has consulted with the District since 1998
Contract Amount	Dry Creek Watershed Update Project: 447,000, CTP 1 : 105,000, CTP 3 55,000
<p>Description of Services</p> <p>The Dry Creek watershed update: CESI was hired to completely update the Dry Creek Watershed Hydrologic Modeling. The Placer County Hydrology Methods were utilized and CESI built an unsteady state hydraulic routing model for most of the watershed. The model was calibrated for use by the USGS and FEMA in 2013.</p> <p>CTP1: CESI participated in new hydrologic and hydraulic modeling of Auburn Ravine and Curry Creek, and assisted with Peer efforts on Dry Creek, and Tahoe Streams</p> <p>CTP3: CESI participated in developing the hydrologic models for 3 Tahoe Streams, Cirby Creek, Linda Creek, S. Branch of Pleasant Grove Creek, Markham Ravine, Raccoon Creek.</p>	
<p>Project Outcome</p> <p>Dry Creek watershed project successfully developed detailed hydrologic modeling for the entire Dry Creek watershed, that successfully calibrated to USGS gage information, and was accepted by FEMA. To this day, the modeling applications from this effort continue to be expanded.</p> <p>CTP1: The CTP1 project provided modeling and FEMA detailed mapping for 50+ miles in Placer County. The Projects completion allowed Placer County's DFIRM update to finalize in 2018, the last County in California to complete its DFRIMS.</p> <p>CTP3: The CTP3 effort is ongoing, CESI Consulted with M. Baker to provide the Hydrology Basis.</p>	

Reference No. 2

Customer Name	City of Lincoln
Contact Individual	Ray Leftwich
Telephone & Email	916 434 2456 ray.leftwich@lincolnca.gov
Street Address	600 Sixth Street
City, State, Zip Code	Lincoln, CA 95648
Date of Services	CESI has consulted with the City of Lincoln since 1995
Contract Amount	Various Contracts ranging from \$1500 to \$300,000.
Description of Services CESI has been considered the unofficial City's Hydrologist since 1995. CESI is consulted by City of a range of services including: Regional Drainage Plans, Model Development, FEMA applications, Design of Infrastructure (E Street), & Review services.	
Project Outcome Our relationship with the City of Lincoln has remained stable and mutually beneficial for 25 years.	

Reference No. 3

Customer Name	GRANDPARK
Contact Individual	Steve Letterly
Telephone & Email	949-422-2860 sletterly@letterlymgmt.com
Street Address	1278 Glenneyre Street,
City, State, Zip Code	#130 Laguna Beach, CA 92651-3103
Date of Services	2016 to Current
Contract Amount	\$472,940
<p>Description of Services</p> <p>Steve Represents the Grandpark Property Owners. This Reference was included because of its relevance to the RFQ scope. CESI was hired to prepare a Natomas Basin Wide Hydrology and Hydraulics model for use in preparing project evaluations for the GRANDPARK project. CESI also performed several project specific tasks within this budget as well. CESI has developed a SACCALC based Hydrology Model, and HEC-RAS based combined 1D/2D, Unsteady State Hydraulics model of the Natomas Basin, and has more recently been developing with project scenarios and Cumulative Development Analysis for the Environmental Impact Report. CESI has completed the "Current Conditions" and "ULDC" specific scenarios discussed in this RFP.</p>	
<p>Project Outcome</p> <p>The analysis has been shown to calibrate well in the 2017 event, however, there have not been any other major storms with the current level of development and improvements since their construction. The modeling is very detailed, and useful for evaluating any flood conditions within the basin. Substantial documentation of the modeling has also been performed.</p>	

GEI REFERENCE FORMS

Reference No. 1

Customer Name	City of Sacramento Department of Utilities
Contact Individual	Connie Perkins, PE, CFM, Central Valley Flood Protection Board (former City of Sacramento Project Floodplain Manager)
Telephone & Email	916.480.5386 (direct); 916.574.0609 (main line); 916.381.6312 (mobile); constance.perkinsgutowsky@CVFlood.ca.gov
Street Address	3310 El Camino Avenue, Suite 170
City, State, Zip Code	Sacramento, CA 958214
Date of Services	2016-Ongoing
Contract Amount	\$200,000
<p>Description of Services 200-Year Floodplain Evaluation: Mr. Ferrari provided many projects (FEMA Letter of Map Revisions; Riverine/Small Stream Modeling for Flood Mapping; Storm Drain Evaluations); for Connie Perkins. In 2015-2016, Mr. Ferrari developed rescue and evacuation mapping for the City of Sacramento Department of Utilities and the County of Sacramento Department of Water Resources, Sacramento, CA. (2015-2016) using the State Department of Water Resources Central Valley (CVFED) Sacramento River 1D/2D hydraulic system model. Mr. Ferrari developed mapping for twenty-seven hypothetical levee failures along the Sacramento and American Rivers for Natomas and areas north and south of the American Rivers. Project limits included 80+ miles of levees within the City of Sacramento and portions of the County of Sacramento. The mapping includes maximum flood depths, time of inundation contours, and evacuation routes.</p>	
<p>Project Outcome The project deliverable included rescue and evacuation mapping for the City/County of Sacramento Emergency Operations and Decision Makers.</p>	

Reference No. 2

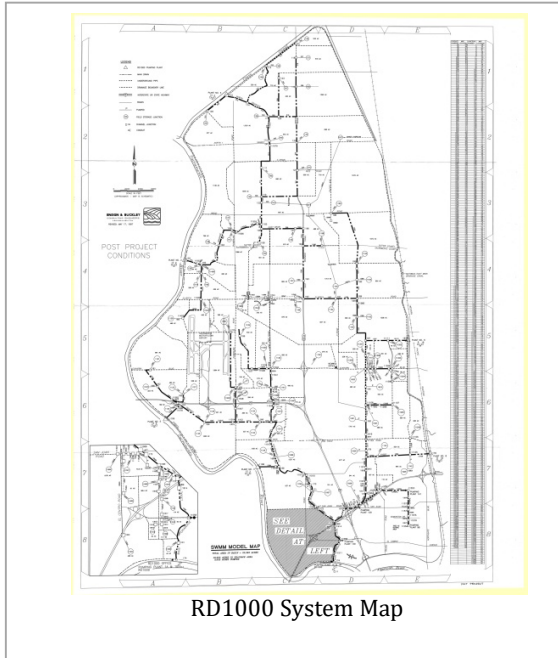
Customer Name	City of Sacramento Department of Utilities
Contact Individual	Rosa Millino, Associate Project Engineer
Telephone & Email	916.808.1451 rmillino@cityofsacramento.org
Street Address	1395 35th Avenue
City, State, Zip Code	Sacramento, CA 95822
Date of Services	2020
Contract Amount	\$57,000
Description of Services	Secondary Levee Evaluation: In 2020, Mr. Ferrari evaluated the internal secondary levee embankment to determine if the existing structure could protect 250,000 residences if the American River south primary levee failed and the internal secondary levee/embankment structure did not fail and the twelve floodgates within the structure were all closed. Mr. Ferrari used the State Department of Water Resources Central Valley (CVFED) Sacramento River 1D/2D hydraulic system model for the levee failures on the primary American River levees.
Project Outcome	The project deliverable included 12 scenarios with flood maps to show the potential impacts to the City for various situations.

Reference No. 3

Customer Name	County of Sacramento Department of Water Resources
Contact Individual	Michael Johnson, Senior Civil Engineer-Drainage
Telephone & Email	916.874.8646 johnsonm@saccounty.net
Street Address	827 7th Street, Suite 301
City, State, Zip Code	Sacramento, CA 95814
Date of Services	2020-Ongoing
Contract Amount	\$375,000 (includes three separate contracts)
Description of Services	Since 2016, Mr. Ferrari has been contracted to provide third party review documents for hydrologic and hydraulic HEC-RAS models for several master plan development projects in Natomas and the Morrison Creek watershed located in South Sacramento. Currently Mr. Ferrari is updating an XPSWMM hydrologic and hydraulic storm drain model for a 1000-acre master drainage plan in Natomas. The hydraulic model includes pump stations, detention/retention basins and overland flow streets for 100-year evaluation.
Project Outcome	The project deliverables have included quality control review project sheets of model documentation and plan and profile sheets.

Qualifications

A. Project Understanding and Detailed Scope of Services



As discussed in the Request for Qualifications (RFQ), the Natomas Basin is surrounded by four leveed channel reaches (Sacramento River, American River, Natomas Cross Canal, Natomas East Main Drain) that are in the process of improvement in order to gain levee accreditation by the Federal Emergency Management Agency (FEMA). The goal of this RFQ is to assist the Reclamation District No. 1000 (RD1000) with its public safety mission to protect more than 100,000 residents and employees within the Natomas Basin by providing modeling and mapping products which meet the current state of the art, and will be usable into the future.

This proposal presents the CESI Team qualifications to complete the process from start to finish. The CESI Team members have developed large system models, and been through the complete FEMA process for numerous projects in the Sacramento and

Central Valley Region. Lead Consultant/Project Director Civil Engineering Solutions Inc, (CESI) produced the South Lincoln LOMR, the Elder and Gerber Creeks LOMR, and the Placer County CTP1 PMR. The CESI Team's main sub-consultant GEI Consultants performed the American River in 2004, the City's South Streams (Morrison, Unionhouse, Florin, Elder) LOMR approval in 2012 and the GEI geotechnical team provided certification for the Three Rivers Levee Improvement Authority (TRLIA) located in Butte County for the Feather and Bear River setbacks. Currently, the CESI Team is involved with several FEMA LOMR projects including Placer County CTP3 PMR, Lincoln 270 CLOMR, the Sacramento River Levee Evaluation, City of Merced LOMR, and the City of Palmdale Amargosa Creek LOMR. Additionally Mr. Chris Ferrari, the proposed project manager, is providing the Sacramento County Department of Water Resources with a third-party review of the Grandpark Natomas Basin hydraulic model, included as an option to be used for this project. CESI is currently finalizing the development of the hydraulic model under review for the Natomas Basin.

Based on review of the scope of services included in the RFQ to develop a hydraulic model for the Natomas basin, the CESI Team will develop a detailed work plan to cover all the items necessary to complete the RFQ. Additional items and assumptions for the RFQ not included in the RFQ are included in the project understanding below.

Purpose: To assist RD1000 with its public safety mission to protect more than 100,000 residents and employees within the Natomas Basin by providing modeling and mapping products which meet the current state-of-the-art, and will be usable into the future.

The following is the CESI Team detailed scope of services to complete the project.

TASK 1. PROJECT MANAGEMENT

- Thomas Plummer (CESI) will be the lead consultant serving as the Project Director. CESI will take the lead on model development tasks, utilizing GEI's staff to assist in the preparation of the model and other tasks.
- Mr. Ferrari of GEI will provide project management and work closely with CESI for coordination with each agency. Initial coordination with FEMA will be very critical to discuss the approach of the submittal of the Natomas model.
- Both Mr. Plummer and Mr. Ferrari have developed and gained approval for several hydrologic and hydraulic models and projects within the County of Sacramento. Based on previous experience with FEMA review and approval, the CESI Team recommends that the HEC-RAS software modeling tool will be used for the effective model. As indicated in the RFQ and based on current review of the XPSWMM model, there are parameters that likely will not pass FEMA's technical review. The CESI Team believes the use of the HEC-RAS software for the hydraulic modeling will provide the most direct path through the FEMA Technical Review process. The CESI teams initial review of the Grandpark Natomas Basin Wide HEC-RAS model currently under development would pass the FEMA's reviews once completed for FEMA submittals.. The model is a combined 1D and 2D based model, and GEI recently gained FEMA approval for a HEC-RAS 1D/2D hydraulic model for the City of Merced.
- The CESI Team will follow FEMA guidance on the modeling of Levees and non-accredited levee like features, based on the 2019 Manual. In some cases embankments will be modeled in their existing conditions, and in other cases the "natural valley procedures" described in the LAMP guidelines will be applied.
- The CESI Team will propose two options of the development of a Basin Wide Model. The first option (Option 1) will be to use the existing Basin Wide Models developed by the Grandpark Project. The second option (Option 2) would be to develop new models from scratch. The work plan presented later in this proposal, presents the full work scope described in Option 2, and would need to be modified if Option 1 is selected. Cost Estimates and Schedules are presented for both options.
- Monthly status reports will be provided as needed with monthly invoicing by the Project Director and Project Manager..
- Coordinate with SAFCA for Exterior Levee Certification, with City's interior Levee Certification Consultant, with County Levee Certification Consultant
 - Data Coordination:
 - Hydraulic Grade Line Information
 - Water Surface Profiles
 - GIS Data
 - Progress updates and Schedules

TASK 2: DATA COLLECTION AND FIELD RECONNAISSANCE

1. DATA COLLECTION

- The CESI Team has collected most of the data required to provide a complete assessment.
- The CESI Team will provide a document which summarizes findings and missing data to the City. This document will include proposed locations for borings or cone penetration testing (CPT).

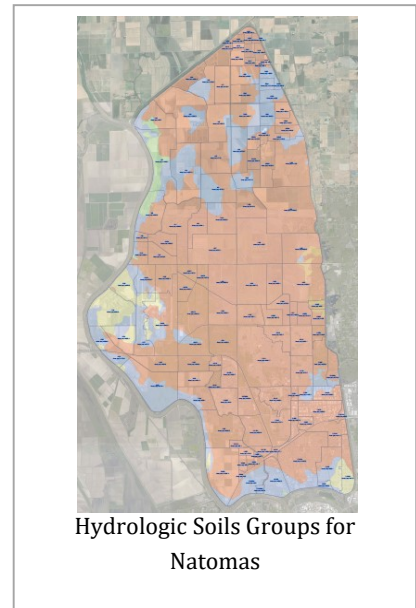
2. FIELD RECONNAISSANCE

- The CESI Team has a significant amount of experience with condition assessments, levee and erosion evaluations.
- The CESI Team will develop and has experience providing FEMA background data. The CESI Team also has experience with obtaining the necessary permits and coordinating property access. This effort will be verified with the first coordination meeting with FEMA staff. This task also includes exploration oversight, permits, photo documentation, and measurements.

3. SURVEY

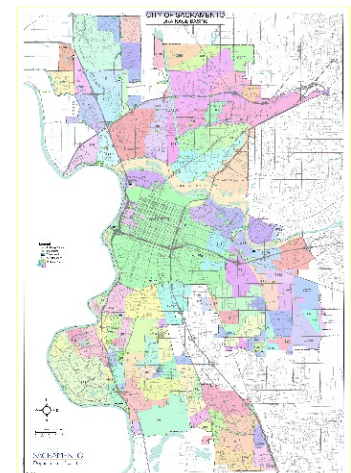
The CESI Team has included RFE Engineering, Inc. for as-needed survey.

- a. May be required to supplement missing data
 - i. Documentation of structures
 - ii. Documentation of Levee heights
 - iii. Documentation of channel geometry



TASK 3: HYDROLOGY

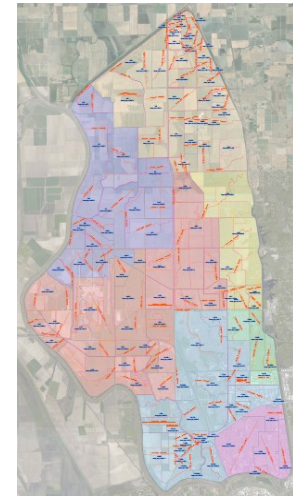
- a. Option to Purchase: An Option (#1) to purchase the “Current Conditions Analysis” of the Grandpark Basin Wide Hydrology Model, which has already assessed most of the Hydrologic factors requested in the RFQ, is included as an option to save time and costs. However, if the terms of that acquisition are deemed unacceptable, we have also included an optional (#2) effort to redevelop the Basin Wide Hydrology from scratch. (See section on Model Purchase Option for more information)
- b. Utilize City/County Hydrology Standards: The Hydrology Standards for the City of Sacramento and County of Sacramento will be utilized to develop the Hydrologic Modeling, including the use of the SACCALC software. Hydrographs for runoff will be created for each watershed, for the 10-day storm events for the 10-(10%), 25-(4%)< 50-(2%), 100-(1%), 200-(0.5%), 500-year storm(0.2%).
- c. Documentation of low infiltration rates: The current XPSWMM model includes calibrated Volume of runoff assessments from previous large events in the 1980’s and 1990’s. The new Basin Wide Hydrology model will include an assessment of identifying infiltration rates in order to match



Statement of Qualifications for Natomas Basin Hydraulic Model

runoff volumes predicted in that model. We note that in current calibrations of the Basin Wide Grandpark Model, it was noted for the 2017 event that Type D soil infiltration rates matching the Current City/County Standards provided the best Calibration. The event was categorized as a 10-year event. It is believed that in smaller events where saturation and groundwater exfiltration are not present, these rates published in the standards will be necessary. And that in less frequent larger events, the volume calibrated based rates will be more applicable.

- d. Considers flat slopes present in the basin: The Basin Wide Hydrology model needs to account for the response lag timing from rainfall hitting the ground until it enters drainage features. For non-urbanized areas of the basin we propose to accomplish this with 2D surfaces representing the existing ground surfaces. For Urbanized areas draining to detention basins, this is less of an issue, but will be accounted for in Lag times if storm drain conveyance times are thought to be significant.
- e. Review RD1000 XPSWMM model to capture data: The CESI Team is unique in that we have working experience with the current RD1000 XPSWMM model and have previously provided an extensive and detailed review the model for the issues identified in this RFQ. Significant data identified in this model will be transferred to the new hydraulic model, such as culvert sizes, channel inverts (below ordinary water observed in the CVFED LiDAR), and pump stations.
- f. Calibration: A Calibration effort will be provided as requested in the RFQ. Since the proposed Basin Wide Model is a composite of a Hydrology Model and an Unsteady State Hydraulics Model the results are coordinated with both efforts. The 2017 event provided the basin with nearly a 10-year event rainfall over an extended series of storms. This is the best and largest storm event of record since the interior level of development and improvements have operated in the current conditions (roughly 2009 to 2020). There is one stream gage in the basin with stage records, for this event, and several gages with precipitation records. But additional stage records are available at the RD1000 pump stations where sump stages were recorded by District Staff during the event. District Staff also recorded pump operations on/off during the event.
- g. Meet FEMA Requirements: The Basin Wide Modeling will need to be produced to meet FEMA requirements. The City/County of Sacramento Standards and methodologies have previously been used in many FEMA submittals. With Calibration, these standards will provide a good basis for the development of Hydrology for the basin. We note that Sacramento County is currently involved in an effort to update the precipitation rates of these standards, and documenting and possibly adapting to the findings of that effort will assist with the FEMA determinations.
- h. Other Materials: There are a number of other resources which will assist in the preparation of the Hydrology Model. For example, RD1000 has a watershed map for the basin, the City

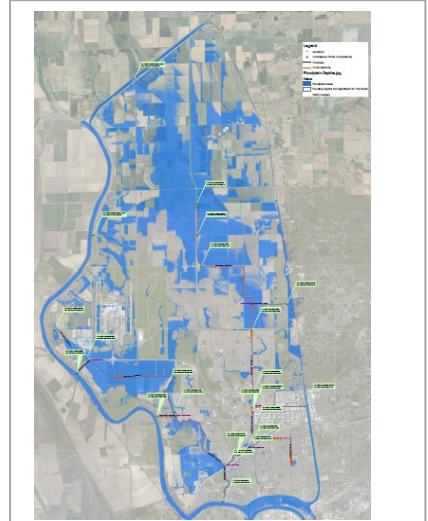


Rain Gage Application for 2017 calibration event – Natomas Basin

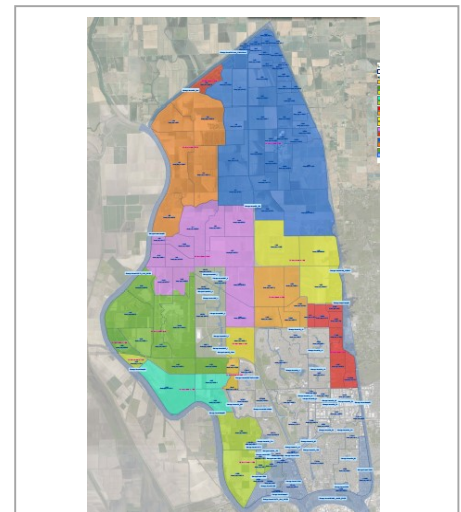
of Sacramento has a watershed map for the urbanized areas, and there are discrepancies between these maps which will need to be resolved as part of this effort. The RD1000 Facilities Map will also be a very informative and useful tool in this effort. There are a number of available GIS layers from RD1000, City of Sacramento, County of Sacramento for Land Use and facility identification which will also be utilized in this effort.

TASK 4: HYDRAULICS

- a. Option to Purchase (#1): An option to purchase the “Current Conditions Analysis and backup data” of the Grandpark Basin Wide Hydraulics Model, which includes many of the factors requested in this RFQ, and is already substantially peer reviewed by GEI is included as an option to save time and costs for this project. However, if the terms of that acquisition are deemed unacceptable, we have also included an optional effort to redevelop the Basin Wide Hydraulics model from scratch. (See section on Model Purchase Option for more information)
- b. Unsteady State Combined 1D/2D model: The CESI Team proposes to prepare the Hydraulics Model using HEC-RAS (latest version), including 1-dimensional and 2-dimensional elements in unsteady state. Most of the RD1000 Drainage Canal system will be represented in 1D channels with cross sections. These 1D elements will be connected to the 2D mesh areas by “lateral weirs” representing the highest ground separating them. Storage areas will be utilized at pump station sumps, and detention basins within the model Area. Pump stations will be modeled using their published pumping rates, and on/off stages documented or observed during operations.
- c. Review RD1000 XPSWMM model to capture data: The CESI Team has already performed extensive review of the RD1000 XPSWMM model, and the TSDN materials from the previous FEMA submittal, to capture data for this modeling effort.
- d. Calibration : A Calibration effort will be provided as requested in the RFQ. Since the proposed Basin Wide Model is a composite of a Hydrology Model and an Unsteady State Hydraulics Model the results are coordinated with both efforts. The 2017 event provided the basin with nearly a 10-year event rainfall over an extended series of storms. This is the best and largest storm event of record since the interior level of development and improvements have operated in the current conditions (roughly 2009 to 2020). There is one stream gage in the basin with stage records, for this event, and several gages with precipitation records. But additional stage records are available at the RD1000 pump stations where sump stages were recorded by District Staff during the event. District



Draft Grandpark 100-year Current Conditions Floodplain

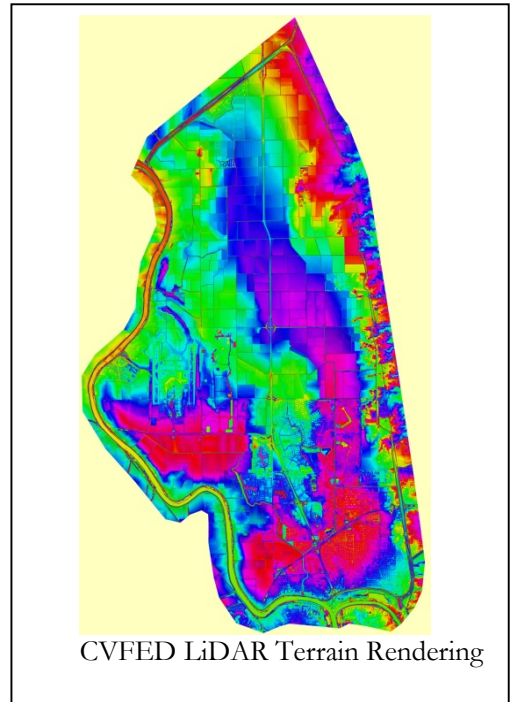


Proposed 2D Regions

Statement of Qualifications for Natomas Basin Hydraulic Model

Staff also recorded pump operations on/off during the event. Our team has already prepared a Calibration Analysis for a Natomas Basin Wide Model and are prepared to add additional calibration events to that information as requested.

- e. Meet FEMA requirements: In order to present a model to FEMA to support a mapping effort, several additional items need to be performed:
- f. For a HEC-RAS model, the software cHECKRAS must be executed on the model, and the model should be corrected for errors and warnings detected, or an explanation needs to be provided, if correction is not appropriate.
- g. As-built Levee Elevations need to be added for any certified levees.
- h. Non-accredited embankments: FEMA issued a Guidance document for mapping and analyzing floodplains for levees and embankments that are not accredited.
- i. Floodway Analysis is Required
- j. Produce Results for Events: The floodplain modeling and mapping effort will include results for the following events: 10-(10%), 25-(4%) < 50-(2%), 100-(1%), 200-(0.5%), 500-year storm (0.2%).
- k. HEC-RAS or XP SWMM: As previously indicated, the CESI Team intends to use the existing RD1000 XPSWMM model as a reference, but will provide all new modeling in SACCALC for Hydrology and HEC-RAS for Hydraulics.
- l. Use Terrain data from CVFED: The RFQ directs to use CVFED Terrain. Our Team has already generated CVFED based Terrain for the model area, modified for improved data from other sources, such as improving the below water elevations based on the XP-SWMM model.
- m. Incorporate As-built data from District and others: We expect to incorporate as-built data from others into the model for the following list and other items as they are presented:
 - i. Pump Stations,
 - ii. Terrain,
 - iii. Existing facilities such as pipes, etc.
 - iv. Culverts
 - v. Bridges
 - vi. Gates,
 - vii. Levee Elevations
 - viii. Erosion Sites
 - ix. Vegetation
- n. In addition, we have included some services for field reconnaissance to photo document and measure undocumented features for the TSDN documentation

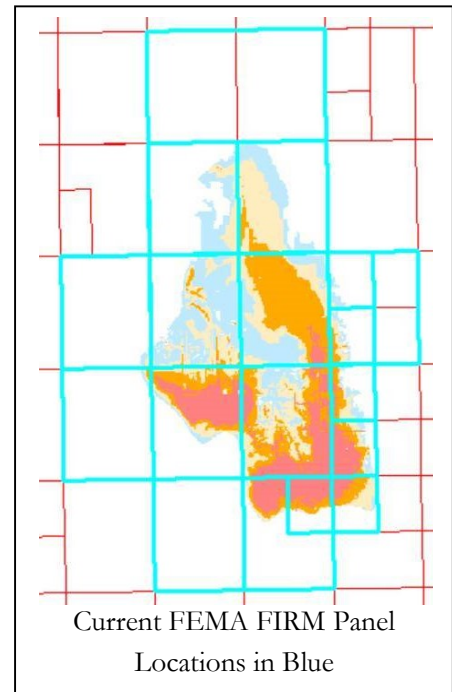


TASK 5: MAPPING

There are 25 existing FEMA panels in the Natomas Basin. The following are the scales for the current effective FIRM panels.

- a. 6 FEMA FIRMs are at 1 inch. = 500 ft
- b. 17 FEMA FIRMs are at 1 inch. = 1000 ft
- c. 2 FEMA FIRMs are at 1 inch. = 2000 ft

After the hydraulic model scenarios are finalized, the CESI Team will prepare work maps to be submitted with the hydrologic and hydraulic modeling for peer review. After the modeling is approved by the peer review teams, the CESI team will develop annotated FIRM Panels per the FEMA requirements. The CESI team will coordinate with RD1000 and all stake holders to determine and evaluate to confirm flood extents, FEMA zoning (AE, AH, AO) and scales for each panel. Potentially there could be a total of 55 panels if the scale is 1 in = 500 ft.



TASK 6: TSDN DOCUMENTATION

The CESI team will collect and provide all relevant supporting data from Task 1 through 5 in a Technical Support Data Notebook (TSDN) as requested by FEMA to present and publish the flood maps. The CESI Team will coordinate with the FEMA team to provide the large data sets in the requested Mapping Information Platform (MIP).

B. Written Responses to “Minimum Qualifications”

The following is the CESI Team firm qualification to perform the work as described in the RD100 RFQ.

FIRMS QUALIFICATIONS

CIVIL ENGINEERING SOLUTIONS, INC. (CESI) – THOMAS PLUMMER



CESI is a Civil Engineering consulting firm specializing in the fields of hydrology, hydraulics, drainage master plans, and floodplain management. The firm was founded in December of 1995 to provide engineering services and software development. CESI is a California-certified Small Business Enterprise.

CESI focuses on floodplain management practices. The staff has prepared numerous floodplain analysis studies including bridge analysis. CESI also produces numerous drainage master plans for their public and private clients. For many of their public sector clients, CESI also provides floodplain management guidance and project review services. CESI has processed numerous FEMA related studies including CLOMR/LOMR and Physical Map Revision (PMR). CESI emphasizes computer modeling and design approaches in our work and invests in the training of our staff to maintain working knowledge with the most state of the art solutions to modern drainage issues.

CESI is also continuously innovating software tools for common engineering solutions, including FLO-2D pre- and post- processors, HEC-1 pre- and post- processors, and HEC-RAS pre- and post- processors, velocity and depth animators, drainage system analysis, SWQ Calculators, CAD tools, and other miscellaneous utilities. CESI releases most of our common tools into the public domain for the benefit of the entire engineering community, reserving some tools in-house which are still in development, giving us a slight competitive advantage. Most recently, CESI updated the Placer County PDP software (new version PDP2) and prepared the Dry Creek and Pleasant Grove Toolbox software packages which are now in use.

CESI is uniquely qualified to participate in this modeling effort having recently developed Natomas Basin Wide H&H Modeling for the Grandpark project in Sacramento County. CESI has already performed thorough investigations of the available data and built state of the art H&H calibrated models of the Natomas Basin. CESI’s knowledge gained in this previous experience will be critical to creating modeling ready for FEMA mapping, and the community needs.

GEI CONSULTANTS



Established in 1970, GEI is a national employee-owned consulting engineering and environmental firm with 42 offices throughout North America. GEI provides engineering, environmental, water resources, and geotechnical consulting services, and devotes a major portion of its resources to evaluate and improve California and U.S. water supplies and flood protection. Our services are built on the expertise and teamwork of more than 900 employees nationwide, including 240 in California. GEI has proven experience managing complex water projects and our decades-long work in our water practice has

GEI Consultants, Inc.

Incorporated in 1970

GEI Corporate Office

400 Unicorn Park Drive
Woburn, MA 01801

GEI Local Office

2868 Prospect Park Drive, Suite 400
Rancho Cordova, CA 95670

Number of GEI Employees

Over 900

Number of GEI Clients

Over 680

afforded what many clients and regulatory agencies view as unique insight in developing strategic approaches leading to cost-effective and reliable projects.

GEI has worked on hundreds of water resources projects in the West Region for local, state, federal and reclamation districts. The GEI projects cover hydrology and hydraulic 1D/2D/3D models, FEMA floodplain evaluations, levee and dam inundation mapping for local, state and federal agencies, dams and spillways condition assessment and structural evaluations, pipelines, canals, wells, pump stations, water quality and habitat enhancement. GEI's staff qualifications includes development of the Sacramento River and tributary 850-mile system model using the United States Corps of Engineers Hydrologic and Hydraulic programs for DWR. GEI staff have worked for the City of Sacramento Department of Utilities and the County of Sacramento Department of Water Resources over the last 20 years preparing hydrologic and hydraulic modeling, floodplain maps, project quality control review and Letter of Map Revisions (LOMR).

ENGINEERING AND DESIGN

Our civil design services support diverse client sectors including state and municipal water agencies; electric utilities, developers, industrial and institutional owners, and others. Project types vary, such as water conveyance, including dams, and dam related structures, levees, canals, pipelines, pumping stations, and wastewater systems. We use proven methods of coordination and collaboration with strict management of quality, value, schedule and cost. Our engineering and design services range from planning and permitting through preliminary and detailed design to construction and commissioning.

WATER RESOURCES

GEI's engineers and scientists are highly experienced in all aspects of water resources planning to address urban, agricultural and environmental water supply needs, and our expertise is unsurpassed in planning for flood protection. We have conducted hundreds of feasibility studies for water supply projects, and developed numerous integrated regional water management plans, agriculture and urban water management plans, groundwater sustainability plans, water quality evaluations, and flood risk assessments. Our staff bring not only advanced skills in surface and groundwater modeling and other technical skills, but also the capacity to lead stakeholders to develop collaborative approaches to multi-benefit projects.

HYDRAULICS AND HYDROLOGY

GEI's engineers are very experienced with up-to-date water resources planning and analysis techniques as applied to urban (and urbanizing) watersheds, natural rivers and channels, man-altered stream and channels, low-impact development, and water quality. We routinely use HEC-HMS, SWMM, and the NRCS watershed models for surface water hydrology and HEC-RAS 1D/2D, FLO-3D (CFD), XP-SWMM and EPA-SWMM for hydraulic analysis.

GEI's experience includes, hydrologic analysis, hydraulic modeling of various sizes of stormwater drainage facilities that include detention ponds, multi-span bridges, box culverts, storm drain systems, Low Impact Development (LID), Water Quality (WQ) and hydraulics and hydrology (H&H) study and modeling. We are sensitive to the concerns of property owners in urban areas and provide creative solutions to infrastructure issues in both urban and rural areas. We also provide flood inundation mapping, erosion control, detention basin design, scour design, construction plan production, technical reports, design or specifications, and construction cost estimates.

We utilize ArcGIS functions such as ArcHYDRO and ArcGEO-RAS to expedite H&H modeling and prepare CLOMR/LOMR using GIS FEMA data base layers. We hydraulically analyze and design our systems using FHWA HY-8 for culverts, GEOPAK DRAINAGE for pipe systems, HEC-RAS for bridge class crossings and stream modeling and EPA SWMM for LID and WQ evaluations.

ENVIRONMENTAL SERVICES

Today's environmental regulations are complex and ever-changing. Project owners and operators need expert assistance to navigate through the labyrinth of regulatory compliance requirements. GEI has the qualified staff and expertise to help your project get permitted and built to specifications while staying on budget and schedule. Environmental services offered by GEI include California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) compliance, cultural resources, biological resources and monitoring, environmental permitting, ecological restoration, water quality/hydrology, air quality/noise/climate change, environmental management and policy, and visual simulations and 3D modeling.

RFE ENGINEERING, INC. (RFE) – SURVEY SUPPORT



RFE ENGINEERING, INC

RFE is a Civil Engineering, Planning and Surveying firm serving primarily Northern California since 2003, with a convenient, centrally located office in Roseville, California. RFE is currently licensed in California, Nevada,

Arizona, Oregon, and Connecticut. The firm has over 100 years of combined experience of key personnel prepared to deliver a professional, accurate and superior quality product on a timely basis and within an established budget. RFE's Civil Engineering Division and Survey Division work together closely to ensure you have all the necessary tools to successfully transform your project from concept to reality. RFE provides Land Surveying services to commercial, residential and municipal clients through the Land Surveying Services Division. RFE's Land Surveying Division is led by surveyor William F. McKinney P.L.S. With over 43 years of industry experience, he has extensive knowledge in the area of land surveying and has been licensed in California since 1979. Their survey field crews utilize modern data collection technology to serve their clients with a high level of accuracy and efficiency.

C. Personnel Qualifications

The greatest factor for success of any project is the experience, commitment, and communication skills of the project management team. Recognizing this, CESI has assembled an exceptional project team that possesses great knowledge of the Natomas Basin drainage and has relationships with the City of Sacramento, Sutter County, Sacramento County, FEMA, State of California, DWR, CVFPB, and the USACE. Most importantly, The CESI Team already has a strong working relationship with all of these agencies with significant roles in evaluating flood conditions in the Natomas Basin. Mr. Plummer and Mr. Ferrari are a hands-on project managers who will be responsible for the day-to-day management of this project and will be attending all meetings and communicating with the Stakeholder Team and District Manager.. the CESI Team is committed and will be available through the project completion.

CESI PROJECT TEAM

All the team members shown in our Organization Chart (Figure 1) will be committed to supporting the RD1000 through the duration of the contract. Mr. Plummer and Mr. Ferrari are committed to begin work immediately with RD1000's project manager upon the Notice to Proceed. The CESI Team anticipates six main staff to participate in the development of the proposed to update the Natomas Basin LOMR

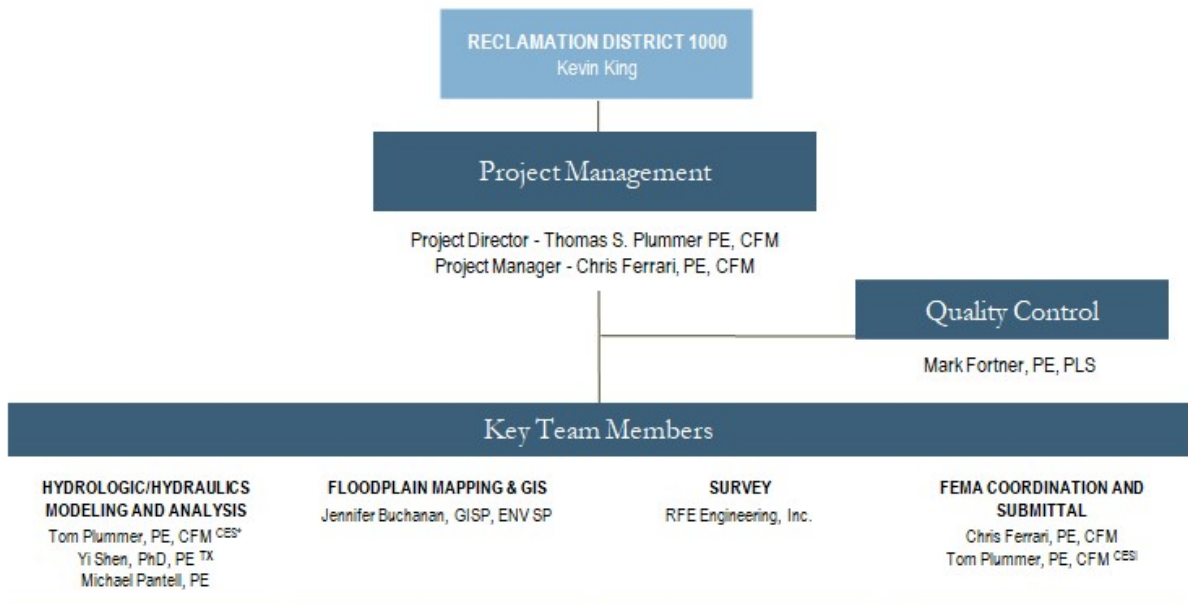


FIGURE 1. PROJECT TEAM ORGANIZATION

KEY TEAM MEMBER QUALIFICATIONS

The following are description of the anticipated roles for our key team members, and we have included detailed resumes for each team member shown in our Organization Chart in the **Appendix A**.



TOM PLUMMER, P.E., C.F.M. – PROJECT DIRECTOR - HYDROLOGIC AND HYDRAULIC MODELING AND ANALYSIS

B.S., Civil Engineering; Professional Engineer, CA No. 49582; Certified Floodplain Manager No. ASFPM US-05-01493

Mr. Plummer founded CESI in December of 1995 to provide engineering services and to produce engineering software. His main field of expertise is hydraulics, hydrology and computer applications in civil engineering. Under his direct supervision Civil Solutions has already released several software packages which perform hydraulic calculations, backwater calculations, roadway design, and earthwork analysis. Mr. Plummer also has extensive experience in the preparation of engineering studies for public facilities. Those experiences included roadway improvements and highway design, floodplain analysis and mapping, levee and dam breach analysis, drainage studies (including HEC-1, HEC-HMS, EPA-SWMM, XP-SWMM (2D), PC-SWMM, SMS, WMS, TR-55, HEC-2, HEC-RAS, HEC-RAS2D, FLO-2D, TUFLOW and CS DRAINAGE STUDIO software models), water transmission, and irrigation pipeline

replacement. He has also processed a number of small and large scale project (Conditional) “Letters of Map Revision” and “Physical Map Revision” applications with FEMA.



CHRIS FERRARI, P.E., C.F.M. – PROJECT MANAGER

Education/Registration: BS, Civil Engineering; Professional Engineer, CA No. 53226; Certified Floodplain Manager, No. US-14-07917

Mr. Ferrari has 32 years of comprehensive civil engineering experience in both the public and private sectors. During his 27 years in the private sector, he has developed, evaluated, and provided quality control on several water resource projects for city, county, and flood control agencies; California Delta Reclamation Districts; the U.S. Army Corps of Engineers, Sacramento District (USACE); FEMA; and DWR. Mr. Ferrari’s range of expertise includes development of the Sacramento and San Joaquin system hydraulic models for DWR, Levee Failure Flood Evacuation Mapping for the City and County of Sacramento, and Flood Insurance Mapping reports for FEMA. He has been recognized by the Consulting Engineers and Land Surveyors of California (CELSOC) and the American Public Works Association (APWA) for the City/County of Sacramento Emergency Rescue and Evacuation mapping project in 2006.

Mr. Ferrari’s expertise in various software applications has been used to provide watershed analysis and evaluations to delineate floodplains, provide channel and pump designs, bridges and culvert evaluations including scour, and design of underground drainage systems for several master plan developments in the Central Valley region. His expertise in various software applications include: HEC-1, HEC-HMS, HEC-2, HEC-RAS, FLOW3D, XPSWMM, AutoCAD, ArcView and Haestad computer applications.



MARK FORTNER, P.E. – PEER REVIEW

Education/Registration: BS, Civil Engineering; Professional Engineer, CA No. 48266; Professional Land Surveyor, CA No. 7342

Mr. Fortner will provide quality control for this project. He has provided engineering design support for Dam Safety projects, Flood Emergency for the State DWR, and Sacramento County. He is currently providing consulting services for the Suisun Marsh, South Sutter Water District, and Bethel Island Municipal Improvement District in Contra Costa County. His knowledge will play a key role in quality control, funding, and assisting on Operation and Maintenance issues.

Mr. Fortner has 30 years of experience and his primary expertise is in the area of drainage systems, flood control, flood insurance studies, flood protection planning, and regulatory permitting (USACE Section 404 and Section 10, Reclamation Board, Reclamation Districts, County Use Permits, Regional Water Quality Boards [Waste Discharge Requirements], and U.S. Department of Fish and Game Streambed Alternation Permits).

Specific work includes hydrologic and hydraulic modeling, design and preparation of master plans and applications for reclamation districts, water districts, levees, and infrastructure works. He has conducted hydraulic analyses of rivers and streams for a variety of projects involving adjacent habitat impacts, jurisdictional waters, evaluation of historic gage data, calibration, and monitoring water levels for flood operations. Responsibilities include representing clients at various agency or organizational meetings, and coordinating environmental issues and environmental documents.



YI SHEN, PH.D., TX. P.E. – HYDROLOGIC AND HYDRAULIC MODELING AND ANALYSIS

EDUCATION/REGISTRATION: PH.D., WATER RESOURCES ENGINEERING; B.S., HYDRAULIC AND HYDROPOWER CONSTRUCTION ENGINEERING, P.E., TX NO. 101271

Dr. Shen is a Water Resources Engineer with 14 years of experience. He has managed multiple projects for federal, private, city, county, and state clients. He has multiple responsibilities, including business development, project management, and training junior staff.



MICHAEL PANTELL, P.E., C.F.M. – HYDROLOGIC AND HYDRAULIC MODELING AND ANALYSIS

Education/Registration: M.S., Civil Engineering, B.S., Geology; Professional Engineer, CA. No. 89649, Certified Floodplain Manager

Mr. Pantell is a civil engineer in GEI's Sacramento office. He is experienced in project management, hydraulic and hydrological modeling, economic and life risk analyses, levee accreditation, feasibility study analyses, storm drain network analyses, and levee design. In previous positions he has coordinated and directed meetings regarding various flood control related issues with Federal, State, and local stakeholders including USACE, DWR, San Joaquin Area Flood Control, Sutter Butte Flood Control Agency, and county governments. He has managed and guided staff engineers in completing a wide variety hydraulic, hydrologic, and life risk analysis related tasks. He has experience developing storm drain models using United States Environmental Protection Agency Stormwater Management Model, FLO2D, and HEC RAS to determine existing infrastructure capacity, map residual flooding, and determine infrastructure improvements needed. He has developed HEC HMS models for determining various frequency rainfall events. He has a strong technical understanding of modern hydrologic methods including the CVHS and the 2017 CVFPP climate change analysis.



JENNIFER BUCHANAN, G.I.S.P., ENV SP – HYDROLOGIC AND HYDRAULIC MODELING AND ANALYSIS

Education/Registration: BS, Mechanical Engineering; GISP No. 62663; Certified ENV SP

Ms. Buchanan is a Certified Geographic Information Systems Professional (GISP) and received a GIS Certificate of Achievement. She has over 20 years of years of experience as a Water Resources Engineer and GIS Specialist. Ms. Buchanan specializes in stormwater and water quality, integrating GIS and CAD data with various Hydrologic and Hydraulic modeling software, creating floodplains, profiles, base flood elevations, land use and roughness assumptions, documentation, deliverables, automation, and a wide variety of maps and data.

Her experience includes development of hydrology and planning studies, hydrologic and hydraulic modeling, detention routing, environmental compliance, scour assessments, and FEMA CLOMR/LOMR Preparation. Key projects and demonstrations have been related to water supply/distribution, water resources flood control systems and facilities, dam inundation, levee certification, flood risk analysis, flood impact analysis, low impact development, mitigation, drainage studies, and emergency preparedness.

Statement of Qualifications for Natomas Basin Hydraulic Model

Her knowledge includes, but is not limited to, the following: ArcGIS, Cartography, Spatial Analysis, Spatial Databases, Geoprocessing, Georeferencing, Geocoding, Queries, Floodplain Delineation, Hydrologic and Hydraulic Modeling, Plan and Profiles, Model Builder, Python, Visual Basic, SQL Server, 3D Analyst, Spatial Analyst, Creating Surfaces, DFIRMS, Remote Sensing, Data Acquisition, LP 360, Metadata, HEC-RAS 1D/2D, HEC-GeoRAS, HEC-HMS, PC-SWSMM 2D, XP-SWMM, EPA SWMM, RASPLOT, MIKE FLOOD, FLO-2D, FLOW-3D, SMS, Global Mapper, Microsoft Office (Word, EXCEL, ACCESS, PowerPoint), LiDAR, Problem Solving, Code Compliance, Presentations, Troubleshooting, Training, Research, Data Management, Permitting, Documentation, AutoCAD, Civil 3D, BricsCAD, Rhino, Calculations, Deliverables, and Animations.

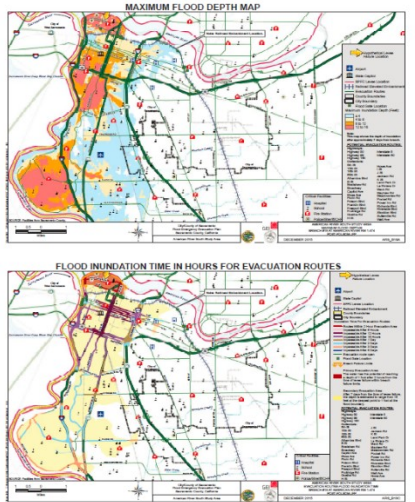
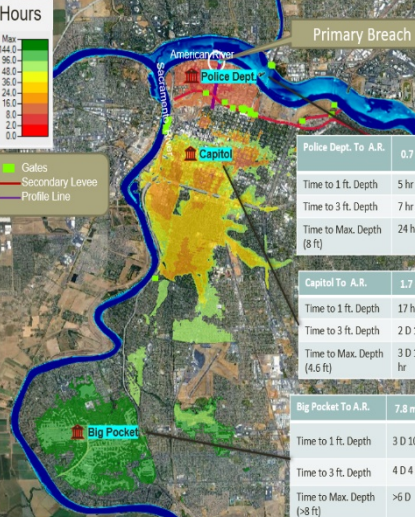
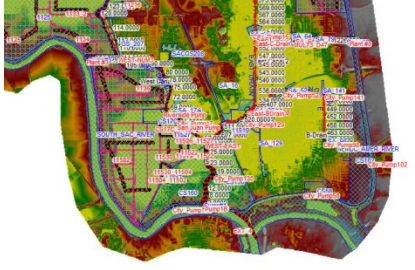
D. List of Clients and References

The CESI Team client references are summarized here from the detailed descriptions provided in the Forms at the beginning of this document. We encourage you to contact the clients about the quality of our performance.

Civil Engineering Solutions, Inc.

Reference and Contact Information	Project Name	Representative Picture
Placer County Flood Control and Water Conservation District Brad Brewer 530 745 7592 bbrewer@placer.ca.gov 3091 County Center Drive, Suite 220 Auburn CA 95603	<ul style="list-style-type: none"> Dry Creek Watershed Update Plan CTP 1 PMR CTP 3 PMR 	
City of Lincoln Ray Leftwich 916 434 2456 Ray.leftwich@lincolncal.gov 600 Sixth Street Lincoln, CA 95648	<ul style="list-style-type: none"> Unofficial City Hydrologist Plan Check various projects South Lincoln LOMR E Street Trunk 	
Grandpark Ownership Group Steve Letterly 949 422 2860 sletterly@letterlymgmt.com 1278 Glenneyre Street #130 Laguna Beach, CA 92651-3103	<ul style="list-style-type: none"> Grandpark Natomas Basin Wide Hydrology and Hydraulics Model (included here because of Option #1 plan) 	

GEI Consultants, Inc.

Reference and Contact Information	Project Name	Picture																				
<p>City of Sacramento Department of Utilities Connie Perkins (now with CVFPB) 916 480 5386 Constance.perkinsgutowsky@cvflood.ca.gov gov 3310 El Camino Avenue, Suite 170 Sacramento, CA 95821</p>	<ul style="list-style-type: none"> 200-yr floodplain evaluation 	 <p>The top map is titled 'MAXIMUM FLOOD DEPTH MAP' and shows various colored zones representing different flood depths. The bottom map is titled 'FLOOD INUNDATION TIME IN HOURS FOR EVACUATION ROUTES' and shows colored zones representing different inundation times.</p>																				
<p>City of Sacramento, Depart of Utilities Rosa Millino, Associate Project Engineer 916 808 1451 rmillino@cityofsacramento.org 1395 35th Avenue Sacramento, CA 95822</p>	<ul style="list-style-type: none"> Secondary Levee Evaluation 	 <p>The map shows an aerial view of the Sacramento River area with color-coded inundation times. A legend indicates 'Gates', 'Secondary Levee', and 'Profile Line'. A data table on the right provides specific inundation times for different locations.</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Distance to A.R.</th> <th>Time to 1 ft. Depth</th> <th>Time to 3 ft. Depth</th> <th>Time to Max. Depth</th> </tr> </thead> <tbody> <tr> <td>Police Dept.</td> <td>0.7 mi</td> <td>5 hr</td> <td>7 hr</td> <td>24 hr (8 ft)</td> </tr> <tr> <td>Capitol</td> <td>1.7 mi</td> <td>17 hr</td> <td>2 D 1hr</td> <td>3 D 10 hr (4.6 ft)</td> </tr> <tr> <td>Big Pocket</td> <td>7.8 mi</td> <td>3 D 10hr</td> <td>4 D 4 hr</td> <td>>6 D (>8 ft)</td> </tr> </tbody> </table>	Location	Distance to A.R.	Time to 1 ft. Depth	Time to 3 ft. Depth	Time to Max. Depth	Police Dept.	0.7 mi	5 hr	7 hr	24 hr (8 ft)	Capitol	1.7 mi	17 hr	2 D 1hr	3 D 10 hr (4.6 ft)	Big Pocket	7.8 mi	3 D 10hr	4 D 4 hr	>6 D (>8 ft)
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Big Pocket	7.8 mi	3 D 10hr	4 D 4 hr	>6 D (>8 ft)																		
<p>County of Sacramento, Department of Water Resources Michael Johnson, Senior Civil Engineer 916 874 8646 johnsonm@saccounty.net 827 7th Street, Suite 301 Sacramento, CA 95814</p>	<ul style="list-style-type: none"> Third party Project Peer Reviews. (Includes Peer Review of Grandpark Model) 	 <p>The map shows a detailed hydraulic model of a river section with various colored zones and numerical values representing different parameters.</p>																				

E. Availability

The CESI Team has availability to begin work on September 21, 2020 as requested in the RFQ. As discussed in 3a, the CESI team is in the position to purchase the existing condition hydrologic and hydraulic model for the Natomas Basin prepared by the Grandpark project. Therefore, two schedules are provided for review in the SCHEDULE section of this proposal. The advantage of purchasing the models from the Grandpark project is to accelerate the schedule and reduce the overall cost. If purchasing the models are not an acceptable option, the CESI team also included a schedule which will start the hydrologic and hydraulic models from scratch. For either option, the CESI team will be able to complete the tasks as discussed in the scope of services.

The timing of this RFQ could not be better as CESI is nearly complete with its work on the Grandpark project, with only a few Technical Memorandums for cumulative conditions analysis remaining to be prepared. The CESI Team is ready to start on this effort.

GRANDPARK NATOMAS BASIN WIDE H&H MODELING AND DOCUMENTATION OPTION:

The CESI Team believes it would be both a cost savings and schedule savings to execute the included agreement (**Appendix B**) with the Grandpark owners to acquire all rights to their “Current Conditions” (pre-project) Hydrology and Hydraulics modeling. We believe the total cost savings to be \$58,000 and the schedule savings would be approximately 3 to 4 months.

When this RFQ was posted, CESI approached the Grandpark ownership group about the availability of the model. We had heard that they had been negotiating with various entities about the purchase of certain rights to the modeling.

The Grandpark owners have invested significant dollars into the development of the modeling. Their thoughts are that if some portion is to be used for the public benefit on other works, they should receive some compensation.

We approached this negotiation with the understanding that they would be relinquishing all rights to the “Current Conditions” H&H modeling, mapping and background data such that it would transfer to the public agencies and public domain. We pointed out they could retain their rights to their project and other modeling efforts and recover those costs via their project fee program at a later date. The Grandpark Ownership Group has agreed to release to CESI exclusively, their rights to the Current Conditions Hydrology and Hydraulics Modeling for a fee of \$100,000. They have already signed the agreement, and it is waiting for CESI’s signatures and a check to be finalized.

Once executed, CESI would immediately transmit the current draft of the data to RD1000 and the other stakeholders, a full working copy of the models and current related documentation for review. CESI could also provide results information to the City’s consultant for their work to proceed. Once executed all parties would consider the model “in the public domain” or the property of RD1000 and the City however, you desire it.

The model would still need work to be ready for FEMA technical review as we have indicated in our work plan, however, execution of this clause will bypass all of the initial model building items of work.

If the purchase is deemed to not be desired by RD1000 and the Stakeholders, and any remaining issues cannot be resolved, CESI has included the option to perform the full scope from scratch.

F. CESI Team Workplan

The CESI team will provide a detailed work plan that will follow the scope of services and schedule provide in this RFQ. The workplan will include the detailed workflow:

1. Project Management:
 - a. Management of Task Assignments: The CESI Team **Project Director** will manage Task Assignments to staff and sub-consultants.
 - i. Schedule Management: The CESI Team **Project Manager** will manage the project schedule, verifying work progress, making updates and providing those updates to stakeholders as the project proceeds.
 - ii. Budget Management: The CESI Team **Project Director** will manage the item by item project budget providing monthly billings and updates to the client.
 - iii. Client Management: The CESI Team **Project Director** and **Project Manager** will coordinate directly with the District Director, District Staff, and Stakeholders on the project progress, and deliverables.
 - b. Coordination Meetings, Agendas, Meeting Notes: The CESI Team will prepare meeting agendas, Attend meetings with appropriate personnel, take meeting notes and provide them to attendees in post meeting correspondence..
 - i. FEMA Coordination: A coordination meeting with the FEMA Region IX Engineer is recommended early in this process to review:
 1. How frequently he/she desires to be updated on the progress. If they desire progress review prior to the official submittal.
 2. Submittal Process : Methods of providing FEMA modeling and documentation
 3. LAMP/non-accredited levee like features
 4. Terrain Modification Items
 5. Floodway Analysis: Unsteady state based modeling and agree to limits of Floodway Analysis
 6. Sankey Spill Mapping Methodology.
 7. 2-D Domain Floodplain and Floodway items
 8. Other procedural issues
 - ii. Coordination with Client and Stakeholders: RD-1000, City of Sacramento, County of Sacramento, County of Sutter, SAFCA: It is noted that review of deliverables will be performed by the City of Sacramento MT-2 staff and

stakeholders. We also note that coordination with SAFCA and SAFCA's consultant will be necessary on determining the Sankey Spill rates for each event, and documenting that critical issue.

- iii. Coordination with Internal Levee Certification Stakeholders: City of Sacramento, County of Sacramento and their consultants. Certification of the internal levees will be a critical component to the FEMA Mapping update. Initially, the CESI Team needs to provide FEMA basis 100-year flood elevations along these levee systems for certification analysis purposes. Later in the project, the CESI Team will need to incorporate Top of Levee information into the Hydraulic Modeling and Flood Profiles.

2. Data Collection:

- a. Review of Data already collected: The CESI Team will assemble, review and catalogue all data already collected and subsequently provided as we work through this project, for inclusion in project documentation and the TSDN. The CESI Team has already obtained the previous TSDN, City Pump information, RD-1000 Facility information, 2017 Rain gage and pump operations information, CVFED LiDAR, RD-1000 XP SWMM Model, Terrain runoff directions, culvert information,
 - b. Identification of Data Gaps: Based on FEMA requirements for data to support LOMR applications, the CESI Team will identify undocumented facilities, and items which require additional documentation. Some known data needs are listed:
 - i. We expect some culverts and bridges will require additional data to meet FEMA data requirements.
 - ii. Top of Levee information still needs to be obtained per the current conditions.
 - iii. Levee Certification information would be provided by stakeholders at a future date.
 - iv. SAFCA: What will be the final condition of the Sankey Gap? Will the Sankey spill modeling have additional revisions and require additional documentation.
 - c. Research for Data: The CESI Team will research for as-built information for the missing data with Stakeholders and other entities. For example records searches may be needed with Caltrans for Highway Culverts, the Airport for Airport Improvements, or local agencies for development improvements. SAFCA is also performing improvements which may be present on recent aerial images but that were not built at the time the CVFED LiDAR was flown.
 - d. Identification of Field Reconnaissance Needs: Remaining Data Gaps will be referred for Field Reconnaissance surveys after all available data is obtained.
3. Field Reconnaissance Surveys: A combination of Engineer Inspections and Land Surveyor Reconnaissance efforts will be employed to obtain remaining missing documentation of

existing facilities, depending on the type of information that is missing. If we need to obtain measurements and photographs, an engineer will be sent to obtain that type of information. If precise elevation or location information is needed, RFE Engineering will obtain that information.

4. Hydrologic Model Development and Review

a. Initial Hydrology Model Build

- i. GP Option: An option is offered to obtain data for the “Current Conditions” Grandpark Basin Wide Hydrology Model and background data for a fee. This option will save both budget and schedule time, providing nearly all of the Initial Build efforts up front. Alternatively the CESI Team has provided a second option to rebuild the Hydrology Model from scratch.
- ii. Watershed Maps: Watershed Maps have been obtained from multiple sources, which are in conflict with each other for boundaries. These conflicts need to be resolved. Additionally some refinement of watersheds are needed based on terrain information, and in some areas additional detail will be added. GIS shapefiles will be developed for the final watershed maps.
- iii. Land Use: GIS based Land use information is available from multiple sources. There is conflicting information which needs to be resolved by comparison to aerial photos. The GEI Team proposes to use County based Land Use Codes (1-18) to identify land use for each land use area. We will add a 19th code for Canals, so that the land use file can also be used to identify n-values in the hydraulic models. The Land use information is intersected with the watershed maps and soils information to provide the input factors for SACCALC.
- iv. Soils Infiltration Factors: GIS based Hydrologic Soils Group data will be obtained for the Hydrologic Model area. This data is believed to be suitable for use in the 10-year event and smaller storms. For large storm events like the 100-year and larger, final soils infiltration rates will be determined by performing a separate analysis of the rates used in the RD-1000 XPSWMM model which showed best volumetric calibration when calibrating to large events like the 1986 storm, 1995 storm and 1997 storm events. It is believed that the clay soils found in the district will saturate and accept substantially less water in large storm events. It is also believed that high/perched groundwater has been witnessed to exfiltrate onto ground surfaces and runoff into the interior basin drainage facilities during large events. The final infiltration rates will be specified in SACCALC using an override attribute SACCALC allows to be set which overrides the factors developed based on soils and land use..
- v. SACCALC Model: The Land Use GIS information is intersected with the watershed GIS and soils GIS to provide the input factors for the SACCALC hydrology software. The SACCALC software applies preset

precipitation to the watershed factors and develops HEC-1 modeling, executes the HEC-1 modeling and produces DSS files which will provide the input flows for the Hydraulic Models directly.

- vi. Peer Review & Improvements: The Hydrology Model Initial Build will be reviewed by CESI Team members and comments will be made and addressed by our project team.

b. Final Hydrology Model Build

- i. Review by Stakeholders: The products of the Initial Build task will be provided to the Project Stakeholder Review Staff for their review.
- ii. Revisions Following Review: Comments from Stakeholder Reviews will be addressed and incorporated into a final Hydrology Model.

5. Hydraulic Model Development and Review

a. Initial Hydraulics Model Build

- i. GP Option: An option is offered to obtain data for the “Current Conditions” Grandpark Basin Wide Hydraulics Model and background data for a fee. This option will save both budget and schedule time, providing nearly all of the Initial Build efforts up front. Alternatively The CESI Team has provided a second option to rebuild the Hydraulics Model from scratch.
- ii. Terrains: A base Terrain will be developed for a 2 foot horizontal point spacing NAVD 88 vertical datum. The initial terrain will be developed from the CVFED LiDAR “Bare Earth” data. The Terrain will include a number of improvements for:
 - 1. Below water THALWEG information (Including canals and existing detention basins per As-built plans)
 - 2. Cuts through non-accredited features for spillage (this will emulate features such as rice check gates without needing to input the gate information and increasing probabilities of instabilities in the model.
 - 3. Freeway Interchange As-built information at Elverta Road.
 - 4. Other existing Terrain modifications since 2010 when the CVFED LiDAR was flown.
- iii. 1-Dimension Model Components: The Hydraulics model will include both 1D and 2D components and will be performed in the latest(stable) edition of HEC-RAS. The below lists the types of 1D features that will be documented in this effort and input into the model.
 - 1. Streams: Stream lines will be drawn for the 1D Streams
 - 2. Junctions: Junction elements will connect the 1D stream lines.

3. Cross Sections: Cross Sections will be added to the 1D model at a suitable spacing for the details of each reach and area of the model.
 4. Inline Structures: Inline Structures such as Bridges and Culverts will be input based on As-built information, aerial imagery, and terrain information.
 5. Storage Areas: Storage areas will be used at all pump station locations to represent the detention areas or sumps of the pump stations. Additionally storage areas will be used to connect upstream limits of 1D streams to other features. Storage areas will use the terrain to develop their storage v. elevation information. In some cases additional as-built data may be used to include subsurface storage areas such as at pump sumps.
 6. Pump Stations: Many pump stations exist within and at the boundaries of the Natomas Basin. Some are used to pump runoff from development areas into the internal RD-1000 system of channels. Others are used to pump flood waters from the RD-1000 Channels into the surrounding rivers. The CESI Team will use as-built and agency provided operations information to input pump rates and stage on/off elevations into the model.
 7. Lateral Weirs: Lateral Weirs are used to connect 1D features to 2D features where the 2D feature runs along the edge of the bank of the 1D stream. The lateral weirs will be defined at the high ground between the 1D and 2D items. The elevations will be obtained from the terrain data. Side channel cut elevation information will be obtained from the terrain information. Culverts through lateral weirs will be modeled, per the existing culvert information if possible, however, in some cases culverts will generate an instability, in these cases the culvert will be modeled as a side channel cut. Lateral Weir Coefficients will be determined based on State Guidance developed during the CVFED modeling effort. Values range from 0.1 to 2.0. In some cases a properly selected lateral weir coefficient will be unstable in the model, and need to be reduced in order to become stable.
- iv. 2-Dimension Model Components: The Hydraulics model will include both 1D and 2D components and will be performed in the latest(stable) edition of HEC-RAS. The below lists the types of 2D features that will be documented in this effort and input into the model.
1. 2D Mesh(s) Domains: A 2D domain will include an internal mesh of elements. For this effort, some mesh elements may be as large as 400 feet by 400 feet, and as small as 10 feet by 10 feet. The size and location of the elements created is controlled by the Refinement Breaklines and Regions.

- a. 2D Mesh Domain Boundaries: A 2D Domain Boundary is defined in the Hydraulic Model for each 2D Domain. This model will include multiple domains separated by terrain features such as the District Channel system. Default mesh element sizes and factors are set for each domain.
 - b. 2D Mesh(s) Refinement Breaklines and Regions: Within each 2D domain, mesh refinement breaklines and regions are defined to for mesh element size and alignment to match ground features and model needs..
2. 2D Connections: 2D areas that are connected to each other require 2D connections, essentially a lateral weir along their common boundary. These are developed with culvert and channel cuts similar to the lateral weir methodology previously described.
 3. 1D connections to 2D Mesh(s): Some of the 2D Domains will connect to the 1D systems. As previously mentioned lateral weirs will perform these connections along the channel edges. However, there can also be direct connections at upstream or downstream limits of the 1D channels which require special care. These connections can be unstable, and sometimes require other features such as a “dummy” weir to be defined to help stabilize the model.
 4. 2D Mesh N-Values: As previously mentioned, the 2D-Mesh N values will be obtained from the Land Use shape file. Higher and lower values will also be tested in the Calibration analysis to determine the best calibrated values to use for the system.
 5. Culverts/Bridges: In some cases, Bridges or Culverts may need to be directly input into the interior of a 2D Domain.
- v. Internal/External Boundary Conditions: Boundary conditions are input to provide the inflows from the hydrology model, and to set downstream water surface elevations.
 1. Locations for Boundary Conditions Applications: Based on the hydrology model, locations for internal boundary conditions will be identified. Some locations will occur within a 2D domain, at the edge of a 2D domain (Sankey Gap for example) or within a 1D channel. Where connecting to a 2D domain a Boundary condition line is developed. For this project and in general these need to be developed to distribute inflows across different field areas so that the timing of the runoff will be appropriate in the calibration analysis.
 2. Apply Hydrology to Model: References to the Hydrology data contained in the DSS files are input in the “Unsteady Flow Data” editor. Additionally initial flow conditions at the start of the model

are set, such as detention basin starting water surface elevations, and starting inflows. In some cases minimum flows are also set at inflow locations to set a minimum flow rate at that location so that the model won't go unstable in low flow conditions. Because the volumetric calibration of this model is important, the use of minimum contributing flows will be minimized.

- vi. Debug: Debugging the model to resolve instabilities and runtime warnings is a large effort process. Especially for this model which provides a high level of detail across the 83 square mile Natomas Basin. There are a lot of elements in the model, and HEC-RAS can develop instabilities from numerous input issues. Debugging the model is an iterative process, where resolution of one stability can result in another. This model is expected to require 4-6 hours to compute on the fastest computer systems available currently.
- b. Final Hydraulics Model Build for FEMA Compliance and Reviews
- i. Preliminary Floodway Analysis: A preliminary Floodway Analysis will be performed which meets FEMA criteria.
 - ii. cHECKRAS: FEMA requires that HEC-RAS models be reviewed by the cHECKRAS software prior to submittal and that all issues be resolved or comments be submitted providing valid reasons why some issues presented by cHECKRAS cannot be resolved. The Floodway Analysis is usually performed at the same time as the cHECKRAS step as many of the comments produced by cHECKRAS relate to the floodway analysis.
 - iii. Debug – Final Model Debug with the added information from the cHECKRAS and Floodway analysis will be performed
 - iv. Review by Stakeholders: The Hydraulic model will be reviewed by Stakeholders including RD-1000, the City of Sacramento MT2 personnel/
 - v. Revisions Following Review: The CESI Team will respond to comments received by the Stakeholder Review, and update the modeling analysis as necessary.
 - vi. Produce: Final Hydraulics Model: Ready for final Modeling and Mapping tasks.
 - 1. Finalize Hydraulics Model: incorporating comments from Stakeholder Review. Provide Final Modeling Hydrology and Hydraulics files to the District.
 - 2. Finalize Model Calibration and Documentation
 - 3. Finalize Floodway Analysis
 - 4. Finalize Profile Generation

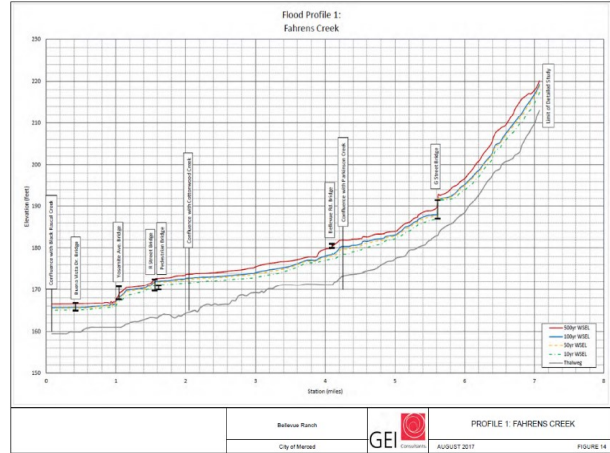
6. Floodplain Mapping: Data developed within the HEC-RAS model will be utilized to develop floodplain limits, flood elevations, cross section data and floodway limits for the floodplain mapping effort.
 - a. Work Maps – The CESI Team will develop Work Maps consistent with FEMA requirements
 - b. Annotated FIRM – The CESI Team will develop Annotated FIRM exhibits consistent with FEMA requirements.
 - c. GIS Files – GIS files of the Mapping products will be provided to the District
7. Internal Quality Control: The CESI Team member GEI will be providing quality control and quality assurance to ensure that a qualified engineer will review each step to verify that the evaluation is defensible. GEI has provide quality control review of the existing hydraulic model for Option No. 1 which is a significant time saver. If the option is chosen to start the hydraulic model from scratch, GEI will provide the necessary quality control checks for FEMA LOMR documentation.
8. External Quality Control: The CESI Team member GEI will coordinate all external Quality Control reviews through the process starting with data collection review, hydrologic and hydraulic model review, FEMA work maps and annotated maps and draft and final TSDN documentation.
9. TSDN: The CESI team will develop the TSDN report which includes all the necessary documentation which will include the following:
 - a. MT-2 Forms: The CESI team will fill out the MT-2 form. The form is stamped and signed by a licensed professional engineer from the CESI Team. CESI will arrange signature from RD1000. The MT-2 form is used for revisions to effective FIS reports. These forms are intended to provide FEMA with assurance that all pertinent data relating to the revision are included in the submittal.
 - b. Supporting Data: As built and operations data: The CESI team will organize the supporting documentation (topographic data; record drawings for all structures, GIS, model data, etc.) in an easy to follow format.
 - c. TSDN Narrative: The CESI team will prepare the necessary documentation of the project details, methodology, model development and details about the model results. The narrative will include documentation for the mapping scenarios.
 - d. Flood Flow Summary Tables: The CESI team will include flood flow summary tables for each storm frequency (10-, 50-, 100-, 500-year). The flood flow tables are intended to show the flow distributions and water surface elevations depths for each of the identified 1D channel segments. There are a significant amount of 2D

Table 1A: Summary Peak Flow Comparison

Node Locations	Flooding Source and Location	2008 Drainage Shed Area (sq. mi.)	2008 FIS Peak Discharges (cfs)				2017 Drainage Shed Area (sq. mi.)	2017 HEC-HMS Peak Discharges (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Cottonwood Creek											
1	At G Street	7.0	250	550	780	1300	6.4	385	688	825	1167
2	At confluence with Fahrrens Creek	8.0	290	755	800	1500	6.7	406	721	863	1217
Fahrrens Creek											
3	At confluence with Black Rascal	38.5	-	-	5400	-	43.1	1951	3630	4422	6446
4	At Cottonwood Creek	29.2	1140	2850	3800	6300	32.2	1698	3036	3659	5256
5	At Parkinson Creek	19.5	760	1900	2530	4200	24.2	1279	2255	2712	3899

areas in the hydraulic model that will also be included and summarized in tables.

- e. Floodway Data Tables: The CESI team will prepare the floodway data tables per FEMA guidelines. All numbers in the table are based on the hydraulic models calculated at each floodplain cross section. The first two columns under “Flooding Source” identify the stream name and the cross sections used in the FIS, and the distance of the given cross section from a known reference point. The reference point is usually designated by the mouth of the flooding source, a corporate limit, or a county boundary. The footnotes at the bottom of the Floodway Data Table identify this reference point.
- f. Flood Profiles: The CESI team will extract and develop flood profiles representing the storm frequencies for each of the study streams as shown. The flood profiles will be developed and scaled per the FEMA guidance documents.



Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model



TOTAL BUDGET

CIVIL ENGINEERING SOLUTIONS, INC. RD 1000	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
I. Project Management																		
Project Management	24		24	\$ 5,880	2	24					26	\$ 6,954			0	\$ -	50	\$ 12,834
Coordination & Board Meetings	24		24	\$ 5,880	2	24	8	8	8	8	58	\$ 12,266	8		8	\$ 1,400	90	\$ 19,546
FEMA Coordination	16		16	\$ 3,920	2	16					18	\$ 4,834			0	\$ -	34	\$ 8,754
FEMA Modeling/Mapping Coordination	16		16	\$ 3,920	2	16					18	\$ 4,834			0	\$ -	34	\$ 8,754
Coordination with SAFCA/External Levee Certification and Sankey Rd.	8		8	\$ 1,960		8					8	\$ 2,120			0	\$ -	16	\$ 4,080
Coordination with City/City's Consultant/Internal Levee Certification Issues/ Revisions, Project Identification/ Certification Issues	8		8	\$ 1,960		8					8	\$ 2,120			0	\$ -	16	\$ 4,080
Sum Total - Project Management and Meetings	96	0	96	\$ 23,520	8	96	8	8	8	8	136	\$ 33,128	8	0	8	\$ 1,400	240	\$ 58,048
IIA. Data Collection																		
Collect Record Drawings	2	12	14	\$ 1,870	1	2	2	2	2		9	\$ 1,935			0	\$ -	23	\$ 3,805
Pump Station Data	2	12	14	\$ 1,870	1	2					3	\$ 827	16		16	\$ 2,800	33	\$ 5,497
IIB. Field Reconnaissance/Survey																		
Culvert/Bridge Data	2	16	18	\$ 2,330	1	2	16	16	16		51	\$ 9,691	16		16	\$ 2,800	85	\$ 14,821
Survey	2		2	\$ 490	1	1					2	\$ 562		25	25	\$ 10,000	29	\$ 11,052
Sum Total - Data Collection/Field Reconnaissance	8		48	\$ 6,560	4	7	18	18	18	0	65	\$ 13,015	32	25	57	\$ 15,600	170	\$ 35,175
III. Hydrology																		
Hydrology and Hydraulics Model Purchase(Hydrology Portioo)																	\$ 20,000	
Watershed Maps - Resolve Inconsistencies between City and RD-1000 watershed limits, GIS Layers			0	\$ -	1	2	0	0	16		19	\$ 3,483					19	\$ 3,483
Land Use Layer - Resolve Current Land Uses from Various Source GIS Data			0	\$ -	1	2	0	0	0		3	\$ 827					3	\$ 827
Resolve Infiltration Factors for Large Events to match RD-1000 Volumetrically			0	\$ -	1	2	0	0	0		3	\$ 827					3	\$ 827
Input Data into SACCALC Model			0	\$ -	1	2	0	0	0		3	\$ 827					3	\$ 827
Peer Review Responses	12		12	\$ 2,940	4	24	16	16	8		68	\$ 15,084					80	\$ 18,024

Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
TOTAL BUDGET



CIVIL ENGINEERING SOLUTIONS, INC. RD 1000	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
Sum Total - Hydrology	12	0	12	\$ 2,940	8	32	16	16	24	0	96	\$ 21,048	0	0	0	\$ -	108	\$ 43,988
IV. Hydraulics																		
Hydrology and Hydraulics Model Purchase(Hydraulics Portioo)																		\$ 80,000
Terrains -1D/2D Cut in Thalweg - 2D Areas - Identify rice checks, culverts which will not be modeled, Document and modify Terrain, Convert to HEC format.			0	\$ -	1						1	\$ 297					1	\$ 297
Draw Streams			0	\$ -	1						1	\$ 297					1	\$ 297
Draw and Re-cut Cross Sections			0	\$ -	1						1	\$ 297					1	\$ 297
Draw 2D Domains boundaries, create domains,			0	\$ -	1						1	\$ 297					1	\$ 297
Add Break Lines - Add Terrain based mesh improvements, resolve 8 side issues	4		4	\$ 980	2	4			8		14	\$ 2,982					18	\$ 3,962
Input Culverts/Bridges And AS-Built data identified by agencies			0	\$ -							0	\$ -					0	\$ -
Internal/External Boundary Conditions (hydrology inflows, Sankey gap, etc.)			0	\$ -							0	\$ -					0	\$ -
Internal Pumps			0	\$ -							0	\$ -					0	\$ -
External Pumps			0	\$ -							0	\$ -					0	\$ -
Add Surveyed Levee Elevations	8		8	\$ 1,960			8	8			16	\$ 3,104					24	\$ 5,064
RE-trace Weirs/Lateral Weirs into Domain.			0	\$ -							0	\$ -					0	\$ -
Apply Hydrology to HEC-RAS and Document			0	\$ -							0	\$ -					0	\$ -
cHECKRAS and Resolve Issues for FEMA Compliant	24		24	\$ 5,880	1	2	24	24			51	\$ 10,139					75	\$ 16,019
Floodway Analysis	40		40	\$ 9,800			16		8		24	\$ 3,968					64	\$ 13,768
Debug	4		4	\$ 980							0	\$ -					4	\$ 980
Peer Review	8		8	\$ 1,960	2	2	8	8			20	\$ 4,228					28	\$ 6,188
Model Calibration	24		24	\$ 5,880	1	2	16	16			35	\$ 7,035					59	\$ 12,915
Respond to Peer Review and Agency Comments and Re-compute, and Re-debug as needed.	40		40	\$ 9,800	1	2	8	8			19	\$ 3,931					59	\$ 13,731
Sum Total - Hydraulics	152		152	\$ 37,240	11	12	80	64	16	0	183	\$ 36,575	0	0	0	\$ -	335	\$ 153,815
V. Mapping																		
Draft Work Map (No. of Panels)	16		16	\$ 3,920	1	2			80	0	83	\$ 14,107					99	\$ 18,027
FEMA LOMR Panels	16		16	\$ 3,920	1	2			40	0	43	\$ 7,467					59	\$ 11,387

Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
TOTAL BUDGET

 CIVIL ENGINEERING SOLUTIONS, INC. RD 1000 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110			\$ 175	\$ 400				
Organize FEMA Files	16		16	\$ 3,920	1	2			40	0	43	\$ 7,467					59	\$ 11,387
FEMA Profiles	16		16	\$ 3,920	1	2			60	0	63	\$ 10,787					79	\$ 14,707
Sum Total - Mapping	64		64	\$ 15,680	4	8	0	0	220	0	232	\$ 39,828	0	0	0	\$ -	296	\$ 55,508
VI. TSDN Documentation																		
Draft Report	60		60	\$ 14,700	2	20			16	8	46	\$ 9,430					106	\$ 24,130
Final Report	40		40	\$ 9,800	2	20			8	8	38	\$ 8,102					78	\$ 17,902
Sum Total - Documentation	100		100	\$ 24,500	4	40	0	0	24	16	84	\$ 17,532	0	0	0	\$ -	184	\$ 42,032

Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model

TOTAL BUDGET

 CIVIL ENGINEERING SOLUTIONS, INC. RD 1000  GEI Consultants	Civil Solutions				GEI Staff							RFE			GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantell, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours
<i>Hourly Billing Rate:</i>	\$ 245	\$ 115		\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110			\$ 175	\$ 400				
Total Hours of All Tasks Requested	432		472		39	195	122	106	310	24	796		40	25	65		1,333
TOTAL PROJECT COSTS of REQUESTED TASKS				\$ 110,440							\$ 161,126				\$ 17,000		\$ 388,566



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
- DRAFT MODEL DELIVERY AND STAKEHOLDER REVIEW**

PHASE 1

CIVIL ENGINEERING SOLUTIONS, INC. RD 1000	Civil Solutions				GEI Staff								RFE				GRAND TOTAL	
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Panteli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fansulau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
	Hourly Billing Rate: \$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110			\$ 175	\$ 400				
I. Project Management																		
Project Management	7.999992	0	8	\$ 1,960	0.6667	7.999992	0	0	0	0	8.667	\$ 2,318	0	0	0	\$ -	17	\$ 4,278
Coordination & Board Meetings	7.999992	0	8	\$ 1,960	0.6667	7.999992	2.666664	2.66666	2.66666	2.666664	19.33	\$ 4,089	2.666664	0	2.6667	\$ 467	30	\$ 6,515
FEMA Coordination	3.2	0	3.2	\$ 784	0.4	3.2	0	0	0	0	3.6	\$ 967	0	0	0	\$ -	7	\$ 1,751
FEMA Modeling/Mapping Coordination	3.2	0	3.2	\$ 784	0.4	3.2	0	0	0	0	3.6	\$ 967	0	0	0	\$ -	7	\$ 1,751
Coordination with SAFCA/External Levee Certification and Sankey Rd.	1.6	0	1.6	\$ 392	0	1.6	0	0	0	0	1.6	\$ 424	0	0	0	\$ -	3	\$ 816
Coordination with City/City's Consultant/Internal Levee Certification Issues/ Revisions, Project Identification/ Certification Issues	1.6	0	1.6	\$ 392	0	1.6	0	0	0	0	1.6	\$ 424	0	0	0	\$ -	3	\$ 816
Sum Total - Project Management and Meetings	25.599984	0	25.6	\$ 6,272	2.1333	25.599984	2.666664	2.66666	2.66666	2.666664	38.4	\$ 9,188	2.666664	0	2.6667	\$ 467	66.66662	\$ 15,927
IIA. Data Collection																		
Collect Record Drawings	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
Pump Station Data	0.4	2.4	2.8	\$ 374	0.2	0.4	0	0	0	0	0.6	\$ 165	0	0	0	\$ -	3	\$ 539
IIB. Field Reconnaissance/Survey																		
Culvert/Bridge Data	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
Survey	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
Sum Total - Data Collection/Field Reconnaissance	0.4		2.8	\$ 374	0.2	0.4	0	0	0	0	0.6	\$ 165	0	0	0	\$ -	3.4	\$ 539
III. Hydrology																		
Hydrology and Hydraulics Model Purchase(Hydrology Portioo)																		20000
Watershed Maps - Resolve Inconsistencies between City and RD-1000 watershed limits, GIS Layers	0	0	0	\$ -	0.2	0.4	0	0	3.2	0	3.8	\$ 697	0	0			4	\$ 697
Land Use Layer - Resolve Current Land Uses from Various Source GIS Data	0	0	0	\$ -	0.2	0.4	0	0	0	0	0.6	\$ 165	0	0			1	\$ 165
Resolve Infiltration Factors for Large Events to match RD-1000 Volumetrically	0	0	0	\$ -	0.2	0.4	0	0	0	0	0.6	\$ 165	0	0			1	\$ 165
Input Data into SACCALC Model	0	0	0	\$ -	0.2	0.4	0	0	0	0	0.6	\$ 165	0	0			1	\$ 165
Peer Review Responses	2.4	0	2.4	\$ 588	0.8	4.8	3.2	3.2	1.6	0	13.6	\$ 3,017	0	0			16	\$ 3,605



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
- DRAFT MODEL DELIVERY AND STAKEHOLDER REVIEW**

PHASE 1

 CIVIL ENGINEERING SOLUTIONS, INC. RD 1000 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Panteli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fansulau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
	Hourly Billing Rate: \$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110			\$ 175	\$ 400				
Sum Total - Hydrology	2.4	0	2.4	\$ 588	1.6	6.4	3.2	3.2	4.8	0	19.2	\$ 4,210	0	0	0	\$ -	22	\$ 24,798
IV. Hydraulics																		
Hydrology and Hydraulics Model Purchase(Hydraulics Portioo)																		80000
Terrains -1D/2D Cut in Thalweg - 2D Areas - Identify rice checks, culverts which will not be modeled, Document and modify Terrain, Convert to HEC format.	0	0	0	\$ -	1	0	0	0	0	0	1	\$ 297					1	\$ 297
Draw Streams	0	0	0	\$ -	1	0	0	0	0	0	1	\$ 297					1	\$ 297
Draw and Re-cut Cross Sections	0	0	0	\$ -	1	0	0	0	0	0	1	\$ 297					1	\$ 297
Draw 2D Domains boundaries, create domains,	0	0	0	\$ -	1	0	0	0	0	0	1	\$ 297					1	\$ 297
Add Break Lines - Add Terrain based mesh improvements, resolve 8 side issues	0.8	0	0.8	\$ 196	0.4	0.8	0	0	1.6	0	2.8	\$ 596					4	\$ 792
Input Culverts/Bridges And AS-Built data identified by agencies	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Internal/External Boundary Conditions (hydrology inflows, Sankey gap, etc.)	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Internal Pumps	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
External Pumps	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Add Surveyed Levee Elevations	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
RE-trace Weirs/Lateral Weirs into Domain.	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Apply Hydrology to HEC-RAS and Document	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
cHECKRAS and Resolve Issues for FEMA Compliant	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Floodway Analysis	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Debug	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Peer Review	4	0	4	\$ 980	1	1	4	4	0	0	10	\$ 2,114					14	\$ 3,094
Model Calibration	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Respond to Peer Review and Agency Comments and Re-compute, and Re-debug as needed.	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Sum Total - Hydraulics	4.8		4.8	\$ 1,176	5.4	1.8	4	4	1.6	0	16.8	\$ 3,898	0	0	0	\$ -	21.6	\$ 85,074
V. Mapping																		
Draft Work Map (No. of Panels)	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
FEMA LOMR Panels	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -


**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
- DRAFT MODEL DELIVERY AND STAKEHOLDER REVIEW**

PHASE 1



 CIVIL ENGINEERING SOLUTIONS, INC. RD 1000 	Civil Solutions				GEI Staff								RFE				GRAND TOTAL	
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantell, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fansulau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110			\$ 175	\$ 400				
Organize FEMA Files	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
FEMA Profiles	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Sum Total - Mapping	0		0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
VI. TSDN Documentation																		
Draft Report	15	0	15	\$ 3,675	0.5	5	0	0	4	2	11.5	\$ 2,358					27	\$ 6,033
Final Report	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Sum Total - Documentation	15		15	\$ 3,675	0.5	5	0	0	4	2	11.5	\$ 2,358	0	0	0	\$ -	26.5	\$ 6,033

**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
- DRAFT MODEL DELIVERY AND STAKEHOLDER REVIEW**



PHASE 1

 CIVIL ENGINEERING SOLUTIONS, INC. RD 1000	Civil Solutions				GEI Staff							RFE			GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantell, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fansulau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400				
Total Hours of All Tasks Requested	48		51		10	39	10	10	13	5	86	3	0	3		140	
TOTAL PROJECT COSTS of REQUESTED TASKS				\$ 12,085								\$ 19,819				\$ 467	\$ 132,371



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 2 - DATA IDENTIFICATION/ACQUISITION MODEL REVISIONS AND DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
I. Project Management																		
Project Management	7.999992	0	8	\$ 1,960	0.6667	7.999992	0	0	0	0	8.667	\$ 2,318	0	0	0	\$ -	17	\$ 4,278
Coordination & Board Meetings	7.999992	0	8	\$ 1,960	0.6667	7.999992	2.6667	2.6667	2.6667	2.6667	19.33	\$ 4,089	2.666664	0	2.6667	\$ 467	30	\$ 6,515
FEMA Coordination	3.2	0	3.2	\$ 784	0.4	3.2	0	0	0	0	3.6	\$ 967	0	0	0	\$ -	7	\$ 1,751
FEMA Modeling/Mapping Coordination	3.2	0	3.2	\$ 784	0.4	3.2	0	0	0	0	3.6	\$ 967	0	0	0	\$ -	7	\$ 1,751
Coordination with SAFCA/External Levee Certification and Sankey Rd.	1.6	0	1.6	\$ 392	0	1.6	0	0	0	0	1.6	\$ 424	0	0	0	\$ -	3	\$ 816
Coordination with City/City's Consultant/Internal Levee Certification Issues/ Revisions, Project Identification/ Certification Issues	4	0	4	\$ 980	0	4	0	0	0	0	4	\$ 1,060	0	0	0	\$ -	8	\$ 2,040
Sum Total - Project Management and Meetings	27.999984	0	28	\$ 6,860	2.1333	27.999984	2.6667	2.6667	2.6667	2.6667	40.8	\$ 9,824	2.666664	0	2.6667	\$ 467	71.46662	\$ 17,151
IIA. Data Collection																		
Collect Record Drawings	2	12	14	\$ 1,870	1	2	2	2	2	0	9	\$ 1,935	0	0	0	\$ -	23	\$ 3,805
Pump Station Data	1.6	9.6	11.2	\$ 1,496	0.8	1.6	0	0	0	0	2.4	\$ 662	16	0	16	\$ 2,800	30	\$ 4,958
IIB. Field Reconnaissance/Survey																		
Culvert/Bridge Data	2	16	18	\$ 2,330	1	2	16	16	16	0	51	\$ 9,691	16	0	16	\$ 2,800	85	\$ 14,821
Survey	2	0	2	\$ 490	1	1	0	0	0	0	2	\$ 562	0	25	25	\$ 10,000	29	\$ 11,052
Sum Total - Data Collection/Field Reconnaissance	7.6		45.2	\$ 6,186	3.8	6.6	18	18	18	0	64.4	\$ 12,850	32	25	57	\$ 15,600	166.6	\$ 34,636
III. Hydrology																		
Hydrology and Hydraulics Model Purchase(Hydrology Portioo)																		
Watershed Maps - Resolve Inconsistencies between City and RD-1000 watershed limits, GIS Layers	0	0	0	\$ -	0.8	1.6	0	0	12.8	0	15.2	\$ 2,786					15	\$ 2,786
Land Use Layer - Resolve Current Land Uses from Various Source GIS Data	0	0	0	\$ -	0.8	1.6	0	0	0	0	2.4	\$ 662					2	\$ 662
Resolve Infiltration Factors for Large Events to match RD-1000 Volumetrically	0	0	0	\$ -	0.8	1.6	0	0	0	0	2.4	\$ 662					2	\$ 662
Input Data into SACCALC Model	0	0	0	\$ -	0.8	1.6	0	0	0	0	2.4	\$ 662					2	\$ 662
Peer Review Responses	9.6	0	9.6	\$ 2,352	3.2	19.2	12.8	12.8	6.4	0	54.4	\$ 12,067					64	\$ 14,419



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 2 - DATA IDENTIFICATION/ACQUISITION MODEL REVISIONS AND DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
Sum Total - Hydrology	9.6	0	9.6	\$ 2,352	6.4	25.6	12.8	12.8	19.2	0	76.8	\$ 16,838	0	0	0	\$ -	86	\$ 19,190
IV. Hydraulics																		
Hydrology and Hydraulics Model Purchase(Hydraulics Portioo)																		0
Terrains -1D/2D Cut in Thalweg - 2D Areas - Identify rice checks, culverts which will not be modeled, Document and modify Terrain, Convert to HEC format.	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Draw Streams	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Draw and Re-cut Cross Sections	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Draw 2D Domains boundaries, create domains,	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Add Break Lines - Add Terrain based mesh improvements, resolve 8 side issues	3.2	0	3.2	\$ 784	1.6	3.2	0	0	6.4	0	11.2	\$ 2,386					14	\$ 3,170
Input Culverts/Bridges And AS-Built data identified by agencies	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Internal/External Boundary Conditions (hydrology inflows, Sankey gap, etc.)	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Internal Pumps	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
External Pumps	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Add Surveyed Levee Elevations	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
RE-trace Weirs/Lateral Weirs into Domain.	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Apply Hydrology to HEC-RAS and Document	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
cHECKRAS and Resolve Issues for FEMA Compliant	12	0	12	\$ 2,940	0.5	1	12	12	0	0	25.5	\$ 5,070					38	\$ 8,010
Floodway Analysis	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Debug	2	0	2	\$ 490	0	0	0	0	0	0	0	\$ -					2	\$ 490
Peer Review	4	0	4	\$ 980	1	1	4	4	0	0	10	\$ 2,114					14	\$ 3,094
Model Calibration	24	0	24	\$ 5,880	1	2	16	16	0	0	35	\$ 7,035					59	\$ 12,915
Respond to Peer Review and Agency Comments and Re-compute, and Re-debug as needed.	20	0	20	\$ 4,900	0.5	1	4	4	0	0	9.5	\$ 1,966					30	\$ 6,866
Sum Total - Hydraulics	65.2		65.2	\$ 15,974	4.6	8.2	36	36	6.4	0	91.2	\$ 18,570	0	0	0	\$ -	156.4	\$ 34,544
V. Mapping																		
Draft Work Map (No. of Panels)	8	0	8	\$ 1,960	0.5	1	0	0	40	0	41.5	\$ 7,054					50	\$ 9,014
FEMA LOMR Panels	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 2 - DATA IDENTIFICATION/ACQUISITION MODEL REVISIONS AND DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
<i>Hourly Billing Rate:</i>	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
Organize FEMA Files	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
FEMA Profiles	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Sum Total - Mapping	8		8	\$ 1,960	0.5	1	0	0	40	0	41.5	\$ 7,054	0	0	0	\$ -	49.5	\$ 9,014
VI. TSDN Documentation																		
Draft Report	24	0	24	\$ 5,880	0.8	8	0	0	6.4	3.2	18.4	\$ 3,772				42	\$ 9,652	
Final Report	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Sum Total - Documentation	24		24	\$ 5,880	0.8	8	0	0	6.4	3.2	18.4	\$ 3,772	0	0	0	\$ -	42.4	\$ 9,652



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 2 - DATA IDENTIFICATION/ACQUISITION MODEL REVISIONS AND DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE			GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours
<i>Hourly Billing Rate:</i>	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400				
Total Hours of All Tasks Requested	142		180		18	77	69	69	93	6	333		35	25	60		573
TOTAL PROJECT COSTS of REQUESTED TASKS				\$ 39,212							\$ 68,907				\$ 16,067		\$ 124,186



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 3 - FINAL MODELING, MAPPING AND FEMA RELATED DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
I. Project Management																		
Project Management	8.000016	0	8	\$ 1,960	0.6667	8.000016	0	0	0	0	8.667	\$ 2,318	0	0	0	\$ -	17	\$ 4,278
Coordination & Board Meetings	8.000016	0	8	\$ 1,960	0.6667	8.000016	2.6667	2.6667	2.6667	2.6667	19.33	\$ 4,089	2.666672	0	2.6667	\$ 467	30	\$ 6,515
FEMA Coordination	9.6	0	9.6	\$ 2,352	1.2	9.6	0	0	0	0	10.8	\$ 2,900	0	0	0	\$ -	20	\$ 5,252
FEMA Modeling/Mapping Coordination	9.6	0	9.6	\$ 2,352	1.2	9.6	0	0	0	0	10.8	\$ 2,900	0	0	0	\$ -	20	\$ 5,252
Coordination with SAFCA/External Levee Certification and Sankey Rd.	4.8	0	4.8	\$ 1,176	0	4.8	0	0	0	0	4.8	\$ 1,272	0	0	0	\$ -	10	\$ 2,448
Coordination with City/City's Consultant/Internal Levee Certification Issues/ Revisions, Project Identification/ Certification Issues	2.4	0	2.4	\$ 588	0	2.4	0	0	0	0	2.4	\$ 636	0	0	0	\$ -	5	\$ 1,224
Sum Total - Project Management and Meetings	42.400032	0	42.4	\$ 10,388	3.7333	42.400032	2.6667	2.6667	2.6667	2.6667	56.8	\$ 14,115	2.666672	0	2.6667	\$ 467	101.86676	\$ 24,970
IIA. Data Collection																		
Collect Record Drawings	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
Pump Station Data	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
IIB. Field Reconnaissance/Survey																		
Culvert/Bridge Data	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
Survey	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
Sum Total - Data Collection/Field Reconnaissance	0		0	\$ -	0	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -
III. Hydrology																		
Hydrology and Hydraulics Model Purchase(Hydrology Portioo)																		
Watershed Maps - Resolve Inconsistencies between City and RD-1000 watershed limits, GIS Layers	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Land Use Layer - Resolve Current Land Uses from Various Source GIS Data	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Resolve Infiltration Factors for Large Events to match RD-1000 Volumetrically	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Input Data into SACCALC Model	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -
Peer Review Responses	0	0	0	\$ -	0	0	0	0	0	0	0	\$ -					0	\$ -



**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 3 - FINAL MODELING, MAPPING AND FEMA RELATED DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
Hourly Billing Rate:	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
Sum Total - Hydrology	0	0	0	\$ -	0	0	0	0	0	0	\$ -	0	0	0	\$ -	0	\$ -	
IV. Hydraulics																		
Hydrology and Hydraulics Model Purchase(Hydraulics Portioo)																	0	
Terrains -1D/2D Cut in Thalweg - 2D Areas - Identify rice checks, culverts which will not be modeled, Document and modify Terrain, Convert to HEC format.	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Draw Streams	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Draw and Re-cut Cross Sections	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Draw 2D Domains boundaries, create domains,	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Add Break Lines - Add Terrain based mesh improvements, resolve 8 side issues	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Input Culverts/Bridges And AS-Built data identified by agencies	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Internal/External Boundary Conditions (hydrology inflows, Sankey gap, etc.)	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Internal Pumps	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
External Pumps	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Add Surveyed Levee Elevations	8	0	8	\$ 1,960	0	0	8	8	0	0	16	\$ 3,104				24	\$ 5,064	
RE-trace Weirs/Lateral Weirs into Domain.	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Apply Hydrology to HEC-RAS and Document	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
cHECKRAS and Resolve Issues for FEMA Compliant	12	0	12	\$ 2,940	0.5	1	12	12	0	0	25.5	\$ 5,070				38	\$ 8,010	
Floodway Analysis	40	0	40	\$ 9,800	0	0	16	0	8	0	24	\$ 3,968				64	\$ 13,768	
Debug	2	0	2	\$ 490	0	0	0	0	0	0	\$ -					2	\$ 490	
Peer Review	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Model Calibration	0	0	0	\$ -	0	0	0	0	0	0	\$ -					0	\$ -	
Respond to Peer Review and Agency Comments and Re-compute, and Re-debug as needed.	20	0	20	\$ 4,900	0.5	1	4	4	0	0	9.5	\$ 1,966				30	\$ 6,866	
Sum Total - Hydraulics	82		82	\$ 20,090	1	2	40	24	8	0	75	\$ 14,107	0	0	0	\$ -	157	\$ 34,197
V. Mapping																		
Draft Work Map (No. of Panels)	8	0	8	\$ 1,960	0.5	1	0	0	40	0	41.5	\$ 7,054				50	\$ 9,014	
FEMA LOMR Panels	16	0	16	\$ 3,920	1	2	0	0	40	0	43	\$ 7,467				59	\$ 11,387	

**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 3 - FINAL MODELING, MAPPING AND FEMA RELATED DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL		
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours	TOTAL LABOR COSTS
<i>Hourly Billing Rate:</i>	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400					
Organize FEMA Files	16	0	16	\$ 3,920	1	2	0	0	40	0	43	\$ 7,467					59	\$ 11,387
FEMA Profiles	16	0	16	\$ 3,920	1	2	0	0	60	0	63	\$ 10,787					79	\$ 14,707
Sum Total - Mapping	56		56	\$ 13,720	3.5	7	0	0	180	0	190.5	\$ 32,775	0	0	0	\$ -	246.5	\$ 46,495
VI. TSDN Documentation																		
Draft Report	21	0	21	\$ 5,145	0.7	7	0	0	5.6	2.8	16.1	\$ 3,301					37	\$ 8,446
Final Report	40	0	40	\$ 9,800	2	20	0	0	8	8	38	\$ 8,102					78	\$ 17,902
Sum Total - Documentation	61		61	\$ 14,945	2.7	27	0	0	13.6	10.8	54.1	\$ 11,403	0	0	0	\$ -	115.1	\$ 26,348

**Proposed Scope of Work Budget for the Natomas Basin Hydraulic Model - Option No. 1 - Purchase and Use the Grand Park Model
PHASE 3 - FINAL MODELING, MAPPING AND FEMA RELATED DOCUMENTATION**

 	Civil Solutions				GEI Staff							RFE				GRAND TOTAL	
	Tom Plummer, Project Director, Hydrologic and Hydraulic Support	Design Engineer	Total Hours	CS LABOR COSTS	Mark Fortner, QC	Chris Ferrari, Project Manager Hydrology & Hydraulics	Yi Shen, Hydrology and Hydraulics	Michael Pantelli, Hydrology and Hydraulics	Jennifer Buchanan, GIS/Mapping	Admin	Total Hours	GEI LABOR COSTS	Erik Fanslau, Data Collection/ Pump Sta.	Survey Team	Total Hours	RFE LABOR COSTS	Total Hours
<i>Hourly Billing Rate:</i>	\$ 245	\$ 115			\$ 297	\$ 265	\$ 165	\$ 223	\$ 166	\$ 110		\$ 175	\$ 400				
Total Hours of All Tasks Requested	241		241		11	78	43	27	204	13	376	3	0	3		620	
TOTAL PROJECT COSTS of REQUESTED TASKS				\$ 59,143							\$ 72,399				\$ 467		\$ 132,009

Appendix A – Staff Resumes



Civil Engineering Solutions, Inc.

Thomas S. Plummer, P.E., CFM
Owner – Civil Engineering Solutions, Inc.

Civil Engineering Solutions, Inc.

Education

1988, B.S; Civil Engineering, California State University of Sacramento

Professional Registrations

Civil Engineer, CA 49582

Certified Floodplain Manager, ASFPM US-05-01493

Affiliations

Past Chair – Floodplain Management Association (FMA)

Member - ASFPM, ASCE

Experience

Thomas Plummer founded Civil Solutions in December of 1995 to provide engineering services and to produce engineering software. Tom's main field of expertise is Hydraulics, Hydrology and computer applications in Civil Engineering. Under Tom's direct supervision Civil Solutions has already released several software packages which perform hydraulic calculations, backwater calculations, roadway design, and earthwork analysis.

Tom also has extensive experience in the preparation of engineering studies for public facilities. Those experiences included roadway improvements and highway design, floodplain analysis and mapping, levee and dam breach analysis, drainage studies (including HEC-1, HEC-HMS, EPA-SWMM, XP-SWMM (2D), PC-SWMM, SMS, WMS, TR-55, HEC-2, HEC-RAS, HEC-RAS2D, FLO-2D, TUFLOW and CS DRAINAGE STUDIO software models), water transmission, and irrigation pipeline replacement.

Tom has also processed a number of small and large scale project (Conditional) "Letters of Map Revision" and "Physical Map Revision" applications with FEMA.

Previous to founding Civil Solutions, Tom gained experience in the design of improvements for subdivisions, commercial developments, multi-family projects, and public work projects. He has completed infrastructure planning, analysis, and cost estimating for new development areas and in-fill projects. He has worked closely with

clients and public agencies in gaining project approvals, utility company review, and construction administration.

Major Project Experience: *(since founding Civil Solutions: ordered from most recent)*

Placer CTP 3 (Tahoe Streams, Linda Creek, Cirby Creek, S. Branch Pleasant Grove, Markham Ravine, and Racoon Creek)

North Natomas Interior Systems Comprehensive Model (Grandpark)

Elder Creek and Gerber Creek Comprehensive Watershed Study

Reason Farms Volumetric Mitigation Facility

RD-17 Expert Peer Review Team for H&H Review

Central Valley Floodplain Evaluation and Delineation Program USJ – King’s River

Dry Creek Watershed Plan Update

Placer CTP 1 (Auburn Ravine, Orchard Creek, Curry Creek)

Lakeview Farms Volumetric Mitigation Facility

Placer Vineyards Master Hydrology Study

Sun City Tehama Master Drainage Plan

Riolo Vineyards Master Drainage Study

Doyle Ranch Floodplain Impacts Analysis

Morgan Creek Master Drainage Study

Sucker Ravine CLOMR at Rocklin

Sierra Vista Specific Plan MDP

Florin Vineyards Community Plan Drainage Studies

Brookfield Natomas Master Hydrology Study (Formerly “Northern Territories”)

Regional University Master Hydrology Study

Markham Ravine Watershed Analysis

Hydrology Analysis for Cosumnes River Blvd Extension:

Woodland High School Hydrology and Detention Basin Design

City of Lincoln Mapping and Inventory of Existing Facilities.

Preliminary Hydrologic Assessment of several Roadway Projects for Placer County.

Hydrology Analysis of the Proposed “Village at Northstar” and Northstar Project Wide Hydrology.

Ingram Slough Bridge and Culvert Analysis at Lincoln

Auburn Ravine Bridge Alternatives at SR-193 and SR-65

Pleasant Grove Watershed Mitigation Analysis (retention requirement analysis for Roseville developments within The Pleasant Grove Creek Watershed)

Foskett Ranch Hydrology Report

City of Lincoln (P.F.E. Drainage Projects Engineer)

Flood Plain Mapping of Auburn Ravine, Orchard Creek and Ingram Slough

SLMP-AIO CLOMR and individual project LOMR Requests

Ravine Meadows Flood Control Project CLOMR

Bickford Ranch Master Hydrology Analysis

City of Lincoln Wastewater Treatment Plant Expansion Effluent Control Hydrology Analysis

City of Lincoln Drainage System Remediation Projects Recommendations

South Lincoln Master Drainage Plan for Auburn Ravine, Ingram Slough and Orchard Creek

Chris A. Ferrari, P.E., CFM

Senior Consultant



Chris Ferrari has 32 years of comprehensive project management, civil design and water resource project experience developing hydrologic rainfall/runoff models and one, two and three-dimensional hydraulic models to evaluate rivers, channels, storm drain systems, dam and spillways. Mr. Ferrari's clients have included the State of California Department of Water Resources (CADWR), the United States Corps of Engineers Sacramento District (USACE), the Federal Emergency Management Agency (FEMA) and several local agencies which include the City of Sacramento Department of Utilities and County of Sacramento Department of Water Resources. Mr. Ferrari expertise includes developing and calibrating the 850-mile Sacramento River system model for the DWR Flood Operations Center and the Project Manager for the City of Sacramento Letter of Map Revision (LOMR) for the South Sacramento streams group which removed approximately 3000 residences from the 100-year base flood. Mr. Ferrari's has been recognized by the Consulting Engineers and Land Surveyors of California (CELSOC) and the American Public Works Association (APWA) for the City/County of Sacramento Emergency Rescue and Evacuation mapping projects. Mr. Ferrari's expertise includes using the following software applications: FLOW-3D (CFD), HEC-1, HEC-HMS, HEC-RAS 1D/2D, XPSWMM and GIS computer applications.

#

PROJECT EXPERIENCE

Secondary Levee Embankment Evaluation for the City of Sacramento Department of Utilities, CA.

(2020) Senior Consultant responsible for developing a one and two-dimension hydraulic model using the United States Corps of Engineers River Analysis program (HEC-RAS) to evaluate the impact to the city if the American River south levee fails and the internal secondary embankment remained in place with the flood gates open or closed. **Contact:** Rosa Millino: (916) 947-5783 RMillino@cityofsacramento.org; Neal Joyce NJoyce@cityofsacramento.org

Letter of Map Revision (LOMR) for the Fahrens Creek Flood Insurance Study, City of Merced

Department of Public Works, Merced, California (2018-2020) Senior Consultant responsible for developing surface water hydraulic model using XPSWMM and hydrologic and hydraulic models using HEC-RAS and Letter of Map Revision (LOMR) report for 10-miles of streams and major flood control channel through an urbanized area of the City of Merced. The hydraulic model was submitted and recently approved by FEMA which will remove several hundred homes from the floodplain. The floodplain mapping is currently in the process and is scheduled to be finalized in Summer 2020. **Contact:** Julie Nelson: (209) 385-6967 nelsonj@cityofmerced.org

Letter of Map Revision (LOMR) for Amargosa Creek Flood Insurance Study, City of Palmdale Public

Works, Los Angeles County, California (2020) Senior Consultant responsible for developing HEC-RAS hydraulic model for 5-miles of Amargosa Creek flood control channel through an urbanized area of the City of Palmdale. The hydraulic model was submitted and in the process of FEMA approval. **Contact:** Mike Shahbakhti: (661) 267-5310; mshahbakhti@cityofpalmdale.org

Rescue and Evacuation Mapping, City of Sacramento Department of Utilities, County of Sacramento

Department of Water Resources, Sacramento, CA. (2015-2016) Senior Consultant responsible for evaluating and quality control on twenty-seven hypothetical levee failures along the Sacramento and American Rivers for Natomas and areas north and south of the American River using the Corps of Engineers HEC-RAS hydraulic

EDUCATION

B.S., Civil Engineering, California State University, Sacramento, 1989

EXPERIENCE IN THE INDUSTRY

32 years

EXPERIENCE WITH GEI

6.5 years

REGISTRATIONS AND LICENSES

Professional Civil Engineer, CA No. 53226
ASFPM CFM; US-14-07917

PROFESSIONAL ASSOCIATIONS

Association of State Floodplain Managers (ASFPM)
Floodplain Management Association, Member (FMA)
American Society of Civil Engineers, Member (ASCE)
American Public Works Association Member (APWA)
National Hydrologic Warning Council (NHWC)



Statement of Qualifications for Natomas Basin Hydraulic Model

Chris A. Ferrari, P.E. Page 2

model program and the State Department of Water Resources CVFED hydraulic models. The model results were used to develop rescue and evacuation mapping for the City/County of Sacramento Emergency Operations. Project limits included 80+ miles of levees within the City of Sacramento and portions of the County of Sacramento. (Connie Perkins – Former City of Sacramento PM)

North B Street, City of Sacramento Department of Utilities, Sacramento, CA. (2016) Senior Consultant responsible for providing the surface water hydraulic modeling results to the City of Sacramento staff and the City council to determine existing condition impacts and recommendations to improve facilities for the Railyards development. The model results were used to develop maximum flood depths and time of inundation contours for the surface water drainage. The analysis utilized the State Department of Water Resources CVFED hydraulic models for each of the flood inundation maps. (Connie Perkins – Former City of Sacramento PM)

South Sacramento Streams Group Letter of Map Revision (LOMR), City and County of Sacramento, Sacramento Area Flood Control District (SAFCA), United States Army Corps of Engineers (USACE), Sacramento, CA. (2011-2013) Project Manager responsible for developing a combined hydrologic and hydraulic HEC-RAS system model for 25+ miles of Morrison, Unionhouse, Elder and Florin Creeks in an urban section of the City and County of Sacramento to remove 3000+ residences and businesses out of the floodplain. The LOMR was approved by FEMA in December 2013 included several channel and floodwall project improvements designed and constructed by the USACE. The system was evaluated for the 500-, 200-, 100-, 50-, and 10-year frequency storm events. (Connie Perkins – Former City of Sacramento PM)

200-Year Urban Level of Flood Protection (ULOP) Floodplain, City of Sacramento Department of Utilities, Sacramento, CA. (2016) Senior Consultant responsible for developing 200-year frequency floodplains for watersheds greater than 10.0 square miles based on the State of California's ULOP criteria. The model results were used to develop 200-year maximum flood depths and time of inundation contour mapping using the approved State Department of Water Resources CVFED hydraulic models. The floodplains for Morrison, Elder, Florin, Unionhouse and Laguna Creeks utilized FEMA approved hydraulic models. (Connie Perkins – Former City of Sacramento PM)

Hydrologic and Hydraulic 2D model for Indian Health Services, Yolo County, CA. (2016) Senior consultant responsible for developing a hydrologic and hydraulic 2D model to determine existing, interim and ultimate condition 100-year flood elevation impacts for a new facility for the Indian Health Services Federal Department. The hydraulic model results were developed using the United States Corps of Engineers Hydrologic River Analysis Program. **Contact:** Shane Deckert Department of Indian Affairs: (916) 930-3981

Real Time Forecasting Modeling Tool (RTIM), Hydrology and Flood Reservoir Operations Center (FOC), California Department of Water Resources, Sacramento, CA. (2017-2018) Senior Consultant/Project Manager responsible for developing a flood forecasting tool with GEIs programming team. The tool automates the process of inserting forecast flows directly from the National Weather Service California-Nevada River Forecast Center (CNRFC). The tool is a significant time saver for the FOC to evaluate the Sacramento and San Joaquin River system in real time and to develop inundation mapping if a levee were to fail. The models require a complete understanding of the State Plan of Flood Control levee system, operations of the major reservoirs and flood gates in the system and the local urban populations protected by the levee system. **Contact:** MD Haque CA State DWR; Md.Haque@water.ca.gov: (916) 930-3981

Sacramento River System Model Development, Central Valley Flood Evaluation and Delineation (CVFED) Project, California Department of Water Resources, Sacramento, CA., Sacramento, CA. (2008-2017) Project Manager/Senior Consultant responsible for developing the Lower Sacramento River system hydraulic model using the Corps of Engineers HEC-RAS program. The hydraulic model included 850+ miles of the study stream. The study streams included the following main rivers: Sacramento River, Feather River, Yolo Bypass, American River and the Delta streams and the Fremont Weir and Sacramento Weir gate structures. The hydraulic model was calibrated to the 1997 and 2006 flood events. (Non-GEI project). At GEI, Mr. Ferrari has since worked with the CAWDR to re-calibrate the model to the high flows in 2017. **Contact:** MD Haque CA State DWR; Md.Haque@water.ca.gov: (916) 930-3981



Mark E. Fortner, P.E., P.L.S.

Senior Consultant



DAMS FOCUS INTRODUCTION

Mark Fortner's primary expertise is in drainage systems, flood control, flood insurance studies, flood protection planning, and regulatory permitting for the U.S. Army Corps of Engineers (USACE) Section 404 and Section 10, Reclamation Board, Reclamation Districts, County Use Permits, Regional Water Quality Boards (Waste Discharge Requirements), and the U.S. Department of Fish and Game Streambed Alteration Permits.

Mr. Fortner's specific work includes hydrologic and hydraulic modeling, design and preparation of master plans and applications for reclamation districts, water districts, levees, and infrastructure works. He has conducted hydraulic analyses of rivers and streams for a variety of projects involving adjacent habitat impacts, jurisdictional waters, evaluation of historic gage data, calibration, and monitoring water levels for flood operations. He has conducted hydrologic, hydraulic analyses for Probable Maximum Flood (PMF) spillway analysis, dam break, and for a variety of projects in compliance with Federal Energy Regulatory Commission (FERC), Division of Safety of Dams (DSOD) and California OES guidelines. Mr. Fortner's other responsibilities include representing clients at various agency or organizational meetings and coordinating with regulatory agencies for project design.

EDUCATION

B.S., Civil Engineering, California State University, Sacramento

EXPERIENCE IN THE INDUSTRY

34 years

EXPERIENCE WITH GEI

12 years

REGISTRATIONS AND LICENSES

Professional Engineer, CA No. 48266
Professional Land Surveyor, CA No. 7342

DELTA FOCUS INTRODUCTION

Mr. Fortner has broad civil engineering and project management experience, which includes providing services to reclamation, flood control and irrigation districts, water companies, agricultural businesses, gravel operators, state, and county agencies. Mr. Fortner's primary expertise is in hydrology and hydraulics related to flood control, flood insurance studies, flood protection planning, and regulatory permitting. Specific work includes hydrologic and hydraulic modeling, civil works design, preparation of plans and applications for reclamation district levee, and infrastructure works in the Sacramento-San Joaquin Delta. Mr. Fortner also has considerable experience in residential and commercial site design working with developers and county development standards. Client responsibilities include representation at various agency or organizational meetings, and coordinating project issues, permits and environmental documents.

As a licensed surveyor Mr. Fortner has conducted boundary and easement investigations for reclamation districts and other local public agencies; field work; and preparing topographic maps and legal descriptions for agency improvements for levees and related channel facilities.

URBAN STORMWATER AND WATER QUALITY FOCUS INTRODUCTION

Mark Fortner's primary expertise is in the fields of hydrology and hydraulics for drainage systems, flood control, flood protection planning, dam safety, water supply, and water resource development. This includes providing services to cities, reclamation districts, flood control and irrigation districts, water companies, large and small agricultural businesses, gravel operators, and state and county agencies.

Mr. Fortner's specific work includes hydrologic and hydraulic modeling, design and preparation of master plans and applications for reclamation districts, water districts, levees, and infrastructure works. He has conducted hydraulic analyses of rivers and streams for a variety of projects involving adjacent habitat impacts, jurisdictional waters, evaluation of historic gage data, calibration, and monitoring water levels for flood operations. He has completed analysis and development of improved operations for snow melt runoff forecasting of the Feather, Yuba, and Merced watersheds using the USGS –PRMS model. Hydraulic analysis of rivers and streams for a variety of projects involving adjacent habitat impacts, jurisdictional waters, evaluation of historic gage data,



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Mark E. Fortner, P.E., P.L.S. Page 2

calibration, and monitoring water levels for flood operations. Mr. Fortner's other responsibilities include representing clients at various agency or organizational meetings and coordinating with regulatory agencies.

PROJECT EXPERIENCE

Oroville Emergency Spillway Recovery Project, California Department of Water Resources (DWR), Feather River, CA. Served as the lead hydraulics engineer for the recovery of the damaged Oroville Reservoir spillway which is part of the California State Water Project. The dam is a zoned earth fill embankment located on the Feather River in Butte County. The 3,000-foot spillway was damaged in February 2017 causing overflow of the emergency spillway for the first time since completion in 1968. A team led by DWR and its consultants developed a recovery plan in close coordination with DSOD and FERC to rebuild the spillway. Served as the hydraulics lead for the recovery team to evaluate spillway hydraulic and incorporate modern engineering components into the new spillway design.

Morena, Barrett, and Savage Dams, Inundation Mapping, City of San Diego Public Utilities Department, CA. GEI prepared inundation mapping for three large dams detailing the potential dam breach inundation mapping. All three dams are classified as extremely high hazard. Morena is a 171-foot-high, rock fill dam. Savage and Barrett are concrete gravity dams. Both Barrett and Morena Dam and spillway failures were routed along the Tijuana River including a portion through Mexico. The maps and technical reports were approved by DSOD for use in emergency action plans.

Dam Failure and Inundation Mapping Study, Sacramento Municipal Utility District (SMUD), Sacramento, CA. Project Manager for dam failure analysis and inundation mapping of SMUD's Rancho Seco Dam located in California's Central Valley. Responsible for estimating dam breach parameters, developing and calibrating a HEC-RAS model, identifying downstream structures and hazards, performing dynamic flood routing, performing sensitivity analyses, and preparing inundation mapping in compliance with CalOES criteria.

Engineering Design Support for Dam Safety, California Department of Water Resources, Sacramento, CA. GEI provides a variety of dam safety engineering services for all 30 State Water Project dams. Technical leader for developing computer models to simulate dam break failures, determine dam break hydrographs and simulate the overland progression of the dam break flood waves. As part of the sensitivity analysis NWS Breach and DAMBRK models were used to evaluate breach parameters. HEC-RAS, in combination with FLO-2D models, are being utilized to develop inundation maps with ArcGIS to depict graphically the computed inundation results. Eight potential dam and reservoir sites will be investigated. All eight dams are high hazard dams with the potential for loss of human life and large property damage. Dam types ranged from earth fill to concrete gravity dams. Dam heights ranged from 100 feet to 770 feet and capacities from 180,000-acre feet to over 4 million-acre feet. The GEI team collected previous studies, evaluated breach parameters, developed inundation modeling and worked closely with federal and state agencies to produce the inundation maps in compliance with FERC and OES standards.

Flood Emergency Response (Flood ER) Program, California Department of Water Resources, Sacramento, CA. GEI is the prime consultant assisting DWR with a major, multi-year program to overhaul California's Flood Emergency Response Program. Project Manager for evaluating and testing snowmelt runoff models; particularly, the USGS-PRMS model, for applicability of use by DWR for water supply forecasting. This work will culminate in a final report to document process and provide a working model for operational forecasting of springtime snowmelt runoff. Project Manager for watershed runoff and modernization to improve operational runoff forecasting, leading up to flood events.

General Consulting, South Sutter Water District, Sacramento, CA. Served as On-Call Consulting Engineer for a variety of hydraulic and water supply projects. This included planning and coordination with the District's Board and General Manager using hydraulic models (HEC-2, HEC-1, and HEC-RAS) to analyze, design, and construct large conveyance structures. Structures included culverts, spillways, siphons, and gates for the South Sutter Water District irrigation system. Planning and analysis for system capacity and potential increase was also included. Flow range for these systems is typically from 10 to 450 cfs and included flow measurements to



Statement of Qualifications for Natomas Basin Hydraulic Model

Mark E. Fortner, P.E., P.L.S. Page 3

maintain rating curves to monitor flows. Engineering services have also included dam break analysis and reservoir PMF studies for Camp Far West Reservoir.

South Sutter Water District On-Call Consulting Engineer, Placer/Sutter County, CA. Served as On-Call Consulting Engineer for a variety of hydraulic and water supply projects. This included planning and coordination with the District's Board and General Manager using hydraulic models (HEC-2, HEC-1, and HEC-RAS) to analyze, design, and construct large conveyance structures. Structures included culverts, spillways, siphons, and gates for the South Sutter Water District irrigation system. Planning and analysis for system capacity and potential increase was also included. Flow range for these systems is typically from 10 to 450 cfs and included flow measurements to maintain rating curves to monitor flows. Engineering services have also included dam break analysis and reservoir PMF studies for Camp Far West Reservoir.

Master Drainage Plan, Reclamation District No. 551, Pearson District, Sacramento County, CA. Served as the District's engineer for 15 years, providing assistance on various project levee and project design issues. In conjunction with the perimeter levee work, prepared an evaluation of the District's interior drainage system of canals and pumps. This master drainage plan evaluation led to a \$700,000 capital improvement project to increase canal capacity and pump efficiencies of the drainage system.

City of Woodland USACE Feasibility Study for Cache Creek Flood Protection, Yolo County, CA. As project engineer, provided hydraulic modeling (UNET, HEC-RAS, and FLO2D) for the USACE Feasibility Study for Cache Creek, City of Woodland flood protection project. This analysis included interaction with Yolo Bypass and Cache Creek Settling Basin. The hydraulic analysis included alternative designs for levee setbacks, bridges, and weirs. Project alternatives required close coordination with the City (local sponsor), state, USACE, and participation at public meetings.

Forecast-Coordinated Operations for Flood Control Reservoirs, California Department of Water Resources, CA. Assisted DWR staff in the implementation of Forecast Coordinated Operations (F-CO) of the reservoirs in the Feather and Yuba River basins. Activities include collecting information for each watershed to assist in evaluating watershed forecasting enhancement needs. In coordination with DWR staff and reservoir operators, assess Forecast-Coordinated Operations of the reservoirs program needs in each watershed, and prepare a work plan, budget, and schedule for completion of various tasks. Coordinated and evaluated work activities for Forecast-Informed Operations (F-IO) under the F-CO program. The purpose of F-IO the program component is to develop a forecast-informed operation for the reservoirs in the Central Valley. The forecast-informed operation provides operational flexibility based on snow accumulations in the basin, basin wetness, runoff forecasts, an improved QPF for the watershed, and climate change analyses.

Hydrologic and Hydraulic Study, Mimino and Kaneha Reservoirs Cornerstone Hawaii Holdings, Kauai, HI. Hydrologic and hydraulic analysis for spillway capacity to pass inflow design flood (IDF), PMF. This work consisted of complying with requirements for state-regulated dams in Hawaii, "Guidelines for Safety Inspections of Dams" DLNR (1992), for PMP storm evaluation and runoff analysis into Mimino and Kaneha reservoirs. Reservoir routing and spillway capacity determination was performed. Both dams are used for irrigation purposes.

Hydrologic and Hydraulic Analysis for the Milk Farm Property, Solano County, CA. Project Engineer for the hydrology investigation and hydraulic analysis for Milk Farm along I-80 near Dixon. This analysis included developing a hydrologic model for pre and post development in a highly modified area, developing an alternatives analysis and routing of drainage water under I-80. #



Statement of Qualifications for Natomas Basin Hydraulic Model

Michael G. Pantell, P.E., C.F.M.
Senior Professional



Michael Pantell is a civil engineer in GEI's Sacramento office. He is experienced in project management, hydraulic and hydrological modeling, economic and life risk analyses, levee accreditation, feasibility study analyses, storm drain network analyses, and levee design. In previous positions he has coordinated and directed meetings regarding various flood control related issues with Federal, State, and local stakeholders including United States Army Corps of Engineers, Department of Water Resources, San Joaquin Area Flood Control, Sutter Butte Flood Control Agency, and county governments. He has managed and guided staff engineers in completing a wide variety of hydraulic, hydrologic, and life risk analysis related tasks.

Mr. Pantell has managed numerous flood risk reduction feasibility study projects that required directing staff, meeting with clients, and maintaining budget and schedule. He has performed dam inundation studies approved by Division of Safety of Dams and developed an Emergency Action Plan submitted to California Governor's Office of Emergency Services. He has developed hydraulic models to perform without levee analyses, residual interior drainage analyses, and 100-year Base Flood Elevation determination for Federal Emergency Management Agency levee accreditation.

He has experience developing storm drain models using United States Environmental Protection Agency Stormwater Management Model, FLO2D, and HEC RAS to determine existing infrastructure capacity, map residual flooding, and determine infrastructure improvements needed. He has developed HEC HMS models for determining various frequency rainfall events. He has a strong technical understanding of modern hydrologic methods including the CVHS and the 2017 CVFPP climate change analysis. He has assisted in developing feasibility-level cost estimates for levee projects.

PREVIOUS PROJECT EXPERIENCE

Urban Flood Risk Reduction Feasibility Study for RD17, San Joaquin Area Flood Control Agency, Lathrop, CA. Project manager responsible for collaborating with Local and State stakeholders to develop and assess alternatives for solutions the RD17 levees the protect the cities of Lathrop and Manteca. Developed 1D/2D HEC RAS 5.0 floodplain model of the Lower San Joaquin River basin to model various frequency flooding events under existing and 2065 climate change scenarios. Created HEC FDA model (including structure inventory and floodplain model) to determine existing and future economic and life risk for the RD 17 region for with and without-climate change scenarios.

Robbins & Meridian Small Community Flood Risk Reduction Studies, Sutter County, CA. Functioned as project manager for numerous DWR grant funded small community projects. Managed subcontractors, overall work schedule, and reviewed work of staff engineers. This study provides much needed hydraulic, geotechnical, and surveying needs to small communities in the Central Valley. As a part of this study, various alternatives were formulated based on local feedback to pick a preferred project that will bring the community up to 100-year level of protection.

Oroville Reservoir Forecasting and Spillway Failure Analyses, Sutter Butte Flood Control Agency, CA. Performed real-time floodplain modeling during the Oroville Spillway incident to inform downstream levee maintaining agencies of the impact of a possible spillway failure on the levee infrastructure. Modeled numerous scenarios to determine the level of impact anticipated downstream and determine the flood wave arrival time for various situations.

Michael G. Pantell, P.E., CFM, Page 2

Madera Lake Dam Inundation Mapping and Emergency Action Plan, Madera Irrigation District, CA. Created a hydraulic model using high resolution terrain in HEC RAS v5.0 that simulated numerous dam breach events. Oversaw the creation inundation maps and technical memorandum submitted to DSOD. Coordinated with local and State public safety officials to develop Emergency Action Plan for the Madera Lake Dam.

Urban Levee Design Criteria (ULDC) Analysis, RD2042 and RD 2126, CA. Performed detailed investigations, analyses, and documentation for the RD 2042 (Bishop Tract) and RD 2126 (Atlas Tract) levees to determine where ULDC is met and where deficiencies exist, and documentation supporting an ULOP 'Protection Exists', or 'Adequate Progress' finding. Developed the penetration section and all H&H-related data including: the design water surface profile, minimum top of levee assessment, frequently loaded levee analysis, wind/wave analysis, and sea level rise analysis.

Blossom Ranch Storm Drainage Analysis, City of Stockton, CA. Performed a drainage shed analysis on the Blossom Ranch development area to assess storm water runoff increase in the future with continued urbanization and the impact on storm drain or pump station capacity. Based on this information, improvements were recommended to manage the increased storm water expected within the drainage shed. Michael used an existing rainfall-runoff model for the Calaveras River watershed, the EPA Stormwater Management Model (SWMM), and the City's GIS data to model a design storm scenario under existing and future/planned development conditions. Based on those results, an analysis was completed to determine various options for infrastructure improvements that could be explored to manage the future storm water runoff expected within the drainage shed.

Locust Road Drainage Study, San Joaquin County, CA. Performed an assessment existing storm drain network for San Joaquin County along Locust Road. A HEC RAS 2D model was developed to model overland flow and culverts. The model assessed the 10-year and 100-year events to determine the effectiveness of the existing storm drain network. Recommendations on improving infrastructure were made to the County.

Butte County Feather River West Levee FEMA Levee Accreditation, Sutter Butte Flood Control Agency, CA. Performed H&H tasks required to obtain FEMA levee Accreditation for Butte County Feather River West Levee. Task included updating hydrologic and hydraulic models, performing with- and without-levee analyses, modeling interior drainage, delineating Special Flood Hazard Areas, and developing topographic work maps.

Smith Canal Interior Drainage Analysis, San Joaquin Area Flood Control Agency, Stockton, CA. Developed hydrologic and hydraulic models to determine the interior drainage flooding from the construction of the Smith Canal Gate Structure. Used the model results to delineate FEMA Special Flood Hazard Zones for use in a Conditional Letter of Mapping Revision.

PRESENTATIONS

FMA 2017: Folsom Dam Breach Analysis

FMA 2018: Impacts of Climate Change on Lower San Joaquin River Basin

PUBLICATIONS

Two-Dimensional Hydraulic Model of Folsom Dam Breach Under the Maximum Probable Flood, 2017



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Yi Shen, Ph.D.
Project Professional

Yi Shen is a Water Resources Engineer with 14 years of experience. He has managed multiple projects for federal, private, city, county, and state clients. He has multiple responsibilities, including business development, project management, and training junior staff.

PREVIOUS PROJECT EXPERIENCE

Mallard Dam Breach and Inundation Mapping Study, Contra Costa Water District, California. Hydraulic Modeler for 2D HEC-RAS modeling on Mallard Dam Breach on its west, north and east side. Breach dimension sensitivity analysis and inundation mapping.

Kings River Levee Breach Evaluation, Kings River Conservation District, California. Hydraulic Modeler for 2D HEC-RAS modeling on four levee breach scenarios. Assessment of channel capacity flows for Kings River system.

Houston I-45 Business Park Detention Basin Hydraulic Analysis, Harris County Flood Control District, Houston, TX. Water Resource Engineer for Hydraulic modeling of new detention basin design for development of undeveloped land into commercial development within the City of Houston limits.

Harris Reservoir Expansion, the Dow Chemical Company, Brazoria County, TX. Water Resource Engineer responsible for environmental flow impact assessment.

AIR Inland Flood Models, United States and Central Europe. Hydrology Scientist responsible for simulation, quality-check, calibration, validation, and statistical analysis on the hydrologic modeling results of long-term historical and stochastic catalog of flow, runoff, and precipitation through analyzing and comparison to existing gauge data, satellite flood maps, spatial patterns, and reports. Investigated the hydrologic model components, such as snowmelt, reservoir model, and rainfall-runoff modules, to address their impact on flood event extent, frequency, and seasonality. Researched alternative way to improve modeling performance. Responsible for C++ source code modification, development, and bug fix. Responsible for pre- and post-process large modeling data and results using R scripts and CSH script under Linux/Windows environment.

AIR Probabilistic Flood Hazard Maps, Vietnam and Canada. Hydraulic Engineer responsible for collection and development of large-scale digital terrain model, catchments, stream network, and river cross section covering Vietnam and its neighboring countries using ArcGIS tools and in a scripting environment. Developed catchment quantiles and model parameters based on complex statistical approach using R script. Developed large-scale flood hazard maps using AIR 1D hydraulic model, 2D Mapping tool, and HEC-RAS 2D.

Water Resources Branch, Texas Parks & Wildlife Department, TX. Water Resources Engineer responsible for 2D/3D coastal



EDUCATION
Ph.D., Water Resources Engineering
Virginia Polytechnic Institute
B.S., Hydraulic & Hydropower
Construction Engineering, Tsinghua
University

EXPERIENCE IN THE INDUSTRY
14 years

EXPERIENCE WITH GEI
Less than one year

REGISTRATIONS AND LICENSES
Professional Engineer, TX No. 101271

AWARDS
Verisk Way to Go, Verisk

Yi Shen, Ph.D. Page 2

circulation modeling and data assimilation study on the long-term spatial and temporal variations of salinity, temperature, water depth, velocity, and species habitats influenced by alternative freshwater inflow scenarios in Texas San Antonio Bay System. Used Water Availability Model to estimate hydrologic alterations of Texas instream flows with alternative water planning scenarios. Reviewed water rights permitting applications and analyzed environmental flow requirements for water development projects. Provided technical support to other team members and stakeholders.

U.S. Fish & Wildlife Service State Wildlife Grant. Principal Investigator for Assessing Predictive Models for Freshwater Inflow to the Texas San Antonio Bay for U.S. Fish & Wildlife Service State Wildlife Grant, \$33,846 (Federal share).

PUBLICATIONS

Shen, Y. and Diplas, P. "Modeling Unsteady Flow Characteristics of Hydropeaking Operations and Their Implications on Fish Habitat." *Journal of Hydraulic Engineering-ASCE* (136), No.12: 1053-1066. 2010.

Shen, Y. and Diplas, P. "Application of two- and three-dimensional computational fluid dynamics models to complex ecological stream flows." *Journal of Hydrology* (348): 195-214. 2008.

Shen, Y., Nelson, J. and Norris C. "Assessing Predictive Models for Freshwater Inflow to San Antonio Bay, Texas." Research Report to U.S. Fish and Wildlife Service. 24pp. 2012.

Shen, Y., Bradsby, D. and Trungale, J. "Using Water Availability Models to Assess Hydrologic Alterations of Texas Instream Flows." Research Report to Texas Parks & Wildlife Department, 82pp. 2007.

Shen, Y. and Diplas, P. "Modeling unsteady reservoir releases and their impacts on stream fish habitat." Proceedings of the Inaugural International Conference of the Engineering Mechanics Institute. Minneapolis, Minnesota. 2008.

Shen, Y., Diplas, P., Crowder, D.W. "Two-dimensional hydraulic modeling: a tool for stream restoration studies." Proceedings of the 5th International Symposium on ecohydraulics, 8pp. Madrid, Spain. 2004.

Shen, Y., and Diplas, P. "Numerical modeling for assessment of ecological stream flows. Proceedings of the International Conf. Protection and Restoration of the Environment VII," 8pp. Mykonos, Greece. 2004.

Hu, H., Shen Y. and Weng W.B., "The Implementation of GIS Technology in Urban Flood Dynamic Simulation Model." Proceedings of International Symposium on Information Technology Tools for Natural Disaster Risk Management, pIII-4-1 ~III-4-13. Bangkok, Thailand. 1998.

PRESENTATIONS

Shen, Y. Chen, C.J. and Senarath, S. "Sensitivity of a hydraulic model to land use uncertainty under extreme flooding." Floodplain Management Association Annual Conference. Santa Clara, California. Sep 2-5, 2014.

Shen, Y., Diplas, P. "The stream restoration symposium." Inaugural International Conference of the Engineering Mechanics Institute, ASCE. Minneapolis, Minnesota. May 19-21, 2008.



Statement of Qualifications for Natomas Basin Hydraulic Model

Jennifer V. Buchanan, GISP, ENV SP
Water Resources Engineer

Jennifer Buchanan is a Certified Geographic Information Systems Professional (GISP) and received a GIS Certificate of Achievement. She has over 20 years of years of experience as a Water Resources Engineer and GIS Specialist. Ms. Buchanan specializes in stormwater and water quality, integrating GIS and CAD data with various Hydrologic and Hydraulic modeling software, creating floodplains, profiles, base flood elevations, land use and roughness assumptions, documentation, deliverables, automation, and a wide variety of maps and data.

Her experience includes development of hydrology and planning studies, hydrologic and hydraulic modeling, detention routing, environmental compliance, scour assessments, and FEMA CLOMR/LOMR Preparation. Key projects and demonstrations have been related to water supply/distribution, water resources flood control systems and facilities, dam inundation, levee certification, flood risk analysis, flood impact analysis, low impact development, mitigation, drainage studies, and emergency preparedness.

Her knowledge includes, but is not limited to, the following: ArcGIS, Cartography, Spatial Analysis, Spatial Databases, Geoprocessing, Georeferencing, Geocoding, Queries, Floodplain Delineation, Hydrologic and Hydraulic Modeling, Plan and Profiles, Model Builder, Python, Visual Basic, SQL Server, 3D Analyst, Spatial Analyst, Creating Surfaces, DFIRMs, Remote Sensing, Data Acquisition, LP 360, Metadata, HEC-RAS 1D/2D, HEC-GeoRAS, HEC-HMS, PC-SWSMM 2D, XP-SWMM, EPA SWMM, RASPLLOT, MIKE FLOOD, FLO-2D, FLOW-3D, SMS, Global Mapper, Microsoft Office (Word, EXCEL, ACCESS, PowerPoint), LiDAR, Problem Solving, Code Compliance, Presentations, Troubleshooting, Training, Research, Data Management, Permitting, Documentation, AutoCAD, Civil 3D, BricsCAD, Rhino, Calculations, Deliverables, and Animations.

PREVIOUS PROJECT EXPERIENCE

Graphics/Database Specialist, Jacobson James & Associates, Inc., Roseville, CA. Duties include generating figures and tables using ArcGIS, BricsCAD, EXCEL and ACCESS for Storm Water Pollution Prevention Plans, Spill Prevention Control and Countermeasure Plans, Feasibility Studies, Remedial Action Plans, and other environmental reports.

Hydrologist/Water Resources GIS and CAD Specialist, Watearth, Sacramento, CA. Projects include Hydrologic and Hydraulic modeling and analysis using HEC-RAS and HEC-HMS, EPA SWMM, XP-SWMM. Experience include project management, Low Impact Development Analysis, water quality analysis, GIS / CAD, proposals, reports and plans, flood control, water resources, automating GIS processes, and integrating GIS with HEC and other H&H software, water resources planning, green infrastructure, pump station analysis and design, water distribution, and stormwater management. Project range from the regional scale to site specific, including: planning, modeling, design, and maintenance, and include storm water infiltration, water supply assessment, water conservation and design, hydraulic and hydrologic modeling, flood control analysis and modeling, advanced environmental and hydrologic GIS applications, data analysis, watershed management, environmental, SWPPP, and QA/QC peer review.

Water Resources Engineer/GIS Specialist, Wood Rodgers, Inc., Sacramento, CA. Expertise includes creating topographic DEMS, floodplain analysis, emergency preparedness mapping, FEMA DFIRM submittals, LOMRs, FIS Profiles, writing automation scripts, 3D visualization, Spatial Analyst, 3D Analyst, other ArcGIS



EDUCATION
B.S., Mechanical Engineering
Technology, California State University,
Sacramento

EXPERIENCE IN THE INDUSTRY
22 years

EXPERIENCE WITH GEI
4 years

REGISTRATIONS AND LICENSES
Geographic Information Systems
Professional, No. 62663, 2012-2020
Certified Envision Sustainability
Professional (ENV SP), 2016 – 2019
GIS Certificate of Achievement, American
River College

TRAINING
FLO-2D Hydrologic Modeling
2D Hydrodynamic Flow and Transport
with SMS
Intro to Integrated 1D & 2D Flood
Modeling and Urban Flood Modeling
Using MIKE FLOOD & MIKE URBAN
Two-Dimensional Modeling Using HEC-
RAS (version 5.0.3)

Jennifer V. Buchanan, GISP, ENV SP Page 2

extensions, importing and exporting data and H&H results, and creating various figures, mapbooks, and data deliverables using ArcGIS (ArcView/ArcMap/ArcInfo), AutoCAD, ACCESS, EXCEL and other software. Worked on projects for federal, state, and local agencies as well as specific plans, environmental impact reports, improvement plans, master drainage, sewer, water, grading, and flood impact studies for proposed developments.

Water Resources Engineer, Borcalli & Associates, Inc., Sacramento, CA. Experience included Water Resources GIS exhibits and writing reports. The company was acquired by Wood Rodgers, Inc.

Bellevue Ranch, Merced, CA. 100-year Floodplain Study using HEC-RAS and XP-SWMM was prepared for existing conditions and proposed development within the City of Merced.

Stormwater Pre-Engineering Services, City of Houston, TX. Several stormwater need areas have been studied using XP-STORM/SWMM to analyze the limitations and deficiencies of the drainage systems and provide conceptual improvement recommendations. The drainage areas were delineated using LiDAR and the storm drains system was organized and analyzed using GIS. HEC-HMS hydrology for Salt Water Ditch was modified for a service area requiring stormwater infrastructure improvements and hydrographs comparisons were completed, in order to assess the probability that redirecting 2-year flow in the need area away from Salt Lake Ditch would provide decrease the 100-year peak flows or floodplain associated. A Feasibility Study for flood damage reduction was also performed, in which the hydraulic model geometry was updated to reflect current survey data using GIS. Raw water customer usage and conveyance system and pump station data were managed and evaluated for system hydraulics and future modeling needs using GIS.

Winding Meadow Village Drainage Study, Shore Spring Partners, Sacramento, CA. Prepared drainage study and performed one-dimensional and two-dimensional hydraulic modeling using HEC-RAS 2D, hydrology using SacCalc, and XP-SWMM for storm drain analysis. Performed impact analysis and evaluated overland release through proposed streets, drainage swales and mitigation storage areas.

AWARDS

Emergency Preparedness Mapping Report for the Sacramento County Comprehensive Flood Management Plan, "Project of the Year Award 2006", APWA, Wood Rodgers, 2006

PUBLICATIONS

Stormwater Retention and Infiltration Strategies (Presentation)
CASQA 2015 Conference, October 19, 2015

Supervised Land Use Classification for Hydrologic Modeling Using GIS (Paper and Poster)
Nathan Jennings (Jenning@Planet.com), December 13, 2010 and *CalGIS Conference*, April 14-16, 2014

Two-Dimensional Hydraulic Modeling for Levee Systems (Presentation), Co-Presenter
Floodplain Management Association 2009 Annual Conference, September 8-11, 2009

Emergency Preparedness Mapping Using HEC-GeoRAS (Paper and Poster)
AWRA 2008 Spring Specialty Conference, March 17, 2008 and *ESRI User Conference*, July, 2009

Determining Flood Hazard Zones Using GIS (Paper and Poster)
AWRA 2008 Spring Specialty Conference, March 17, 2008 and *ESRI User Conference*, July, 2009

PROFESSIONAL ASSOCIATIONS

ASCE Sacramento Section Sustainability Committee, Chair, 2015 - Present

NorCal URISA, 2014 – Present

URISA, July 2013 - 2015

NorCal American Water Resources Association, Secretary, 2008 - 2010





Erik Fanselau, P.E., CFM, LEED AP

Education

B.S., Civil Engineering,
California State
University, Sacramento

Registrations

Civil Engineer, California
(68414)
Colorado (40007)
Certified Floodplain Manager
(US-11-06045)
LEED AP (10591588)

Expertise

Grading & Drainage Design
Hydrology / Hydraulics
Stormwater Quality
SWPPP Preparation
Utility Design
Roadway Design

About

Erik has 20 years' experience in water resources, project management, and utility coordination. Expertise includes financial management, invoicing, managing design staff, preparing scope and fee estimates, client and stakeholder coordination, drainage design, preparation of SWPPPs, water quality design, utility coordination, pipeline rehabilitation, pump station design, and erosion control plans.

Project Experience

Pumping Plant No. 3, Reclamation District 1000, Sacramento, CA

Assisted Senior Engineer with the concrete and steel design of the outfall structure for the rehabilitation of the plant. The purpose of the project was to reconstruct the pump station to increase the pumping capacity. Work included drafting, surveying, and concrete and steel design.

Natomas Cross Canal South Levee Phase 1, Sacramento, CA

Office Engineer on the construction management team providing services for the repair of the Natomas Cross Canal Levee, contracted at \$13.7 million. Improvements included levee crown degrade and reconstruction, installation of a DSM (deep soil mixed) cutoff wall and conventional slurry wall, repaving of Garden Highway and revegetation of the levee.

River Mile 75.1 Emergency Levee Repair Project, Sacramento, CA

Office Engineer for the project that included levee degrade at an abandoned Reclamation District 1000 on the Sacramento River levee to remove existing outfall through levee and related facilities.

Hazel Ave Bridge Widening, Sacramento, CA

Prepared drainage report, drainage plans, and erosion control plans for the Hazel Ave Widening project. Scope of project included over two miles of road widening in eastern Sacramento County. Road was widened from four lanes to six lanes which included the widening of the bridge over the American River.

R Line Light Rail Transit, Denver, CO

Deputy Project Manager and Drainage/Utilities Design Lead for \$750 million design/build of 10.5 miles of new Light Rail Transit including Interstate Highway and local roadway improvements, 8 Light Rail Stations, multiple light rail bridges and drainage way crossings and improvements and associated utility relocations. Two CLOMR/LOMRs were prepared for the Toll Gate Creek and Sand Creek crossings.

Creekside – Parcel 14, Sacramento, CA.

Designed the drainage facilities for a residential subdivision. Work included modeling the drainage system using StormCad and preparing an exhibit with the resultant flows and hydraulic grade lines.

Bothell Crossroads Improvements City of Bothell, WA.

Drainage Task Lead - Prepared roadway drainage design with water quality treatment for the Bothell Crossroads project. The proposed project consisted of shifting the existing roadway several hundred feet as part of a congestion relief project for an existing intersection.

Cambria Pump Station, Cambria, CA.

This project included adding a drainage pump station intended to eliminate flooding in Cambria, CA. The pump station consisted of a sump, two vertical pumps each rated at 80



Erik Fanselau, P.E., CFM, LEED AP

cf, and a 42-inch discharge pipe. Managed staff, coordinated with client and agency staff, and handled project administration tasks for Project Manager.

Basin 22 and 108 Master Plan, Sacramento, CA.

The purpose of the project was to analyze the existing drainage conditions of the basins and pump station capacities to determine solutions to alleviate flooding. Work included site assessment, computer modeling, and open channel flow calculations to determine basin runoff flowrates.

Bradshaw Road Widening, Sacramento, CA.

Performed a drainage study for the roadway reconstruction and designed the storm drainage improvements for the Bradshaw Road Widening. A technical memorandum and exhibits were prepared for the project report.

Storm Drainage Facilities Master Plan, Woodland, CA.

Performed hydrologic and hydraulic analysis for the City of Woodland. Work included extensive use of SWMM and HEC-1 programs as well as open channel, culvert, and pipeline design. Construction plans were drafted to implement the Master Plan facilities.

Lehigh Drive Drainage Improvements, Denver, CO.

Project Manager – Project involved construction of 265 feet of new storm pipe with inlets and manholes. The purpose of the project was to eliminate surface flow at pedestrian ramps. Duties included financial management, design, utilities, coordination, and management of design staff.

Acoma Alley Drainage Improvements, Denver, CO.

Project Manager – Project involved construction of 205 feet of new storm pipe with inlets and manholes to eliminate an existing ponding issue. Duties included financial management, design, utilities, coordination, and management of design staff.

Ellsworth Ave Drainage Improvements, Denver, CO.

Project Manager – Project involved construction of 630 feet of new storm pipe with inlets and manholes. The purpose of the project is to eliminate surface flow at pedestrian ramps and add a new conveyance system. Duties included financial management, design, utilities, coordination, and management of design staff.

Lamar Reliever Route, Lamar, CO

Drainage/Utilities Lead on 10 miles of roadway construction. The project includes the construction of the US 50 realignment and two new interchanges. Duties include coordinating with third party utilities and CDOT staff. Erik designed a new, innovative water quality treatment facility feature to address client feedback.

MetroLink, Orange Station Improvements, Orange, CA

Designed the water quality treatment for the MetroLink Pedestrian Undercrossing project at the commuter rail station. Work involved researching and developing water quality treatment solutions and preparing a water quality report and design modifications for replacing an existing drain inlet with a storm filter inlet to treat surface runoff. Erik performed drainage basin modeling to size the unit.

I-69 Construction, IN

Served as drainage lead for Segments 7 and 8 on the I-69 Indiana freeway project. The project included 150 miles of new 4-lane freeway construction in Indiana. Segments 7 and 8 totaled about 10 miles. As drainage lead Erik managed a staff of three people in designing both onsite and offsite drainage facilities. Basin hydrology, detention, and culvert/bridge hydraulics were required in the design.

Las Tablas/Route 101 Interchange, San Luis Obispo, CA

Performed a drainage study for the roadway reconstruction and designed the storm drainage improvements for the Las Tablas Road/Route 101 Interchange Interim Improvements, San Luis Obispo County. StormCad was used to model the drainage system. A technical memorandum and exhibits were prepared for the project report.



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Steven Killmer, PLS

Sacramento City College
Foothill College, Los
Altos, CA

Registrations
Registered Professional Land
Surveyor, California (8097)

Expertise
Boundary & Topographic
Easements
Boundary Line Adjustments
ALTA
Legal Descriptions
Right-of-Way
Construction Staking
Utilities
Mapping

About

Steve's has over 20 years' experience working with both public and private sector clients that have exposed him to every facet of the surveying industry. Steven has been project manager performing and supervising cadastral, control, topographic and construction surveys. In addition to his professional experience, Steven has worked for the California Board for Professional Engineers, Land Surveyors and Geologists with the development, review, and grading of the Land Surveyors Licensing Examination.

Project Experience

- 2019 San Joaquin RTD General Engineering On-call**
Staff surveyor for a multi-discipline team with several subconsultants to provide on-call services to support operations, maintenance, and capital improvements for the District.
- 2019 Nevada County Engineering On-call**
Staff surveyor for a multi-discipline team with several subconsultants to provide on-call services to support operations, maintenance, and capital improvements for the County.
- 2019 Butte County Record of Survey Review Support**
Surveyor on a contract to provide additional staff support to the County Surveyor for Record of Survey reviews to support the Camp Fire Recovery efforts. Work included acting as contract staff reviewing applications for Record of Survey reviews, providing formal comments, and coordinating with applicants and the County Surveyor.
- Lakeport Seawall, Lakeport, CA**
Field surveyor for topographical survey for 650 feet of seawall, sidewalk, dock area, and park. The purpose of the project was to raise the existing seawall to reduce the frequency of frequent flooding due to high water surface elevations in Clear Lake. The field survey included a 2-man crew with in-water survey work required.
- Solano Irrigation District, Solano County, CA**
Provided topographic field surveying of existing conditions and improvements and the associated mapping of multiple S.I.D. infrastructures/facilities within Solano County. Most projects included the verification of the location of the existing SID easement and the adjoining property boundary lines. Preparation of new irrigation easement exhibits, and descriptions were provided when necessary. Provided construction staking for installation of new infrastructures/facilities.
- Solano County Water Agency, Solano County, CA**
Provided topographic surveying, mapping, verification of existing easement location, construction staking and prepared various easements at multiple locations within Solano County.
- City of Woodland, Yolo County, CA**
Provided topographic and boundary surveys; prepared Tentative Parcel Maps and Final Parcel Maps at multiple locations. Created new easements for access and utility purposes when necessary. Work included coordination with the Client, Title Company and City.
- Unincorporated areas of Yolo, Solano, Sutter and Colusa Counties, CA**
Provided topographic and boundary surveys; prepared Tentative Parcel Maps and Final Parcel Maps, Records of Surveys and Lot Line Adjustments for multiple properties at various locations throughout the unincorporated areas of these



Steven Killmer, PLS

- Counties. Work included coordination with the County Planning and/or Public Works Departments.
- City of Woodland, Yolo County CA**
Provided a topographic and boundary survey and prepared the associated mapping; provided construction staking for 36" water main in Farmers Central Road; set project control for future staking; prepared easement descriptions and exhibits for right of way acquisition.
- Sutter Mutual Water Company, Sutter County, CA**
Provided topographic and boundary surveys for the design of a pumping plant and levee repairs. Provide the staking for construction of the pumping plant and the associated levee repairs. Prepared easement descriptions and exhibits at various locations within Sutter County. Prepared a Lot Line Adjustment application package for a project that modified an existing property line between a private landowner and a property owned by S.M.W.C. The LLA application was processed through the Sutter County Planning Department.
- Sacramento Jet Fuel Line, from West Sacramento to the Sacramento International Airport**
Provided construction staking and as-built survey; prepared 35 page as-built map; performed boundary surveys to determine property lines and Interstate 5 right of way lines. Prepared easement descriptions and exhibits for the various property owners along the 10+ mile jet fuel line.
- City of Oroville, Butte County, CA**
Performed a topographic and boundary survey for the preparation of a Tentative Map. The topographic survey was utilized for the Construction Documents (Civil Engineering Onsite and Offsite Improvement Plans). Prepared and filed a Final Map for 25 single family lot within the City of Oroville. Work included coordination with the City. Set applicable monumentation as required by the City for the new lots and streets.
- City of Colusa, Colusa County, CA**
Reviewed 3 Parcel Maps and 2 Final Maps for the City of Colusa to ensure that the maps were technically correct pursuant to the California Subdivision Map Act. Prepared review comments to the submitting Surveyor. Signed the mylar map for filing with the County Recorder's Office.
- City of Winters, Yolo County, CA**
Reviewed a Parcel Map for the City of Winters to ensure that the maps were technically correct pursuant to the California Subdivision Map Act. Reviewed Easement descriptions and exhibits for the City of Winters to ensure that they were technically correct. Prepared review comments to the submitting Surveyor. Signed the mylar map for filing with the County Recorder's Office.
- 4945 Hope Lane, Sacramento, CA**
Provided topographic and boundary surveys for a residential parcel. Prepared a Lot Line Adjustment application package that included resultant parcel descriptions and exhibits that could be utilized for recording purposes. Work included coordination with the County.
- Morning Star Company, Williams, CA**
Provided topographic and boundary surveys; prepared Tentative Parcel Maps and Final Parcel Maps for a commercial parcel. Created new easements to facilitate access, drainage and irrigation for the new parcel configurations. Work included coordination with the County. Set durable permanent monuments at the new parcel corners or at offsets thereof.



Appendix B – Assignment Agreement

ASSIGNMENT AGREEMENT

This Assignment Agreement by and between Civil Engineering Solutions, Inc. (“Assignee”), on the one hand, and Brookfield Natomas LLC, a California Limited Liability Company, (hereinafter called “BNLLC”), Ose Properties Inc. (hereafter called “OPI”) and Demeter Development, L P. (hereinafter called “DD), cooperatively working together as the Grandpark Owners Group (BNLLC, OPI and DD are collectively referred to herein as “Assignor”), on the other, is made effective as of August 21, 2020 (“Effective Date”).

1) Assignor is the owner of a hydrology modeling tool for the Natomas Basin, commonly referred to as the Current Conditions Scenarios of the Grandpark Basin Wide Hydrology and Hydraulics Model (the “Modeling Tool”).

2) In exchange for the sum of One Hundred Thousand Dollars (\$100,000) (the “Purchase Price”), Assignor desires to convey, transfer and assign to Assignee all of its right, title and interest, including all copyright interest, in and to the Modeling Tool, and Assignee desires to accept said assignment. The Purchase Price shall be payable the earlier of the following (the “Purchase Price Due Date”): (a) sixty (60) days of Assignee entering into an agreement with Reclamation District No. 1000 for the creation of a Natomas Basin Hydraulic Model (the “RD 1000 Agreement”), or (b) ten (10) days from Assignee receiving payment under the RD 1000 Agreement.

3) Upon payment of the Purchase Price, Assignor conveys, transfers, assigns and delivers to Assignee all of Assignor’s right, title and interest, including all copyright interest (“Rights”), in and to the Modeling Tool

4) Upon transfer of the Rights in and to the Modeling Tool, Assignee grants Assignor a perpetual, irrevocable, royalty free, sublicensable, assignable license to copy, perform, display, make derivative works of, and otherwise use the Modeling Tool.

5) TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE MODELING TOOL IS PROVIDED “AS-IS”, AND ASSIGNOR DISCLAIMS ANY REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, CONCERNING THE MODELING TOOL, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, NONINFRINGEMENT, FITNESS FOR A PARTICULAR PURPOSE, OR TITLE.

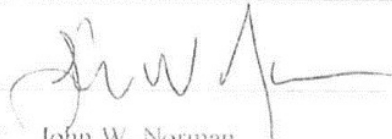

6) ASSIGNOR SHALL NOT BE LIABLE TO ASSIGNEE OR ANY OTHER PARTY FOR CONSEQUENTIAL, INCIDENTAL, PUNITIVE, EXEMPLARY OR INDIRECT DAMAGES, LOST PROFITS OR OTHER BUSINESS INTERRUPTION DAMAGES, REGARDLESS OF THE THEORY OF LAW UNDER WHICH SUCH MEASURE OF DAMAGES IS SOUGHT, INCLUDING WITHOUT LIMITATION, BY OR THROUGH STATUTE, TORT, CONTRACT, UNDER ANY THEORY OF STRICT LIABILITY, OR OTHERWISE. ASSIGNOR’S AGGREGATE LIABILITY FOR ANY AND ALL CLAIMS ARISING OUT OF OR RELATED TO THE MODELING TOOL, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, WILL NOT EXCEED ONE HUNDRED DOLLARS (\$100).

Statement of Qualifications for Natomas Basin Hydraulic Model

7) Assignee agrees to indemnify, defend, and hold harmless Assignor and their parent corporations, officers, directors, employees, shareholders, affiliates, successors, assigns and related entities (collectively, "Indemnitees"), from and against all losses, liabilities, judgments, awards, damages, obligations, costs and expenses (including without limitation, personal injury, bodily injury, death of persons or damage to property) to the extent arising out of, pertaining to, or relating to Assignee or any third party's use of the Modeling Tool subsequent to the Effective Date, and the negligence, recklessness, or willful misconduct of Assignee or Assignee's agents, subcontractors, or employees.

8) In the event (a) Assignee fails to enter into the RD 1000 Agreement within ninety (90) days of the Effective Date of this Agreement; or (b) Assignee fails to pay the Purchase Price by the Purchase Price Due Date, this Agreement shall automatically terminate and to the extent Assignee is deemed to have acquired any Rights in and to the Modeling Tool, such rights shall automatically revert to Assignor.

IN WITNESS WHEREOF, ASSIGNOR and ASSIGNEE have caused this assignment to be executed by each of their duly authorized officers, as of the Effective Date.

Brookfield Natomas LLC	Civil Engineering Solutions, Inc.
 By: <u>John W. Norman</u> Title: Vice President Date: <u>8/27/2020</u>	 By: _____ Title: _____ Date: _____
 By: <u>Margie Campbell</u> Title: <u>President</u> Date: <u>Aug. 27, 2020</u>	By: <u>Jeff Norton</u> Title: _____ Date: _____
Ose Properties Inc. By: <u>Margie Campbell</u> Title: _____ Date: _____	Demeter Development L.P. Demeter Management LLC  By: <u>Jeff Norton</u> Title: <u>MANAGER</u> Date: <u>8-27-20</u>



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 6.2

TITLE: Property Acquisition

SUBJECT: Review and Consider Authorizing the General Manager to Acquire Property (Lone Tree Canal)

EXECUTIVE SUMMARY:

Reclamation District No. 1000 (RD 1000; District) was recently approached by The Greenbriar Project Owner, LLC (a project specific entity created by Integral Communities), regarding their 28.3 acre Lone Tree Canal Preserve which serves as a portion of the habitat mitigation strategy for the Greenbriar development project (Attachment No. 1). The preserve includes approximately 5,200 lineal feet of the Lone Tree Canal along the western edge of the development property. The District currently holds an easement over the canal for water conveyance.

The Greenbriar Project Owner obtained all required regulatory agency permits and has begun project construction. Improvements to the property required under their permits are underway at this time. After completion of those improvements they will record a Conservation Easement over the property to ensure long term preservation of the property. They will also fund a long-term endowment which will ensure funding for maintenance and compliance with all agency reporting requirements in perpetuity.

The endowment funding should ensure that the property owner will have little or no on-going costs associated with ownership of the property other than any charge for water used, and property taxes, neither of which would be applicable to the District. The approximately \$770,000 endowment The Greenbriar Project Owner is responsible for includes money for annual costs to cover all agency required monitoring and reporting as well as money for site security, vegetation management, erosion control, and mosquito abatement (Attachment No. 2).

Integral Communities is looking for long term ownership solutions for all the mitigation properties. The balance of their mitigation includes sites actively farmed for rice and alfalfa and will be under separate ownership. If approved by the Board, the District would hold title to the Lone Tree Canal property. The basic idea is that they complete their required improvements, record the conservation easement, fund the required endowment, and then “sell” the property to the District for \$1.

RECOMMENDATION:

Staff recommends the Board review and consider authorizing the General Manager to Acquire Property (Lone Tree Canal).

TITLE: Property Acquisition – Lone Tree Canal

FINANCIAL IMPACT:

Unbudgeted Expense of \$1 in Fiscal Year 2020/2021.

ATTACHMENTS:

1. Lone Tree Canal – Proposal Summary
2. Lone Tree Canal Preserve – SSMP and PAR

STAFF RESPONSIBLE FOR REPORT:



Kevin L. King, General Manager

Date: 10/02/2020

8/31/20

THE GREENBRIAR PROJECT OWNER, LLC

Kevin L. King
General Manager
Reclamation District 1000

Re: Lone Tree Canal Mitigation Property Summary/Proposal

Mr. King,

Pursuant to our discussion I am writing to summarize the Lone Tree Canal mitigation property and our discussion regarding the Reclamation District taking ownership of the property.

The 28.3 acre Lone Tree Canal Preserve is currently owned by The Greenbriar Project Owner, LLC (a project specific entity created by Integral Communities) and serves as a portion of the habitat mitigation strategy for the Greenbriar development project (now referred to as North Lake). The preserve includes approximately 5,200 lineal feet of the Lone Tree Canal along the western edge of the development property. RD 1000 currently holds an easement over the canal for water conveyance.

The Greenbriar Project Owner obtained all required regulatory agency permits and has begun project construction. Improvements to the property required under our permits are underway at this time. After completion of those improvements we will record a Conservation Easement over the property to ensure long term preservation of the property. We will also fund a long term endowment which will ensure funding for maintenance and compliance with all agency reporting requirements in perpetuity.

That endowment funding should ensure that the property owner will have little or no on-going costs associated with ownership of the property other than any charge for water used, and property taxes- both of which I understand RD 1000 to be uniquely positioned to handle. The approximately \$770,000 endowment (details previously provided to you) we are responsible for includes money for annual costs to cover all agency required monitoring and reporting as well as money for site security, vegetation management, erosion control, and mosquito abatement.

Integral Communities is looking for long term ownership solutions for all the mitigation properties. The balance of our mitigation includes sites actively farmed for rice and alfalfa and will be under separate ownership. I believe RD 1000 is uniquely positioned to hold title to the Lone Tree Canal property. My basic idea is that we complete our required improvements, record the conservation easement, fund the required endowment and then "sell" the property to the District for \$1.

Please let me know if you are interested in pursuing this further and what the next steps would be if so.

Sincerely,

Kevin Fryer
Integral Communities
925-899-5065

Greenbriar Development Project Lone Tree Canal Reserve

Site Specific Management Plan
February 2017



Prepared for:
Greenbriar Project Owner, LP
500 La Gonda Way, Suite 102
Danville, CA 94526

Prepared by:
HELIX Environmental Planning, Inc.
11 Natoma Street, Suite 155
Folsom, CA 95630

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Chapter 1.0 Introduction

1.1 Background

On behalf of Greenbriar Project Owner, LP (Project Applicant), HELIX Environmental Planning, Inc. (HELIX) has prepared this Site Specific Management Plan (Plan) to serve as a guide for establishment, maintenance and long-term management of the Lone Tree Canal Reserve, that would occur in conjunction with the proposed Greenbriar Development Project (Project). As part of the Greenbriar Conservation Strategy, which involves the establishment of several reserves in the Natomas Basin (*i.e.*, Lone Tree Canal Reserve, North Nestor Reserve, Moody Reserve, Spangler Reserve), implementation of the Lone Tree Canal Reserve is intended to offset in part Project impacts to state and federal listed species and to conserve and restore habitat for species covered by the Natomas Basin Habitat Conservation Plan (NBHCP; Covered Species; City of Sacramento *et al.* 2003).

The Project's planned development activities have the potential to impact federal- and state-listed species including the federal- and state-listed as threatened giant garter snake (GGS, *Thamnophis gigas*) and the state-listed as threatened Swainson's hawk (SWHA; *Buteo swainsoni*). In addition, several species that are not federal- or state-listed, but are considered "special-status" because they are protected by a variety of other federal and state regulations, also have the potential to be impacted by development activities on the Greenbriar Project Site and Off-site Improvement Lands.

As outlined in this plan, the Lone Tree Canal Reserve will preserve 28.3 acres along the western edge of the Greenbriar Project Site, including approximately 5,200 feet of Lone Tree Canal, and will provide a buffer between Lone Tree Canal and the Greenbriar development. While the Lone Tree Canal Reserve is not intended to provide habitat for all of the special-status species impacted by the proposed project, it will provide high-quality habitat for many of the species potentially impacted by development activities on the Greenbriar Project Site and Off-site Improvement Lands and will, in conjunction with the Project's other proposed reserves and additional proposed reserves, adequately offset any impacts to all special-status species.

This Plan is prepared in support of Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS), and an application for a Section 2081 permit from CDFW for potential incidental take of SWHA on the Greenbriar Project Site. Impacts to special-status species that would potentially occur as a result of the proposed project and the Project's complete conservation strategy are described in a variety of technical documents prepared to support the above-mentioned processes including the *Greenbriar Development Project Conservation Strategy* (HELIX 2017a), *Greenbriar Development Project: Greenbriar Project Site and Off-site Improvement Lands Biological Resources Evaluation* (HELIX 2013), the *Greenbriar Development Project Biological Assessment* (HELIX 2017b), and the *Greenbriar Development Project California Endangered Species Act (Section 2081) Incidental Take Permit Application* (HELIX

2017c). This plan provides a summary of the Project's development impacts to special-status species and habitats as well as a summary of the Project's proposed reserves. For further information, the reader is referred to the documents listed above.

1.2 Goals and Objectives

The goals of the proposed activities on the Lone Tree Canal Reserve are to contribute to the Project's overall conservation strategy by: (1) offsetting impacts to wetland and upland habitats potentially utilized by listed and other special-status species; and, (2) contributing to the goals of the NBHCP by preserving a site that contributes to reserve connectivity in the Natomas Basin and habitat connectivity for GGS between the central and northern portions of the Natomas Basin.

In order to achieve the goals contained in this Plan, the objectives are to: (1) establish the Lone Tree Canal Reserve to preserve 28.3 acres within the Natomas Basin in perpetuity; (2) enhance the reach of Lone Tree Canal between Interstate-5 and Elkhorn Boulevard as habitat for GGS; (3) enhance and preserve a 200-225 foot wide grassland buffer on the east bank of the canal as upland habitat for GGS. Management of the Lone Tree Canal Reserve will be funded by a non-wasting endowment held by a third party, and will be the responsibility of the Reserve Operator. Preservation will be through a conservation agreement that will be recorded for the property.

1.2.1 Type and Area of Habitat to be Preserved

The 28.3-acre Lone Tree Canal Reserve will include the approximately 5,200-foot reach of Lone Tree Canal between Interstate-5 and Elkhorn Boulevard. The canal is managed for drainage and flood control by Reclamation District (RD) 1000, which holds an easement over the canal. The RD 1000 easement area would be included in the Lone Tree Canal Reserve and RD 1000 maintenance activities within its easement would take precedence over reserve management priorities for the canal. Nevertheless, the Lone Tree Canal Reserve would provide additional preservation for the canal as 3.1 acres of open water habitat for GGS. Approximately 0.2 acre of existing seasonal wetland in the southern end of the reserve would be preserved as well. The environmental setting of the Lone Tree Canal Reserve is described further in **Chapter 3.0**.

1.2.2 Type and Area of Habitat to be Restored and Enhanced

The portion of the Lone Tree Canal Reserve outside of Lone Tree Canal (23.75 acres) is currently managed for agriculture, and would be restored and enhanced as grassland. Existing winter grain fields, disturbed areas, and abandoned ditches would be disked and seeded with a native perennial grassland seed mix. Agriculture would be discontinued, and the land would be managed as upland habitat for GGS and other NBHCP Covered Species. An additional 1.25 acres of seasonal wetland would be created along the east bank of Lone Tree Canal by recontouring the existing 1:1 slope of the bank to a 3:1 slope.

1.3 Site Selection

The Lone Tree Canal Reserve was chosen as a reserve site due to its importance as a connectivity corridor for GGS between the central and northern portions of the Natomas Basin.

1.4 Ownership Status, Legal Arrangements and Protection Instrument

The Lone Tree Canal Reserve site is under the ownership of Greenbriar Project Owner, LP. The Lone Tree Canal Reserve will be managed in perpetuity under a Conservation Agreement requiring that the property be managed for the benefit of NBHCP Covered Species in perpetuity. The Conservation Agreement will include the entire 28.3-acre Lone Tree Canal Reserve, will be recorded on the property, and will include the City of Sacramento, USFWS, and CDFW as signatories along with the Reserve Operator and the endowment holder.

Chapter 2.0 Project Background

2.1 Project Location and Summary

2.1.1 Location of Greenbriar Development Project

The Greenbriar Project Site and Off-site Improvement Lands are located within Section 4, Township 9 North, and Section 33, Township 10 North; Range 4 East on the United States Geological Survey (USGS) 7.5-minute “Taylor Monument” quadrangle (quad) map. **Figure 1** depicts the locations of the Greenbriar Project Site and Off-site Improvement Lands within the region, along with the Project’s proposed reserves. The Greenbriar Project Site comprises a 577-acre property northwest of the Interstate-5/State Route 99 interchange; the Off-site Improvement Lands comprise 12.76 acres adjacent to that property.

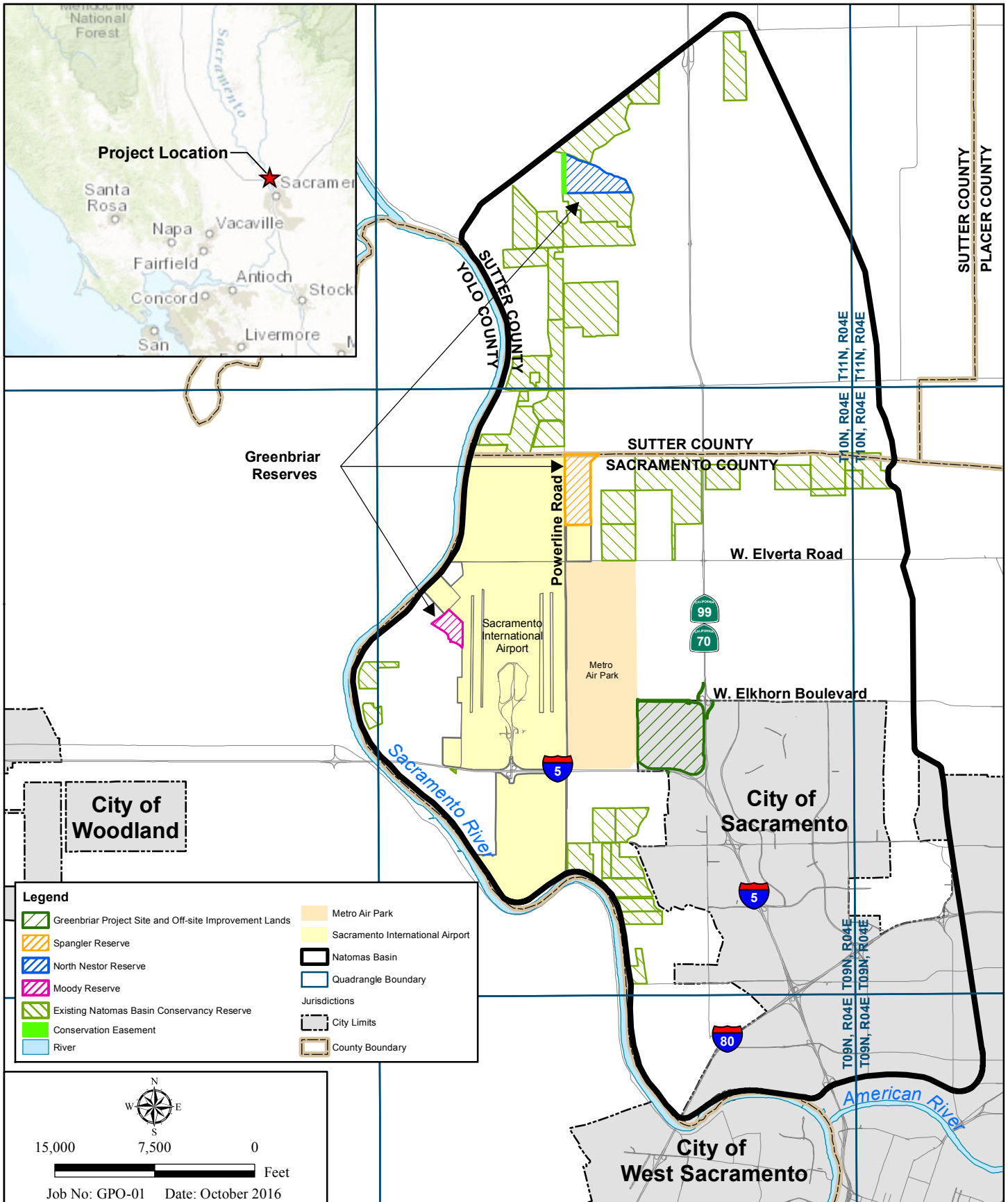
2.1.2 Summary of Greenbriar Development Project

The Greenbriar Development Project is a proposed transit-oriented mixed-density residential and retail/commercial development, designed to incorporate the planned Green Line to the Airport Light Rail connection, as well as improvements previously included in the planned Metro Air Park development west of the Greenbriar Project Site (**Figure 2**). The Greenbriar Development Project would result in development impacts to 537.0 acres on the Greenbriar Project Site, and 5.3 acres of Off-site Improvement Lands, for a total of 542.3 acres. The remaining 40.0 acres of the Greenbriar Project Site would be avoided for potential future road improvements (1.6 acres), avoided and permanently conserved as the Lone Tree Canal Reserve (28.3 acres), or has already been developed and mitigated by another entity (10.1 acres). The remaining 7.46 acres of the Off-site Improvement Lands are existing pavement and development by another entity that has already been mitigated. **Figure 3** depicts the project design.

The Greenbriar Development Project includes approximately 3.0 acres of permanent impacts from road crossings over Lone Tree Canal (**Figure 3**). These areas are not included in the Lone Tree Canal Reserve.

2.1.3 Summary of the Greenbriar Conservation Strategy

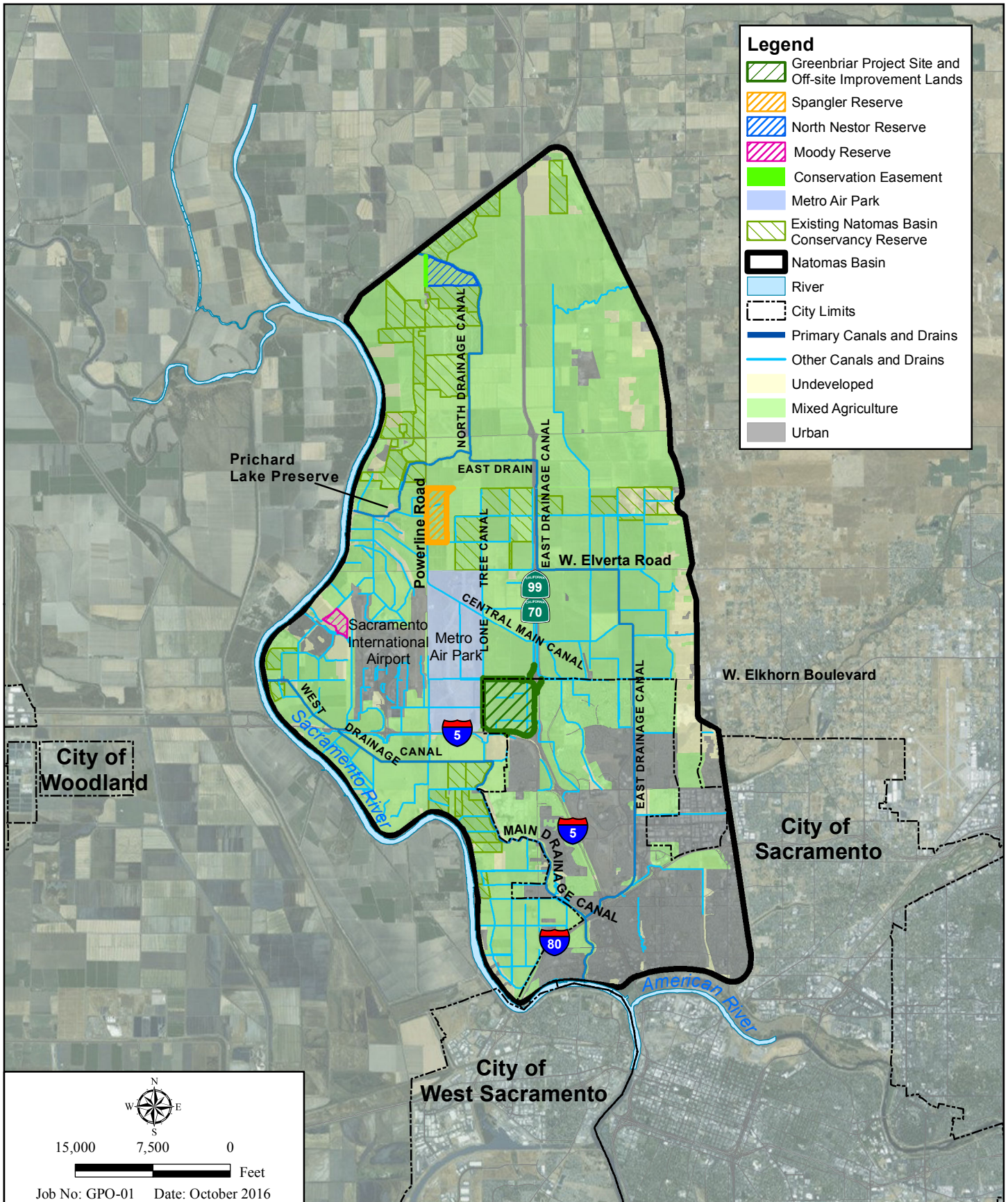
The Greenbriar Development Project includes a preservation component intended to offset project impacts to biological resources in the Greenbriar Project Site and Off-site Improvement Lands. The preservation component of the project comprises 557 acres in 4 permanent reserves: Lone Tree Canal, North Nestor, Moody, and Spangler. The Lone Tree Canal Reserve is located along the western edge of the Greenbriar Project Site, and the remaining reserves are located on off-site lands in the Natomas Basin. A site-specific management plan consistent with the NBHCP has been prepared for each of these reserves, including this plan for the Lone Tree Canal Reserve.



Regional Locator and Site Vicinity

GREENBRIAR DEVELOPMENT PROJECT

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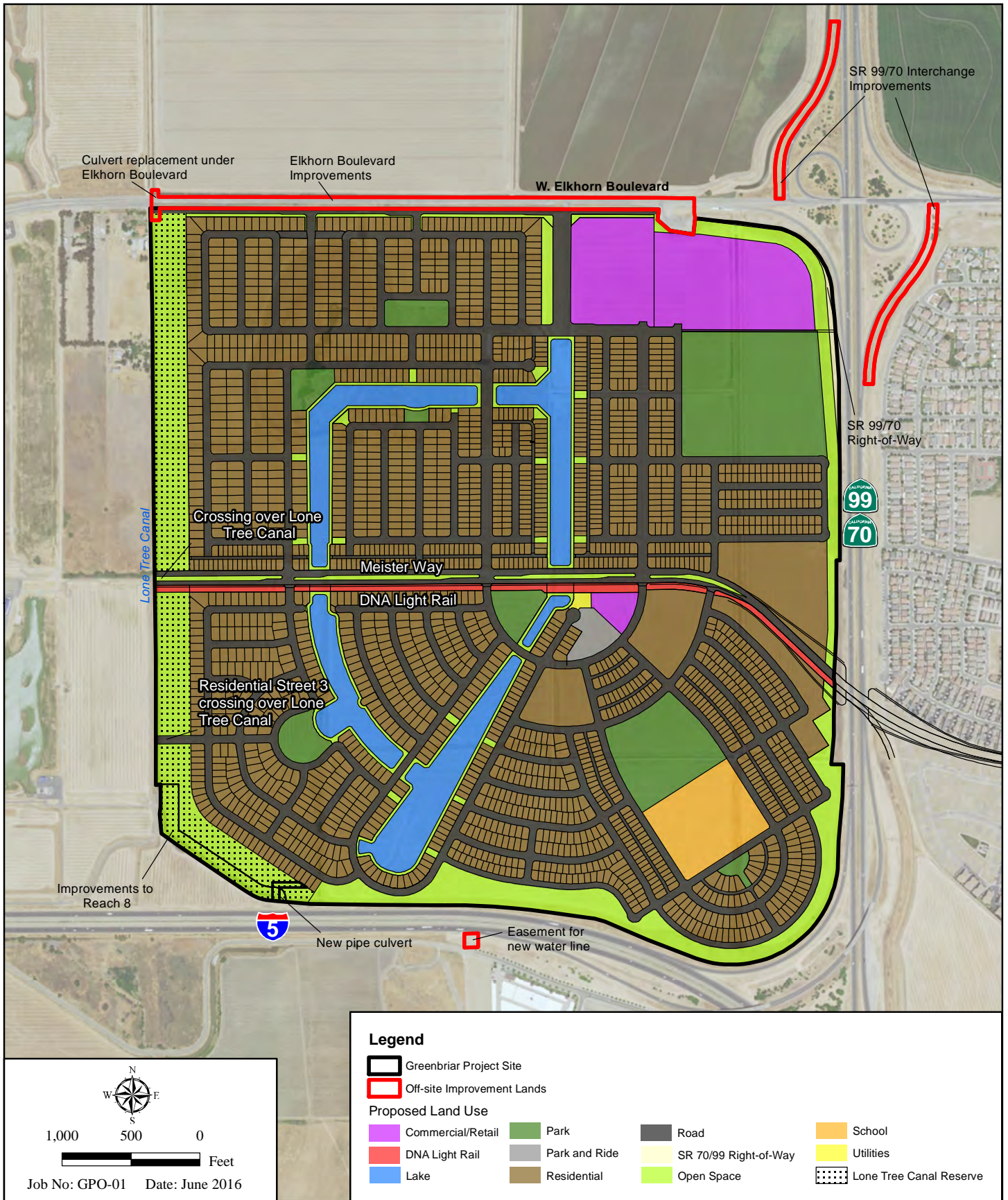
Source: TNBC, DWR (1998, 2000, 2010) Aerial: ESRI 2014

Environmental Setting

GREENBRIAR DEVELOPMENT PROJECT

Figure 2

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Aerial: ESRI 2014

Project Design

GREENBRIAR DEVELOPMENT PROJECT

Figure 3

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2.1.4 Project Schedule

The proposed development at the Greenbriar Project Site is expected to be phased for completion over a 5 to 10 year period, with construction commencing in 2017. Development on the Greenbriar Project Site will be constructed in at least two phases: the first phase(s) likely will involve constructing the proposed development north of Meister Way, and the latter phase(s) will involve constructing the proposed development south of Meister Way. The Lone Tree Canal Reserve will be established, including execution of the Conservation Agreement and installation of proposed habitat enhancement, during the first phase of development on the Greenbriar Project Site.

2.2 Project Impacts

2.2.1 Jurisdictional Waters

The Greenbriar Development Project would result in temporary and permanent impacts to potentially jurisdictional waters of the U.S. and waters of the State on the project site (including the Lone Tree Canal Reserve) and Off-site Improvement Lands through construction of the proposed development, and permanent impacts to potentially jurisdictional waters of the U.S. and waters of the State on the Spangler Reserve site through installation of proposed habitat creation/restoration in the Spangler Reserve. Implementation of habitat restoration in the Lone Tree Canal Reserve would result in temporary impacts to 3.1 acres of jurisdictional waters of the U.S. in Lone Tree Canal. Temporary impacts would result from proposed recontouring of the east bank of the canal.

Implementation of the creation/restoration and preservation component of the Project at the Spangler Reserve is anticipated to fully offset impacts to jurisdictional waters. The Lone Tree Canal Reserve is not proposed to offset any impacts to jurisdictional waters of the U.S.

2.2.2 Special-Status Species

Special-status species with the potential to be impacted by Project activities on the Greenbriar Project Site and Off-site Improvement Lands include GGS, western pond turtle (*Emys marmorata*), tri-colored blackbird (*Agelaius tricolor*), western burrowing owl (*Athene cunicularia*), Aleutian cackling goose (*Branta canadensis leucopareia*), Swainson's hawk, white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*), white-faced ibis (*Plegadis chihi*), bank swallow (foraging habitat only; *Riparia riparia*), and Sanford's arrowhead (*Sagittaria sanfordii*) (HELIX 2013). Potential impacts to these species are briefly discussed below.

The Greenbriar Project Site provides approximately 35.21 acres of suitable habitat for the federally threatened GGS as well as western pond turtle. Lone Tree Canal and a spur along an intersecting interior canal provide approximately 3.21 acres of potential aquatic habitat for GGS and western pond turtle, and a potentially suitable movement/dispersal corridor. Based on the definition of GGS habitat that is commonly used by the USFWS in Biological Opinions, including the *Programmatic Biological Opinion for*

U.S. Army Corps of Engineers Projects with relatively small impacts on GGS (USFWS 1997), suitable upland habitat incorporates 200 feet of uplands adjacent to suitable aquatic habitat. Therefore approximately 32 acres of upland habitat adjacent to suitable aquatic habitat is present on the Greenbriar Project Site. This upland habitat may also be used by western pond turtle.

Foraging habitat is present on the Greenbriar Project Site for tri-colored blackbird, western burrowing owl, Aleutian cackling goose, Swainson's hawk, loggerhead shrike, white-faced ibis, and bank swallow. These bird species are not expected to nest on the site. One plant species, Sanford's arrowhead, also has the potential to occur in Lone Tree Canal and be impacted by the proposed project.

Chapter 3.0 Lone Tree Canal Reserve Description

3.1 Reserve Location

The Lone Tree Canal Reserve is located in the southern portion of the Natomas Basin in the City of Sacramento, along the western edge of the Greenbriar Project Site (**Figure 1**).

3.2 Existing Land Use

Land uses in the vicinity of the Lone Tree Canal Reserve include Interstate-5, Elkhorn Boulevard, active and inactive agricultural land, commercial/industrial development in the Metro Air Park, and residential development. The Reserve is bordered on the north by Elkhorn Boulevard, on the south by Interstate-5, on the east by the Greenbriar Development, and on the west by undeveloped lands in the Metro Air Park.

The Lone Tree Canal Reserve consists of active agricultural land used for hay production and Lone Tree Canal.

3.3 Topography

The Lone Tree Canal Reserve is located in the Natomas Basin in the Sacramento Valley. Terrain in the immediate area is primarily flat, with elevations ranging from 18-23 feet above mean sea level (amsl). The site has been actively cultivated for decades and has been graded and leveled to create fields. There is no natural topography remaining in the site.

3.4 Soils

The Lone Tree Canal Reserve contains three soil mapping units in three soil series (NRCS 2016): Clear Lake clay, hardpan substratum, 0 to 1 percent slopes; Jacktone clay, drained, 0 to 2 percent slopes; Cosumnes silt loam, partially drained, 0 to 2 percent slopes. These soils are all described as poorly drained or somewhat poorly drained alluvial soils occurring on basin floors up to an elevation of 100 feet amsl. All have a frequency of flooding of “rare” and a frequency of ponding of “none”, and have a depth to water table of 0 inches. All three soil series are listed on the 2015 National Hydric Soils List. Clear Lake clay and Jacktone clay are predominantly clay soils with a cemented duripan layer at depths of 34 to 48 inches. Cosumnes silt loam grades from silt loam, through silty clay loam and stratified clay loam, to clay with increasing depth.

3.5 Hydrology

Lone Tree Canal functions within the managed drainage system of the Natomas Basin, and has hydrologic connectivity to drainages off-site. Lone Tree Canal is approximately 3.5 miles in length,

beginning at Elverta Road approximately two miles north of the reserve and terminating in the RD 1000 West Drainage Canal approximately 3,000 feet south of Interstate-5. Water levels in the reach of Lone Tree Canal in the reserve are currently maintained by: (1) backwater from the West Drainage Canal, which inundates the southern 3,200 feet of Lone Tree Canal in the reserve; (2) a 15-inch culvert outfall from a GGS habitat ditch created by Metro Air Park that discharges water pumped from a groundwater well into Lone Tree Canal directly upstream of Elkhorn Blvd.; (3) upstream agricultural discharges into Lone Tree Canal and the L2 canal maintained by RD 1000 that empties into Lone Tree Canal immediately upstream of Elkhorn Blvd. Hydrology in the upland portion of the reserve is driven by natural precipitation and runoff.

3.6 Proposed Enhancement

Enhancement activities in Lone Tree Canal Reserve include recontouring the east bank of Lone Tree Canal, and seeding existing winter grain fields with a native perennial grassland seed mix.

3.7 Habitat Types

The dominant vegetation community and land cover type (referred to as habitat types) in the Lone Tree Canal Reserve is grassland, with minor amounts of open water and seasonal wetland habitat (**Table 1**).

Table 1. Existing Habitat in the Lone Tree Canal Reserve

Habitat Type	Total
Grassland	23.75
Seasonal wetland	1.45
Active canal (open water)	3.1
Total	28.3

3.7.1 Grassland

Upland areas adjacent to Lone Tree Canal are in agricultural use for grass hay production.

3.7.2 Seasonal Wetland

Seasonal wetlands in the reserve consist of approximately 0.2 acre of seasonal wetland in grass hay fields at the southern end of the reserve, and emergent wetland vegetation along the water line in Lone Tree Canal. The seasonal wetland is characterized by seasonal dominance of non-native Italian ryegrass (*Festuca perennis*). Seasonal wetlands on the banks of Lone Tree Canal are dominated by tule (*Schoenoplectus acutus*) below the water line, and dallis grass (*Paspalum dilatatum*), tall flatsedge (*Cyperus eragrostis*), and bristly ox-tongue (*Heminthotheca echioides*) above the water line. Tules are periodically removed from the channel by RD 1000 to maintain flow capacity in the canal.

3.7.3 Active Canal

The reach of Lone Tree Canal in the reserve includes approximately 3.1 acres of open water habitat at least 12 inches deep year-round. The active channel is maintained largely free of emergent vegetation by RD 1000; however, the channel bottom supports herbaceous aquatic species, especially water milfoil (*Myriophyllum spicatum*) and lanceleaf water-plantain (*Alisma lanceolatum*).

3.8 Aquatic Functions and Values

Because the hydrology of Lone Tree Canal is managed by RD 1000, the functions and values are largely limited to wildlife habitat and maintenance of biodiversity. It does however perform some functions of flood attenuation, pollutant filtration, and sediment capture. Seasonal wetlands in the reserve likely provide minimal functions of groundwater recharge by collecting and retaining precipitation from surrounding uplands.

3.9 Jurisdictional Waters

Seasonal wetlands and Lone Tree Canal are jurisdictional waters of the U.S. and waters of the State.

3.10 NBHCP Covered Species

Based on analysis conducted for the Biological Resources Evaluation of the Greenbriar Project Site by HELIX in 2013 (HELIX 2013), 7 NBHCP Covered Species have potential to occur on the Lone Tree Canal Reserve. This potential is based on species' habitat affinities and ranges, and the habitats available in the reserve. Of these 7 species, only white-faced ibis has been observed on the Reserve property; the remaining 7 species have nearest reported occurrences ranging from adjacent lands to more than 4.5 miles from the Reserve (**Table 2**).

Table 2. Status of NBHCP Covered Species with Potential to Occur on the Lone Tree Canal Reserve

Species Name ¹ (Common Name)	Regulatory Status ²	Status on the Reserve ³	Status in the Region ³
Plants			
<i>Sagittaria sanfordii</i> (Sanford's arrowhead)	--/--/1B.2	No records.	No records in the Natomas Basin.
Reptiles			
<i>Emys marmorata</i> (western pond turtle)	--/--/SSC	No records.	Records from Fisherman's Lake, Pritchard Lake, and Elkhorn pumping station.
<i>Thamnophis gigas</i> (giant garter snake)	FT/ST/--	Observed in Lone Tree Canal off-site during surveys in 1999 and 2003.	104 individuals trapped in TNBC reserves in 2015.
Birds			
<i>Agelaius tricolor</i> (tri-colored blackbird)	--/--/SSC	No records.	No records of nesting in the Natomas Basin since 2011.
<i>Athene cunicularia</i> (western burrowing owl)	--/--/SSC	No observations since 2012; one observation in Dec. 2012.	One record from 0.75-mile north of the site; numerous records from throughout the Natomas Basin.
<i>Branta canadensis leucopareia</i> (Aleutian Canada goose)	FD/--/--	No records.	No records in the Natomas Basin since surveys began in 2004.
<i>Buteo swainsoni</i> (Swainson's hawk)	--/ST/--	One observation of foraging in 2012; no nest habitat in the reserve.	Documented nest sites throughout the Natomas Basin; one nest site <0.1-mile northwest of the reserve.
<i>Lanius ludovicianus</i> (loggerhead shrike)	--/--/SSC	Observed in 2005 and 2012.	Common, known to nest in the Natomas Basin.
<i>Plegadis chihi</i> (white-faced ibis)	--/WL/--	No records.	Common and increasing in the Natomas Basin.
<i>Riparia riparia</i> (bank swallow)	--/ST/--	No records.	Does not nest in the Natomas Basin. Migrating birds may forage.
¹ Source: Biological Resources Evaluation for the Greenbriar Project Site (HELIX 2013). ² Regulatory Status: Federal listing/State listing/Other State status. FT=Federal threatened; FD=Federal delisted; ST=State threatened; SSC=Species of Special Concern; WL=wait-list ³ Status taken from California Natural Diversity Database record search dated 3/19/2015, and NBHCP Effectiveness Monitoring Reporting for 2015 (ICF 2016)			

The Lone Tree Canal Reserve provides potential habitat for all of the NBHCP Covered Species listed in **Table 2**, and is expected to contribute to the overall multi-species conservation strategy of the NBHCP.

The suitability of the Lone Tree Canal Reserve for the Covered Species listed in **Table 2** is discussed in detail in the following sections.

3.10.1 Western Pond Turtle

Western pond turtle has not been observed in the Lone Tree Canal Reserve. The reserve provides suitable habitat for turtles in the form of Lone Tree Canal and adjacent upland basking and hibernation sites.

3.10.2 Giant Garter Snake

GGS has been observed off-site in Lone Tree Canal in focused surveys performed in 1998-1999 and 2003, and the canal is presumed to be occupied by GGS. A habitat assessment of the Greenbriar Project Site conducted in 2010 considered Lone Tree Canal to be “good” quality aquatic habitat for GGS; however, the suitability of upland habitat on the site for overwinter hibernation was restricted by plowing in the fall for agriculture (Berryman 2010). Dispersal of GGS into the reserve from the south is limited by the long culvert under Interstate-5. North of Elkhorn Boulevard, Lone Tree Canal is connected to an extensive network of canals that likely support GGS, and the culvert under Elkhorn Boulevard is not a substantial barrier to GGS passage.

Recountouring of the east bank of the canal is intended to improve the value of the canal and adjacent uplands for GGS by reducing the steepness and increasing the vegetative cover of the land-water interface, and by increasing the area of shallow-water foraging habitat in the canal. Cessation of agriculture in the adjacent uplands will increase the value of those areas as over-wintering habitat.

3.10.3 Tri-colored Blackbird

The Lone Tree Canal Reserve does not support nesting habitat for tri-colored blackbird. The grassland may provide suitable foraging habitat for flocks nesting off-site; however, there are no known nesting sites near the reserve.

3.10.4 Western Burrowing Owl

Western burrowing owl has not been observed in the Greenbriar Project Site since a lone individual was observed in a remnant building foundation in December of 2012 (CDFW 2012). The Lone Tree Canal Reserve supports potentially suitable habitat for burrowing owl in the grasslands and canal banks.

3.10.1 Aleutian Canada Goose

Aleutian Canada goose has not been observed in the Natomas Basin; however, the Lone Tree Canal Reserve supports suitable winter foraging habitat for this species in the form of grassland.

3.10.2 Swainson's Hawk

The Lone Tree Canal Reserve does not support trees suitable for SWHA nesting; however, there are large trees west of the reserve, and a documented SWHA nest site less than one mile northwest of the reserve. The grassland habitat on the reserve provides suitable foraging habitat for Swainson's hawks nesting in the region, and SWHA has been observed foraging on the Greenbriar Project Site.

3.10.3 White-faced Ibis

The Lone Tree Canal Reserve does not support suitable nesting or foraging habitat for white-faced ibis. This species nests in dense emergent marsh vegetation and forages in wet areas such as flooded fields.

Chapter 4.0 Greenbriar Conservation Strategy

4.1 Overall Conservation Strategy

The project proponent proposes a layered, multi-species mitigation approach providing 557.1 acres of reserve to offset 542.3 acres of net impacts associated with the Greenbriar Development Project (1.03 acre of reserve per 1 acre impacted). The project’s reserves include the 28.3-acre Lone Tree Canal Reserve, 219.1-acre North Nestor Reserve, 74.3-acre Moody Reserve, and 235.4-acre Spangler Reserve, all located in the Natomas Basin. Of the 557.1 acres of proposed reserve lands, rice agriculture will comprise approximately 46.6 percent, managed marsh complex approximately 25.8 percent, and upland habitat approximately 27.6 percent (Table 3).

Table 3. Proposed Land Uses in the Greenbriar Project Reserves (acres)

Reserve	Rice Agriculture	Upland	Managed Marsh Complex	Total
Spangler Reserve	40.3	53.1	142.0	235.4
Moody Reserve	--	74.3	--	74.3
North Nestor Reserve	219.1	--	--	219.1
Lone Tree Canal Reserve	--	26.5	1.8	28.3
Total	259.4	153.9	143.8	557.1

4.2 Conservation Strategy at the Lone Tree Canal Reserve

The Lone Tree Canal Reserve will be managed as habitat for GGS , SWHA, and other Covered Species. The reserve will have no active land uses and will be undisturbed except for routine maintenance such as trash removal and RD 1000 maintenance activities. Entry into the reserve will be restricted by a GGS exclusion barrier/wrought iron fence along the eastern edge where the reserve borders the Greenbriar development. The GGS barrier/fence will prevent GGS from entering developed areas, and will discourage the entry of people and domestic animals into the reserve. The remainder of the reserve boundary will be fenced, with locked gates on all access roads. The perpetual management of the Lone Tree Canal Reserve as open space for the benefit of GGS will, along with management of rice cultivation, uplands, and wetlands on the other proposed reserves, offset impacts to GGS, SWHA, and other Covered Species resulting from the proposed Greenbriar Development Project.

Chapter 5.0 Maintenance and Long-Term Management

Management of the Lone Tree Canal Reserve will be funded by a non-wasting endowment held by a third party, and will be the responsibility of the Reserve Operator. Preservation will be through a Conservation Agreement that will be recorded for the property and will include the Reserve Operator, the endowment holder, the City of Sacramento, CDFW, and USFWS as signatories.

5.1 Land Use

This plan assumes that the Lone Tree Canal Reserve will be managed as open space in perpetuity, and that RD 1000 management of Lone Tree Canal as an earthen drainage and flood control channel subject to periodic vegetation removal will continue unchanged. The conservation agreement will not affect RD 1000 management or its easement on Lone Tree Canal.

5.2 Aquatic Resources

Regulatory authority, regulated activities, and permit requirements for impacts to aquatic resources are defined in Sections 404 and 401 of the Clean Water Act, Section 1602 of the California Fish and Game Code, and the Porter Cologne Water Quality Control Act. Direct impacts include placement of fill, discharge of pollutants, dredging, extraction of materials from the bed or banks, and diversion; indirect impacts include alteration of surface or subsurface hydrology, and vegetation removal.

Impacts to jurisdictional aquatic resources in the Lone Tree Canal Reserve are limited to temporary impacts to the east bank of the canal during bank recountouring that will occur prior to the establishment of the reserve. Permanent impacts to Lone Tree Canal associated with proposed crossings at Elkhorn Boulevard, Meister Way, and Residential Street 3 that are part of the Greenbriar Development Project are located outside of the Lone Tree Canal Reserve, and will be offset by wetland creation at the Spangler Reserve.

Temporary disturbance resulting from RD 1000 channel maintenance in Lone Tree Canal is not associated with establishment or maintenance of the Lone Tree Canal Reserve, and is not the responsibility of the Greenbriar Development Project proponent or the Reserve Operator.

Prior to any action that would result in additional direct or indirect impacts besides those described above, the Reserve Operator shall obtain prior approval of the signatories to the conservation agreement and appropriate permits from USACE, CDFW, and RWQCB.

5.3 Reserve Operations

The following conditions are intended to ensure that operation of the Lone Tree Canal Reserve is consistent with the goal of managing the site as habitat for Covered Species, especially GGS and SWHA. The intent of this plan is that the Lone Tree Canal Reserve should function in perpetuity as open space.

5.3.1 Hunting

Hunting shall not be allowed on the Lone Tree Canal Reserve. Signs shall be placed on the perimeter of the reserve stating that the property is private property managed as wildlife habitat and that hunting is strictly prohibited.

5.3.2 Other Public Incursion

All public incursion, including vehicular recreation, dumping, trash-burning, camping, loitering, parking, archery, or target shooting shall be prohibited on the Lone Tree Canal Reserve. Signs shall be placed on the perimeter of the property stating that the property is private property managed as wildlife habitat and that trespass is strictly prohibited.

5.3.3 Community Outreach



The Reserve Operator will coordinate with the Greenbriar Development Homeowners Association(s) to educate the community regarding the nature and purpose of the Lone Tree Canal Reserve and to engage in public relations and other management actions designed to reduce public incursion into the reserve. Such actions may include installing interpretive signs on the GGS exclusion barrier/wrought iron fence between the development and the reserve, educating the public about the effects of feral and domestic cats on wildlife, periodically presenting information to the community regarding the condition of the reserve and effects of unauthorized incursions (e.g., photos of trails, vandalism, displays of trash collected from the reserve, etc), and designing landscaping on the developed side of the barrier that discourages entry into the reserve.

5.3.4 Reserve Maintenance

Fence and Signage

The Reserve Operator will be responsible for maintaining the reserve side of the GGS exclusion barrier/wrought iron fence free of vegetation, trash, and debris, and for repairing damage to the GGS exclusion barrier, other fencing, and signage.

Invasive Weed Control

Weed control will be conducted as necessary to minimize competition that could prevent the establishment of native species. As weeds become evident, they should be removed by hand or controlled with the proper herbicides. Maintenance personnel will be responsible for knowing the

difference between weeds and native species. Non-native plant material will be removed from the reserve and disposed of in a licensed landfill.

Remedial Planting

No container stock will be installed in the reserve. If native plant establishment is not apparent in portions of the reserve in the spring following installation, additional seed will be applied during the next October – November and supplemental watering or other remedial measures taken as indicated following investigation into cause(s) of establishment failure. Given the current condition of the reserve as non-irrigated grass hay agriculture, it is likely that native seed will successfully establish.

Vegetation Clearing

RD 1000 will maintain Lone Tree Canal within its 90 to 100-foot wide easement, primarily to maintain flood control functions. RD 1000 maintenance activities will include mowing upland areas for fire hazard reduction, and vegetation/sediment removal from the channel. Mowing is expected to occur annually after the end of the growing season but the timing/frequency may be adjusted to increase foraging value for Swainson's hawk; vegetation/sediment removal is expected to occur every 3-4 years.

Trash and Debris Removal

The Reserve Operator will keep the reserve free of trash and debris.

Shooting, Trapping, and Vermin Control

Hunting of game and target shooting, by any means including firearms and archery, shall be prohibited on the Lone Tree Canal Reserve without exception. Trapping or shooting of pests, or removal of depredating animals, shall not occur without consultation with and written approval from USFWS and CDFW (this plan acknowledges that use of poison to control rodents in the banks of Lone Tree Canal will be at the discretion of RD 1000 and beyond the control of the Reserve Operator).

Damage

Damage to the reserve occurring as a result of unusual weather or vandalism will be repaired promptly.

5.3.5 Water Levels in Lone Tree Canal

Aquatic habitat shall be maintained throughout the GGS active season in Lone Tree Canal, in perpetuity. This is the legal responsibility and obligation of the MAP Property Owners' Association (MAP POA). The MAP HCP includes provisions to ensure that water levels are maintained at or above 12 inches of depth. If water is not provided to Lone Tree Canal by the MAP to meet the habitat requirements of GGS, as required by the MAP HCP, and USFWS exhausts its enforcement options, water will be provided to the section of Lone Tree Canal within the Lone Tree Canal Reserve through the 8-inch drainpipe that is part

of the Greenbriar Development Project design. This 8-inch drainpipe drains the detention basins/lakes that are part of the Greenbriar Development Project.

Assuming this backup water responsibility was a mitigation measure in the City of Sacramento’s Draft EIR for the Greenbriar Project. However, as stated in the EIR, the project applicant shall only assume this responsibility if it has been sufficiently demonstrated to the City of Sacramento that USFWS has exhausted all reasonable means to compel MAP to comply with the relevant conditions of the MAP Incidental Take Permit. If necessary, the Reserve Operator shall coordinate with the Greenbriar Development Project Homeowners Association(s) to release water from the detention basins/lakes in the Greenbriar Development in sufficient quantity to meet the responsibility to maintain water levels in Lone Tree Canal or provide water to the canal by other means.

5.3.6 Summary of Reserve Management Activities

Table 4 provides a summary of allowed and prohibited activities in the Lone Tree Canal Reserve. The Reserve Operator shall be responsible for ensuring that reserve operations comply with these restrictions.

Table 4. Summary of Reserve Management Activities

Activity	Status¹
Routine Operations	
Fence and Sign Repair	Allowed
Invasive Weed Control	Allowed
Trash Removal	Allowed
Not Anticipated	
Burning for thatch or weed management	Agency and Air Quality Management District Approval
Construction (trails, utility lines)	Agency Approval
Trapping/Removal of Depredating Animals	Agency Approval
Release of water to maintain water levels in Lone Tree Canal	Agency Approval
Prohibited	
Development/Land Use Changes	Not Allowed
Dumping	Not Allowed
Hunting/Shooting	Not Allowed
Trash-burning	Not Allowed
Vehicular Recreation	Not Allowed

¹Status of the activity in the restoration area: Agency Approval= activity is allowed after consultation with and written approval from USFWS and CDFW; Allowed = activity is allowed as routine operations and does not require Agency notification; Not Allowed = activity is not permitted.

5.4 Biological Monitoring

Biological monitoring of the Lone Tree Canal Reserve shall be conducted annually by a qualified biologist. The Reserve Operator shall be responsible for retaining a qualified biologist. The qualified biologist is not required to possess take permits from USFWS or CDFW.. General monitoring will consist of an assessment of site condition, including adherence to all operational conditions described in this plan, photo-documentation, and a general avian and wildlife survey.

5.4.1 Site Condition

The biological monitor will inspect the site and assess general site conditions in light of the reserve operations conditions described in this plan. The assessment will include 100 percent visual coverage of the reserve property, and will describe any evidence of violations of the reserve operations conditions described in this plan. The assessment will include the presence and condition of perimeter fencing and signing described in **Sections 5.3.1** and **5.3.2**. The survey will also include noting infestations of invasive weeds.

5.4.2 Photo-documentation

Representative photographs of the reserve will be taken from established points.

5.4.3 General Avian and Wildlife Survey

A general avian and wildlife survey shall be conducted on foot, by slowly walking a route that provides coverage of all habitats in the reserve. The surveyor will note all avian species observed or detected. This survey should be conducted in late March or early April, as that period is the beginning of the general avian breeding season, when nest-building and territorial behaviors are most evident.

5.5 Reporting

The Reserve Operator will prepare an annual report for submittal to the USFWS and CDFW. The annual report will include an assessment of the general condition of the reserve, adherence to the operations conditions described in this plan, photos showing site conditions, and the results of the general avian and wildlife survey. The report will include an accounting of the total dollar amount expended on maintenance and monitoring, lists of plant and animal species observed during site visits, and any recommendations for changes to reserve management for the coming year. The annual report will be submitted to USFWS and CDFW by January 31st of each year.

Chapter 6.0 Adaptive Management Plan

If reserve operations cannot be carried out as outlined in this plan, the Reserve Operator will notify the USFWS and CDFW. Modifications to this management plan may be proposed as needed and submitted to the USFWS, CDFW, and City of Sacramento for approval. No substantive modifications to the operation of the Lone Tree Canal Reserve will be made without approval by the USFWS and CDFW.

If monitoring or other information indicates that the reserve is not progressing towards meeting the goals of this Plan, the Reserve Operator must notify the USFWS and CDFW as soon as possible. USFWS and CDFW will evaluate and pursue measures to address deficiencies in the Plan in consultation with the responsible parties. Measures will be implemented as necessary to ensure that the reserve meets goals comparable to those described in the Plan objectives including but not limited to: site modifications, design changes, revisions to maintenance requirements, and revisions to monitoring requirements.

Chapter 7.0 Transfer and Replacement

7.1 Transfer

Any subsequent transfer of responsibilities under this management plan to a different Reserve Operator shall be requested by the Reserve Operator in writing to USFWS and CDFW, and shall require written approval by those agencies.

7.2 Replacement

If the Reserve Operator fails to implement the reserve operations conditions described in this plan and is notified of such failure in writing by USFWS or CDFW, the Reserve Operator shall have 90 days to cure such failure. If failure is not cured within 90 days, the Reserve Operator may request a meeting with the agencies to resolve the failure. Such meeting shall occur within 30 days or a longer period if approved by the agencies. Based on the outcome of the meeting, or if no meeting is requested, the agencies may designate a replacement Reserve Manager in writing by amendment of this plan. If the Reserve Operator fails to designate a replacement, then such public or private land or resource management organization as is acceptable to and directed by the agencies may enter onto the reserve property in order to fulfill the purposes of this plan.

Chapter 8.0 References

8.1 Literature Cited

- Berryman, E. 2010. *Giant Garter Snake Habitat, Greenbriar Property, Sacramento*. Memo to AKT Development Corporation, dated October 4.
- California Department of Fish and Wildlife (CDFW). 2012. Staff Report on Burrowing Owl Mitigation. March 7.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. Final Natomas Basin Habitat Conservation Plan. Prepared for U.S. Fish and Wildlife Service and California Department of Fish and Game.
- HELIX Environmental Planning, Inc. (HELIX). 2017a. Greenbriar Development Project Conservation Strategy. Unpublished report.
- _____. 2017b. Greenbriar Development Project Biological Assessment. Prepared for Greenbriar Property Owner, LP. February.
- _____. 2017c. Greenbriar Development Project California Endangered Species Act (Section 2081) Incidental Take Permit Application. Prepared for Greenbriar Property Owner, LP. September.
- _____. 2016. Greenbriar Development Project: Analysis of the Effects on the Greenbriar Development Project on the Natomas Basin Habitat Conservation Plan. Prepared for Greenbriar Property Owner, LP. August.
- _____. 2013. Greenbriar Development Project: Greenbriar Project Site and Off-site Improvement Lands Biological Resources Evaluation. Prepared for Greenbriar Property Owner, LP. June.
- ICF International. 2016. Biological Effectiveness Monitoring for the Natomas Basin Habitat Conservation Plan Area 2015 Annual Survey Results. Final. April. (ICF 00890.10.) Sacramento, CA. Prepared for The Natomas Basin Conservancy, Sacramento, CA.
- Natural Resource Conservation Service (NRCS) 2016). Web Soil Survey. <<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>> Accessed February 15, 2016.
- United States Fish and Wildlife Service (USFWS). 1997. *Programmatic Biological Opinion for U.S. Army Corps of Engineers Projects with relatively small impacts on GGS*.

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
PART 1. MONITORING AND MANAGEMENT COSTS											
Element A.1 - Biological Monitoring											
Task A.1-1 – Vegetation Monitoring	5.4	RO = Reserve Operator	Conduct vegetation monitoring.	Years 1, 5, 10, 15, 20, and every 5 years thereafter in perpetuity	Conduct field mapping to determine plant community types present and species composition.	Hours	6	100.00	600.00	5	120.00
Task A.1-2 – Vegetation Monitoring	5.4	RO	Digitally link data to GIS database.	5 Years	Download GPS data and link to GIS database.	Hours	2	100.00	200.00	5	40.00
Task A.1-3 – Vegetation Monitoring	5.4	RO	Analyze data.	5 Years	Analyze monitoring data and compare with baseline and previous years' data.	Hours	2	100.00	200.00	5	40.00
Task A.1-4 – Biological Monitoring	5.4	RO	Transportation Cost	Annually	Daily cost for transportation, including ATV, vehicle, and/or GPS as appropriate.	Days	1	250.00	250.00	1	250.00
<i>Subtotal</i>										\$	450.00
Element A.2 - Special-Status Species Monitoring											
Task A.2-1 – Giant Garter Snake	5.4	RO	Monitoring and reporting for Giant Garter Snake, Western Pond Turtle and habitat.	5 Years	Two surveys during active period for visual occurrence and presence of habitat. Reporting.	Hours	16	125.00	2,000.00	5	400.00
Task A.2-2 – Nesting Raptors and General Wildlife	5.4	RO	Monitoring and reporting for nesting raptors- targeting SWHA. General wildlife survey.	5 Years	Two surveys during active nesting period (April through July). And reporting.	Hours	8	100.00	800.00	5	160.00
Task A.2-3 – Special-Status Species Monitoring	5.4	RO	Transportation Cost	Annually	Daily cost for transportation, including ATV, vehicle, and/or GPS as appropriate.	Days	3	250.00	750.00	5	150.00
<i>Subtotal</i>										\$	710.00

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
Element B.1 - Vegetation Management											
Task B.1-1 – Vegetation Management	5.3.4	RO	Conduct site inspection to determine presence of and document invasive vegetation during late February to mid-March. Document thatch levels.	Seasonally	Review guidance materials on what species may threaten site and how to manage for them; Conduct site inspection to determine presence and document location of invasive vegetation by filling out monitoring form, taking photos, GPS documentation and mapping. Determine wetland vegetation management / invasive plant control. Document thatch levels.	Hours	8	140.00	1,120.00	1	\$ 1,120.00
Task B.1-2 – Vegetation Management	5.3.4	RO	Use weed control chemicals or mow using hand equipment to control invasive plants (grazing is preferred method).	Annually	Purchase weed control chemicals.	ls	1	200.00	200.00	1	200.00
Task B.1-3 – Vegetation Management	5.3.4	RO	Use weed control chemicals or mow using hand equipment to control invasive plants (grazing is preferred method).	Annually	Purchase or rent field work items-- protective items, spray rig, etc.	ls	1	250.00	250.00	1	250.00
Task B.1-4 – Vegetation Management	5.3.4	RO	Use weed control chemicals or mow using hand equipment to control invasive plants (grazing is preferred method).	Annually	Apply weed control chemicals or mow affected areas.	ls	1	1,500.00	1,500.00	1	1,500.00
Task B.1-5 – Vegetation Management	5.3.4	RO	Manage thatch by annual string trimming.	Annually	Biological monitoring during string trimming activities.	Hours	24	100.00	2,400.00	1	\$ 2,400.00
Task B.1-6 – Vegetation Management	5.3.4	RO	Manage thatch by annual string trimming.	Annually	Use string trimmers to clear excessive thatch annually. Cut to 6 inches or greater in stubble height and according to GGS guidelines.	Acres	26.5	400.00	10,600.00	1	\$ 10,600.00
Task B.1-7 – Vegetation Management	5.3.4	RO	Supervise vegetation management activities.	Annually	Supervise vegetation management activities and agency coordination.	Hours	4	140.00	560.00	1	560.00

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
Task B.1-8 – Vegetation Management	5.3.4	RO	Transportation Cost	Annually	Daily cost for transportation, including ATV, vehicle, and/or GPS as appropriate.	Days	5	250.00	1,250.00	1	1,250.00
<i>Subtotal</i>										\$	17,880.00
Element B.2 – Sedimentation and Erosion											
Task B.2-1 – Sedimentation and Erosion	5.4	RO	Inspect site for sedimentation and/or erosion problems.	Annually, after the first heavy, continuous rainfall period > 1 inch	Following a rainfall period > 1 inch, document any sedimentation or erosion problems on maintenance monitoring form.	Hours	1	140.00	140.00	1	\$ 140.00
Task B.2-2 – Sedimentation and Erosion	5.4	RO	Transportation Cost	Annually	Daily cost for transportation, including ATV, vehicle, and/or GPS as appropriate.	Days	0.5	250.00	125.00	1	125.00
<i>Subtotal</i>										\$	265.00
Element C.1 – Site Security											
Task C.1-1 - Site Security	5.4	RO	Inspect site for unauthorized access, vandalism, and trash.	Annually	Inspect site and document signs of encroachment or trash on maintenance form, GPS locations), and create map showing locations).	Hours	4	100.00	400.00	1	\$ 400.00
Task C.1-2 - Site Security	5.3.4	RO	Remove trash and debris. Fill tire ruts and fill and level soil surface where necessary. Confer with County and/or resource agencies if necessary.	Annually	Pick up and remove trash and debris. Ensure that no trash and debris accumulate on or directly adjacent to the GGS exclusion fence.	Hours	4	100.00	400.00	1	400.00
Task C.1-3 - Site Security	5.3.4	RO	Dispose of trash and debris.	Annually	Dispose of trash and debris at local approved landfill.	ls	1	35.00	35.00	1	35.00
Task C.1-4 - Site Security	5.3.4	RO	Replace or repair signs as necessary.	Annually	Repair or replace signage as necessary.	ls	1	15.00	15.00	1	15.00
Task C.1-5 - Site Security	5.3.4	RO	Transportation Cost	Annually	Daily cost for transportation, including ATV, vehicle, and/or GPS as appropriate.	Days	0.5	250.00	125.00	1	125.00
<i>Subtotal</i>										\$	975.00

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
Element C.2 – Mosquito Abatement											
Task C.2 - Mosquito Abatement	5.4	RO	Conduct annual inspection for potential mosquito habitat and abundance of mosquitos onsite. Coordinate with mosquito abatement district as necessary.	Once annually during mosquito breeding season	Document conditions at site regarding presence/absence of vector breeding areas; photograph, GPS, and map potential problem areas; and coordinate with mosquito vector control district as necessary.	Hours	1	140.00	140.00	1	\$ 140.00
<i>Subtotal</i>										\$ 140.00	
Element C.3 – Fences, gates, locks, signage.											
Task C.3-1 – Fences, gates, locks, signs.	5.3.4	RO	Inspect fences, gates, locks, and signs.	Annually	Inspect for damage or need for maintenance.	Hours	4	100.00	400.00	1	400.00
Task C.3-2 – Fences, gates, locks, signs.	5.3.4	RO	Repair barb wire fences and gates as needed.	Annually	Maintain fence and gates (proper tension, attachments to posts, broken wire, etc.).	ls	1	1,000.00	1,000.00	1	1,000.00
Task C.3-3 – Fences, gates, locks, signs.	5.3.4	RO	Replace all barb wire fencing and posts.	Assumes every 30 years	Replace worn fence with 30 year gauge metal fencing. Assumes 5-strand barb wire on metal posts with 10 foot centers with end post braces for tension support.	In ft	6,990	7.00	48,930.00	20	2,446.50
Task C.3-4 – Fences, gates, locks, signs.	5.3.4	RO	Replace gates. 7 gates.	Assumes every 30 years	Replace worn gates with 16 foot wide rolled steel gate (e.g. Powder River) with braced supports on both sides.	each	7	750.00	5,250.00	30	175.00
Task C.3-5 – Fences, gates, locks, signs.	5.3.4	RO	Repair/replace signs as needed.	Annually	Repair or replace signs that have fallen, broken, are illegible or have poor supporting posts.	ls	1	100.00	100.00	1	100.00
Task C.3-6 – Fences, gates, locks, signs.	5.3.4	RO	Replace locks as needed.	Every 5 years	Replace locks on the gates with hardened steel pad locks.	each	7	15.00	105.00	5	21.00
Task C.3-7 – Fences, gates, locks, signs.	5.3.4	RO	Repair giant garter snake exclusion fence as needed.	Every 5 years	Repair the giant garter snake exclusion fence as needed.	ls	1	5,000.00	5,000.00	5	1,000.00

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
Task C.3-8 – Fences, gates, locks, signs.	5.3.4	RO	Transporation Cost	Annually	Daily cost for transportation, including ATV, vehicle, and/or GPS as appropriate.	Days	1	250.00	250.00	1	250.00
<i>Subtotal</i>										\$	5,392.50
Element D.1 – Annual Report											
Task D.1-1 - Prepare Annual Report	5.5	RO	Prepare Annual Report	Annually	Describe status of the Preserve, positives and negatives with references biological resources and management. Provide summary of management actions, including grazing summary. Provide recommendations for remedial actions.	Hours	8	190.00	1,520.00	1	1,520.00
Task D.1-2 - Prepare Biological Section of Annual Report	5.5	RO	Prepare biological section every 5 years as described in Management Plan.	5 years	Prepare biological section of the accounting and management report based on analysis of data from biological monitoring as scheduled and described for Element A.1 and A.2. Assess change(s) in biological resources by comparing current data with baseline and previous years' data. Include illustrative figures & maps for comparative purposes. Make recommendations as necessary.	Hours	4	140.00	560.00	5	\$ 112.00
<i>Subtotal</i>										\$	1,632.00
Record Keeping and Reporting											
Record Keeping and Reporting	RO Admin	RO	Annual Work Plan	Annually	Prepare work plan and annual budget for internal use based management plan and on annual budget allocations	Hours	4	190.00	760.00	1	760.00
Record Keeping and Reporting	RO Admin	RO	Maintain Periodic Inspection Documentation and Annual Report	Annually	Collect and maintain documentation of all (1) management/maintenance activities by date, (2) maintenance monitoring forms, (3) vendor invoices and receipts, (4) biological data and data forms, and (5) track budget status and spending allocations on form data sheet.	Hours	2	140.00	280.00	1	280.00
<i>Subtotal</i>										\$	1,040.00
Administration											

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
Administration	RO Admin	RO	Contracts with vendors	Annually	Manage contracts	Hours	2	140.00	280.00	1	\$ 280.00
Administration	RO Admin	RO	Accompany ANRT or Agencies on site visits as needed.	Annually	Coordinate and meet on-site with ANRT and Agencies as necessary.	Hours	4	140.00	560.00	1	560.00
Administration	RO Admin	RO	Accounting	Annually	Bookkeeping	Hours	2	140.00	280.00	1	280.00
Administration	RO Admin	RO	Taxes	Annually	Property Taxes	Acres	28	-	-	1	-
Administration	RO Admin	RO	Insurance	Annually	Insurance	ls	1	2,000.00	2,000.00	1	2,000.00
Administration	Conservation Easement Manager (CEM)	Non-Profit	Endowment management, site visit; site conservation easement compliance, review of compliance reports, annual report submittal.	Annually	Site inspections and review of reports prepared by reserve operator.	Contract Item	1	5,000.00	5,000.00	1	5,000.00
<i>Subtotal</i>											\$ 8,120.00
TOTAL ANNUAL ITEMIZED COSTS											\$ 36,604.50
Contingency (Annual Costs)											
								Rate			
Contingency	RO Admin	RO	Contingency for unanticipated items	Annually	Fund is to cover unanticipated items and activities necessary in order to meet the goal of the conservation area	item	\$ 36,604.50	10%	3,660.45	1	\$ 3,660.45
<i>Subtotal</i>											\$ 3,660.45
TOTAL ANNUAL COSTS WITH CONTINGENCY											\$ 40,264.95
Funding							Income	Cap Rate	Endowment:		
Funding	Endowment Management	Non-Profit	Establish endowment fund for implementation of the Management Plan by Reserve Operator.	Single Payment	Receive endowment funds and establish endowment	Single Payment	\$ 40,264.95	3.5%			\$ 1,150,427.14
ENDOWMENT REQUIREMENTS FOR ANNUAL LONG-TERM MANAGEMENT AND MAINTENANCE											\$ 1,150,427.14

Estimated Endowment Costs for Long-Term Resources Management Associated with the Greenbriar Reserve (28.3-acre Lone Tree Reserve), City of Sacramento, California. March 28, 2019.

Activity/Actions Required	SSMP Section	Responsible Party	Description	Frequency Required	Actions Required	Unit	Number of Units	Cost/Unit	Total Cost	Divide Years	Annual Cost (Part 1) or Cost (Part 2)
PART 2. NON-RECURRING MONITORING AND MANAGEMENT COSTS											
Non-Annual Monitoring Costs											
Restricted Endowment (Three-Year Funding Account) Years 1 - 3 Monitoring	Conservation Easement Manager (CEM)	Non-Profit	Provides funding of the first three years of management and monitoring expenses.	During Years 1 - 3	Perform maintenance monitoring activities.	Item	1	120,794.85			120,794.85
<i>Subtotal</i>											\$ 120,794.85
Conservation Easement Manager Fees											
Fee to be charged by Reserve Operator (aka Land Manager)	RO Admin	Land Manager	Initiation of Management	one time only	Final coordination with agencies regarding document finalization, assemble all documents, prepare annual event calendar, coordination with Conservation Easement Manager and Endowment Holder.	Item	1	20,000.00			20,000.00
Fee to Be Charged by Endowment Holder	Conservation Easement Manager (CEM)	Non-Profit	Conservation Easement Fee	one time only	Pay Fee	Item	1	20,000.00			20,000.00
Fee to Be Charged by Endowment Holder	Conservation Easement Manager (CEM)	Non-Profit	For Non-Profit legal/emergency fund	one time only	Establish Fund	One Time Payment	\$ 1,150,427.14	1.0%			11,504.27
<i>Subtotal</i>											\$ 51,504.27
TOTAL NON-RECURRING ITEMIZED COSTS, CONSERVATION EASEMENT MANAGER FEES, AND ENDOWMENT HOLDER FEES											\$ 172,299.12
ENDOWMENT COSTS FOR ANNUAL COSTS AND NON-RECURRING COSTS AND FEES											\$ 1,322,726.26
SUMMARY: ENDOWMENT REQUIREMENTS FOR LONG TERM MANAGEMENT AND MAINTENANCE											
				Part 1.	Endowment to Provide Annual Income of:				\$ 40,264.95		\$ 1,150,427
				Part 2.	One time Payment for Non-Recurring Monitoring Costs:						120,794.85
				Part 3.	One Time Payment for Non-Recurring Fees						51,504.27
										\$ 1,322,726.26	
Assumption #1: Repair and maintenance activities by RD1000 may occur as necessary using an approach meant to minimize disturbance to covered species or their habitat. RD1000 will be responsible for canal maintenance, including sediment removal as needed.											
Assumption #2: Repair and replacement of the GGS exclusion fence will be the responsibility of the individual lot owners, or HOA as appropriate, enforceable through CC&R verbiage.											
Assumption #3: Damage occurring as a result of unusual weather or vandalism will be repaired promptly under the supervision of the Reserve Operator, funding may include contingency funds as identified above (with approval of the CE grantee). If the money necessary to repair the damage exceeds what can be provided by PAR contingency funding, then the balance of costs will be provided by the Land Owner.											
Assumption #4: Reserve Operator will be responsible for repair/replacement of approximately 1800 In ft of 5-strand barb wire fencing to be installed perpendicular to the channel at the north and south perimeter boundary, plus gates. The west side fence, GGS exclusion fence, fence associated with the residential street 3 crossing, and fence associated with the light rail channel crossing will be maintained by others (i.e. RD1000, MAP POA, HOA, and/or Light Rail Authority).											



RECLAMATION DISTRICT 1000

DATE: OCTOBER 9, 2020

AGENDA ITEM NO. 7.1.1

TITLE: Committee Meeting Minutes

SUBJECT: Meeting Minutes from Committee Meetings Since the September Board Meeting

EXECUTIVE SUMMARY:

Executive Committee Meeting – September 30, 2020

A meeting of the Reclamation District No. 1000 Executive Committee was held on Wednesday, September 30, 2020 at 8:00 a.m. via GoToMeeting and Conference Call. In attendance were Trustees Smith, Burns and Gilbert. Staff in attendance were General Manager King and District Counsel Smith. No members of the public were present and therefore no public comments were made.

General Manager King presented the proposed agenda for the October 9, 2020 Board of Trustees meeting. The Committee reviewed the agenda and approved as presented.

With no further business on the Executive Committee Agenda, meeting adjourned at 8:35 a.m.

STAFF RESPONSIBLE FOR REPORT:

Kevin L. King, General Manager

Date: 10/01/2020