ADJUSTED SERVICES AUTHORIZATION NO. 8

REQUESTED BY: *Solano County General Services Capital Projects Management*

ADDRESS: *675 Texas Street, Suite 2500 Fairfield, California 94533*

DATE: *May 7, 2019*

REFERENCE JOB NO.: *1791*

To confirm authorization for Adjusted Services as they relate to the existing Agreement between the County of Solano and Mead & Hunt, Incorporated dated November 7, 2017. This Adjusted Services Authorization (ASA) authorizes Mead & Hunt to perform the following under the existing agreement:

- ☐ ***Provide civil engineering and related services to validate the scope of the proposed Solano County Justice Campus (SCJC) asset protection project as described in the SCJC Due Diligence Report & Basis of Design by Lionakis, December 22, 2017. The attached Mead & Hunt proposal "Fairfield Justice Campus Asset Protection – Phase I – Scope Validation of April 19, 2019, is hereby incorporated as "Attachment A".***

The cost of the above services is for a total amount not to exceed of $153,343 including all expenses, to be billed monthly based on the actual costs of services provided, bringing the total Contract Amount to $828,709. Mead & Hunt has verified and reviewed the scope of work to be performed in this ASA and agrees that in Mead & Hunt's professional judgment, the work can and shall be completed for the costs within the maximum amount set forth in this ASA and the adjusted contract amount.

All other terms and conditions of the original agreement dated November 7, 2017 remain in effect. If the above meets with your approval, please sign below and return this document to Solano County General Services, Capital Projects Management Division. A fully executed copy will be returned to you for your files.

Agreed to:
Solano County, General Services Department

By: _____
Authorized Signature

Birgitta E. Corsello
Signer's Name (Typed or Printed)

Title: County Administrator

Date: _____

Agreed to:
Mead & Hunt, Incorporated

By: _____
Authorized Signature

Nathan Rockwood, P.E., S.E.
Signer's Name (Typed or Printed)

Title: Vice President

Date: 5/13/19

Project Budget Summary

BU 1791

Project Name	Asset Protection/Clay St. Ditch	Capital Projects Management Division	
Project Number	1791		
Date	4-Jun-19	Project Coordinator:	M. Hummel

Project location and description: Solano County Justice Center asset protection from storm waters - Current phase: Schematic Design Phase 1 - Scope Validation

Cost Category	Budget From Inception	Year to Date Actuals plus Encumbrances	Balance
Hard Costs			
Construction Contract	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
Subtotal	$ -	$ -	$ -
Soft Costs			
A/E Services - Lionakis Due Diligence/Basis of Design	$ 341,357	$ 341,357	$ -
A/E Services - AluCeron Due Diligence verification	$ 40,000	$ 37,891	$ 2,109
A/E Services - Mead & Hunt, Inc. SD Phase 1	$ 153,343	$ -	$ 153,343
Permit / Inspection Costs	$ -	$ -	$ -
Other Direct Costs	$ -	$ -	$ -
Project Mangement	$ 75,000	$ 72,317	$ 2,683
Project Contingency	$ 868,868	$ -	$ 868,868
Subtotal	$ 1,478,568	$ 451,565	$ 1,027,003
TOTAL BUDGET:	$ 1,478,568	$ 451,565	$ 1,027,003

SOURCE(S) OF FUNDS	Funding Sources
Capital Renewal Reserve Fund FY 16/17	$ -
Accumulated Capital Outlay Fund	$ 1,478,568
TOTAL FUNDS:	**$ 1,478,568**
VARIANCE:	$ -

version 2018-07-27 mh

*Note: Balance of funds not earmarked should be added to contingency to balance with total funding appropriation, resulting in zero variance.

as of 5/15/2019

Mead & Hunt Master Services Agreement - ASA Log

P.O. C0102354

ASA 1	Fence Design	$ 67,056.00	
ASA 2	Hangar Design (Phase 1)	$ 123,175.00	
ASA 3	Hangar Design (Phase 2)	$ 126,155.00	
ASA 4	Fence Construction	$ 76,293.00	
ASA 5	Hangar Re-Bid	$ 20,000.00	
ASA 6	Hangar Construction (CM)	$ 244,187.00	
ASA 7	Hangar Special Inspections	$ 18,500.00	$ 675,366.00
ASA 8	Asset Protection Scope Validation	$ 153,343.00	
		$ 828,709.00	

ADJUSTED SERVICES AUTHORIZATION NO. 8

REQUESTED BY: *Solano County General Services*
Capital Projects Management

ADDRESS: *675 Texas Street, Suite 2500*
Fairfield, California 94533

DATE: *May 7, 2019*

REFERENCE JOB NO.: *1791*

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- ☐ ***Provide civil engineering and related services to validate the scope of the proposed Solano County Justice Campus (SCJC) asset protection project as described in the SCJC Due Diligence Report & Basis of Design by Lionakis, December 22, 2017. The attached Mead & Hunt proposal "Fairfield Justice Campus Asset Protection – Phase I – Scope Validation of April 19, 2019, is hereby incorporated as "Attachment A".***

The cost of the above services is for a total amount not to exceed of $153,343 including all expenses, to be billed monthly based on the actual costs of services provided, bringing the total Contract Amount to $828,709. Mead & Hunt has verified and reviewed the scope of work to be performed in this ASA and agrees that in Mead & Hunt's professional judgment, the work can and shall be completed for the costs within the maximum amount set forth in this ASA and the adjusted contract amount.

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Agreed to:
Solano County, General Services Department

By: _____
Authorized Signature

Birgitta E. Corsello
Signer's Name (Typed or Printed)

Title: County Administrator

Date: 5/4/19

Agreed to:
Mead & Hunt, Incorporated

By: _____
Authorized Signature

Nathan Rockwood, P.E., S.E.
Signer's Name (Typed or Printed)

Title: Vice President

Date: 5/13/19

Mead & Hunt

April 19, 2019

Mark A. Hummel, AIA
Capital Projects Manager
Solano County Department of General Services
675 Texas Street, Suite 2500
Fairfield, CA 94533

Subject: Fairfield Justice Campus Asset Protection – Phase I – Scope Validation

Dear Mark,

Mead & Hunt appreciates the opportunity to continue our service to the County of Solano as part of our Master Services Agreement (MSA), authorized on November 7, 2017. We have enclosed our proposed Scope of Services and Fee for *Fairfield Justice Campus Asset Protection, Phase I – Scope Validation,* intended to confirm the final design criteria for reducing flood risk for the Fairfield Justice precinct facilities.

For contracting purposes, this work would be identified under the MSA as County Adjusted Services Authorization No. 8. If you have any questions or require additional information, please contact me at 415-652-6667 or vince.geronimo@meadhunt.com.

Sincerely,

MEAD & HUNT, Inc.

Vince Geronimo, PE, CFM
Senior Project Manager

Nathan Rockwood, PE, SE
Vice President

Enclosure: Proposed County Adjusted Services Authorization No. 8, Scope of Services and Fee

Solano County
County Adjusted Services Authorization (ASA) No. 8
Scope of Services for Fairfield Justice Campus Asset Protection
Phase I – Scope Validation

1. PROJECT OVERVIEW

The County of Solano (County) intends to construct a low, protective, landscaped stormwater barrier system around the existing Fairfield Justice precinct facilities (Project) including Hall of Justice, ancillary facilities, Communications and Sheriff Investigation Unit. The protective barrier will be supplemented with an on-site stormwater detention basin and stormwater pumping facilities. The County and the Justice Council of California (JCC) retained Lionakis to prepare a Due Diligence Report & Basis of Design for improvements at the Fairfield Campus (Lionakis 2017) and confirm the conceptual design for the Project.

As part of **Phase I – Scope Validation**, Mead & Hunt, Inc. (Mead & Hunt) will research, assess, and evaluate available reporting, analyses, and digital data (GIS and/or CAD terrain data, utilities, site infrastructure, etc.). The Consultant will evaluate the potential level of protection from various flood sources: riverine (Union Avenue Creek), overland flooding, on-site precipitation, and tidal (Suisun Slough). The Consultant will analyze various combinations of current and future condition scenarios to determine a risk prioritization matrix to compare with past reporting, establish other requirements for the Project, and determine the appropriate and acceptable engineering design for the Project.

The Scope of Services for the Scope Validation phase of the Project consists of the following elements:

- Project Management
- Review Prior Documents, Studies, and Modeling
- Conduct Hydrologic & Hydraulic Analyses
- Assess potential funding opportunities
- Preliminary Engineer's Design Summary

The results of the Scope Validation phase will be reported in a memorandum to the County. This Phase will provide validation for refining the professional services necessary to complete the Project. The award of the Design Phase Contract is expected in Summer 2019.

Approximate Schedule

The Scope Validation Phase duration is scheduled to be a total of 120 workdays; 30 days for Task 1.2.; 60 days for Tasks 1.2 - 1.4, and 30 working days for Task 1.5. Preliminary Engineer's Design Summary. Work is anticipated to begin in April 2019.

Mead & Hunt Team

Mead & Hunt's Project Manager will be the primary point of contact for the County.

Civil Engineering
Mead & Hunt, Inc.
Vince Geronimo, PE, CFM, Senior Project Manager
(415) 652-6667; vince.geronimo@meadhunt.com

2. SCOPE OF SERVICES

The scope of services to be provided by Mead & Hunt for **Phase I – Scope Validation** is detailed as follows:

Task 1.1 Project Management and Coordination

Project Management and ASA Administration

Mead & Hunt provides Project Management to identify, assemble, and employ appropriate resources to accomplish the work described in this Scope of Services. Project management includes the following services: development of Scope of Services, fee estimate, schedule, and agreement; assignment of appropriate staff and resources; monitoring of scope, budget, and schedule to determine status, action, and effort; and invoicing and reporting (expected monthly). Your Project Manager (PM), Vince Geronimo, is assigned to the Project and will be responsible for the implementation of the Scope of Work. The PM will communicate with the County via phone/conference calls, email, webinars, and text messaging. Coordination with the PM will be continuous throughout the project. The PM will address County concerns and provide input on project status. The PM is also responsible for maintaining quality control on all Mead & Hunt work and implementing and monitoring a Quality Management Program throughout the life of the project.

In-Person Project Meetings

Mead & Hunt will attend five (5) client meetings, scheduled monthly, in person. The PM will attend all meetings and would be joined by another Mead & Hunt staff person, as needed for three (3) of those meetings. Three additional face-to-face meetings with the PM are allotted and scheduled as requested by the County.

Stakeholder Coordination

Mead & Hunt requires additional information from stakeholders and prior consultants. It is anticipated that members of the Mead & Hunt team will coordinate with the following:

- City of Fairfield – to discuss stormwater facilities, and Union Avenue Creek Watershed improvements
- Lionakis – to acquire digital data
- David Ford (now HDR) – discuss their memo on hydraulic modeling
- FEMA – to assess the benefits of the Project's potential to reduce flood risk
- Winzler & Kelly (W&K) – to discuss their H&H report and the basis of design, if necessary

Task 1.2 Review Prior Documents, Data, and Modeling

Review Prior Reporting

The *Solano County Justice Campus Flood Protection Study*, June 2014, Prepared by Lionakis for The Judicial Council of California & Solano County, has been thoroughly reviewed by the Mead & Hunt PM. The Mead & Hunt team will review other studies and documentation: (1) *Fairfield Drainage Analytical Study*, May 2009, Prepared by Winzler & Kelly for the City of Fairfield & Solano County. (2) *Flood*

JCC for a variety of downstream boundary conditions (up to MHHW +52", at this stage inundation is from the coast). The (hydraulic) flood risk reduction benefits for implementing attenuation storage upstream in the watershed will also be assessed. The resulting hydraulic model scenarios will account for overland flow conveyance or stage-storage estimates for flooding backed-up around the JCC. These conditions would consider the capacity of the City of Fairfield's storm drainage facilities and the availability of existing pumps to convey overland stormwater to the Union Avenue Creek. The total number of model scenarios that would inform the risk matrix is estimated at approximately 30, dependent on the digital data provided by FEMA2.

Task 1.4 Assess potential funding opportunities

The Mead & Hunt team will assess various sources of grant funding available to the County for construction. Mead & Hunt will work with the County to understand the landscape of private and public sector (local, state, and Federal) grants that may be appropriate for the Fairfield Justice Campus Asset Protection project. These options may include post-disaster, disaster risk reduction and resilience, water management (flood risk reduction), and climate adaptation grants. A full list of these potential options is available in the *Climate Adaptation Finance and Investment in California*, by Jesse Keenan, 2019[3].

Task 1.5 Engineer's Preliminary Design Summary Memorandum

Mead & Hunt will prepare a draft Summary Memorandum describing the outcome of the coordination and evaluation tasks, results of analyses, and recommendations for the final basis of design for the proposed flood control improvements. At this stage, we do not anticipate a significant change to the conceptual design (Lionakis 2014). Mead & Hunt will develop a risk prioritization matrix (probable flood risks evaluated in terms of the likelihood or probability of the risk and the severity of the consequences) to better describe the proposed level of flood protection for the JCC afforded by the proposed elevation of the flood control barrier.

Scope of Services Assumptions:

1. No new tide gage data will be collected. The Consultant will utilize data from the Suisun City, Suisun Slough, Suisun Bay, California Tide Chart https://tides.mobilegeographics.com/locations/7901.html or a USGS gage (USGS 11185185) for Suisun Bay at Mallard Island, CA http://waterdata.usgs.gov/usa/nwis/uv?11185185

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[2] Mead & Hunt made a formal request to FEMA to acquire the effective Hydrology and Hydraulic models: case number B1909092.

[3] *Climate Adaptation Finance and Investment in California* is made available under a Creative Commons Attribution-Non Commercial-No Derivatives 4.0 license. Download for free at: http://opr.ca.gov/docs/20181106-Keenan_Climate_Adaptation_Finance_and_Investment_in_California_2018.pdf

Attachment 1 – Mead & Hunt Fee Estimate

Mead & Hunt Team Scope of Services Cost Breakdown
Mead & Hunt California Billing Rate Schedule (2019)
SubConsultants Scope of Services, Fee and Rate Schedules

ATTACHMENT 1

Civil Engineering Design - Cost Estimate Summary

AIRPORT: Fairfield Justice Campus Asset Protection
LOCATION: Fairfield, CA
AIP PROJECT NO. N/A
PROJECT DESCRIPTION: Flood Barrier for the Solano County Justice Center
County Adjusted Services Authorization No. 8

PROJECT NUMBER: M1943400-190824.01
DATE: 4/19/19
REV. NO: 0

Task		ENGINEERING FEES	
	PHASE I - SCOPE VALIDATION		
1.1	Project Management and Coordination	$ 24,364.00	
1.2	Review Prior Documents, Data, and Modeling	$ 15,980.00	
1.3	Conduct Hydrologic & Hydraulic Analyses	$ 60,916.00	
1.4	Assess potential funding opportunnities	$ 6,376.00	
1.5	Engineer's Preliminary Design Summary Memo	$ 17,204.00	
	Summary Costs	$ 124,840.00	
	Expenses (Phase I)	$ 1,637.89	
		$ 126,477.89	
	PHASE II - PROJECT MANAGEMENT AND CONTRACT ADMIN	TBD (future)	
	PHASE III - PRELIMINARY DESIGN	TBD (future)	
	PHASE IV - FINAL DESIGN	TBD (future)	
	PHASE V - BID ADMINISTRATION	Not Included	
	TOTAL MEAD & HUNT FEES	**$ 126,477.89**	
	TOTAL DIRECT SUBCONSULTANT FEES	**$ 26,865.00**	
	TOTAL PROJECT FEES	**$ 153,342.89**	**NTE**

DIRECT SUB CONSULTANTS FEES		
Additional Topographic Surveying	$	5,120.00
Additional Geotechnical Investigation	$	10,120.00
Additional Landscape Architect	$	11,625.00
Other	$	-
TOTAL DIRECT SUB CONSULTANTS	**$**	**26,865.00**

Civil Engineering Design - Mead & Hunt Expenses

AIRPORT: Fairfield Justice Campus Asset Protection
LOCATION: Fairfield, CA
AIP PROJECT NO. N/A
PROJECT DESCRIPTION: Flood Barrier for the Solano County Justice Center
County Adjusted Services Authorization No. 8

PHASE I - SCOPE VALIDATION			ENGINEERING EXPENSES
	Unit Cost	Units (Qty)	Cost
Auto Mileage	$0.90	1100	$ 990.00
Copies	$0.10	100	$ 10.00
Color Printing	$0.65	25	$ 16.25
FEMA Engineering Library Request	$393.00	1	$ 393.00
Postage/Shipping	$15.00	$1.00	$ 15.00
Summary Costs			**$ 1,424.25**
Expenses mark-up (15%)			$ 213.64
Total Expenses			**$ 1,637.89**
TOTAL MEAD & HUNT Expenses			**$ 1,637.89**

PSOMAS

Scope of Work

Psomas will gather all available survey control, boundary, easement and topographic information that pertains to the project site. This information will come from the client and Psomas research. Psomas will then analyze this information to determine the feasibility for using the data during the design phase of the project.

Psomas will also recover and inspect the closest National Geodetic Survey (NGS) vertical benchmark to the project that has published vertical data referenced to the North American Vertical Datum of 1988 (NAVD88). Psomas will also verify the existence of the tide gauge at Suisun Slough in Suisun Bay. A leveling survey will then be completed to create a vertical relationship between the NGS benchmark and the tide gauge. This will aid in the analysis of the potential for flooding of the project site.

Budget

Psomas Project Manager:	4.0 hrs	$832.00
Psomas Project Surveyor:	6.0 hrs	$1,056.00
Psomas Surveyor IV:	8.0 hrs	$1,120.00
Psomas 2 Person Field Crew	8.0 hrs	$2,112.00
Psomas Total Fee		**$5,120.00**

CE&G
Pragmatic Expertise™

CAL ENGINEERING & GEOLOGY
785 Ygnacio Valley Rd. | Walnut Creek | CA 94596
6455 Almaden Expwy., Suite 100 | San Jose | CA 95120
23785 Cabot Blvd., Suite 321 | Hayward | CA 94545
www.caleng.com

MEMORANDUM

To: Vince Geronimo
Mead & Hunt
180 Promenade Circle, Suite 240
Sacramento, California 95834

From: Paul Sorci, PE, GE
Cal Engineering & Geology, Inc.
6455 Almaden Expwy, Suite 100
San Jose, California 95120

Date: 17 April 2019

RE: Proposal for Geotechnical Services
Fairfield Justice Campus Asset Protection: Phase I - Scope Validation
Fairfield, Solano County, California

BACKGROUND

The existing Fairfield Justice precinct facilities currently experience flooding during large storm events, causing damage and negatively impacting its operations. The County of Solano (County) intends to construct a stormwater barrier system around these facilities. Cal Engineering & Geology (CE&G) proposes the following scope to assist Mead & Hunt, Inc. during the Phase I – Scope Validation.

Based on conversations with Mead & Hunt and preliminary review of documents provided to us, we understand the current design concept includes construction of a combination of embankments and/or floodwalls to surround the Justice Campus. Some of the geotechnical issues we foresee addressing as part of the proposed services includes the following:

- For constructing embankments, the overall footprint may be wide depending upon the height, width and slopes of the embankment. We would comment on the feasibility with respect to the maximum slope gradient anticipated and implications regarding sub-excavation of existing soils to accommodate the embankment.

- Seepage considerations for the proposed improvements.

Should we become aware of a condition that could require a change to our scope of work and level of effort, and/or the extent of subcontracted geotechnical services needed, we will notify the Mead & Hunt immediately in order to come to an agreed upon resolution.

ASUMPTIONS

We have made the following assumptions to develop our scope of work outlined above:

1. Subsurface explorations have not been included in this phase.

EXECUTION

Our work will be completed in accordance with generally accepted geologic and geotechnical engineering practices and procedures. This standard is in lieu of all warranties either expressed or implied. We will begin work on the project upon written notice to proceed from the Mead & Hunt. We understand this work will be completed under a subconsultant agreement provided to us by Mead & Hunt.

We look forward to working with you.

Sincerely,

CAL ENGINEERING & GEOLOGY, INC.

Paul Sorci, P.E. 73163, G.E. 3132
Senior Engineer

CE&G

Pragmatic Expertise™

Schedule of Charges 2019-2022

Personnel	2019	2020	2021	2022	Rates/Units
Senior Principal Engineer/Geologist	$ 270	$ 280	$ 290	$ 300	per hour
Principal Engineer/Geologist	$ 235	$ 240	$ 245	$ 250	per hour
Associate Engineer/Geologist	$ 210	$ 215	$ 220	$ 225	per hour
Senior Engineer/Geologist	$ 195	$ 200	$ 205	$ 210	per hour
Project Engineer/Geologist	$ 155	$ 160	$ 165	$ 170	per hour
Staff Engineer/Geologist	$ 140	$ 145	$ 150	$ 155	per hour
Technician (Straight rate prevailing wage)	$ 125	$ 130	$ 135	$ 140	per hour
Senior GIS/CADD Specialist	$ 135	$ 140	$ 145	$ 150	per hour
GIS/CADD Specialist	$ 120	$ 125	$ 130	$ 135	per hour
UAS Manager	$ 150	$ 155	$ 160	$ 165	per hour
Project Assistant	$ 90	$ 95	$ 100	$ 105	per hour
Administration/Clerical	$ 80	$ 80	$ 80	$ 80	per hour
Special Inspector (Straight rate prevailing wage; no	$ 130	$ 135	$ 140	$ 145	per hour
Deposition/Court Testimony (minimum 4 hours)	$ 390	$ 400	$ 410	$ 420	per hour

Field and Laboratory Tests	2019	2020	2021	2022	Rates/Units
Concrete Compressive Strength Testing	$ 38	$ 39	$ 41	$ 42	per cylinder
Moisture Content (ASTM D 2216)	$ 22	$ 23	$ 24	$ 24	per test
Moisture & Density (ASTM D 4318)	$ 30	$ 31	$ 32	$ 32	per test
Atterberg Limits (ASTM D 4318)	$ 196	$ 202	$ 208	$ 214	per test
Compaction Curve, 4" mold (ASTM D 1557)	$ 249	$ 257	$ 264	$ 272	per test
Compaction Curve, 6" mold (ASTM D 1557)	$ 308	$ 317	$ 326	$ 336	per test
Wash over #200 Sieve (ASTM D 1140)	$ 69	$ 71	$ 73	$ 75	per test
Sieve Analysis with #200 Wash (ASTM D 422)	$ 143	$ 148	$ 152	$ 157	per test
Sieve & Hydrometer (ASTM D 422)	$ 223	$ 229	$ 236	$ 243	per test

Reimbursables	2019	2020	2021	2022	Rates/Units
Mileage (per allowable federal)	$ 0.58	$0.58	$ 0.58	$ 0.58	per mile
Nuclear Gage	$ 56	$ 57	$ 59	$ 60	per day
Inclinometer	$ 190	$ 196	$ 201	$ 208	per day
Vane Shear Device	$ 109	$ 113	$ 116	$ 119	per day
UAS Equipment	$ 350	$ 361	$ 371	$ 382	per day
GNSS Mapping Equipment	$ 200	$ 206	$ 212	$ 219	per day

1. **Professional Services -** These are "all-up" rates, and include direct salary cost, overhead, general and administrative costs not separately accounted for, and profit. They shall remain in effect through December 31, 2022. Ongoing work continuing beyond December 31, 2022 will be invoiced at the applicable new year's rate.
2. **Travel Time -** Travel time will be charged at regular hourly rates, not to exceed eight (8) hours per day.
3. **Expenses -** All direct costs will be billed at actual cost plus 10%, unless there is explicit agreement otherwise. Direct costs include:
   - Third party services – Fees for subcontracted third party services (including drilling and backhoe services, special consultant fees, permits, special equipment rental, overnight mail or

ENVIRONMENTAL CONSULTANTS

SCOPE VALIDATION PHASE

SOLANO COUNTY CRIMINAL JUSTICE CENTER FLOOD RISK MANAGEMENT

SCOPE OF WORK AND ESTIMATED BUDGET

Prepared for:

VINCE GERONIMO
Mead and Hunt

WRA Project No. 29094

April 18, 2019

PURPOSE

The purpose of this Scope of Work is to describe the necessary work and costs to assist in planning the design phase of the Solano County Criminal Justice Center Flood Risk Management project.

WORK PRODUCTS

WRA will develop a scope of work and budget proposal for the landscape architecture portion of the project.

SCOPE OF WORK

Task 1: Planning
WRA will review background documents, attend calls and meetings, including a kick-off meeting at the project site in Fairfield, CA, and evaluate project needs. Costs of design will be estimated and tabulated.

SCHEDULE

Task 1: WRA will develop a draft scope of work and budget proposal for the landscape architecture portion of the project by July 1, 2019 and respond to comments by July 31, 2019.

STAFFING

Ben Snyder, PE will be the Project Manager and lead engineer. George Salvaggio, RLA will be the lead landscape architect. Additional staff will be assigned as needed to complete the work.

ASSUMPTIONS

Project Name:	Solano County JC
Project Number:	29094
Date:	4/18/2019
Rate Schedule:	Standard

wra
ENVIRONMENTAL CONSULTANTS

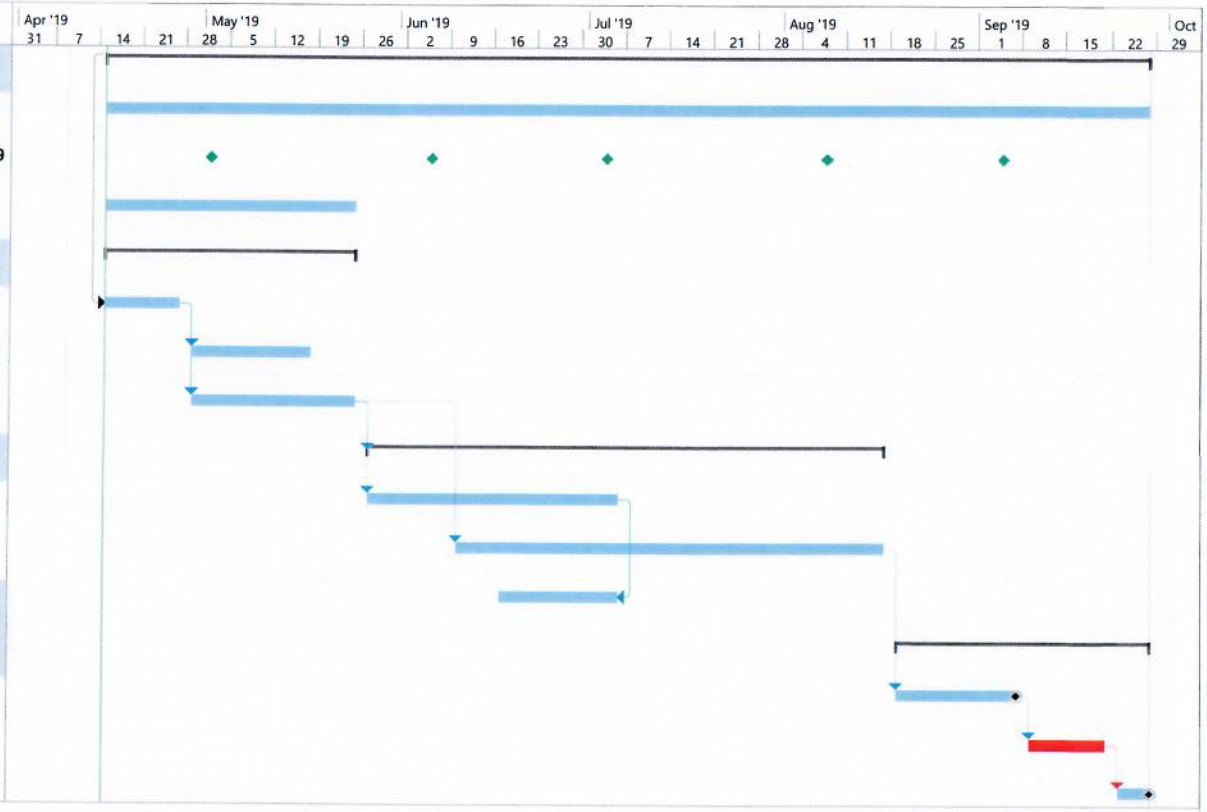
Task #	**Task Description**	**Personnel Hours by Task***						**WRA Cost by Task**	**WRA Direct Expenses**	**Sub-Contractor**	**Total Project Cost**
		Ben Snyder	Senior Associate Engineer	**George Salvaggio**	Principal	**Ingrid Morken**	Associate Landscape Architect				
		$ 227.00		$ 243.00		$ 173.00					
1	Document review	4		4		8		$ 3,264	$ -		$ 3,264
	Calls and Meetings	8		2		10		$ 4,032	$ 54		$ 4,086
	Budget			2		6		$ 1,524	$ -		$ 1,524
	Cost Estimate			1		4		$ 935	$ -		$ 935
	Project Management	8						$ 1,816	$ -		$ 1,816
								$ -	$ -		$ -
								$ -	$ -		$ -
	TOTAL LABOR HOURS	**20**		**9**		**28**					
	TOTAL COST	**$ 4,540**		**$ 2,187**		**$ 4,844**		$11,571	$54	$0	**$11,625**

*Please note: WRA may substitute similarly qualified individuals as necessary.

Attachment 2 – Mead & Hunt Project Schedule

Phase I – draft Scope Validation Preliminary Schedule

ID	Notes	Task Name	Duration	Start	Finish
1	**Task 1.1**	**Project Management**	**120 days**	**Mon 4/15/19**	**Fri 9/27/19**
2		Project Management & Contract Administration	120 days	Mon 4/15/19	Fri 9/27/19
3		**Meetings (monthly)**	**91 days**	**Wed 5/1/19**	**Wed 9/4/19**
9		Stakeholder Coordination	30 days	Mon 4/15/19	Fri 5/24/19
10	**Task 1.2**	**Review Prior Documents, Studies, and Modeling**	**30 days**	**Mon 4/15/19**	**Fri 5/24/19**
11		Review Prior Documents, Studies	10 days	Mon 4/15/19	Fri 4/26/19
12		Evaluate Exisitng Digital Data	15 days	Mon 4/29/19	Fri 5/17/19
13		Assess Prior Hydrologic & Hydraulic Analysis	20 days	Mon 4/29/19	Fri 5/24/19
14	**Task 1.3**	**Conduct Hydrologic & Hydraulic Analyses**	**60 days**	**Mon 5/27/19**	**Fri 8/16/19**
15		Conceptual Attenuation Storage Analyses	30 days	Mon 5/27/19	Fri 7/5/19
16		Update the Hydraulic Modeling (2D) overland flow	50 days	Mon 6/10/19	Fri 8/16/19
17	**Task 1.4**	**Assess potential funding opportunities**	15 days	Mon 6/17/19	Fri 7/5/19
18	**Task 1.5**	**Preliminary Engineer's Design Summary Memorandum**	**30 days**	**Mon 8/19/19**	**Fri 9/27/19**
19		Draft Summary Memorandum	15 days	Mon 8/19/19	Fri 9/6/19
20		County Review	10 days	Mon 9/9/19	Fri 9/20/19
21		Deliverable	5 days	Mon 9/23/19	Fri 9/27/19



DRAFT

modify for NTP and discussion with the County

Project: Simple Project Plan
Date: Mon 4/15/19

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

Attachment 3 – Mead & Hunt Team Resumes

Mead & Hunt

Cal Engineering & Geology, Inc.

Psomas

WRA Environmental Consultants

MARIEKE ARMSTRONG
ENVIRONMENTAL SPECIALIST

Marieke Armstrong has over 15 years of experience providing regulatory analysis, agency coordination and environmental document preparation within engineering consulting firms to support water resources and land development projects. She is an experienced environmental coordinator for multi-phase construction projects working with an outside environmental team and manages and prepares California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documents for water development and flood control projects. She is experienced coordinating with field personnel, design engineers, and regulatory agencies to obtain required approvals. Marieke is experienced in Geographic Information Systems and using ArcGIS to perform analyses and create maps to support feasibility and planning phases of design projects.

Marieke is experienced in Federal Energy Regulatory Commission (FERC) licensing environmental assessments and environmental impact statements, submitting environmental permits, preparing due diligence and feasibility studies, town master plans and neighborhood studies, and analyzing regionalized zoning and build-out.

Areas of Expertise

- Environmental analyses
- Environmental permitting
- CEQA/NEPA documents
- FERC licensing
- Geographic Information Systems

Education

- MS, Environmental Science, Indiana University, 1998
- BS, Ecology, Behavior, and Evolution, University of California – San Diego, 1995

RELATED PROJECTS

CEQA Compliance to Support Compatible Development at Byron Airport
Contra Costa County Public Works Department Airport Division
Contra Costa County, California

Mead & Hunt was selected as part of a project team to identify compatible land uses for on-site development at the Byron Airport for the purposes of revenue generation and support the preparation of an Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA). Marieke is part of the project team to identify potential land uses for revenue generation and to prepare a revised Airport Land Use Compatibility Plan (ALUCP).

South River Pump Station Flood Protection Project
Sacramento Regional County Sanitation District (Regional San)
Yolo County, California

Marieke was the permitting coordinator for the construction of a Federal Emergency Management Agency (FEMA) accredited flood protection system around the South River Pumping Station in Yolo County to provide protection in a 200-year flood event. Her work included rehabilitation of existing levees, construction of new levee, underseepage mitigation, borrow sourcing, utility relocations, drainage system design, roadway design and right-of-way engineering. Marieke provided project descriptions and exhibits for the County-prepared Environmental Impact Report. She also managed the environmental subconsultants and prepared permit applications for the Army Corps of Engineers, California Fish and Wildlife, the State Water Resources Control Board, and Yolo County.

GIS Mapping of Reservoir System Features
Northern California Power Agency (NCPA)
Tuolumne and Alpine Counties, California

Mead & Hunt assisted NCPA with regulatory approvals for Lake Alpine and Utica Reservoir in Tuolumne and Alpine counties. Marieke compiled data and produced exhibit maps using ArcGIS to support FERC part 12 inspections to evaluate the safety

LALITHA BENJARAM, EIT
CIVIL ENGINEER

Lalitha Benjaram is an Engineer-in-Training in Mead & Hunt's Sacramento office Water Resources group. Lalitha supports the engineering staff by providing with hydrologic and hydraulic design. She has been involved in modeling flood events with HEC-RAS and FLO-2D simulations and hydrologic modeling using HEC-HMS.

Areas of Expertise

- Hydraulic modeling
- Hydrologic modeling

Education

- BS, Civil and Environmental Engineering, University of California-Davis, 2014

Registration/Certification

- Engineer-in-Training

Software Proficiency

- GIS
- HEC-HMS
- HEC-RAS (steady)
- XPSWMM

Software Familiarity

- Civil-3D
- FLO-2D

RELATED PROJECTS

Lake Herman Inundation Mapping and Emergency Action Plan (EAP)
City of Benicia
Benicia, California

Based on results of hydraulic modeling, Mead & Hunt developed inundation maps in ArcGIS. The Division of Safety of Dams (DSOD) digital files were also prepared, including inundation boundaries in ESRI shapefile format and raster files of flood wave arrival time, maximum depth, peak velocity and deflood time. A technical study report was prepared to summarize the assumptions, and methodology followed for the analysis. Currently, Mead & Hunt is in the process of developing an EAP for Lake Herman Dam.

Bell Canyon and Lower St. Helena Reservoir Inundation Mapping and EAP
City of St. Helena
St. Helena, California

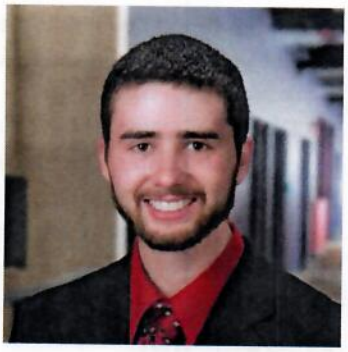
Mead & Hunt developed inundation maps for both dams and associated critical appurtenant structures at the size and scale recommended by Federal Emergency Management Agency (FEMA) guideline P-946. Technical study reports were prepared for each reservoir in accordance with DSOD regulations. DSOD digital files were also prepared, including inundation boundaries in ESRI shapefile format and raster files of flood wave arrival time, maximum depth, peak velocity and deflood time. Mead & Hunt is currently in the process of developing an EAP for Bell Canyon and Lower St. Helena Reservoir dams.

Evaluation and Certification of 55 Miles of Levees
Sacramento Area Flood Control Agency (SAFCA)
Sacramento, California

Mead & Hunt was a key part of a team that helped SAFCA obtain FEMA re-accreditation for approximately 55 miles of levees along the Sacramento and American Rivers and many smaller creeks. The flood facilities under SAFCA's jurisdiction are broadly categorized into geographic groups. All levees in these systems currently have FEMA accreditation, which is based on positive evaluation previously provided by the U.S. Army Corps of Engineers (USACE). To maintain continuous accreditation of the affected levees and to identify what actions will be required to meet the requirements of Title 44 CFR 65.10 and the State of California's Urban Levee Design Criteria (200-year) requirements, SAFCA needed to evaluate the levee systems. Lalitha helped categorize and evaluate penetration data in the levee system. She also evaluated whether each penetration met the 200-year design requirement, which included performing a structural analysis of penetrations.

RYAN GREIF, PE, CFM
CIVIL ENGINEER

Ryan Greif specializes in hydraulic design, flood modeling, hydroelectric planning and design, dam safety, storm water management, watershed management and municipal hydraulics, including conveyance facility design and pump sizing. He has performed hydraulic analysis and design for hydropower projects, modeled flood events with HEC-RAS and FLO-2D, created unsteady-flow dam breach simulations, developed hydraulic transient models using WHAMO, and designed district-level irrigation systems, pump stations, storm water conveyance facilities and energy dissipation structures.



Areas of Expertise

- Hydraulic modeling
- Hydropower
- Dam safety
- Fish passage
- Flood control
- Storm water management
- Hydrologic modeling

Education

- BS, Civil Engineering, University of Wisconsin – Platteville, 2007

Registration/Certification

- Licensed Professional Engineer – California
- Certified Floodplain Manager (CFM), Association of State Floodplain Managers (ASFPM)

Software Proficiency

- HEC-RAS (steady, unsteady, 2-D)
- FLO-2D
- WHAMO
- AutoCAD Civil 3D
- AutoTURN
- HEC-GeoRAS
- ArcGIS
- MS Excel
- Bentley CulvertMaster
- Bentley FlowMaster
- PipePac
- Turbn Pro
- CEDAS-ACES

Software Familiarity

- HEC-HMS
- HEC-ResSim
- Code-Saturne
- SALOME
- ParaView
- AutoCAD Hydraflow Express, Hydrographs and Storm Sewers extensions
- SpecsIntact

RELATED PROJECTS

Riverside Canal and Pipeline
Natomas Mutual Water Company
Sacramento, California

To accommodate levee improvements for the United States Army Corps of Engineers American River Common Features Project, three miles of an irrigation main canal must be relocated. The relocated Riverside Canal and Pipeline work will consist of design and construction of piping through levees, lined canals, pressure pipelines, a sediment basin and two automated pump stations. Ryan is the engineer for hydraulic design elements, including pipeline sizing, pump selection, sedimentation analysis, and assessment of operating scenarios.

Environmental Assessment Report – Parallel Taxiway "M"
Dane County Regional Airport
Madison, Wisconsin

Concurrent with the environmental assessment of proposed taxiway improvements at the Dane County Regional Airport, Mead & Hunt evaluated the project effects on the effective floodplain according to Federal Emergency Management Agency (FEMA) standards. Ryan was the lead hydraulic engineer responsible for developing effective, corrected-effective / pre-project and post-project HEC-RAS models to justify a no-rise determination.

Folsom Stormwater Basin Restoration
City of Folsom
Folsom, California

Mead & Hunt was subcontracted by UNICO Engineering to evaluate 22 storm water basins to determine if those basins were still in compliance with design intent, and to provide mitigation recommendations for deficient basins. Ryan helped evaluate and prepare the accompanying Assessment Memorandum.

Bear Creek Floodplain Study
Lampert-Lee & Associates
Monroe County, Wisconsin

Mead & Hunt prepared a hydraulic floodplain model for a portion of Bear Creek, to evaluate the potential impact of a confidential development site. Ryan was the lead hydraulic engineer who prepared the HEC-RAS floodplain model and established the preliminary floodway boundary along the study reach. The study results were submitted to Monroe County for review and may be submitted to FEMA as part of a future Letter of Map Revision (LOMR) effort.

JACKIE HADER, PE
CIVIL ENGINEER

Jackie Hader is a registered Civil Engineer who has a diverse background in Water Resources with experience in planning, design and construction of projects. Jackie is currently working as a civil designer and has past experience as a contract manager/administrator, construction inspector and materials tester. She has worked closely with federal, state, and local agencies like the United States Bureau of Reclamation (USBR), United States Army Corps of Engineers (USACE), Pacific Gas & Electric (PG&E), Tehama Colusa Canal Authority (TCCA), Sacramento Area Flood Control Agency (SAFCA), Natomas Central Mutual Water Company (NCMWC) and Reclamation District 1000 (RD1000) while facilitating her projects.

RELATED PROJECTS

Riverside Canal and Pipeline
Natomas Mutual Water Company
Sacramento, California

To accommodate levee improvements for the United States Army Corps of Engineers American River Common Features Project, three miles of an irrigation main canal must be relocated. The relocated Riverside Canal and Pipeline work will consist of design and construction of piping through levees, lined canals, pressure pipelines, a sediment basin and two automated pump stations. Jackie is assisting the lead civil engineer by designing and developing drawings and reports for this ongoing project.

Jersey Island Pump Station Relocation
Reclamation District 830 (RD830)
Jersey Island, California

Mead & Hunt is a subcontractor performing the design for a pump station relocation including pipeline extensions and levee berm grading. Jackie is working as the lead civil design engineer while developing drawings, cost estimates, and reports for this ongoing project.

Bufferlands Camry Correa Well
Sacramento Area Flood Control Agency (SAFCA)
Natomas Basin, California

Mead & Hunt is a subcontractor performing the design of a combined agriculture and mitigation supply well as a separate contract for mitigation to the SREL Natomas Basin Project. Jackie is working as the lead civil design engineer while developing drawings and reports for this ongoing project.

Caribou 2 Penstock Drainage Improvements
Pacific Gas and Electric Company (PG&E)
Caribou, California

Mead & Hunt designed and provided construction support for drainage improvements along the access roads leading to PG&E's Caribou Powerhouse and Penstock 2. Jackie helped complete the final design and provided construction support.

Potter Valley Decommissioning Alternatives Analysis
Pacific Gas and Electric Company (PG&E)
Potter Valley, California

Mead & Hunt analyzed and developed a report on the comparison of a variety of potential operation scenarios for Federal Energy Regulatory Commission (FERC) relicensing of PG&E facilities in the Potter Valley. Jackie worked as the lead civil design

Areas of Expertise

- General Civil Design
- Site Grading
- Pipeline Design
- Water Conveyance Design
- Simple Structures Design
- Computer Aided Drafting (CAD)
- Cost Estimating
- Construction Support
- Value engineering and value planning studies
- Feasibility studies

Education

- BS, Civil Engineering, California State University, Chico, 2011

Registration/Certification

- Licensed Professional Engineer – California (#C84872, 2015)
- Licensed Professional engineer – Oregon (#90965PE, 2014)

JEFF KASHIWADA, PE, CFM
WATER RESOURCE ENGINEER

Jeff Kashiwada is a civil engineer specializing in civil and structural analysis, design, and hydraulic modeling and design. His project experience includes flood control projects, master drainage plans, storm drain systems, detention basins, pump lift stations facilities, fish screens, building design, and irrigation facilities and culverts. He has designed steel, concrete, and concrete masonry structures including rack houses, office buildings, pump stations, and retaining walls. He has also designed water conveyance projects. Jeff is familiar with HEC-RAS, XPSWMM, AutoCAD and Civil 3D.

RELATED PROJECTS

Riverside Canal and Pipeline
Natomas Mutual Water Company
Sacramento, CA

To accommodate levee improvements for the United States Army Corps of Engineers (USACE) American River Common Features Project, three miles of an irrigation main canal must be relocated. The relocated Riverside Canal and Pipeline work will consist of design and construction of piping through levees, lined canals, pressure pipelines, a sediment basin and two automated pump stations. Jeff is the project manager leading the team through the planning and preparation of the drawings, technical specifications, cost estimate, and design reports for project construction. In addition, Jeff is responsible for project coordination with the Owner, project stakeholders, and other engineering consultants preparing construction plans for levee improvements adjacent to the Riverside Canal/Pipeline.

Natomas Basin Project
Sacramento Area Flood Control Agency (SAFCA)
Sacramento, California

Jeff is the project manager for the planning, design and design support for this project. Project components include designing the relocation of the Natomas Central Mutual Water Company's Riverside Irrigation Canal and associated soil borrow sites and providing design support for the United States Army Corps of Engineers' (USACE's) preparation of construction documents for four levee repair contracts. The USACE design support tasks will include coordinating stakeholder facility requirements, reviewing designs for compliance with FEMA certification standards and state provisions, and providing technical support for levee related design.

South River Pump Station Flood Protection Project
Sacramento Regional County Sanitation District (Regional San)
Sacramento, California

Jeff is the project manager for the planning, design, permitting for the construction of a Federal Emergency Management Agency (FEMA) accredited flood protection system around the South River Pumping Station in Yolo County to provide protection in a 200-year flood event.

Dry Creek Recapture Project
Browns Valley Irrigation District
Browns Valley, California

Mead & Hunt designed a water system including a river intake structure, pumping plant with level controls, and 10,000 feet of 24-inch-diameter water main to provide up to 10 cubic feet per second (cfs) of irrigation water to the upstream irrigation canal. The

Areas of Expertise

- Structural analysis
- Structural design
- Hydraulic modeling and design
- Civil design

Education

- BS, Civil Engineering, California State University, Sacramento, 2004

Registration/Certification

- Licensed Professional Engineer – California
- Certified Floodplain Manager

MEGAN LEROY, PE
HYDRAULIC ENGINEER / HYDROLOGIST

Megan LeRoy specializes in hydraulic design, flood modeling, dam safety, and stormwater quality. She is familiar with ArcGIS, HEC-HMS, XPSWMM, PCSWMM, FLO-2D, HEC-RAS, GIS Analysis, StormCAD and SewerCAD. She is also familiar with continuous simulation models including BAHM, SalinasHM and SAHM. Her experience includes analysis of large and small watersheds, including those with many subbasins with routing and junction elements. She has designed drainage and stormwater quality solutions to meet local jurisdiction requirements in California.

Areas of Expertise

- Hydrologic and hydraulic modeling
- Stormwater master planning
- Drainage analyses and design
- Stormwater quality analyses

Education

- BS, Civil Engineering, California Polytechnic State University (San Luis Obispo) 2012

Registration/Certification

- Licensed Professional Engineer – California (2017, #86473)

RELATED PROJECTS

Inundation Mapping and Emergency Action Plan (EAP) Preparation
Tehachapi Cummings County Water District (TCCWD)
Tehachapi, California

Mead & Hunt prepared breach analysis and inundation mapping for Antelope, Blackburn and Jacobsen dams for TCCWD, and preparing an EAP for each. The primary effort consisted of simulating a dam breach scenario and preparing GIS-based maps to show extents of inundation areas. Megan is the primary hydraulic modeler. She is modeling the inundation area using HEC-RAS, and mapping and preparing the EAP.

Inundation Mapping and Emergency Action Plan (EAP) Preparation
City of Fairfield
Fairfield, California

In response to legislative and regulatory changes in California related to dam safety in 2017 and 2018, Mead & Hunt was tasked with preparing inundation mapping for Pennsylvania Creek Dam in Fairfield and to prepare an EAP. Megan prepared the EAP.

Rancho Cordova On-Call
City of Rancho Cordova
Rancho Cordova, California

Mead & Hunt prepared plans, specifications and an engineering estimate for work associated with drainage improvements at the intersection of Benita Drive and Segovia Way. Megan prepared the project deliverables and coordinated with city officials to receive approval of the drainage improvements.

RELATED PROJECTS WITH OTHER FIRMS

Menlo Gateway, Constitution Phase
Bohannon Development Company
Menlo Park, California

As a project engineer, Megan provided stormwater quality and drainage design support to the Menlo Gateway, Constitution Phase Project. The project consisted of the site civil design supporting two office buildings, two parking garages and related paving areas. The project included designing a storm drain trunk line to be constructed in Constitution Drive. Megan used PCSWMM to design the storm drain system and provided stormwater quality design to meet local permit requirements. This project was completed while Megan was employed by another firm.

Lee Road Development, Phase 1
Elite Developments
Watsonville, California

GRACE ROSE, PE
STRUCTURAL ENGINEER

Grace Rose has six years of experience in structural project design. She designs concrete, steel and masonry structures, and has experience with seismic design. She has provided structural design for public and private projects, including water resources, military, aviation and correctional facilities. Grace regularly collaborates with other offices for project work and communicates with various disciplines.

Areas of Expertise

- Structural design
- Seismic design
- Construction support services

Education

- BS, Architectural Engineering, California Polytechnic State University at San Luis Obispo, 2010

Registration/Certification

- Licensed Professional Civil Engineer – California

RELATED PROJECTS

Rock Creek Dam Toe Void Repair
Pacific Gas and Electric Company (PG&E)
Belden, California

The goal of this project was to investigate and repair voids in the toe of the Rock Creek Dam spillway flip bucket and under adjacent abutment. The project included investigating toe voids to establish root cause. Mead & Hunt identified potential cause as a combination of construction deficiencies, high scour forces and variations in facility from design that increased scour. We recommended an anchored concrete repair with surface armoring and prepared a construction plan that involved significant dewatering, and barge staging of work for permitting and agency approval. Repair is scheduled for 2018. Grace supported the project during the investigation phase by the analyzing possible options for a temporary cofferdam to be used during construction.

Bucks Creek Energy Dissipaters
Pacific Gas and Electric Company (PG&E)
Plumas County, California

Bucks Creek Powerhouse has two generating units, each with two Pelton wheels. Downstream of each wheel, water reaches a wheel pit and tailrace bay before exiting the powerhouse and entering the Feather River. Steel framed hydraulic energy dissipater structures are near the exterior wall where water exits the powerhouse. The energy dissipater frames dissipate the hydraulic energy exiting the needle valves before water reaches the Feather River. Mead & Hunt evaluated the hydraulic pressure applied to the energy dissipaters and designed new structural frames. The new energy dissipaters have the capacity to resist the hydraulic pressure exiting the needle valves before entering the Feather River. Grace provided the structural engineering, creating calculations and plans for construction, incorporating comments from the reviewers and assembling the approved-for-construction documents. Grace also supported construction by reviewing submittals, responding to contractor questions, inspecting the installation at the project site and assembling as-built drawings.

Hat Creek Canal Gate Automation Project
Pacific Gas and Electric Company (PG&E)
Fall River Mills, California

With the help of this gate automation project, PG&E now has local-manual and local-automatic control of water levels at Baum Lake through a remote monitoring system at their Pit 3 switching center. The project improves protection for canal over-topping and breach by providing analog-level sensing at three locations along the mile-long canal. Mead & Hunt helped reduce the likelihood that the Baum Lake level would deviate from the desired 12-inch range. We also addressed extreme travel (open and closed) feedback, canal level feed-back and head gate trip supervision feedback, making it available on the Pit 3 Baum Lake display. Grace provided structural design support to

STEPHEN SULLIVAN, PE
SENIOR PROJECT ENGINEER

Stephen Sullivan is a California-registered civil engineer with more than 38 years of experience in the planning, design and construction of water resources and power projects. As a project engineer, he supervises the design and construction of flood control facilities, irrigation and water supply facilities, managed wetlands and habitat features, diversion dams, fish passage and screening facilities, pumping plants, water wells, water tanks, booster pump stations, canals, penstocks, pipelines and hydropower facilities. As a project manager, he has managed the completion of numerous water resource projects, up to $100 million in value.

Stephen frequently supervises design projects and has extensive experience preparing planning studies, design drawings, cost estimates and contract documents. He also manages the project team's efforts in obtaining agency approvals by preparing biological and environmental assessments, California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documentation, permitting and securing project funding and environmental documentation and permitting efforts. He provides independent peer reviews for a range of public works projects and serves on independent expert panels for large water resources projects. He performs levee and dam assessments, inspections and prepares problem identification reports and certifications.

RELATED PROJECTS

Riverside Canal and Pipeline
Natomas Mutual Water Company
Sacramento, CA

To accommodate levee improvements for the United States Army Corps of Engineers American River Common Features Project, three miles of an irrigation main canal must be relocated. The relocated Riverside Canal and Pipeline work will consist of design and construction of piping through levees, lined canals, pressure pipelines, a sediment basin and two automated pump stations. Stephen was the engineer of record and client liaison.

Spillway Detailed Inspections and Focused Assessment Reports
Pacific Gas and Electric Company (PG&E)
Northern California

The FERC notified PG&E in spring 2017 that a PFMA would be required on all 36 of their spillways before the end of 2017 and DSOD order assessment of 12 spillways. Mead & Hunt led the project involving numerous consultants starting in August, completing thorough and detailed spillway safety assessments by the deadline. Stephen developed an assessment report template for the team, performed detailed inspections at four of the most critical spillways, participated in PFMA sessions for eight spillways, and prepared assessment reports for six critical spillways.

American River Levee at 28th Street Improvements
American River Flood Control District (ARFCD)
Sacramento, California

ARFCD took up improvements on the American River levee near 28th Street, which entails creating an Americans with Disabilities Act (ADA)-compliant ramp connecting the terminus of an existing landside bike trail with an existing waterside trail. Mead & Hunt planned the ramp in collaboration with ARFCD and prepared plans and quantity

Areas of Expertise

- Dam design and inspection
- Pumping plant design
- Irrigation facilities
- Water supply systems
- Flood control facility design and inspection
- Streambed restoration
- Fish screen and fish passage facilities
- Hydroelectric facilities
- Substation and transmission facilities
- Dam design
- Intake design
- Structural design
- Construction management
- Planning and feasibility studies
- Cost estimating
- Permitting and approvals

Education

- BS, Civil Engineering, University of Massachusetts, 1980

Registration

- Licensed Professional Engineer – California

protection in a 200-year flood event. Work includes rehabilitation of existing levees, construction of new levee, relief wells, borrow sourcing, utility relocations, drainage system design, roadway design and right-of-way engineering. Stephen had overall responsibility for this work.

Natomas Levee Improvement Program (NLIP)
Sacramento Area Flood Control Agency (SAFCA)
Sacramento, California
Stephen is the owner's engineer for project design and is responsible for reviewing the consultants' design products and assisting with project implementation. He is also the overall program manager for Mead & Hunt's work.

Napa River Comprehensive Flood Protection Project
City of St. Helena
St. Helena, California
Mead & Hunt was the lead consultant on this project that included a new levee, floodwall, foundation improvements, pumping plant, storm drain improvements, and streambed restoration. Mead & Hunt also obtained a letter of map revision (LOMR) from the Federal Emergency Management Agency (FEMA) on behalf of the City and Napa County. Stephen has been closely involved with the entire design process from conceptualizing to final documents, achieving regulatory approval, stakeholder coordination and obtaining state funding.

Reclamation District 1000 (RD1000) Pumping Plant No. 1
Sacramento Area Flood Control Agency (SAFCA)
Sacramento, California
Mead & Hunt designed the new Plant 1B including feasibility studies and alternatives evaluation, preliminary and final design engineering, plans and specifications, bidding assistance, construction management, and preparation of the operations and management plan. Demolition of the existing Plant 1B and the existing substation and a caretaker residence were included in the project. Stephen was the technical lead for this project.

Reclamation District 1000 (RD1000) Pumping Plant No. 2 Replacement
Sacramento Area Flood Control Agency (SAFCA)
Sacramento, California
Mead & Hunt designed new facilities for this 120-cubic-feet-per-second (cfs) drainage pumping plant that moves water from the North Drainage Canal into the Sacramento River. Stephen was the technical lead for this project.

Reclamation District 1000 (RD1000) Pumping Plant No. 3 Modifications
Sacramento Area Flood Control Agency (SAFCA)
Sacramento, California
Mead & Hunt was responsible for designing modifications to Pumping Plant No. 3. A key issue is construction sequencing of the modification work with levee construction and drainage and irrigation water pumping requirements. Design involved modifications to the concrete sump and structure, welded steel discharge pipes over the new levee, outfall modifications, four pumps, mechanical and electrical design, cathodic protection system, supervisory control and data acquisition (SCADA) and permitting. Stephen was the technical lead for this project.

Reclamation District 1000 (RD1000) Pumping Plant No. 4 Replacement

BRANDON WINCHELL, PE
ELECTRICAL ENGINEER

Brandon Winchell is a registered electrical engineer with nine years of design experience as an electrical designer of power, instrumentation, and control systems. He has performed designs for hydro, excitation, arc flash, water, wastewater, airport vaults, airport closed circuit rebreather (CCR) runway/taxiway circuits and generators.

RELATED PROJECTS

Arc Flash Studies, 2017
Merced Irrigation District (MID)
La Grange, California
This project provided MID with short circuit, PDC and Arcflash risk assessment reports with appropriate arc flash labels for equipment at Exchequer Powerhouse and McSwain Powerhouse. Tasks included a field visit and equipment surveyed, reports and recommendations, and applying labels. Brandon was the electrical engineer for this work.

Riverside Canal and Pipeline, 2016-Ongoing
Natomas Mutual Water Company
Sacramento, California
To accommodate levee improvements for the United States Army Corps of Engineers (USACE) American River Common Features Project, three miles of an irrigation main canal must be relocated. The relocated Riverside Canal and Pipeline work will consist of design and construction of piping through levees, lined canals, pressure pipelines, a sediment basin and two automated pump stations. Brandon is the electrical engineer for this project.

Middle Fork Powerhouse Generator Management Relay Upgrade Project
Placer County Water Agency (PCWA)
Foresthill, California
Mead & Hunt provided electrical engineering design and construction support services to replace PCWA's electromechanical relays with microprocessor-based relays. The hydrogeneration project is a two-unit facility with six jet Pelton turbines, each rated 58,000-horsepower (HP), and synchronous generators, each rated 68-megavolt-ampere (MVA). Brandon was the electrical engineer and provided detail design of equipment arrangements, grounding, control and relay protection design using SEL 300G and BECWITH M-3425A relays.

Hat Creek Canal Gate Automation Project, 2015
Pacific Gas and Electric Company (PG&E)
Fall River Mills, California
Electrical Engineer. Helped lead electrical engineer design automating the head gate position to maintain Baum Lake level for regulatory compliance. The design included canal breach detection along the one-mile canal to the powerhouse, proximity switches, combination reversing starter, control panel, remote terminal unit (RTU)and radio and pressure transmitters.

Hydraulic Piping and Instrument Diagrams (P&ID), 2015
Pacific Gas and Electric Company (PG&E)
Central California
Brandon served as the electrical engineer. He reviewed, documented and field verified PG&E's Central Region facilities. This included powerhouses, water conveyance

Areas of Expertise

- Electrical power design
- Electrical systems
- Control systems
- Lighting systems
- Construction cost estimating
- CAD

Education

- BS, Electrical Engineering, California State University, Sacramento, 2010

Registration/Certification

- Licensed Professional Engineer - California

Software Proficiency

- AutoCAD
- Navis Works
- SKM
- Visual Pro Lighting

CE&G

Pragmatic Expertise™

PHILLIP GREGORY
Senior Principal Engineer
California Civil Engineer No. 40728
California Geotechnical Engineer No. 2193

EDUCATION

M.S., Civil Engineering (Geotechnical), University of California at Berkeley, 1984
B.S., Civil Engineering, University of California at Berkeley, 1983

ACCOMPLISHMENTS

Thirty-four years of professional geotechnical engineering experience; twenty-five years with CE&G
Managed more than 100 public works geotechnical investigation and geo-design projects for ten separate agencies
Former soil testing instructor at Chabot Junior College in Hayward
Invited lecturer on geosynthetics, slope stability, and erosion control
Former co-Chairman of the Slope Technology Committee of IECA
Project engineer for design and analysis of various embankment dams through western U.S.
Designer of over 150 geogrid reinforced slopes and retaining walls

PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers
International Erosion Control Association
American Public Works Association
Post Tensioning Institute
International Geotextile Society
International Association for Promoting Geoethics
United States Society of Dams
Association of State Dam Safety Officials
California Geotechnical Engineers Association
Floodplain Management Association
East Bay Municipal Engineers

REPRESENTATIVE EXPERIENCE

Stanford Detention Basin — **Stanford, CA**
Technical reviewer for a subsurface investigation, laboratory testing, and prepared a geotechnical design report for the detention basin at Stanford University. The proposed basin was planned to be located on the West Campus Athletic Fields to be 310 feet by 620 feet by 9 feet deep. CE&G's scope included a Phase I Environmental Site Assessment, review of maps, site reconnaissance, drilling and sampling, and laboratory testing.

Penitencia Water Treatment FM Seismic Retrofit — **San José, CA**
Technical reviewer as part of a team of structural and geotechnical engineers and geologists to complete a landslide study, Landslide Displacement Hazard Analysis (LDHA), and provide geotechnical design recommendations to prevent catastrophic failure due to an earthquake. The project includes three adjacent pipelines that service the Penitencia Water Treatment Plant (PWTP) which is located over the slow-moving Penitencia Creek Landslide. All three pipelines cross the stable Santa Clara Valley floor onto the landslide mass.

Zone 6 Line E (Laguna Creek) Trenchless Culverts Below I-880 — **Fremont, CA**
Quality control manager for twin culverts below I-880 to increase the storm water conveyance capacity of Laguna Creek (Zone 6, Line E) for the Alameda County Flood Control and Water Conservation District. Completed geotechnical data and design reports for the trenchless portions of the project and provided civil and structural design services for the upstream and downstream concrete transition structures. The project design included advancing two 110 inch steel casings below the freeway using pilot tube-guided auger bores with less than 4 feet of cover. The project was designed jointly by District staff and CE&G staff and was reviewed and approved by Caltrans.

Water Delivery System Phase III — **Palo Alto, CA**
Technical Review/QA/QC Manager for CE&G's role in the Phase III Recycled Water Project, located in the northern part of the City of Palo Alto. The recycled water distribution system is proposed to consist of new pipelines extending uphill and westward from the Palo Alto WPCP near Highway 101 to Deer Creek Road. The system consists of a main recycled water pipeline backbone and multiple smaller laterals. In total, the pipeline extends approximately 11.3 miles along various roadways. Up to ten trenchless undercrossings have been identified, including where the alignment is to cross underneath Highway 101, El Camino Real (Hwy 82), Caltrain railways, Foothill Expressway, and several creeks. A booster pump station is to be located at the Stanford-Palo Alto Community Playing Fields' parking lot near the intersection of El Camino Real and Page Mill Road. The second phase of work includes extensive subsurface exploration along proposed pipeline alignments and at trenchless crossings.

Alamitos Creek — **San José, CA**
Technical reviewer for a FEMA levee evaluation for levees along Alamitos Creek from Via Valiente Road to McKean Road in San Jose. This reach of the creek includes 10,000 feet of levees. The District requested a geotechnical investigation to determine if the existing levees can be certified in accordance with FEMA's current Standards for Levee Analysis and Land Mapping Procedures. CE&G services include: review of existing data, office studies, site reconnaissance, work plan, field investigation, laboratory testing, engineering analyses for FEMA requirements, and preparation of a geotechnical report.

CE&G

Pragmatic Expertise™

PAUL J. SORCI
Senior Engineer
California Professional Engineer No. 73163
California Geotechnical Engineer No. 3132

EDUCATION
B.S., Civil Engineering, California State University Sacramento, 2005
M.S., Geotechnical Engineering, California State University Sacramento, 2013

ACCOMPLISHMENTS
14 years of professional geotechnical experience
GeoStudio Slope/w, Seep/W
Skilled in Gint, ArcGIS, Lpile, HEC-RAS,

PROFESSIONAL ORGANIZATIONS
USACE Construction Quality Management (CQM) for Contractors, American Society of Civil Engineers, Floodplain Management Association

REPRESENTATIVE EXPERIENCE

Sacramento Area Flood Control Agency – Natomas Basin Evaluation — **Sacramento, CA**
This program included evaluation of levees that stretched over 50 miles in length surrounding the Natomas Basin in Sacramento. As Project Engineer, Mr. Sorci was responsible for performing various field investigations and conducting geotechnical analysis. His main tasks included coordinating and logging geotechnical borings and cone penetration tests (CPTs), finalizing boring logs and assigning laboratory testing, performing seepage and stability analysis utilizing Seep/W and Slope/W software, and writing problem identification reports.

Lower Silver Creek Flood Protection Improvements and Creek Restoration — **Santa Clara County, CA**
Provided quality control testing oversight and management as well as ensuring adherence to earthwork, pavement, concrete, and structural materials design standards for this project. The project consisted of raising the Dobern Pedestrian Bridge over a creek and constructing improvements to the bridge site including the installation of retaining walls, constructing a maintenance road using aggregate materials, and constructing an asphalt concrete trail. CIDH piles, and shotcrete, and inspection and testing of the HMA pavements.

East Cliff Drive Sewer Project — **Santa Cruz, CA**
This project included a geotechnical investigation and design for a 20-inch HDPE sanitary sewer line extending about 1 mile along East Cliff drive in Santa Cruz, CA. The work was performed for the County of Santa Cruz Public Works Department. Mr. Sorci lead the field investigation and provided the County of Santa Cruz with geotechnical design recommendations pertaining to both trench and trenchless methods of pipe installation.

Waikoloa Reservoir No. 1 — **Waimea, HI**
This program included evaluation and design for repairs from a recent seismic event to the earth embankment of Waikoloa Reservoir No. 1 in Waimea, Hawaii. As Project Engineer, Mr. Sorci inspected the existing concrete liner for deficiencies. He also assisted in design recommendations by performing seepage analysis, stability analysis, seismic stability analysis, and design calculations.

Freeport Regional Water Authority Pipeline — **Sacramento County, CA**
This project involved providing geotechnical recommendations for a proposed 93,000-foot long water line. Mr. Sorci was the field engineer overseeing the drilling operation utilizing both hollow-stem augers and solid-flight augers drilling techniques and collecting soil samples using Standard Penetration Test (SPT) methods. He also aided in the development of geotechnical recommendations for both trench and trenchless crossings.

Alum Rock Falls Road — **San Jose, CA**
Mr. Sorci provided geotechnical construction oversight of a soldier beam and wood lagging wall to stabilize a hillside landslide in San Jose, CA. The work was performed for the City of San Jose. Tasks included review of previously performed geotechnical data, providing additional geotechnical recommendations, pier drilling observations, response to contractor RFI's, and contractor submittal review.

PG&E Water Conveyance Group — **Western US**
Team member of the PG&E Water Conveyance Asset Management group. The water conveyance group consists of multi-disciple engineers and stakeholders, responsible for managing risk of canals and tunnels that convey water from reservoirs to their associated powerhouses. Tasks include scheduling and performing inspections; identifying potential hazards and assessing their risk of failure and associated consequences; prioritizing repairs based on risk and available budget; and developing repair alternatives. Also assisted in Emergency Action Plan tabletop exercises as part of their hydroelectric dam safety plan, in compliance with the Federal Energy Regulatory Commission (FERC).

PG&E Bucks Creek Project — **Bucks Lake, CA**
Assessed over 36 miles of project roads as part of the Bucks Creek Project Relicensing. As a senior project engineer, Mr. Sorci lead the assessment, which included identifying deficiencies in the roadway surface, assessing slope instabilities along the roadway, and evaluating roadway drainage structures. The assessment also included identifying amphibian and fish barriers along the roadway.

CE&G

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ELIJAH ZANE
Associate Engineer
California Civil Engineer No. C73284
California Geotechnical Engineer No. 3035

EDUCATION

B.S., Civil Engineering, University of California at Berkeley, 2005
International Erosion Control Association 2006 Conference
CPN Training Course on Radiation Safety and Use of Nuclear Gauge
TRI Course on Construction QA/QC geosynthetic installations and compacted clay liners

ACCOMPLISHMENTS

Thirteen years of professional experience; thirteen years with CE&G
Geotechnical-related structure design
Geogrid-reinforced soil slopes and segmental retaining wall designs
Preparation of plans and specifications for municipal agencies
Construction Quality Assurance for Landfill Liner Placement and Cell Development
Evaluation (static, seismic, rapid drawdown) of levees
Certified CQA geosynthetic materials and compacted clay liner inspector (GCI)

PROFESSIONAL ORGANIZATIONS

International Erosion Control Association
American Society of Civil Engineers
East Bay Municipal Engineers

REPRESENTATIVE EXPERIENCE

Zone 5 Line A Levee Certification **Alameda Co., CA**
Project engineer for subsurface exploration and testing for FEMA certification of a levee in Union City. Work included completion of cone penetration soundings and rotary wash borings along the levees and performing slope stability, seepage, and settlement analysis of the existing and proposed levee modifications. Project was completed as part of a FEMA levee certification process for Alameda County Flood Control District.

Peralta Creek Improvements **Oakland, CA**
Lead geotechnical and design engineer for geotechnical investigation and design of creek bank retaining wall systems as part of an Alameda County Flood Control District-led project to improve the hydraulic capacity and habitat of a section of open flood control channel / creek in the Oakland flatlands. Work included subsurface borings and laboratory testing, preparation of a geotechnical design memorandum, design of new variable batter soil nail retaining walls, cantilever reinforced masonry retaining walls, and stabilization of existing un-engineered retaining walls; and engineering services during construction.

Agua Fria Creek Improvements **Hayward, CA**
Project engineer for geotechnical investigation and design of creek bank retaining wall systems as part of creek restoration project for Alameda County Flood Control and Water Conservation District. Work included preparation of plans, specifications, and engineer's estimate for log and concrete crib walls.

Zone 5 Line A Soil/Bentonite Wall **Alameda Co., CA**
Field geotechnical engineer during construction of the Zone 5 Line A levee remedial work along Alameda Creek south levee. The project consisted of reconstructing 3,900 feet of levee and construction of a 2,100 foot long soil/bentonite wall approximately 80 feet deep. Work consisted of construction observations during regrade, soil/bentonite wall construction, field testing of the soil materials, and conformance testing of the soil/bentonite wall.

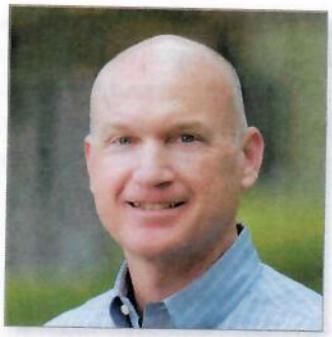
Creek Bank Stabilization **Martinez, CA**
Project engineer for creek bank stabilization project constructed along Alhambra Way in Martinez. Performed calculations and developed plans, specifications, and engineer's estimate for rock slope protection embankment with concrete retaining wall. Work also included performing construction observations during construction.

Zone 2 Sulphur Creek Levee Improvements **Hayward, CA**
Managed quality control materials testing and geotechnical engineering observation services during the construction of levee improvements required to obtain FEMA certification of the levee. Strict documentation of the completed grading and fill control was needed to enable approval and certification of the project. The work included coordination with the alameda County Flood Control District design team, construction staff, and contractor. The project involved construction of new inlet structures, raising of the existing levee, and placement of rock slope protection in an environmentally sensitive area.

San Lorenzo Creek Emergency Embankment Repair **Alameda Co, CA**
Project manager for an emergency creek bank repair below the Casa Sandoval Retirement Center in Hayward, California. A 34 foot long stretch of the south bank of San Lorenzo Creek failed during the winter of 2011. The project consisted of reconstructing the 0.5H:1V embankment with a 24 foot tall geocell embankment. Work included design, and preparation of PS&E repair plans in a months time. Work also included full time field engineer during construction to complete the repair before then end of grading season.

Geotechnical Investigation **Walnut Creek, CA**
Project engineer for geotechnical investigation for new home. Included logging of the geotechnical borings, a liquefaction analysis, preparation of report and figures.

Scott Bryant, PLS
Senior Project Manager



REGISTRATION

1996/CA/Professional Land Surveyor/#7228

2004/NV/Professional Land Surveyor/#16767

EDUCATION

1991/BS/Surveying and Photogrammetry/California State University, Fresno

PROFESSIONAL AFFILIATIONS

California Land Surveyors Association

Society of American Military Engineers

National Society of Professional Surveyors

TRAINING

U.S. Air Force Reserves (Chief Master Sergeant)

EXPERIENCE

With Psomas for 22 years; with other firms for 7 years

Scott Bryant has 29 years' experience and is responsible for surveying services on levee, transportation, utility and development projects. His expertise includes large-scale control surveys; aerial mapping and imagery; mobile and static terrestrial LiDAR mapping; design topography surveys and mapping; development of land net base maps; boundary and right of way surveys; right of way engineering; appraisal exhibits; construction support surveys; bathymetric surveys; and mapping products in AutoCAD Civil3D and Microstation platforms. He is an expert in providing surveying and mapping support for large-scale projects and on-call contracts.

Experience

Department of Water Resources Emergency Levee Repairs – Various Sites, Various, CA: Project Manager on multiple task orders to provide base mapping and real estate acquisition services on almost 100 levee repair sites throughout the Department of Water Resources (DWR) jurisdictional area. Scott is currently providing services such as; topographic mapping, boundary surveys, aerial surveys using drones, bathymetric surveys and base mapping in DWR's Microstation format.

Sacramento Area Flood Control Agency (SAFCA) Open-End Contract for Surveying & Mapping, Sacramento and Sutter Counties, CA: Task Manager providing GPS, control surveys, topography surveys, aerial photography, and mapping. Also provided title and easement review, right-of-way field surveys, right-of-way legal description and plat preparation, right-of-way acquisition coordination and support, hydrographic surveys, construction surveys, and as-built surveys for 30 miles of levees. Project sites include levees along Dry, Robla, Steelhead, and Arcade Creeks; Natomas Cross Canal; and portions of the Sacramento and American River systems.

Sacramento Area Flood Control Agency (SAFCA) Natomas Levee Improvement Program, Sacramento and Sutter Counties, CA: Task Manager for this levee project involving 42+ miles of State and Federal levees and County roads of the Natomas Basin. Services included establishing survey control to Second Order, Class II specifications; providing orthophotography; performing topographic surveys; 1"= 40' base mapping with 1-foot contours, utility surveys; performing boundary surveys, analysis, and land net maps preparation; preparation of right-of-way strip maps, descriptions and exhibits for 200+ acquisitions and land transfers; construction survey support; monitoring; GIS database development, and eminent domain proceedings support.

West Sacramento Riverfront Development - Promenade and Trails Project, West Sacramento, CA: Survey Manager for the West Sacramento Riverfront Promenade PS&E. Preliminary engineering tasks included supporting other project team consultants tasks during the alternative selection phase, further developing pre-selected conceptual design plans for the promenade area, existing utility identification, preliminary cost estimates, and environmental document support. PS&E tasks involved pedestrian trail design along the Sacramento River Levee, utility relocation, re-grading of the immediate surrounding area, and architectural treatment additions to improve aesthetics and use along the trail.

Dirk de Valk, PLS
Office Surveyor

REGISTRATION

2006/CA/Professional Land Surveyor/#8139

EDUCATION

1990/BS/Hydrographic Surveying/ Maritime College of Amsterdam

PROFESSIONAL AFFILIATIONS

California Land Surveyors Association

TRAINING

CLSA Seminars

SKILLS

Hydrographic Surveying

EXPERIENCE

With Psomas for 2 years; with other firms for 18 years

Dirk de Valk has over 20 years of survey experience, including GPS and hydrographic surveying. He has extensive experience processing survey data and generating maps and exhibits using AutoCAD. Dirk is skilled in boundary resolutions, final map preparation, topographic base mapping, and construction staking. He is also well-versed in preparing ALTA land title surveys. As a Licensed Land Surveyor in Responsible Charge, Dirk has prepared numerous record of survey maps, final maps, and legal descriptions on a variety of projects.

Experience

Department of Water Resources Emergency Levee Repairs – Various Sites, Various, CA: Staff Team on multiple task orders to provide base mapping and real estate acquisition services on almost 100 levee repair sites throughout the Department of Water Resources (DWR) jurisdictional area.

Cirby Way/Roseville Road Improvement Project, Roseville, CA: Staff Team responsible for providing the design team with topographic base mapping, utility mapping, and land net boundary survey for this roadway realignment and widening project. The project includes extensive coordination with Union Pacific Railroad (UPRR) and adjacent property developments, including property acquisition of 14 private parcels and a land swap with UPRR.

Regional San (SRCSD/SASD) On-Call Surveying Services, CA: Staff Team for this current on-call contract. Services include legal descriptions and plats, site surveys to facilitate property transfers between agencies, surveys to establish/delineate easement limits, property boundary surveys, sewer manhole surveys, surveys for lot merger, topographic and underground utility surveys.

Sacramento Area Flood Control Agency (SAFCA) Levee Accreditation Program, Sacramento, CA: Staff Team for 50+ miles of urban levees. Provided design support services that included: establishing permanent survey control; design topographic base mapping; detail structure surveys; coordination with DWR on right-of-way surveys performed in MA-9 portion of the project; right-of-way strip mapping to provide details of ownership and rights; and easement evaluation services as requested by the design team and SAFCA.

wra
ENVIRONMENTAL CONSULTANTS

BRIAN BARTELL, BSLA

Stream Restoration Specialist

bartell@wra-ca.com

o: 415.454.7588

c: 443.243.2114

Years of Experience: 25

Education

BS, Landscape Architecture, West Virginia University, 1991

Professional Affiliations/Certifications

California Licensed Landscape Architect, #6050

Specialized Training

- Stream Restoration, Cook College, 2000
- Winter Wetland Vegetation Identification, Cook College, 2001
- Applied Fluvial Geomorphology, Wildland Hydrology, 2001
- River Morphology and Applications, Wildland Hydrology, 2002
- Dale Carnegie Training, Dale Carnegie & Associates, Inc., 2002
- River Assessment and Monitoring, Pilot View, 2003
- Natural Channel Design & River Restoration, Wildland Hydrology, 2003
- River Restoration Design Implementation, Wildland Hydrology, 2005
- GPS Pathfinder Office Training, Earth Vector Systems, 2009
- Riparian Habitat Restoration for the Arid Southwest, Wetland Training Institute, 2017

Brian Bartell is a restoration designer and implementation specialist with WRA. He received his Bachelor's degree in landscape architecture from West Virginia University, where he developed an affinity for the ecological restoration field. Brian brings 25 years of restoration planning, design, and construction oversight experience for stream, wetland riparian and specialized habitat projects. His capability encompasses the restoration of stream, wetland and wildlife habitat projects for a variety of public agency and private clients, and spans all stages of project development including project assessment, restoration design, site selection, permitting, construction oversight and post construction maintenance oversight.

With a long history of design/build experience, Brian has an integral appreciation of the complexities of environmental restoration projects. He understands that it often requires more than a set of plans to make a project a reality, and knows how to work with landowners, contractors, project sponsors and agency representatives to meet or exceed project expectations. Understanding that ecological restoration projects should work at the landscape level, Brian works to fully integrate all projects with the surrounding environment to maximize ecological uplift.

Representative Projects

Petersen Ranch Wetland Mitigation Bank, Los Angeles County, California 2017

Brian oversaw the production of construction documents and a bid package, and managed construction for the Petersen Ranch Mitigation Bank, the largest wetland mitigation bank in California. The project involved removing a dam crest to return natural fluvial processes to a remnant alluvial fan and filling man made ponds to restore a complete valley bottom seasonal wetland system. Construction documents included custom details and specifications to clearly explain the specifics of the highly technical and innovative design. Brian also worked closely with the client throughout the bid process to ensure that the best value contractor was selected. Throughout construction, Brian was on site weekly and actively managed the contractor to ensure that the project was completed on time and under budget.

Soquel Canyon Mitigation Bank, Chino Hills, California 2017

Brian oversaw riparian planting and ongoing maintenance of the Soquel Canyon Mitigation Bank in Chino Hills California. His efforts included working closely with the contractor and WRA banking department to ensure that the efforts of the contractor were tailored to help the site meet success criteria set forth in the Development Plan. Brian also helped prepare and implement adaptive management strategies for the site brought on by the ongoing drought in Southern California.

Butte Creek Mitigation Bank, Colusa, California, 2017

Brian worked with WRA's banking and wildlife departments to prepare a conceptual plan for restoring floodplain riparian and wetland areas along Butte Creek for the restoration of juvenile salmonid rearing habitat. The design called for converting the former rice fields to mixed riparian and wetland areas to provide complex habitat for juvenile fishes in winter and spring. Other considerations included minimizing habitat for invasive predatory fish and efficiently moving sediment through the site.

and construction oversight. Coordinated with town officials, project sponsor and local watershed group to procure funding through the NFWF Chesapeake Bay Small Watershed Grants Program for the design/build project.

Wagman Farm Stream Restoration, York County, Pennsylvania, 2012
Brian was the Project Manager/Landscape Architect. He completed assessment and restoration design for Barshinger Creek and the associated floodplain wetlands on the Wagman Farm as part of a stream restoration project on the site funded through the EPA Section 319 Grants program. The creek on the site was experiencing rapid degradation associated with historic long term grazing and downstream channelization. The restoration design incorporated stone and log structures with heavy use of bioengineering practices to restore channel function and fish habitat. Channel elevation was also set to reconnect the creek to the broad floodplain to reduce erosive shear stress and velocity values and to enhance the existing floodplain wetlands. Held field meetings with regulatory agencies and procured all necessary permits for the project.

Hollow Run at Nixon Park Stream Restoration, Springfield Township, Pennsylvania, 2011
Brian was the Restoration Designer/Project Manager for this project to restore approximately 1,300 linear feet of eroding streambanks on a tributary to East Branch Codorus Creek. Coordinated with PAFBC to utilize habitat restoration structures and expedited the permitting process to ensure that the project was completed prior to the end of the Growing Greener grant period.

Miller Lane Farm Stream and Wetland Restoration, Monkton, Maryland, 2010
Brian was the Restoration Designer/Permitting Specialist. He completed assessment, design and permitting for the restoration of two second order tributaries and associated floodplain. The design included restoring a natural pattern, profile and channel dimensions to 2,400 linear feet of degraded stream channels, raising the channel inverts and grading legacy sediments on the floodplain to create an interactive stream/wetland/floodplain system. Permitting included sediment and erosion control, MDE/Federal waterway construction authorization and NPDES registration.

Mazza/Grandmarc Stream Restoration Design/Build, College Park, Maryland, 2009
Brian was the Restoration Designer/Permitting Specialist/Construction Manager. He completed assessment, natural channel design, sediment control planning, permitting, and construction management for the restoration of approximately 750 linear feet of severely degraded perennial stream channel and 420 feet of highly eroded intermittent channel in conjunction with the development of private student housing in College Park, Maryland. Perennial channel design elements included restoring stable pattern, profile and dimensions, and stabilizing invert grade and banks using crossvanes, boulder toe and single arm vane structures in conjunction with live staking and erosion control matting. The intermittent channel, which has an average grade of five percent, was stabilized using a series of boulder step pools lines with a cobble/gravel substrate.

Little Blackwater Restoration Site Design/Bid/Build, Dorchester County, Maryland, 2008
Brian was the Restoration Designer/Construction Manager. He acted as project manager for completing restoration design of the 735-acre Little Blackwater site in the town of Cambridge, Maryland. The project included restoring biological and hydrologic functions to agricultural drainage ditches by creating headwater "swamp run" morphology typical of low gradient systems. Careful consideration was given to off-site runoff and existing site features in creating a system that would effectively transport high flows, provide maximum water quality improvement benefits and enhance both aquatic and terrestrial wildlife habitat.

Bonnie View Estates Stream Restoration Design/Build, Baltimore County, Maryland, 2008
Brian was the Restoration Specialist/Construction Manager. Completed stream restoration design using natural channel design and step/pool morphology for a planned residential community on the grounds of a former golf course. The design involved creating a new road crossing and creating a channel in an area that was formerly an

INGRID C. MORKEN
Associate Landscape Architect
morken@wra-ca.com
o: 510.296.5023
c: 510.717.2731

Years of Experience: 14

Education

Master of Landscape Architecture, University of California, Berkeley

BA, Environmental Studies
Gustavus Adolphus College, St. Peter, Minnesota

Professional Affiliations/ Certifications

California Licensed Landscape Architect #5472

Certified Ecological Restoration Practitioner, #0128

Bay-Friendly Qualified Landscape Design Professional

American Society of Landscape Architects

Society of Ecological Restoration

California Native Grasslands Association

Ingrid Morken is a landscape architect specializing in the design of ecological restoration, park and open space, and sustainable development projects. She brings a diverse background in landscape architecture, environmental planning, and restoration ecology to her work. She received a Master of Landscape Architecture degree from UC Berkeley and is a licensed Landscape Architect in the State of California.

Ingrid has led the planning and design of a variety of ecological restoration projects throughout California, including stream and riparian, wetland, coastal scrub, and grassland habitats. In the process, she utilizes site design and construction methods which maximize ecological function and minimize impacts to adjacent lands and sensitive habitats. She also integrates projected sea level rise and resiliency to climate change into project design. In addition, she designs park and public access projects, often with the goal of preserving and enhancing the ecological character and aesthetics of the site while providing an engaging experience for the public. As a Bay-Friendly Qualified Landscape Design Professional, she understands and implements sustainable design strategies, such as low-water use plants and irrigation systems and the protection and conservation of soil and water resources. She currently serves as co-chair of the American Society of Landscape Architects Ecology & Restoration Professional Practice Network.

Representative Projects

Dotson Family Marsh Restoration and Public Access Plan, East Bay Regional Park District, Richmond, California

The goals of the Dotson (formerly Breuner) Marsh project are to create, restore, enhance, and protect 150 acres of tidal marsh, seasonal wetland, and coastal prairie habitat on the San Francisco Bay shoreline in the City of Richmond. In addition, the plan calls for an extension of the San Francisco Bay Trail and opportunities for public education. Ingrid prepared the concept plan and construction documents for the restoration of approximately 30 acres of tidal marsh and seasonal wetland habitat. Construction of the project was completed in 2017.

Bayshores Residential Project Wetland Reserve, Newark, California

The Bayshores residential development project includes the creation of a 4-acre wetland reserve as an amenity to the local residents and as mitigation for project wetland impacts. The wetland reserve is hydrologically connected to an adjacent tidal channel and includes the preservation and restoration of tidal wetland and upland areas. Ingrid was the lead landscape architect for the project and led the preparation of the conceptual plans and the construction documents, including the grading, planting, and irrigation plans for tidal wetland, grassland, and upland habitats. Construction of the project was successfully completed in 2017.

GEORGE SALVAGGIO, MLA, ASLA

Principal Landscape Architect & Restoration Biologist

salvaggio@wra-ca.com

o: 415.454.8868 x1190

Years of Experience: 22

Education

Master of Landscape Architecture, Cornell University, 1995

MS Computer Science, John Hopkins University, 1988

BS Biology and BS Mathematics, Dickinson College, 1980

Professional Affiliations/ Certifications

CA Licensed Landscape Architect, #4707

American Society of Landscape Architects

Special Recognitions/ Publications

ASLA Merit Award - Wetland Mitigation at the Santa Lucia Preserve

Northern California ASLA Honor Award – Bixby Marsh Wetlands Restoration and Public Access

Specialized Training

Project Management, Wetland Delineation

George Salvaggio is a Principal Landscape Architect with more than 20 years of experience in designing habitat restoration/mitigation projects, designing public open space projects, and planning and designing low impact development projects. George supervises the Landscape Architecture Department at WRA. He received his Master's degree in Landscape Architecture from Cornell University where he specialized in native plant propagation, wetland design, and wetland feasibility analysis. George is a licensed Landscape Architect in the State of California.

As a Principal and project manager for a variety of habitat mitigation and restoration projects, George has developed a variety of innovative approaches to modeling wetland hydrology, designing wetlands, and developing successful planting programs for wetlands. He is also responsible for designing public open space areas, specializing in providing public access to open space areas with water resources such as rivers, creeks, lakes, and shorelines. Often these projects have a water enhancement or habitat restoration component. George is also involved in planning and designing low impact development projects, which often include integrated storm water treatment systems, green roofs, the utilization of native plant material or plant material that utilize low amounts of water, the preservation of sensitive habitat areas, the conservation and reuse of topsoil and other soil resources, habitat restoration, and the reuse and recycling of construction materials.

Representative Projects

PUBLIC ACCESS and HABITAT RESTORATION PROJECTS

East Bay Regional Park District, Breuner Marsh Restoration and Public Access Project, Richmond, California

Breuner Marsh was a historic tidal marsh that had been filled. It is surrounded by tidal marsh habitat that is home for endangered species including the Salt marsh harvest mouse and Ridgeway's rail. It is located in an area where a large section of the SF Bay Trail is missing. The project includes the recreation of 30 acres of tidal marsh habitat and the integration of public access including the SF Bay Trail into an area with sensitive biological habitats. It represents an opportunity to preserve and expand critical tidal marsh habitat and allow the public to enjoy the beauty and wonder of tidal marshes.

George was the lead designer for the habitat restoration components of the project and developed the public access plan for the project. This included developing detailed grading plans, performing cut/fill analysis and performing an evaluation of how the project would be impacted with rising sea levels. George supervised a team of landscape architects that prepared the detailed construction drawings for the grading elements of the project and construction observation services for the project. The restoration components of this project were completed in 2015, and the public access features completed in 2017.

walking paths. George also supervised the preparation of construction drawings, details, and specifications for planting, irrigation, and other park improvements. Phase II of the project included a pond-side gazebo, a grove of established native alders at the pond, and a native perennial garden to attract butterflies. The project was completed in 2006 and is currently being enjoyed by the public.

SUSTAINABILITY AND LID PROJECTS

Avena Bella Low Income Housing Development – Sustainable Landscape Design, Turlock, California
George was lead landscape architect for this project. He designed a comprehensive sustainable design for the landscape. The design included rainwater catchment, integrated stormwater infiltration throughout the landscape, pervious paving, bioswales, California native plants, reduction in site stormwater infrastructure, low maintenance and low water use landscape, on-site food production, shading to reduce energy cost. This project will be built in the summer of 2012 and will be used as a case study for sustainable sites.

Pacific Commons Stormwater Treatment Wetland, Fremont, California
George was the restoration biologist and collaborating landscape architect for this project, which included integrating wetland and wildlife habitat into an 18-acre stormwater treatment wetland located adjacent to a public park. George prepared the fine grading plans for the project to create habitat types based on water depth and hydrology, guidance as to screening levels for identifying soil defects, plant species selection, and detailed plant establishment protocols that included the utilization of a temporary irrigation system. The design included remedies for difficult site conditions, such as elevated soil salinity, the potential for water fowl to eat the plant material, the potential for plant material to float away during the establishment period, and long term mosquito abatement.

Bay Meadows Stormwater Treatment Wetland, Redwood City, California
George was the consulting landscape architecture for the integration of wetland habitat into a 4-acre stormwater treatment facility for a new residential housing development. Site challenges included a high water table and saline water and soil conditions based on connectivity to the SF Bay. The site was graded to meet the specific water depth requirements of wetlands plants and plant selections were made based on the salt tolerance levels of plant species.

HABITAT RESTORATION AND MITIGATION PROJECTS

Elsie Gridley Vernal Pool Mitigation Bank, Solano County, California

George is the lead designer for the restoration of vernal pools and mima mound topography for the mitigation bank. The design includes the restoration approximately 40 acres of vernal pools and the restoration of mima mound topography on approximately 120 acres of uplands. Under his direction WRA prepared schematic design documents that served as the basis for the mitigation bank enabling instrument and permit applications. In addition, WRA prepared grading plans and acquired a grading permit from Solano, and is in the process of preparing the final construction documents for the projects. The design incorporates the following innovations: depth/volume design parameters based on the analysis of high resolution topography from vernal pool reference sites; template grading mima mounds; HEC/RMS modeling to demonstrate water harvesting and storm water attenuation.

Antonio Mountain Ranch Vernal Pool Mitigation Bank, Placer County, California

George was the restoration biologist and lead landscape architect for this project, which included creation of eight seasonal wetlands and 8,500 linear feet of new creek channels. George supervised the preparation of the construction documents for the creation of the wetlands and stream channels. WRA prepared the permit applications for the owner including applications for the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Game. In addition, WRA conducted five years of performance monitoring for the wetlands and stream channels.

San Francisco Public Utilities Commission, Alameda Creek Pipeline Replacement, Sunol, California
Construction of a natural gas pipeline created a barrier to fish passage on Alameda Creek, and Pacific Gas and Electric is developing plans to lower it. Removal of the associated concrete drop structure requires the design of a new stable channel. Ben was the lead engineer for the channel design. He directed subcontractors in collection of survey data, developed a digital terrain model of the existing site condition, created a design surface topography in AutoCAD Civil 3D, and performed two-dimensional hydrodynamics and sediment transport analyses.

San Francisco Public Utility Commission, Upper Tuolumne Temperature Study, Groveland, California
Construction of New Don Pedro Reservoir cut off hundreds of miles of salmonid habitat. Should anadromy be restored to the headwaters, temperature will be a limiting factor. Ben created a temperature model of nearly 20 miles of the Upper Tuolumne and developed a water management regime that will provide optimum thermal conditions for all life stages of salmonids while minimizing use of stored water.

US Army Corps of Engineers, Napa Salt Marsh Restoration, Napa, California
Industrial salt extraction has had a lasting impact on the once pristine tidal marshes and estuaries of San Francisco Bay. Napa Salt Marsh is an example of large scale restoration of salt ponds to tidal marshes and managed ponds. Ben provided technical oversight on engineering aspects of the project, including hydrodynamic modeling and civil design.

US Army Corps of Engineers, South Bay Shoreline Project, San Jose, California
Sea level rise continues to threaten our planet's coastal communities. Santa Clara Valley Water District worked with the US Army Corps of Engineers to develop a plan to protect San Jose and Milipitas from coastal flooding. The comprehensive plan included evaluation of flood risk from riverine sources. Ben developed two-dimensional hydrodynamic models of many of the creeks and floodplains to support the evaluation, and used GIS to develop floodplain inundation maps for existing and proposed conditions scenarios.

Presentations/Publications

Snyder, B., B. Bledsoe, L. MacDonald, and R. Mussetter (2005). Predicting Flow Resistance in Mountain Streams. Master's Thesis, Colorado State University, Fort Collins, CO, 2005.

Solano County Justice Campus Asset Protection
DUE DILIGENCE REPORT & BASIS OF DESIGN

Submitted to:
Solano County and Judicial Council of California

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LIONAKIS