AMENDMENT NO. 5

NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT AGREEMENT NO. 220223B (FC)

PROFESSIONAL SERVICES AGREEMENT

THIS AMENDMENT NO. 5 ("Amendment No. 5") **OF NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT AGREEMENT NO. 220223B (FC)** ("Agreement") is made and entered, effective as of the __ day of _____, 2025 by and between the NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, a special district of the State of California, hereinafter referred to as "DISTRICT," and HDR Engineering, Inc., a Nebraska corporation, whose mailing address is 2365 Iron Point Road, Suite 300 Folsom, CA 95630, hereinafter referred to as "CONTRACTOR."

RECITALS

WHEREAS, on January 4, 2022, DISTRICT and CONTRACTOR entered into the Agreement for specialized services to complete the design of the Floodwalls North of the Bypass Project (PROJECT) to a 35% level, as directed by the District; and

WHEREAS, on March 14, 2023, and June 18, 2024, DISTRICT and CONTRACTOR amended the Agreement to bring the PROJECT to final design and complete unanticipated additional analyses required for approval from the US Army Corps of Engineers (USACE) for the PROJECT; and

WHEREAS, on November 1, 2024, DISTRICT and CONTRACTOR amended the Agreement to expand the scope of work and related compensation; and

WHEREAS, on July 15, 2025, DISTRICT and CONTRACTOR amended the Agreement needed to support environmental compliance, cultural monitoring, and construction management related to PROJECT construction; and

WHEREAS, additional work is needed to support the design of the next phase of the PROJECT – The Imola to Hatt Floodwalls; and

WHEREAS, CONTRACTOR is willing to provide such additional professional services on the PROJECT design; and

WHEREAS, DISTRICT and CONTRACTOR now desire to modify the provisions of the Agreement to modify the scope of work and increase the maximum compensation by $6,984,710.00 to a new total of $17,846,772.00 and update the rates.

TERMS

NOW, THEREFORE DISTRICT and CONTRACTOR hereby agree to amend the Agreement as follows:

1. Paragraph 2 of the Agreement is hereby amended in full to read as follows:

Scope of services. CONTRACTOR shall provide DISTRICT those services set forth in Exhibit A, attached to the original agreement, Exhibit A-1, attached to Amendment No. 1, and Exhibit A-2, attached to Amendment No. 2, and Exhibit A-3, attached to Amendment No. 3, and Exhibit A-4, attached to Amendment No. 4, and Exhibit A-5 attached to this Amendment No. 5 incorporated by reference herein.

2. Paragraph 3, subd. (a), of the Agreement as to term of the agreement is hereby amended in full to read as follows:

Rates. In consideration of CONTRACTOR's fulfillment of the promised work as set forth in Exhibits A, A-1, A-2, and A-3, DISTRICT shall pay at the rates set forth in Exhibit B, attached to the original Agreement; as to the promised work as set forth in Exhibit A-4, the rates set forth in Exhibit B-1, attached to Amendment No. 4. Beginning on the effective date of this Amendment No. 5, in consideration of CONTRACTOR's fulfillment of the promised work, DISTRICT shall pay CONTRACTOR at the rates set forth in Exhibit B-2, as attached hereto and incorporated herein to this Amendment No. 5. CONTRACTOR will be allowed to submit an annual rate schedule adjustment each fiscal year based on the current Bay Area Construction Cost Index or another Index at the request of CONTRACTOR and approved by DISTRICT ENGINEER in writing.

3. Paragraph 3, subd. (c), of the Agreement is hereby amended to read as follows:

Maximum Amount. Notwithstanding subparagraphs (a) and (b), the maximum payments under this Agreement shall not exceed a total of SEVENTEEN MILLION EIGHT HUNDRED FOURTY-SIX THOUSAND SEVEN HUNDRED AND SEVENTY-TWO DOLLARS AND ZERO CENTS ($17,846,772.00) for professional services and expenses; provided, however, that such amounts shall not be construed as guaranteed sums, and compensation shall be based upon services actually rendered and reimbursable expenses actually incurred.

4. This Amendment No. 5 shall be effective as of the Effective Date first set forth above.

5. Except as provided in paragraphs (1) through (4), above, the terms and provisions of the Agreement shall remain in full force and effect as last approved.

[*REMAINDER OF PAGE LEFT BLANK INTENTIONALLY*]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment No. 5 of the Agreement No. 220223B (FC) to be executed as of the date written on the first page of this Amendment.

HDR ENGINEERING, INC., a Nebraska Corporation

By: _____
HOLLY L. KENNEDY, Senior Vice President

"CONTRACTOR"

NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, a special district of the State of California

By: _____
JOELLE GALLAGHER,
Chair of the Board of Directors

"DISTRICT"

APPROVED AS TO FORM Office of District Counsel By: *Shana A. Bagley* Deputy County Counsel Date: July 30, 2025	APPROVED BY THE BOARD OF DIRECTORS OF THE NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT Date: _____ Processed By: _____ Deputy Secretary of the District Board	ATTEST: NEHA HOSKINS Secretary of the District Board By:_____

EXHIBIT "A-5"

SCOPE OF WORK – AMENDMENT NO. 5

PROJECT BACKGROUND

The Napa River/Napa Creek Flood Protection Project (Project) was authorized by the Flood Control Act of 1965. The original approved plan is described in the Final Supplemental General Design Memorandum (SGDM) dated October 1998. The Project was designed to provide a 100-year level of flood protection to the City of Napa (downstream to Imola Avenue) while maintaining or enhancing the river's natural processes.

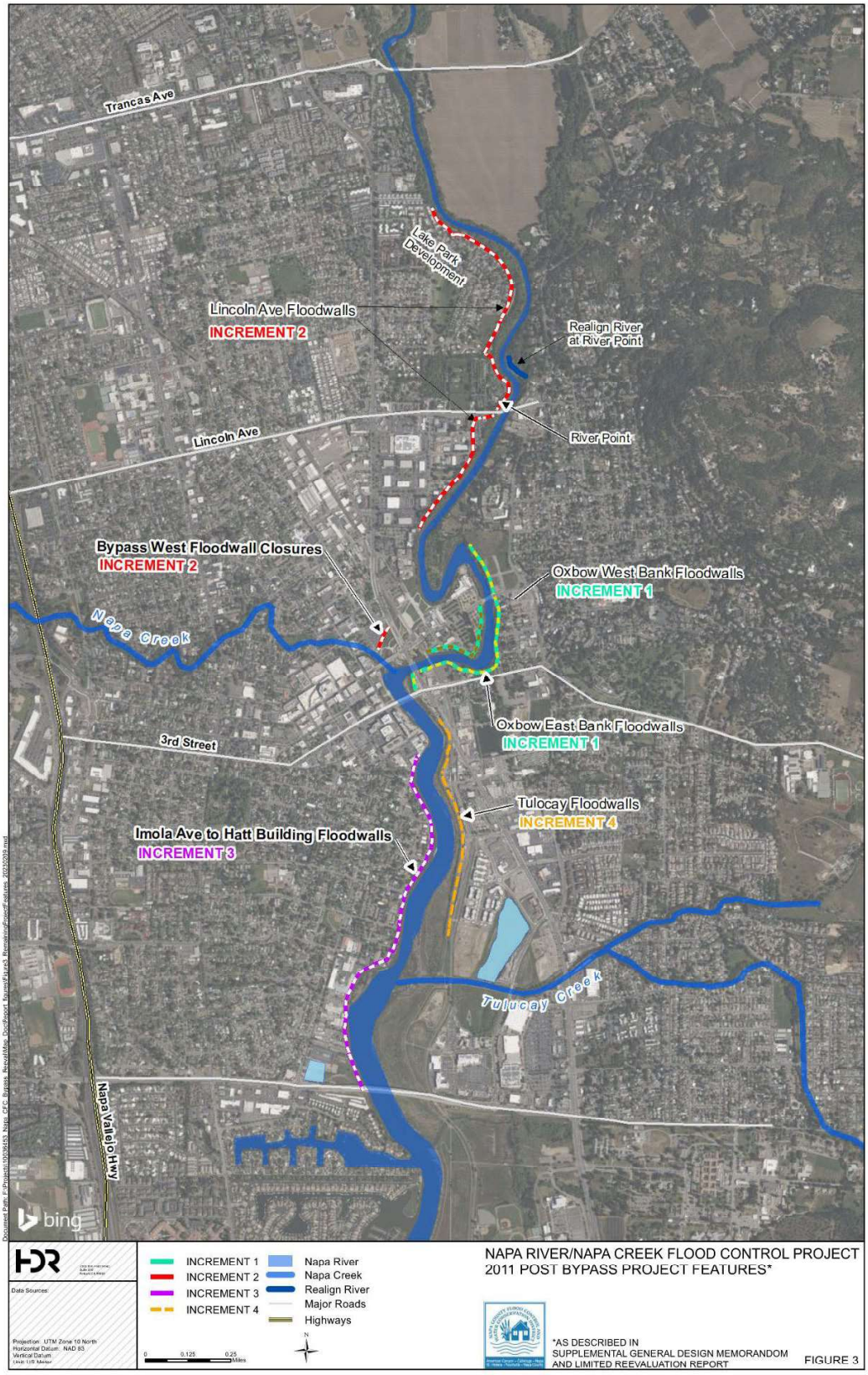
Construction of the Project's approved plan began in FY 2000, but due to shortfalls in federal appropriations, construction has been intermittent. The Napa County Flood Control and Water Conservation District's (NCFCWCD) most recent construction was the Bypass Channel, completed in 2015. At that time, the United States Army Corps of Engineers (USACE) determined the Bypass Channel was the last project feature that was economically justified for federal investment. To continue the Project and provide the needed flood risk reduction, NCFCWCD undertook an effort that included a value engineering study and an incremental analysis of remaining Project features to identify remaining increments that USACE could find economically justifiable. NCFCWCD retained HDR to assist with this effort and the study was called the Post-Bypass Value Engineering and Incremental Analysis (VEIA).

NCFCWCD completed the VEIA in 2017, and through that effort, NCFCWCD found additional economically justifiable project increments, primarily by eliminating the three pump stations in USACE's original SGDM. Elimination of these pump stations reduced costs and enabled two remaining project increments to achieve favorable Benefit-Cost Ratios (BCR). Those two remaining increments, Increments 2 and 3, are both on the west side of the Napa River as shown on Figure 1. Increment 2 includes floodwalls north of the bypass (also known as the Lincoln Area Floodwalls). Increment 3 includes the Imola to Hatt floodwalls. Following the USACE review of the VEIA, USACE produced a Federal Interest Determination, which essentially concurred with the VEIA's findings and confirmed federal interest in these two increments.

USACE received funding for these two increments in its FY 2021 Workplan, which required the need for an amendment to the Project Partnership Agreement (PPA). While the PPA process was underway, NCFCWCD moved forward with making changes to the floodwall alignment in the Ace & Vine, RiverPointe, and Lake Park areas to address stakeholder concerns, and with initiating the 35% design of the floodwalls north of the Bypass (Increment 2 in the VEIA).

NCFCWCD has since entered a Section 204 Memorandum of Understanding (MOU) with the USACE. Under this MOU, NCFCWCD will provide the design for the proposed work in accordance with the terms and conditions of the MOU and requirements of applicable Federal laws and implementing regulations, including guidance issued for Section 204, as amended.

Figure 1. Napa Project Increments Map



SCOPE OF WORK

The following scope of work progresses the design of Increment 3 from Reconnaissance Level Design to 100% Design in accordance with the Section 204 MOU.

TASK 1. PROJECT MANAGEMENT

A - Project Management

HDR's project manager will provide project management services for the task order's duration. Activities include coordination between HDR's design disciplines, developing and maintaining Quality Control and Quality Assurance (QA/QC) activities, and coordination with NCFCWCD and USACE. HDR's Project Manager will provide monthly invoices and project progress reports to NCFCWCD. The project progress reports will summarize the work performed during the month, the current task order budget, and schedule status. The project progress reports will also identify technical, budget, or schedule issues as needed.

HDR will develop a Project Management Plan (PMP) that presents the objectives, organization, scope of services, schedule, budget, communication protocols, document control, cost controls, invoicing procedures, and reporting. HDR will coordinate with NCFCWCD to comply with USACE Section 204 invoicing/reporting requirements consistent with Increment 2. The PMP will identify the key project delivery team (PDT) members, including HDR, NCFCWCD, and USACE.

HDR will develop a Quality Management Plan (QMP) that will provide the procedures and actions to be taken as part of the QA/QC process. The plan will identify key personnel that will conduct reviews of the project deliverables. The plan will layout the process for PDT reviews, Agency Technical Reviews (ATR) and Safety Assurance Reviews (SAR).

Deliverables:

- Monthly Invoices & Progress Reports (PDF)
- Draft and Final HDR PMP (PDF)
- Draft and Final HDR QMP (PDF)

Assumptions:

- Notice to Proceed will be provided on 8/12/2025. All work will be completed in a 24-month duration.
- The PMP will be updated when there are significant changes in scope or staffing.

B – USACE Review Plan

HDR will perform a review and provide comments to NCFCWCD and USACE on the development of the USACE Review Plan.

Deliverables:

- Review comments (MS Word)

Assumptions:

- One round of review will be performed by HDR.

C – USACE Implementation Plan

HDR will perform a review and provide comments to NCFCWCD and USACE on the development of the USACE Implementation Plan.

Deliverables:

- Comments in a Microsoft Word document on the Implementation Plan

Assumptions:

- One round of review will be performed by HDR.

D – USACE Design Recommendations Report

USACE is developing a Design Recommendations Report (DRR) summarizing work completed by the PDT (NCFCWCD, HDR, and USACE) to comply with federal regulations. In support of DRR development, HDR will provide technical input related to HDR's work to NCFCWCD and USACE for incorporation into the DRR.

Deliverables:

- Write-ups on technical sections for the Draft DRR (Microsoft Word)
- Write-ups on technical sections for the Final DRR (Microsoft Word)

Assumptions:

- HDR will provide write-ups on sections related to HDR's work only. A review of the full DRR is not included.

TASK 2. PROJECT MEETINGS AND SITE VISITS

A- NCFCWCD Coordination Meetings

HDR will attend weekly coordination meetings with representatives of NCFCWCD throughout the 24-month duration of the work. Meetings will inform the parties of progress to date, critical activities, interdependencies of work products, key issues and resolutions, and key decisions. HDR will develop agenda and meeting notes for each meeting.

Deliverables:

- Meeting agendas and notes (PDF)

Assumptions:

- NCFCWCD Coordination meetings will virtual and attended by up to four HDR professionals as needed.
- Meetings will be weekly for one year and biweekly for the second year.
- NCFCWCD Coordination Meeting duration is assumed to be up to one hour.

B – Biweekly PDT Coordination Meetings

HDR will attend biweekly coordination meetings with representatives of NCFCWCD and USACE, throughout the 24-month duration of the work. Meetings will inform the parties of progress to date, critical activities, interdependencies of work products, key issues and resolutions, and key decisions. HDR will develop agendas and meeting notes for each meeting.

Deliverables:

- Meeting agendas and notes (PDF)
- Decision log (PDF)

Assumptions:

- The PDT coordination meetings will be virtual and attended by up to five HDR professionals as needed.

- PDT Coordination Meeting duration is assumed to be up to one hour.

C – HDR Delivery Team Coordination Meetings

HDR design leads will attend coordination meetings to discuss ongoing coordination between the disciplines throughout the 24-month duration of the work.

Deliverables:

- Meeting agendas and notes (PDF)

Assumptions:

- Meetings will be held weekly to discuss ongoing coordination between the discipline leads and will be attended by the Project Manager, Deputy Project Manager, Civil Lead, Environmental Lead, Structural Lead, Geotechnical Lead, Utility Lead, Landscaping Lead, Transportation Lead, Scour Lead, RIDM Lead, and Quality Control Lead.
- Meetings will be virtual and up to 1 hour each.
- Meetings will be weekly for one year and biweekly for the second year.
- River Focus, as a subconsultant to HDR, will attend up to 6 team meetings.

D – Primavera Project Schedule and Monthly Project Schedule Updating Meeting

HDR will prepare an integrated Primavera P6 schedule that will show design tasks, durations, and interdependencies. HDR will coordinate with NCFCWCD to provide monthly schedule updates showing the latest status of the project.

Deliverables:

- Initial Primavera Project Schedule (PDF)
- Monthly Schedule updates (PDF)

Assumptions:

- The Monthly Project Schedule Updating Meeting will be up to two hours each month for the 24-month duration, will be virtual, and will be attended by up to four HDR professionals.

E – Design Team Site Reconnaissance Visits

HDR will conduct site reconnaissance visits of the project area during the design phase. The intent of the site reconnaissance is to confirm field conditions relative to as-built documents, and to assess site characteristics and constraints affecting the project alignment and design of key project features. Photographs of site features will be taken and pertinent observations of site conditions will be recorded.

Deliverables:

- Site photos (digital copies in .jpg format)

Assumptions:

- HDR staff will perform 15 field visits for eight hours per trip.
- Permission to enter private property, if required, will be provided by NCFCWCD.

TASK 3. FINALIZE PREFERRED ALTERNATIVE FOR INCREMENT 3

HDR performed a reconnaissance level design for Increment 3 as part of Amendment 1 for the Project. Additional studies are required to progress the Increment 3 design efficiently into the final design

process. The following subtasks provide the steps necessary for development of the preferred alternative.

A – Closure Structure Alternatives Analysis Memorandum

HDR will develop an alternatives analysis memo and provide recommendations to aid NCFCWCD in selecting a preferred closure structure along the floodwall at openings for pedestrian and vehicular access. Similar to Increment 2, five closure structures will be analyzed including: stoplogs, swing gates, miter gates, rolling (roller) gates, and trolley gates. The memorandum will build upon a similar document developed for Increment 2, with the application of an updated scoring matrix.

The document will be submitted to NCFCWCD for review and comment. Comments will be addressed then a final document will be submitted for NCFCWCD to select a preferred alternative to move forward into design.

Deliverables:

- Draft and Final Closure Structure Alternatives Analysis Memorandum (PDF).

Assumptions:

- NCFCWCD will provide the updated weighting factors corresponding to each criterion.
- A two-hour workshop will be held between the City of Napa and HDR to finalize the scoring matrix and select the preferred alternative.

B – Geometric Approval Drawings and Basis of Design

Increment 3 Reconnaissance Study drawings have been prepared under Amendment 1 and are included in Attachment 1. These drawings will be further progressed to develop Geometric Approval Drawings to be submitted to the City of Napa, Fire and Police for review. The focus of the Geometric Approval Drawings will be to clarify traffic direction along Riverside Drive and the final layout of the Pine Street, Cross Street, and Riverside Drive intersection. Geometric Approval Drawings will include a series of plan views showing the proposed traffic direction along with the preliminary flood control project, as well as typical sections at pertinent locations, similar to the Reconnaissance Study Drawings.

A draft Basis of Design Memorandum (BODM) will be prepared and submitted to NCFCWCD for review and comment. The BODM will summarize the results of the Geometric Approval Drawings and other key design criteria to be utilized in development of the 15% Level Design. The design will be based on appropriate USACE Engineering Manuals consistent with the Increment 2 project.

Comments will be addressed, in writing, then a Final BODM will be submitted for backcheck and approval.

Deliverables:

- Draft and Final Geometric Approval Drawings (11x17 PDF)
- Draft and Final Basis of Design Memorandum (PDF)
- Written responses to comments (Microsoft Word)

Assumptions:

- The design criteria and considerations used to set the top-of-wall elevations will not deviate significantly from those used to set design elevations for the portions of the project already constructed.

- The quantity of plan views or sections will not increase from those included in the draft plan set (Attachment 1).
- The BODM will be finalized in one iteration.
- Geometric Approval Drawings will be approved by the City of Napa, Fire and Police and will be based on the Increment 3 Reconnaissance Level Design.

C – Traffic Operations Analysis

Traffic operations will be evaluated along Riverside Drive, between the Division Street/Brown Street intersection at the north end and Ash Drive at the south end, to support CEQA. The following key scenarios (from a traffic operations standpoint) will be evaluated:

- Existing conditions (assumes "No Build" or "No Project" conditions).
- Existing with Increment 3 Project conditions and Riverside Drive as one-way route (Northbound only) based on the reconnaissance level design sections.

Traffic operations will be qualitatively evaluated by considering existing and proposed number of travel lanes and lane widths, current and expected average daily traffic (ADT) volumes (autos and trucks) along impacted roadway segments and impacts to bike/pedestrian operations and on-street parking. Recent years' traffic safety data (recent collision data along study segments of Riverside Drive) will be requested from the City and the data reviewed and summarized. For project alternatives that involve elimination of one direction of travel along Riverside Drive, traffic operational impacts on adjacent parallel routes and anticipated traffic recirculation patterns will be reviewed and adverse operational impacts along parallel routes be qualitatively described. For alternatives that involve traffic recirculation to adjacent neighborhood streets, Vehicle Miles Traveled (VMT) impacts will be qualitatively described and documented to support project transportation impact evaluation under CEQA.

Deliverables:

- Draft and Final Traffic Operations Analysis Technical Memorandum (PDF)
- *Written responses to comments*

Assumptions:

- Current or latest available ADT data, and weekday AM and PM peak hour traffic count data at key intersections and segments along Riverside Drive and key parallel streets will be provided by the City. No new traffic count data collection is proposed.
- Peak hour level operational evaluation of intersections is not proposed/anticipated at this time.

D – Finalize Geometric Level Design

HDR will progress the Reconnaissance Design and Geometric Approval Drawings for Increment 3 to a consolidated design package. Key features include the tie-ins to the Hatt Building and Imola Avenue Bridge areas, and intersection design. Design will consist of plan and profile sheets with typical cross-sections and will focus on type, size and location (to include alignment) of the flood risk reduction measures, and include hydraulic, geotechnical, structural, transportation and civil engineering aspects. The design will be used to support assessment of real estate needs, develop an OPCC, and assess potential environmental and residential impacts.

Access and construction considerations, potential impacts to adjacent properties, and need for easements will be considered. Approximate quantities will be developed for the key facility types in AutoCAD,

with onscreen software, or calculated in Microsoft Excel. A Class 4 OPCC, per USACE Engineer Regulation (ER) 1110-2-1302, will be prepared in Microsoft Excel, and key assumptions will be documented. Appropriate contingencies will be added to the costs and notable cost risks will be documented. Cost data will be based on local construction market conditions, previous project cost estimates, and reasonable assumptions of construction methodology and associated labor, equipment, and material costs

Deliverables:

- Draft and Final Geometric Level Design Plans (11x17 PDF)
- Draft and Final OPCC (PDF)
- Written responses to comments

Assumptions:

- The quantity of plan views or sections will not increase from those included in the Geometric Approval Drawings.
- There will be one round of review and comments.
- Real estate assessments will be completed by others.

E – Public Meetings

NCFCWCD will lead the public meeting efforts with support from HDR's technical leads. HDR will prepare production materials that include graphic renderings, PowerPoint presentations, and informational pamphlets in coordination with NCFCWCD.

Deliverables:

- Production of materials (PDF, PowerPoint)

Assumptions:

- Meetings will be in person and attended by up to three HDR personnel.
- Materials needed for public meetings can be derived from work products associated with the above tasks.
- Two (four-hour) Project-wide public meetings.

F – 35% Basis of Design Memorandum

HDR will develop a 35% BODM that will build on the Planning Level Basis of Design and expand to cover design criteria, standards, and considerations used for development of the 35% Design.

Deliverables:

- Draft and Final 35% BODM (PDF)
- Written responses to comments (Microsoft Word)

Assumptions:

- The design criteria and considerations used to set the design for top-of-wall elevations for proposed improvements will not deviate significantly from those used to set design elevations for the portions of the project already constructed.
- The BODM will be finalized in one iteration.

TASK 4. HAZARDOUS AND TOXIC MATERIALS SUPPORT

A – Coordination and Toxic Materials Support

NCFCWCD will lead the Phase I Environmental Site Assessment (ESA) and HDR will provide minimal support in the form of response to comments and questions by NCFCWCD that arise during the Phase I ESA.

Deliverables:

- Written email responses to comments from NCFCWCD.

Assumptions:

- NCFCWCD will lead the Phase I ESA.
- HDR will have one Senior Environmental Planner attend up to four, one-hour virtual meetings and respond to questions on the Phase I ESA.

TASK 5. SUPPLEMENTAL SURVEY

A – Supplemental Survey

RSA+, as subconsultant to HDR, will perform a supplemental ground survey of the area near Imola Avenue (Figure 2) and widen existing topographic information along the project alignment (Figure 3). Above ground features will be surveyed in addition to the topographic data. A combined topographic survey file will be provided incorporating the additional areas for use in design, including survey control information.

Figure 2. Supplemental Survey Location

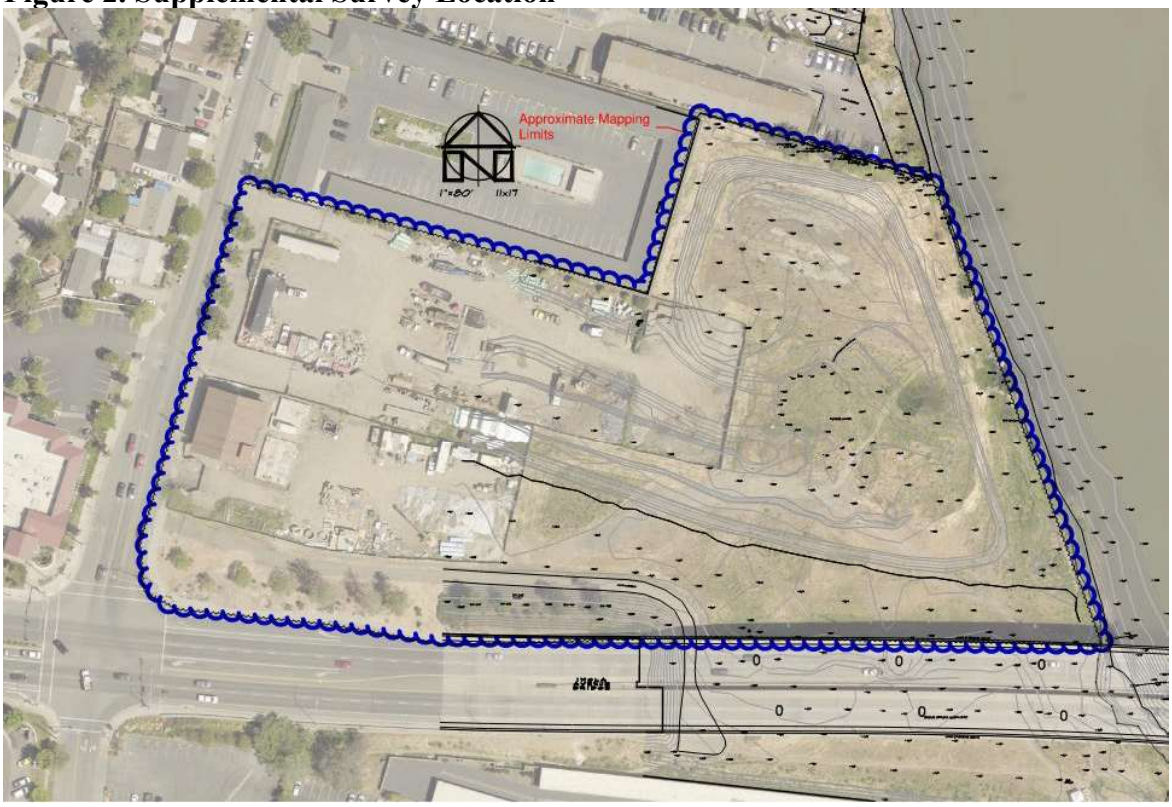


Figure 3. Updated Topographic Survey Corridor

Deliverables:

- Updated Topographic Survey CAD File compatible with AutoCAD 2024 (XML, DWG, and PDF)

Assumptions

- Access is provided by NCFCWCD to perform the field survey.

B – Potholing Services

RSA+ will perform approximately 20 potholes at yet to be determined locations along the project alignment. This scope assumes the potholing efforts will be completed in up to two groups. Pothole sites will have USA location services performed prior to potholing activities. Potholing cores will remove asphalt concrete (AC) plugs, if needed, and Vactron native material. Cores will be backfilled with sand, concrete, and AC per City of Napa standards when indicated or required. Traffic or Pedestrian Control Plans will be developed, submitted, and implemented as required for each potholing core location and encroachment permits will be obtained to perform the work.

Deliverables

- Traffic/Pedestrian Control Plan (PDF)
- Encroachment permits (PDF)
- Updated Topographic Survey CAD File with subsurface findings compatible with AutoCAD 2024 (Electronic)

Assumptions

- Pothole locations to be finalized prior to start of potholing services.
- Access is provided by NCFCWCD to perform the field survey.

TASK 6. HYDROLOGY AND HYDRAULICS

A – Review/Update Hydraulic Models and Assess Floodwall Heights

HDR (with subconsultant River Focus) will review the current hydraulic models and documentation for the Project. For floodwall design, as well as analysis of the potential impacts of the floodwall project, a suite of model conditions will be performed:

- Pre-Project Conditions
- Current Interim Conditions
- Post-Floodwall Project Conditions – This model will be compared to Current Interim Conditions and/or Pre-project Conditions to analyze potential impacts, which may be considered temporary impacts.
- Full Buildout Project Conditions – This model (including as-built, current planned, and future components) will be used to calculate the required floodwall elevations because it provides the maximum flood elevations in the Napa River (flood wall heights will be set based on FEMA freeboard requirements [44 CFR 65.10(b)(1)(i)]). Additionally, this model will be compared to pre-project conditions to analyze permanent impacts

River Focus will evaluate whether properties will experience a temporary or permanent increase in 100-year water surface elevation that was not addressed in the project Conditional Letter of Map Revision (CLOMR).

The HEC-RAS 1-D models for the Napa River developed for Increment 2 will be used for the Increment 3 floodwall design. The HEC-RAS 2-D model for the Project will be used for streambank stabilization design, as well as the risk analysis for the floodwall design. Both models will be updated using the latest survey data for the Project provided in Task 6.

Deliverables:

- Modeling methodology, criteria, and results (provided in the Design Documentation Report (DDR) – see below)

Assumptions:

- None.

B – Reconnaissance Design through 35% Design

River Focus will update the hydraulic modeling and floodwall analysis based on the 15% design plans. Model results will be reviewed and summarized, including computed flood elevations, flood extents, and flow velocities. Following comments on the reconnaissance level plans, the hydraulic modeling and floodwall analysis will be updated to reflect the 35% design plans. Model results will be reviewed and summarized, including computed flood elevations, flood extents, and flow velocities. A quality control review of the updated models will be performed, and comments will be addressed and backchecked.

River Focus will evaluate where drainage penetration(s) should be located in the floodwall segments to meet USACE and FEMA requirements. The XP-STORM hydraulic model for interior drainage will be updated and used for analyzing the drainage locations.

River Focus will confirm where closure structures are required to meet USACE and FEMA requirements. The XP-STORM hydraulic model for interior drainage will be updated, as needed, and used for analyzing the drainage and closure structure locations.

Deliverables:

- Results will be included in the DDR (see below).

Assumptions:

- Existing USACE hydrology will be used; no revisions to the hydrology are anticipated.
- Completion of a new Risk and Uncertainty analysis is not included in this scope of work.
- Pump station analysis is not included in this scope of work.

C – 65% through 100% Design

River Focus will update the HEC-RAS 1-D and 2-D hydraulic modeling and floodwall analysis based on the 65%, 95%, and 100% design level plans. Model results will be reviewed and summarized, including computed flood elevations, flood extents, and flow velocities.

River Focus will perform a field reconnaissance investigation of the project area to confirm current river and overbank conditions, and findings will be incorporated into the 65% design hydraulic models.

To analyze the potential impacts of the floodwall project, the 1-D hydraulic model results under post-floodwall project conditions will be compared to current interim conditions and/or pre-project conditions. These may be considered temporary impacts.

To analyze permanent impacts, the Full Buildout Project Conditions will be compared to pre-project conditions. River Focus will determine if properties experience a temporary or permanent increase in 100-year water surface elevation that was not addressed in the project CLOMR. This analysis will be performed at the 65% through 100% design levels.

River Focus, as a subconsultant to HDR, will provide updated 1-D and 2-D hydraulic models to be used in support of scour and erosion control design.

Deliverables:

- Revised hydraulic models (HEC-RAS)
- Results in DDR (see below)
- Documentation of internal quality control reviews

Assumptions:

- Existing USACE hydrology will be used; no revisions to the hydrology are anticipated.
- Risk & Uncertainty (R&U) analysis will not be used for determining floodwall elevations and is not included in the scope of work.
- Pump station analysis is not included in this scope of work.

D – DQA, ATR and SAR Coordination – 35% through 100% Design

River Focus will coordinate with HDR to provide support during the USACE and NCFCWCD review of the 35%, 65%, 95%, and 100% Drawings, Specs, OPCC, and DDR.

Deliverables:

- Responses to hydrology/hydraulics comments

Assumptions:

- None.

E – Support for Risk Analysis

River Focus will use the HEC-RAS 2-D hydraulic model for Full Buildout Project Conditions to calculate/estimate the overtopping flow rates. The frequency of these overtopping flows will be estimated by extrapolation using a flood-frequency curve based on the USACE hydrology. Concurrent flows for major tributaries to the Napa River in the study reach will also be estimated, and extreme event flow hydrographs will be developed for the Napa River and tributaries.

River Focus will model the following scenarios, as required for the risk analysis, based on direction provided by HDR:

- Overtopping without floodwall breach – two model scenarios
- Floodwall breach prior to overtopping – one model scenario
- Floodwall breach with overtopping – one model scenario

River Focus will adjust the hydraulic model domain, if necessary, to accommodate the extreme floods required for the risk analysis. A sensitivity analysis will be performed for the breach location, with two locations modeled for the floodwall breach prior to overtopping model scenario.

Deliverables:

- HEC-RAS hydraulic models and results for the risk analysis (Electronic)
- Documentation of internal quality control reviews (PDF)
- HDF files, model terrain, and flood boundary polygons (Electronic)

Assumptions:

- Floodwall overtopping and/or breach modeling will be performed for full buildout project conditions only.
- Hydrologic analysis is limited to extrapolation of existing USACE hydrology.

TASK 7. SCOUR AND EROSION PROTECTION

A – Bank Stability and Toe Erosion Model (BSTEM) Development

The scour and erosion protection analyses will be based upon the hydraulic models prepared under Task 6. HDR will review the 1-D and 2-D hydraulic models to identify changes that need to be reflected in the scour and erosion protection analyses and design as the Project design progresses. H&H Model updates will be completed, as needed, to support scour and erosion.

HDR will utilize the HEC-RAS 1-D hydraulic model for full buildout project conditions developed in Task 6 to develop an unsteady flow Bank Stability and Toe Erosion (BSTEM) model.

The BSTEM model will include up to ten cross section locations, consistent with the locations of seepage and stability analyses to be performed as described in Task 9. Only the right bank adjacent to the proposed floodwall will be evaluated in the BSTEM model. The edge-of-bank and top-of-toe parameters will be determined from review of topographic data and from site photographs.

Cross section materials will be determined specific to each of the ten cross sections to be included in the BSTEM analysis. Soil strength parameters will be developed from review of the laboratory testing data from the geotechnical analysis in Task 9 and the USACE Napa River Geotechnical Basis of Design

Report (BODR). The NCHRP-Erosion soil test database (Briaud, 2018) will be used to determine critical shear stress and erodibility coefficient based on the plasticity index and saturated unit weight of soils.

Deliverables:

- Model results included with lateral erosion evaluation in DDR

Assumptions:

- The model will utilize the geometry from the HEC-RAS 1-D hydraulic model for full buildout project conditions with no changes.
- The right bank adjacent to the proposed floodwall will be evaluated. Erosion of the left bank is not included in this scope of work.
- The unsteady flow model will be developed for the proposed condition BSTEM analysis only. The model is not intended to be used for the hydraulic analyses in Task 6.

B – Lateral Erosion Analysis

The BSTEM model will be used to calculate a rate and extent of lateral erosion for various storm magnitudes and durations at up to ten cross section locations, consistent with the locations of seepage and stability analyses to be performed as described in Task 9. Five storms will be developed using the 5-day, 100-year design storm from the 2-D model and historical data obtained from the USGS Napa stream gauge #11458000:

- The 2005-2006 storm event from December 2005 through April 2006. This event includes a series of medium to large storm events, with a peak flow rate of 29,600 cfs on December 31, 2005.
- The 1998 storm event. This event includes a series of medium to large storms in rapid succession from January 1998 to February 1998 with a peak flow rate of 19,800 cfs.
- The 2005-2006 storm event from December 2006 to January 2006, appended with the 100-year design storm hydrograph at the end of the model run. This event includes a peak flow rate of 29,600 cfs closely followed by the 5-day, 100-year design storm event with a peak flow rate of 44,370 cfs at Napa River south of Tulucay Creek.
- The 2005-2006 storm event hydrograph from December 27, 2005, to January 9, 2006, extrapolated to the 100-year design storm event peak flow rate of 44,370 cfs at Napa River south of Tulucay Creek.
- The 5-day, 100-year design storm as used in the 2-D HEC-RAS model.

For this analysis, it is assumed the sediment transport module will be activated with the BSTEM analysis but will not require calibration. A sediment transport analysis was performed by Phillip Williams and Associates (PWA) as a part of the Napa River Flood Damage Reduction Plan (PWA, 1997) that did not show significant degradation or aggradation within the Increment 3 Project reach, as such, sediment transport outside the select cross sections to be evaluated for lateral erosion will not be considered as a part of this BSTEM analysis. A singular sediment boundary condition will be evaluated, sediment transport results will not be presented, and calibration of the sediment transport model will not be required, as the focus of the BSTEM model will be lateral erosion.

The analysis will present the rate and magnitude of lateral erosion at each cross section for each design storm event. The analysis will determine if toe and bank protection is necessary, or if NCFCWCD will be able to continue to monitor lateral erosion and perform emergency repairs as a part of an adaptive management operation and maintenance program.

To supplement the BSTEM lateral erosion analysis, the probability of erosion failure will be calculated with the USACE Risk Management Center (RMC) Riverine Suite-Erosion Toolbox, which uses water surface elevations and velocities for loading events up to the top of the floodwall to estimate the conditional probability of failure due to surface erosion on the waterside of a levee.

Deliverables:

- HEC-RAS 1-D hydraulic model with BSTEM analysis
- Lateral erosion estimates
- Failure probability charts from RMC Riverine Suite-Erosion toolbox

Assumptions:

- While the sediment transport module will be active for the analysis, sediment transport will not be evaluated with the BSTEM analysis, only lateral erosion will be determined.
- The sediment transport boundary condition will not require additional data collection or calibration.
- The BSTEM analysis will be performed using the HEC-RAS 1-D hydraulic model for full buildout project conditions only.
- Because of the inherent sensitivity of scour calculations, the BSTEM analysis will not be calibrated excepting through visual "order of magnitude" comparison with historical aerial photographs.

C – Bank Stabilization Design

Based on the results of the lateral erosion analysis determined in Subtask B, for locations on the right bank of the Napa River that will require bank stabilization, HDR will evaluate and recommend methods of bank protection, bank protection limits, and sizing of required protection. Potential bank stabilization methods include but are not limited to seeding, bio-engineered bank protection methods, and rock slope protection. For areas that will require bank stabilization, toe scour will be determined, and rock slope protection will be sized to provide protection to the toe scour depth. Bank protection materials will be designed based on allowable velocities and critical shear stresses from the 1-D hydraulic model. Typical section plan sheets will be provided for the 35%, 65%, 95%, and 100% submittals.

Analysis methods, criteria, results, and recommendations will be documented in the DDR.

Deliverables (Consolidated Deliverable with other Disciplines):

- Scour analyses, design calculations and recommendations for toe scour rock slope protection, and design calculations and recommendations for bank stabilization will be documented in the DDR
- Bank Protection Typical Section Drawings (11" x 17" PDF)
- Technical Specifications (PDF)

- Written response to comments from the DQA and ATR comments

Assumptions:

- Scour analyses and recommendations for scour countermeasures will be performed for areas which require bank stabilization only, based on the results of the lateral erosion analysis performed in Subtask B.
- Up to 8 typical sections for bank protection will be provided.
- Hydrologic and hydraulic analyses will be provided in Task 6.
- Habitat enhancements such as Large Woody Debris, Root Wads, etc. are not assumed to be included in this design. Design of such measures is not included in the scope of work and fee estimate.

D – Overtopping Scour Evaluations and Countermeasure Recommendations

HDR will evaluate overtopping erosion using the RMC scour behind floodwalls toolbox. Up to four locations will be evaluated using water surface elevations and durations from the overtopping flood event in the HEC-RAS 2-D hydraulic model for full buildout project conditions as determined in Section 6. Vegetal cover estimates (when applicable) will be determined from the Landscaping team. Soil strength and erodibility parameters for the lateral erosion analysis will be determined from the geotechnical analysis in Task 8 and from the BODR. Erodibility parameters for critical shear stress and will be determined from statistical analysis of the NCHRP-Erosion soil test database (Briaud, 2018) based on the plasticity index and saturated unit weight of soils.

HDR will evaluate the potential for scour at storm drain outfall locations that penetrate the proposed floodwalls. HDR will determine the magnitude of scour at the outfall based on the flow rates and velocities determined for each pipe. It is assumed the hydrologic and hydraulic analyses for each storm drain will be provided as a part of Task 6.

At each outfall to be evaluated, HDR will calculate/estimate the magnitude of scour and recommend scour countermeasures based on review of existing scour at the site, and using the procedures described in the FHWA Publication No. FHWA-NHI-06-086, *Hydraulic Engineering Circular No. 14*, Third Edition, Published July 2006.

HDR will size scour countermeasures and include design details and specifications for scour countermeasures. Analysis methods, criteria, results, and recommendations will be documented in the DDR.

HDR will review the results of the HEC-RAS 2-D hydraulic model developed in Task 6 for full buildout project conditions and compare peak velocities from the model to allowable velocities for various proposed land cover values and soil types based on the proposed landscaping plans and the geotechnical analysis in Task 8. For areas with velocities and shear stresses greater than allowable values, HDR will investigate local scour caused by the floodwall and, as appropriate, recommend scour countermeasures. Analysis methods, criteria, results, and recommendations will be documented in the DDR.

Based on the results of the overtopping erosion analyses, HDR will coordinate with USACE to evaluate the necessity for scour countermeasures or design changes to mitigate overtopping erosion. Potential mitigation measures include rock slope protection or other erosion protection, redesign of foundations, or redesign of the floodwall to allow for overtopping at other parts of the system which are protected

from erosion (per EM 1110-2-2502). HDR will size appropriate scour countermeasures and develop details and specifications for scour countermeasures. Analysis methods, criteria, results, and recommendations will be documented in the DDR.

Deliverables:

- Calculations and recommendations for erosion and scour mitigation will be included in the DDR.
- Specifications and details for scour mitigation to be coordinated with the civil design team for inclusion in the design deliverables.

Assumptions

- None.

E – Support for Risk Assessment

HDR will provide additional Risk Assessment Analyses for up to two locations previously analyzed. HDR will determine lateral erosion using BSTEM as described in Subtasks B and C considering the overtopping storm developed for the Risk Assessment in Task 7. Soil parameters for use in the revised BSTEM analysis will be coordinated with the geotechnical team.

HDR will use the RMC Riverine Suite-Erosion Toolbox to provide additional lateral erosion analyses to support the Risk Assessment determination. HDR will evaluate the probability for erosion and foundation failure at up to two locations. The RMC Riverine Suite-Erosion Toolbox uses the water surface elevation, velocities, and durations from the overtopping storm developed for the Risk Assessment in Task 7.

Deliverables:

- Lateral scour calculations for inclusion in the Risk Assessment Memo.

Assumptions:

- Hydrologic and hydraulic analyses will be provided in Task 7. No additional hydrologic or hydraulic analysis will be provided with this subtask.
- It is assumed up to two cross section locations will be analyzed to support the Risk Analysis.
- Soil strength and erodibility parameters determined from available test results from BODR and Geotechnical analysis in Task 8.

F – DQA, ATR and SAR Coordination – 35% through 100% Design

HDR will develop responses to review comments during the USACE and NCFCWCD review of the 35%, 65%, 95%, and 100% Drawings, Specs, OPCC, and DDR.

Deliverables:

- Responses to comments

TASK 8. GEOTECHNICAL

A – Field Exploration and Laboratory Testing

The proposed subsurface exploration program will focus on supplementing existing information presented in the USACE Napa River Geotechnical Basis of Design Report (BODR) where additional data are needed for design. The actual number and locations of explorations will be determined during planning in the beginning of the program. For estimating purposes, HDR has allocated performing up to

16 test borings to a depth of 60 feet along or near the proposed floodwall alignment. Up to 6 bulk samples will also be obtained along the edge of the adjacent roadway for pavement design.

Prior to conducting the field work, HDR will prepare a Field Work Plan and HASP, obtain the applicable encroachment and drilling permits, check site access, and check for the presence of underground utilities by contacting Underground Service Alert (USA). NCFCWCD will prepare a Categorical Exemption (Cat Ex) to support geotechnical investigations. In support of this, HDR will conduct limited desktop environmental reviews of publicly available databases, aerial imagery, and other existing and readily available sources of information to verify that the geotechnical investigations will not have potential environmental impacts.

HDR will develop environmental protocols for NCFCWCD's consideration to be included as part of the geotechnical investigations (i.e., archaeological and biological worker awareness training, BMP fencing). HDR will provide the aforementioned relevant information to NCFCWCD for their compilation of the Cat Ex package. NCFCWCD will prepare the NOE form and will submit the NOE to the County Clerk for compliance with CEQA. NCFCWCD will be responsible for paying the filing fee for the NOE.

HDR will retain and coordinate with appropriate exploration subcontractors to select appropriate exploration equipment to access the desired exploration locations, to the extent that is reasonable and practical. This scope and fee do not include measures such as mobilizing barges or rafts, nor preparing temporary pads to explore hard-to-access and potentially environmentally sensitive areas. Drill cuttings and fluids will be generated from the borings. Drill cuttings and fluids will be contained in drums and transported to a nearby temporary storage area provided by NCFCWCD. Following chemical testing of samples of the drummed materials, we will arrange to have the materials transported to an appropriate disposal facility. This scope and fee assume that the subsurface materials encountered are free of contaminants.

A laboratory testing subcontractor will be retained to perform geotechnical laboratory tests on selected samples obtained from the borings. Testing will include moisture content, density, Atterberg limits, gradation, consolidation, and shear strength, as appropriate.

Deliverables:

- Logs of test borings and laboratory test results to be included in 35% DDR (PDF only)
- Field Work Plan (PDF)
- HASP (PDF)

Assumptions:

- Explorations will be performed during regular weekday work hours.
- 16 borings can be completed in a maximum of 4 weeks
- HDR will be provided ready access to proposed exploration locations.
- Soil is free of contaminants.
- In soils, foundation, groundwater, and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration, and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect total cost and/or execution. These conditions and

cost/delays associated with such variances are not the responsibility of HDR and, if such conditions impact HDR's services, the parties will negotiate an equitable adjustment to HDR's fee and/or schedule for performance.

B – Geotechnical Engineering Analyses and Recommendations 35% Design

Based on information from subsurface conditions from the explorations and laboratory tests, HDR will prepare plan and profile figures presenting interpreted geotechnical and geologic conditions along the project alignment. HDR will divide the alignment into reaches with similar subsurface conditions and select a representative cross section for each reach. HDR will then select soil parameters for analysis of each cross section.

HDR will perform engineering analyses to develop 35% level geotechnical conclusions and recommendations for the proposed project. Based on the current concept, the proposed floodwall will consist of a system of T-walls and I-walls with little to no raises in existing site grades. Thus, significant magnitudes of floodwall settlement are not anticipated. For cost estimating purposes, HDR has allocated performing settlement analyses at up to four locations along the project alignment.

HDR will perform seepage and stability analyses for the proposed floodwall system. For cost estimating purposes, HDR has allocated performing seepage and stability analyses for up to 10 cross section locations. For each cross-section location, seepage and stability will be performed for one floodwall geometry and two water surface elevations (100-year water surface elevation) and water at top-of-wall for the following conditions:

- Seepage (both levee through seepage and underseepage)
- Stability under steady-state seepage conditions
- Stability at the end of floodwall construction
- Stability under rapid drawdown loading conditions (when floodwaters recede)
- Stability under seismic loading, including estimated magnitudes of liquefaction induced levee and floodwall settlement and pseudo-static lateral displacement.

HDR will perform engineering evaluations and analyses to develop geotechnical recommendations for the following, as appropriate: earthwork, floodwall and gate structure foundation support, and lateral earth pressures or earth pressure coefficients on floodwalls. HDR will perform engineering evaluation and analysis to develop new roadway pavement section options. The pavement section options will be determined using the gravel equivalency method for design of flexible pavement based on a design Traffic Index provided by the City. The pavement section options will include a conventional hot mix asphalt and aggregate base section and an alternative reinforced subgrade section if soil conditions warrant.

Deliverables:

- Results of geotechnical analyses, conclusions and recommendations in 35% DDR (PDF only).

Assumptions:

- This scope and fee assume that all field exploration and laboratory testing are completed prior to the start of the 35% design phase.
- Geotechnical stability analysis for each cross-section is limited to limit-equilibrium methods only. The scope and fee does not include the stress/deformation using advanced numerical

methods (e.g., finite element or finite difference numerical methods).

- This scope and fee do not include the development and implementation of liquefaction mitigation measures, such as soil improvement. Should such conditions be encountered, NCFCWCD would need to weigh the cost and benefit of liquefaction mitigation measures versus the risks. This issue will need to be addressed as a separate topic if it arises.
- The proposed scope and fee do not include performing a site-specific seismic response analysis. Seismic parameters for design will be developed using the online United States Geological Survey (USGS) Earthquake Hazard Toolbox. Should conditions be encountered that would require a site-specific seismic response analysis, or if required by USACE, additional scope, fee and time will be needed.
- The proposed scope and fee assume that the project features will be classified as Non-Critical with respect to standards for serviceability and safety that need to be met in accordance with ER 1110-2-1806, "Engineering and Design, Earthquake Analysis, Evaluation, and Design for Civil Works Projects," effective June 29, 2024. The proposed scope and fee do not include any additional field investigation, laboratory testing, analysis, evaluation, or design that may be required should any of the project features need to be classified as Critical.

C – Geotechnical Engineering Analyses and Recommendations for 65% Design

HDR will update or revise the geotechnical analyses and recommendations presented in the 35% to reflect changes in the design as the project progresses, and to address DQA and ATR comments. Additionally, the 65% specifications will be reviewed and updated.

Deliverables:

- Results of updated geotechnical analyses, conclusions and recommendations in 65% DDR (PDF only)
- Updates to relevant technical specifications

Assumptions:

- None.

D – Geotechnical Engineering Analyses and Recommendations 95% Design

HDR will update or revise the geotechnical analyses and recommendations presented in the 65% design to reflect changes in the design as the project progresses and address DQA and ATR comments. The 95% specifications will be reviewed and updated.

Deliverables:

- Results of updated geotechnical analyses, conclusions and recommendations in 95% DDR (PDF only)
- Updates to relevant technical specifications

Assumptions:

- None.

E – Geotechnical Engineering Analyses and Recommendations 100% Design

HDR will update the recommendations presented in the 95% design to reflect changes in the design as the project progresses and to address DQA and ATR comments. The 100% specifications will be updated.

Deliverables:

- Results of updated geotechnical conclusions and recommendations in 100% DDR (PDF)
- Geotechnical Data Report (Draft and Final)
- Updates to relevant technical specifications

Assumptions:

- None.

F – Geotechnical Support for Risk Assessment

HDR will provide geotechnical support for the risk assessment to perform supplemental seepage, stability and sensitivity analyses. The analyses will be dependent on the results of the risk workshops, as described in Task 14.

Deliverables:

- Included in Task 14.

Assumptions:

- Geotechnical support includes modifying up to two geotechnical analysis cross-sections and modeling up to eight sensitivity/"what if" scenarios total, as described in Task 14.

TASK 9. STRUCTURAL

The structural work will include the design and/or analysis of floodwalls, inclusive of both concrete T-walls and sheet pile I-walls, transitions, tie-ins to existing structures, closure structures, vault structures and outfall structures. For estimating purposes, it is currently assumed that the floodwalls will be sheet pile walls with the exception of the portion adjacent to the Hatt Building. This portion will be a concrete T-wall to match the wall type designed and constructed by the USACE. The following type, size and location of the closure structures have been assumed for this scope of work:

- 12-ft wide, 4.5-ft tall pedestrian swing/roller gate – Station 59+00
- 6-ft wide, 6-ft tall pedestrian swing/roller gate – Station 49+25
- 20-ft wide, 5-ft tall swing gate/roller gate – Station 46+25
- 20-ft wide, 6-ft tall swing gate/roller gate – Station 43+45
- 6-ft wide, 5-ft tall pedestrian swing/roller gate – Station 37+25
- 6-ft wide. 5.5-ft tall pedestrian swing/roller gate – Station 31+90
- 20-ft wide, 5-ft tall swing gate/roller gate – Station 31+75
- 30-ft wide, 5-ft tall roller gate – Station 27+65
- 12-ft wide, 4.5-ft tall pedestrian swing/roller gate – Station 0+35

The design of each closure structure will include two concrete monoliths, or end abutments, provided at the ends to support the gate. The floodwall, end abutments, and closure structures of the project will be designed in accordance with the applicable USACE engineering manuals and applicable portions of industry codes referenced below. Designs will be based on established engineering practices, incorporating software packages as applicable.

Twenty wall penetrations have been identified crossing the floodwall alignment ranging in pipe diameter size from 4-inch to 60-inch. Penetrations greater than 30-inch require a unique design which will likely consist of a king pile or special framing section at the penetration. The large pipe penetrations will also require new concrete vault structures and outfall headwall structures. The vault structures will provide

positive closure to the penetrations and located on the water side of the structure independent of the floodwall. The vault structure is assumed to be a rectangular concrete structure with a sluice gate that can be operated manually by either a hand crank or a portable drive unit. Access to the vault structure will be from the landside. The following penetrations and vault structures have been identified and used for estimating:

- 36-inch RCP – Station 1+26
- 4-foot by 6-foot RCBC – Station 8+88
- 54-inch CMP – Station 17+62
- 32-inch CMP – Station 32+02
- 60-inch CMP – Station 37+86
- 60-inch CMP – Station 58+42

The structural team will develop the requisite sections of the DDR to support the structural design. This will include design methodology, calculations, analysis, and analysis assumptions used for developing the floodwall, vaults and closure structure design. The DDR will be included with each design submittal (35%, 65%, 95%, 100%).

The following USACE engineer manuals, engineer technical letters, and engineer circulars will be utilized in the structural design (latest versions shall be used).

- EM 1110-2-2000, Standard Practice for Concrete for Civil Works Structures
- EM 1110-2-2007, Structural Design of Concrete Lined Flood Control Channels
- EM 1110-2-2100, Stability Analysis of Concrete Hydraulic Structures
- EM 1110-2-2102, Waterstops and Other Preformed Joint Materials for Civil Works Structures EM 1110-2-2104, Strength Design for Reinforced Concrete Hydraulic Structures
- EM 1110-2-2502, Retaining and Flood Walls
- EM 1110-2-2902, Conduits, Culverts and Pipes, Changes 1-3
- EM 1110-2-2107, Design of Hydraulic Steel Structures
- American Concrete Institute (ACI). Building Code Requirements for Structural Concrete (ACI 318).
- American Institute of Steel Construction (AISC). Specification for Structural Steel Buildings (ANSI/AISC 360)
- American Society of Civil Engineers, Minimum Design Loads and associated criteria for Buildings and Other Structures (ASCE/SEI 7)
- American Welding Society, Structural Welding Code, Steel (AWS-D1.1/D1.1M) American Welding Society, Bridge Welding Code (AASHTO/AWS-D1.5/D1.5M)
- Hurricane and Storm Damage Risk Reduction System (HSDRRS) Design Guidelines

The following software will be utilized in the structural design:

- MathCAD
- Microsoft Office
- Microsoft Excel
- SAP2000

- CWALSHT
- CI-Wall

The drawings will be developed utilizing NCFCWCD standards and will include the following:

Table 1. Preliminary Sheet Index – Structural

Plan Title	Qty
General Notes	2
Plan and Profile	35
Concrete T-wall Sections	1
Sheet pile Sections	5
Details	10
Vault Sheets	5
Vaults	10
Outfall Headwall	1
Closure Gates	12
Stoplog	1
Total	**87**

A – Structural 35% Design

The following will be prepared as a part of the 35% design phase:

- Prepare the stability analysis of the concrete floodwall for load cases as specified in EM 1110-2-2502.
- Analysis of the sheet pile I-walls to determine preliminary sheet pile sizes and embedment depths.
- Stability analysis and sizing of the vault structures and outfall headwall structures. One typical outfall headwall structure design has been included for this scope of work and assumed to apply for the headwalls.
- Conceptual layout of the large pipe penetration detail.
- Analysis and design of the closure gates. The closure gate structures are assumed to be manually operated single leaf steel swing gates. Although four swing gate configurations have been identified, for design efficiency it is assumed that similar designs can be used for various configurations (i.e., the gates will be designed for the largest opening and applied to gates with similar heights). Two swing gate analyses have been assumed for this scope of work. Preliminary design will be performed to determine the member sizes for the two gate configurations.
- Preparing drawings per NCFCWCD standards, including plan and profile and detail sheets.
- A specifications table of contents (TOC) will be developed for the 35% design.
- Structural analysis will be documented in the DDR.
- Quantities will be developed to support the OPCC as described in Task 15.

Deliverables (Consolidated 35% Deliverable with other Disciplines):

- 35% Drawings (11” x 17” PDF)

- 35% DDR (PDF)
- 35% Technical Specification TOC (PDF)

Assumptions:

- ATR and DQA reviews will be performed in parallel as described in Task 14.
- Comments received on the 35% design submittal will be addressed as a part of 65% design development.
- One concrete floodwall section and five sheet pile floodwall sections have been assumed for this scope of work.
- Six vault structures have been assumed for this scope of work.
- Structural drawings and specifications will be submitted as a part of a consolidated package with the civil drawings and specifications.

B – Structural 65% Design

This task will build on work completed as a part of the 35% design development. The level of detail provided in the Drawings and Design Documentation Report (DDR) will be expanded and refined as the design progresses through 65% design increment.

HDR will complete 65% Design level drawings. These drawings will further refine and advance the 35% design level drawings and will include strength design and reinforcement layout for the concrete T-walls, vault structures and outfall structures, along with development of construction drawings. Sheet pile I wall designs will also be further progressed.

HDR will revise the DDR which is intended to be a living document that will be updated at each increment of design and will provide documentation and justification for the assumptions used in analyses, calculations, and designs.

The following will be performed for the 65% design phase:

- Strength design and reinforcement details for the concrete T-walls, vault structures, and outfall structures.
- Finalizing the member sizes for the closure structures.
- Special design considerations and detailing for the sheet pile wall
- Tie-in details of the new concrete flood to existing structures
- Details of the sheet pile I-wall to concrete T-wall transitions
- Development of technical structural specifications
- Structural analysis will be documented in the DDR.
- Quantities will be developed to support the OPCC as described in Task 15.

Deliverables (Consolidated 65% Deliverable with other Disciplines):

- 65% Drawings (11” x 17” PDF)
- 65% DDR (PDF)
- 65% Technical Specifications (PDF)

Assumptions:

- ATR and DQA reviews will be performed in parallel followed by SAR review, as described in Task 14. There will be one round of review comments from each.

C – Structural 95% Design

This task will build on work completed as a part of the 65% design development. The level of detail provided in the Drawings and Design Documentation Report (DDR) will be expanded and refined as the design progresses through 65%, design increment. HDR will complete 95% Design level drawings. These drawings will further refine and advance the 65% design level drawings and will include concrete structure design details, closure structure design details, and development of construction drawings.

HDR will revise the DDR and design calculations based on comments received from the USACE. The following will be performed for the 95% design phase:

- Finalizing the design and details for the concrete T-walls, vault structures, and outfall structures.
- Finalizing the closure gate structure design drawings including the connections.
- Finalizing design for the sheet pile wall and special pipe penetration details.
- Finalizing the tie-in details of the new concrete flood to existing structures.
- Details of the sheet pile I-wall to concrete T-wall transitions.
- Details of the floodwall to high-ground transitions (if applicable).
- Structural analysis will be documented in the DDR.
- Quantities will be developed to support the OPCC as described in Task 15.

Deliverables (Consolidated 95% Deliverable with other Disciplines):

- 95% Drawings (11” x 17” PDF)
- 95% DDR (PDF)
- 95% Specifications (PDF)

Assumptions:

- ATR and DQA reviews will be performed in parallel followed by SAR review, as described in Task 14. There will be one round of review comments from each.

D – Structural 100% Design

The 100% design submittal will be an updated set of drawings, specifications, and DDR. The 100% submittal will be utilized for bidding purposes.

Deliverables (Consolidated 100% Deliverable with other Disciplines):

- 100% Drawings (11” x 17” PDF)
- 100% DDR (PDF)
- 100% Technical Specifications (PDF)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- There will be no substantial changes from the 95% design. There will be no new comments on the 100% design deliverable.

TASK 10. ROADWAY DESIGN

Roadway design of the Riverside Drive street improvements will be based on the City of Napa 2022 Standard Plans and Standard Specifications, and the 2023 Standard Plans of the State of California

Department of Transportation (Caltrans). Drawings will be developed in accordance with NCFCWCD standards. A preliminary sheet index is presented below, we have assumed the sheet count will remain the same through the 100% design.

Table 2. Preliminary Sheet Index – Roadway

Plan Title	Qty
Key Map	1
Typical Sections	2
Layout Plans	6
Construction Details	3
Drainage Layouts	6
Drainage Details	2
Existing Utilities	6
Striping / Marking / Signage	6
Striping / Signage Details	1
Standard Plans - Caltrans and City of Napa	6
Total	**39**

A – Roadway 35% Design

HDR will prepare conceptual engineering design plan sheets for the street improvements along Riverside Drive between the entrance to the Napa Valley Yacht Club and Division Street. Plan sheets will also be prepared for the improvements at the Riverside Drive, Pine Street, and Cross Street intersection. The following concept design plan sheets will be prepared for the 35% Roadway design.

- The typical sections will show the existing street right of way and the existing and proposed roadway cross section. The typical sections will include the proposed street centerline, curb and gutter, sidewalk, and planter strip locations.
- The layout plans will delineate the street centerline alignment, and the proposed street improvements. The plans will be prepared using the field survey information for Riverside Drive that was conducted under Task 7.
- Profile plan sheets will include profiles for the street centerline and top-of-curb along both sides of Riverside Drive.
- Drainage layout plan sheets will show the existing storm drain improvements along Riverside Drive and the proposed relocation of existing storm drain inlets.
- Existing utility plan sheets will be prepared for Riverside Drive using the information gathered under Task 7.
- Striping plans will show the replacement of existing pavement markings including stop bars, crosswalks, and STOP legends. The plans will show the relocation of existing stop signs and dead-end signs and the location of new One Way signs. The plans will include new pavement striping and signage proposed for the Riverside Drive, Pine Street, and Cross Street intersection.
- Documentation of analyses and design for roadway improvements will be included in the DDR.

- Quantities will be developed to support the OPCC as described in Task 15.

Deliverables (Consolidated 35% Deliverable with other Disciplines):

- 35% Drawings (11" x 17" PDF)
- 35% DDR (PDF)
- 35% Technical Specification TOC (PDF)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- A new storm drain system along Riverside Drive is not required as part of the project. Drainage plans are limited to showing the relocation of existing storm drain inlets.

B – Roadway 65% Design

HDR will complete 65% Design level drawings to further refine and advance the 35% design level drawings. HDR will compile and edit the special provisions required for the Riverside Drive improvements. The special provisions will be based on the Caltrans 2023 Standard Specifications and Standard Special Provisions and supplemented by the City of Napa 2022 Special Provisions.

HDR will prepare designs for the relocation of existing storm drain inlets along Riverside Drive. These designs will be provided to the City of Napa for review and comment as part of the 65%, 95%, and 100% PS&E submittals.

Deliverables (Consolidated 65% Deliverable with other Disciplines):

- 65% Drawings (PDF)
- 65% DDR (PDF)
- 65% Technical Specifications (PDF)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- The City of Napa will provide the Pavement Structural Section to be used for the Riverside Drive street improvements.
- Traffic staging plans will be the responsibility of the construction contractor and are not part of the Riverside Drive PS&E.
- Potential utility conflicts will be identified during the 65% design. Potholes will be acquired under Task 6.
- The existing streetlights along Riverside Drive will remain on the existing overhead power poles. Electrical plans for new streetlights are not included in the scope of work.

C – Roadway 95% Design

HDR will complete 95% Design level drawings that further refine and advance the 65% design level drawings. The 95% Design will be considered substantially complete and provided to NCFCWCD and USACE for backcheck and approval.

Deliverables (Consolidated 95% Deliverable with other Disciplines):

- 95% Drawings (11" x 17" PDF)
- 95% DDR (PDF)

- 95% Technical Specifications (PDF)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- None.

D – Roadway 100% Design

The 100% design submittal will be an updated set of drawings, specifications, and DDR. The 100% submittal will be utilized for bidding purposes.

Deliverables (Consolidated 100% Deliverable with other Disciplines):

- 100% Drawings (11" x 17" PDF)
- 100% DDR (PDF)
- 100% Technical Specifications (PDFs)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- There will be no substantial changes from the 95% design. There will be no new comments on the 100% design deliverable.

TASK 11. CIVIL DESIGN

Civil design drawings will be prepared using AutoCAD software using NCFCWCD standards. These drawings will include general project layouts, updated survey and mapping data, floodwall alignments and profiles, typical sections, utility abandonment and relocations details, revetment details, and other necessary information to develop construction drawings. The following table provides an initial sheet index for civil drawings, we have assumed the sheet count will remain the same through 100% design.

Table 3. Preliminary Sheet Index – Civil

Plan Title	Qty
General Drawings	11
Survey Drawings	2
Demolition Drawings	12
Plan and Profile	20
Typical Sections	9
Details	6
Pavement Details	6
Utilities	24
Total	**90**

A – Civil 35% Design

HDR will coordinate with the respective agency/owner for modifications to public/City maintained utilities (water, sewer, and drainage system) impacted by the Project. HDR will prepare designs for the respective utilities in accordance with local and state standards and codes. These designs will be

provided to the respective agency for comment and review for each increment of design. Known utilities include a 6-inch cast iron waterline along Riverside Drive that will potentially be impacted by the proposed floodwall as well as two sewer and water laterals servicing waterside businesses.

HDR will coordinate with the respective private utility owners (e.g., PG&E, AT&T) impacted by the Project. The design of private utility modifications will be done by the respective owner and HDR will be responsible for providing information and coordination with the private utility owner about the Project features and requirements to resolve conflicts.

HDR will provide continued coordination with NCFCWCD on Project needs for temporary and permanent real estate.

The design team will coordinate with the environmental team to support the Supplemental EA/EIR. This includes effort to estimate equipment types, their usage duration, the overall construction duration, and quantify impact areas commonly called permanent and temporary construction limits.

HDR will prepare 35% Design level drawings. HDR will develop a combined DDR incorporating design information from the tasks listed in this proposal. The DDR is intended to be a living document updated at each increment of design and will provide documentation and justification for the assumptions used in analyses, calculations, and designs. HDR will develop a Specifications Table of Contents that lists applicable technical (Division 1 and above) specifications relevant to the design elements listed above.

The HDR team will coordinate with NCFCWCD and USACE on the DQA and ATR reviews and provide responses to the comments for both the DQA and ATR. As part of the review process the HDR team will support NCFCWCD in conducting a Technical Review Conference that will provide the project background and present the key features of the 35% designs to the DQA and ATR reviewers. The HDR technical leads will present an overview of the engineering analysis to support the 35% designs. HDR will work with NCFCWCD and USACE to resolve comments from the DQA and ATR.

Deliverables (Consolidated 35% Deliverable with other Disciplines):

- 35% Drawings (11” x 17” PDF)
- 35% DDR (PDF)
- 35% Technical Specifications TOC (PDF)
- Written response to comments from the DQA and ATR comments

Assumptions:

- DQA and ATR reviews will be performed in series. The SAR will be performed in parallel with the DQA and ATR reviews. There will be one round of review comments from each. HDR will provide response to comments once all comments (DQA and ATR) have been received for backcheck and signoff by the corresponding reviewers.

B – Civil 65% Design

The 65% design submittal will be an updated set of drawings and DDR expanded on the 35% design submittal. The submittal will also include written responses to ATR and SAR comments on the 35% design submittal. HDR will continue coordination with public and private utilities impacted by design and continue coordination with NCFCWCD on Project needs for temporary and permanent real estate.

HDR will coordinate engineering with the environmental team to support the Supplemental EA/EIR. This includes effort to estimate equipment types, their usage duration, the overall construction duration, and quantify impact areas commonly called permanent and temporary construction limits.

HDR will complete 65% Design level drawings. These drawings will further refine and advance the 35% design level drawings and will include general project layouts, updated survey and mapping data, floodwall alignments and profiles, typical sections, utility abandonment and relocations details, revetment details, structural details, landscaping and permanent irrigation, and other necessary information to develop construction drawings.

HDR will revise the DDR, intended to be a living document updated at each increment of design, and provide documentation and justification for the assumptions used in analyses, calculations, and designs. Technical specifications will be prepared based on the outline of technical specifications developed during the 35% design.

The SAR will start at the 65% Design stage. DQA and ATR reviews will be performed in series, and the SAR will be performed after the DQA and ATR reviews. There will be one round of review comments from each. HDR will work with NCFCWCD and USACE to resolve comments from the DQA, ATR and SAR.

Deliverables (Consolidated 65% Deliverable with other Disciplines):

- 65% Drawings (11" x 17" PDF)
- 65% DDR (PDF)
- 65% Technical Specifications (Microsoft Word)
- Written response to comments from the DQA, ATR and SAR comments.

Assumptions:

- ATR and DQA reviews will be performed in parallel followed by SAR review. There will be one round of review comments from each.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are to be provided by others.

C – Civil 95% Design

HDR will prepare a 95% Design level submittal. Drawings will further refine and advance the 65% design level drawings. The 95% DDR and Technical Specifications will be a further refinement of the 65% design documents. The 95% Design will be considered substantially complete and provided to NCFCWCD and USACE for backcheck and approval. Coordination will continue with the environmental team as needed based on revisions to the design.

Deliverables (Consolidated 95% Deliverable with other Disciplines):

- 95% Drawings (11" x 17" PDF)
- 95% DDR (PDF)
- 95% Technical Specifications (Microsoft Word)
- Written response to comments from the DQA, ATR and SAR comments.

Assumptions:

- ATR and DQA reviews will be performed in parallel followed by SAR review. There will be one round of review comments from each.

- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.

D – Civil 100% Design

The 100% design submittal will be an updated set of drawings, specifications, and DDR. The 100% submittal is considered final and will be utilized for bidding purposes.

Deliverables (Consolidated 100% Deliverable with other Disciplines):

- 100% Drawings (11" x 17" PDF)
- 100% DDR (PDF)
- 100% Technical Specifications as a package of specifications (PDFs)
- Written response to comments from the DQA, ATR and SAR comment.

Assumptions:

- There will be no substantial changes from the 95% design. There will be no new comments on the 100% design deliverable.

TASK 12. LANDSCAPING

HDR will coordinate with the respective owner/NCFCWCD for modifications to existing plant communities and irrigation systems impacted by the Project. HDR will provide ornamental and native plant restoration drawings for select areas of the Project to be agreed upon with NCFCWCD. Irrigation design will be limited to new meter locations, as necessary, and associated point of connection components for future irrigation systems (by others). Fence and Wall Aesthetics are not included in this scope of work. The following table provides an initial sheet index for landscape drawings, we have assumed the sheet count will remain the same through 100% design.

Table 4. Preliminary Sheet Index – Landscaping

Plan Title	Qty
Planting Drawings	10
Irrigation Drawings	10
Total	**20**

A – Landscaping 35% Design

HDR will complete 35% Design level planting and irrigation drawings. Specifications TOC will be developed as an outline of planting and irrigation technical specifications.

Deliverables (Consolidated 35% Deliverable with other Disciplines):

- 35% Drawings (11" x 17" PDF)
- 35% Technical Specifications TOC (PDF)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- Irrigation Drawings will identify meter locations, and points of connection needs only.

B – Landscaping 65% Design

HDR will complete 65% Design level planting and irrigation drawings. Specs will be drafted based on

the outline of technical specifications developed during the 35% design and will include specifications for planting and irrigation features.

Deliverables (Consolidated 65% Deliverable with other Disciplines):

- 65% Drawings (11" x 17" PDF)
- 65% Technical Specifications (Microsoft Word)

Assumptions:

- Landscape Architect will attend up to six of the bi-weekly two-hour coordination meetings.
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

C – Landscaping 95% Design

HDR will complete 95% Design level drawings and specifications. These drawings will further refine and advance the 65% design level drawings and will include updated landscaping and permanent irrigation plans. Specs will be drafted based on the outline of technical specifications developed during the 65% design and will include specifications for design features. The 95% Design will be considered substantially complete and provided to NCFCWCD and USACE for backcheck and approval.

Deliverables (Consolidated 95% Deliverable with other Disciplines):

- 95% Drawings (11" x 17" PDF)
- 95% Technical Specifications as individual specifications (Microsoft Word)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses

Assumptions:

- None.

D – Landscaping 100% Design

The 100% design submittal will be an updated set of drawings, specifications, and DDR. The 100% submittal will be utilized for bidding purposes.

Deliverables (Consolidated 100% Deliverable with other Disciplines):

- 100% Drawings (11" x 17" PDF)
- 100% DDR (PDF)
- 100% Technical Specifications as a package of specifications (PDFs)
- Written response to comments from the DQA and ATR comments to be combined with HDR Team responses.

Assumptions:

- There will be no substantial changes from the 95% design. There will be no new comments on the 100% design deliverable.

TASK 13. OPCC AND CONSTRUCTION SCHEDULE

A – 35% OPCC and Construction Schedule

HDR will prepare quantities and an OPCC for the preferred alternative based on the feasibility level designs. The OPCC will be Class 4 per USACE Engineering Regulation (ER) 1110-2-1302. The 35% OPCC will be prepared in Microsoft Excel, and key assumptions will be documented. Takeoffs will be prepared in AutoCAD, with onscreen software, or calculated in Microsoft Excel. Appropriate

contingencies will be added to the costs and notable cost risks will be described in the report. Cost data will be based on local construction market conditions, previous project cost estimates, and reasonable assumptions of construction methodology and associated labor, equipment, and material costs.

Deliverables:

- 35% OPCC (PDF)
- OPCC Spreadsheet

Assumptions:

- A total project cost summary will not be submitted.
- A cost schedule risk analysis will not be conducted.

B – 65% OPCC and Construction Schedule

The OPCC will be prepared in Microcomputer Aided Cost Estimating System (MCACES) version 4.4.3 or later. Cost data will be based on current equipment rates (Region VII equipment library), local labor libraries (DBA and SCA rates current as of estimate submittal) and material prices (local price quotations or other justifiable assumptions or sources). Costs will be escalated to the midpoint of construction. The MCACES Cost Book will be the 2023 release when used. Reasonable assumptions of construction methodology will be made when developing crews, production rates, and pricing and assumptions will be documented in the project notes. The 65% OPCC will be a Class 3 estimate.

Appropriate contingencies will be added to the costs consistent with ER 1110-2-1302 if requested by USACE Cost Engineering staff and notable cost risks will be described in the report. A formal cost schedule risk analysis will not be performed. Quantity take-offs will be prepared in AutoCAD, with onscreen software, or in Microsoft Excel. Backup documentation will include quantity takeoffs, key assumptions of construction methods and indirect costs, and sources of cost information. A total project cost summary (TPCS) will not be prepared. Coordination meetings with the USACE and NCFCWCD will occur to discuss estimate assumptions and project cost constraints.

A construction schedule will be prepared in Gantt chart format displaying major work items with start times, completion times, and durations. The construction schedule will be supported by the construction sequencing, work breakdown structure, and durations detailed in the OPCC. The schedule will be used as the basis for determining construction contract duration and applied to indirect costs in the OPCC as appropriate. The schedule will be prepared in Microsoft Project or equivalent scheduling software.

Deliverables:

- 65% OPCC MCACES Cost Report (PDF) and native file (.mlp)
- Cost estimate backup documentation (takeoffs, production calculations, cost quotations, basis of rates).
- Construction schedule (PDF and native file)

Assumptions:

- The OPCC will conform to USACE ER 1110-2-1302, UFC 3-740-05, and the document Cost Estimate Enclosure for AE SOW_20200304 and will be prepared in detail matching the level of design.
- A cost schedule risk analysis will not be conducted.

C – 95% OPCC and Construction Schedule

The 95% OPCC will be a refinement to the 65% OPCC based on the progression of the design. The 95% OPCC will be a Class 2 estimate. Appropriate contingencies will be added to the costs and notable cost risks will be described in the report. A formal cost schedule risk analysis will not be performed. A total project cost summary (TPCS) will not be prepared. Coordination meetings with the USACE and NCFCWCD will occur to discuss estimate assumptions and project cost constraints. The construction schedule will be updated as needed based on design progression.

Deliverables:

- 95% OPCC MCACES Cost Report (PDF) and native file (.mlp)
- Written responses to comment
- Cost estimate backup documentation (takeoffs, production calculations, cost quotations, basis of rates)
- Construction schedule (PDF and native file)

Assumptions:

- A cost schedule risk analysis will not be conducted.

D – 100% OPCC and Construction Schedule

The 100% OPCC will be a refinement to the 95% OPCC based on the progression of the design. The 100% OPCC will be a Class 1 estimate. Appropriate contingencies will be added to the costs and notable cost risks will be described in the report. The construction schedule will be updated as needed based on design progression.

Deliverables:

- 100% OPCC MCACES Cost Report (PDF) and native file (.mlp)
- Written responses to comments.
- Cost estimate backup documentation (takeoffs, production calculations, cost quotations, basis of rates).
- Construction schedule (PDF and native file)

Assumptions:

- A cost schedule risk analysis will not be conducted.

TASK 14. RISK ASSESSMENT/RISK INFORMED DESIGN

The USACE recently published *Interim Approach for Risk-Informed Designs for Dam and Levee Projects* (ECB 2022-7), which states that risk assessments should help guide and refine design decisions. It further states that that "risk-informed approach will be used for dam and levee designs for new projects, modifications, improvements, rehabilitation or repairs." USACE acknowledges that "since the formal application of risk-informed design is a new requirement, the risk assessments must be scaled to fit within the constraints of current schedules and budgets." The guidance clarifies that "reformulation is not the goal when incorporating risk into the design of projects with an approved decision document. To satisfy the intent of ECB 2022-7, HDR will complete the following tasks:

A. Potential Failure Modes Analysis and Risk Screening Workshop
B. Hydrologic Loading
C. Supporting Engineering Analyses
D. Consequences Assessment

E. Design Refinement Charrette
F. Risk Estimating
G. Risk Report

A – Potential Failure Modes Analysis and Risk Screening Workshop

Between 35% and 65% design milestones, HDR will conduct a workshop to review the emerging design and provide recommendations for design refinements. The efforts will focus on identifying and screening Potential Failure Modes (PFMs) to confirm that the design includes appropriate defense measures. Opportunities to recommend Increment 3 configuration and incorporate features that could enhance environmental and recreational benefits of the project will also be discussed. The risk workshop is expected to be collaborative and include representatives of the design team, NCFCWCD, USACE and others as deemed appropriate. The workshop will be facilitated by an HDR risk facilitator. No expert elicitation or risk estimating will be conducted at this time. The goal is to document risk-driving PFMs that should be carried forward into a semi-quantitative risk analysis and identify additional analyses needed to progress the design.

Deliverables:

- A PFMA/Risk screening memorandum, which will be later incorporated into to an Increment 3 Risk Report that will be presented with the 95% DDR. The report will describe risk-driving potential failure modes, including more likely and less likely factors and major areas of uncertainty, provide justification for excluded failure modes, present major findings, and provide recommendations for additional analyses and design refinements.
- A draft memorandum will be provided to participants for review and comments.

Assumptions:

- Three-day in-person workshop, to be held in HDR Sacramento or Folsom, CA office.
- HDR will provide a risk facilitator, a notetaker and up to 7 subject matter experts (geotechnical, structural, hydrology/hydraulics, transportation, scour, civil/utilities and constructability). No expert elicitation or risk estimating will be completed during this workshop.
- Decisions related to risk tolerability and associated design refinements including deviations from the deterministic criteria will be made by NCFCWCD in consultation with USACE as appropriate and communicated to HDR for the 65% design development.

B – Hydrologic Loading

HDR will be develop representative hydrologic loading functions (probability of loading the levee to various levels and duration of loading) at the locations of risk-driving PFMs. The functions will be based on the existing hydrologic and hydraulic modeling previously completed for the project reach and efforts completed as part of Task 8.

Deliverables:

- Representative hydrologic loading functions and supporting documentation to be incorporated into the Risk Report (Task 17G)

Assumptions:

- Up to three representative loading functions will be developed. These functions will be based on readily available existing information and no additional H&H modeling will be required to complete this effort.

C – Supporting Engineering Analyses

Following the PFMA/risk screening workshop, HDR will complete supplemental engineering analyses to help evaluate risk-driving PFMs. These analyses are in addition to design calculations described in Tasks 6 through 8. They are intended to test sensitivity of the results, explore "what if" scenarios and improve confidence in the design decisions.

Deliverables:

- Calculation packages to be included in the Increment 3 Risk Report

Assumptions:

- Supporting analyses may include seepage, stability, scour, structural, or other relevant discipline as deemed necessary. It is assumed that sensitivity analyses will be completed based on existing numerical models and engineering analyses developed under Tasks 6 through 8 with only minor modifications. For the purposes of the fee estimate, the effort is assumed to be commensurate with modifying two geotechnical analysis cross-sections and modeling up to eight sensitivity/"what if" scenarios total. The type and specific modeling details will be determined based on the outcome of Task 14A to fit within the authorized budget.

D – Consequences Assessment

HDR will estimate potential life loss and direct economic damages in the leveed area caused by inundation due to breach or overtopping of Increment 3 levee. Consequences assessment will be completed with the USACE Levee Screening Tool (LST) following guidance in the LST *Application Guide and Technical Reference Manual*.

To help develop LST inputs related to emergency preparedness parameters, HDR will hold a two-hour informal virtual interview with NCFCWCD, City of Napa staff and local emergency management authorities as appropriate. Interview participants will be identified in collaboration with NCFCWCD.

Deliverables:

- A memorandum summarizing consequences assessment results, including inundation maps for the modeled breach scenarios.

Assumptions:

- Consequences modeling will be completed for up to two breach locations, to be selected based on Task 14A.
- Task includes limited sensitivity analyses (up to eight runs) to test sensitivity to select input parameters
- NCFCWCD will provide their flood emergency action plan(s) for review.
- USACE National Structure Inventory will be used to identify the population at risk
- USACE will provide HDR access to the LST software.

E – Design Refinement Charrette – Optional Task

HDR will conduct a design charrette to review and refine issue-specific design decisions. This could include a particular location, feature or design alternative, or other design consideration brought forward by the design team or the reviewers. Charrette participants are expected to include HDR (design leads and subject matter experts), NCFCWCD, USACE and DQA, ATR, SAR reviewers as appropriate. The specific topic(s), timing and participants will be selected in consultation with NCFCWCD.

Deliverables:

- A draft and final memorandum summarizing discussions and decisions.

Assumptions:

- The effort is to prepare for, conduct, and document the charrette.
- A draft memorandum will be provided to participants for review and comments.
- HDR will provide a facilitator and a note taker.
- Up to seven HDR technical experts will participate in the charrette.
- The charrette will be a full day in-person meeting held at HDR Sacramento office.

F – Risk Estimating

Semi-quantitative risk estimates will be developed for risk-driving potential failure modes identified in Task 14A using SQRA calculations methodology (USACE RMC-TN-2018-01) and designs advanced to 65% level. HDR will facilitate virtual expert elicitation meetings with subject matter experts to develop the estimates.

Deliverables:

- Results will be incorporated into the risk report.

Assumptions:

- Up to three virtual meetings, each four hours long, will be required to complete expert elicitation
- Risk estimates will be developed based on the 65% design deliverables; updating risk estimates to reflect 100% design and/or as-constructed conditions is outside the scope
- The risk estimators will be a combination of USACE and HDR technical staff; HDR will provide two estimators, a risk facilitator and a note taker
- HDR will prepare technical briefing presentations to inform elicitation

G – Increment 3 Risk Report

Increment 3 Risk Report will present results of Tasks 14A through 14F. The draft report will be submitted for review as a separate deliverable between 65% and 95% design milestones, with final report incorporated into the 95% DDR.

Deliverables:

- Draft and final report

Assumptions:

- Review comments on the draft report will be provided within 30 calendar days following submittal. This is necessary for HDR to be able to develop a final report for the 95% DDR.

TASK 15. OMRR&R MANUAL UPDATES

Work completed on the Project includes floodwall, penetration, and encroachment improvements within Napa County. As a result, the OMRR&R Manual dated July 2025 developed as part of the Increment 2 project must be updated to account for improvements associated with Increment 3. HDR will work with NCFCWCD to prepare an Addendum for the OMRR&R Manual incorporating revisions based on the proposed Increment 3 improvements. The addendum will include updated information on encroachments, penetrations, historical information, unique features along the floodwall and within the flood right-of-way, maintenance requirements, and other pertinent improvements and information. A Draft and Final full revision of the OMRR&R Manual will be developed after construction is complete

under a future task order.

HDR will submit a draft copy of the Addendum to NCFCWCD and USACE for review. HDR will address comments in writing, then submit a final Addendum.

Deliverables:

- Draft OMRR&R Manual Addendum.
- Written response to NCFCWCD and USACE comments (Excel or PDF).
- Final OMRR&R Manual Addendum.

Assumptions:

- The OMRR&R Addendum will be updated and formatted in accordance with USACE ER 1110-2-401.
- The Addendum will include OMRR&R requirements for improvements made to the system as part of the Project. HDR will use the latest version of the OMRR&R Manual developed for Increment 2 as a basis for the Addendum.
- A full revision of the OMRR&R Manual will be developed after construction is complete under a future task order.
- The Addendum will not include shop drawings and manufacturer-supplied documents for equipment, gates or other appurtenances associated with Increment 3 which won't be available to the design team until construction submittals have been submitted by the Contractor during construction. These documents, which are typically included in an OMRR&R Manual, will be incorporated as part of the Draft and Final Manual updates post construction.

TASK 16. INDUCED FLOODING/TAKINGS ANALYSIS

Using existing hydraulic modeling results to the extent possible, and generating new modeling results only when necessary, River Focus, as a subconsultant to HDR, will develop flood inundation information for the following project conditions:

a) Without Project (before any Federal-constructed features)
b) With Federal-constructed features up through the Dry Bypass, plus Increment 2 and Increment 3.

The flood inundation information will be developed for the following Annual Exceedance Probability (AEP) / return periods.

• AEP	• Return Period (years)
• 50%	• 2
• 20%	• 5
• 10%	• 10
• 4%	• 25
• 2%	• 50
• 1%	• 100
• 0.5%	• 200
• 0.2%	• 500

The Project's existing 1-D hydraulic models, which are being used for the design of Increment 2 and Increment 3, will be utilized for computing flood depths and velocities.

Building off of previous work, 2-D hydraulic models will be developed for Without Project conditions and for Increment 2 plus Increment 3. The 2-D hydraulic models will be run long enough to allow the water to recede.

An Induced Flooding memo will be developed that includes the following information:

- Background on the hydraulic models used and methods applied, including a discussion of the uncertainty and tolerance of the hydraulic models
- Flooding inundation maps for each return period
- Flood extent, depth, velocity, arrival times, duration, etc. for each return period across the study area
- Variation in depth, arrival times, duration, etc. between different conditions

The induced flooding memo will undergo QC review. USACE will provide a Quality Assurance level review. Once comments have been addressed, a final memo will be prepared. The flood inundation maps will be provided in raster file format, suitable for use in a GIS system.

Flood inundation data and real estate parcel data will be overlayed in a GIS system to calculate variations in depth, arrival times, and duration for various return periods. The goal is to provide a structure/property inventory of residential or commercial structures and properties that are flooded. This analysis will be summarized in both figures and data tables.

The results of the structure flooding investigation will be summarized in a draft Structure Flooding Analysis report that includes data tables, figures, and maps showing the parcel impacts (and individual buildings as available). The parcel/building vs flooding analysis memo will undergo QC review. USACE will provide a Quality Assurance level review. Once comments have been addressed, a final memo will be prepared.

HDR and River Focus will support NCFCWCD in answering questions from the USACE Sacramento District Office of Counsel and will modify the results in accordance with Office of Counsel requests.

Deliverables:

- HEC-RAS hydraulic models and results for the induced flooding analysis
- Flood inundation map as GIS raster files
- Documentation of internal QC reviews
- Draft and final Induced Flooding technical memo
- Draft and final Structure Flooding Analysis report

Assumptions:

- NCFCWCD will provide the parcel and building GIS information.

TASK 17. ENVIRONMENTAL DOCUMENTATION AND PERMITING

Given the 25 years that have transpired since the 1999 Supplemental Environmental Impact Statement/Environmental Impact Report (1999 SEIS/EIR) for the overall Flood Protection Project as

well as the proposed modifications to the floodwall design, bank protection, traffic circulation plan, and utility relocations, and the fact that the Project requires additional discretionary action by NCFCWCD and USACE, the Project requires additional environmental review. Specifically, the Increment 3 Floodwalls Project requires reevaluation under the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the California Endangered Species Act (CESA), Clean Water Act (CWA), Clean Air Act (CAA), and National Historic Preservation Act (NHPA). The following scope presents options for CEQA and NEPA environmental documentation and permitting and consultation based on the reevaluation.

A – Environmental Documentation

CEQA Documentation

Building from the 1999 SEIS/EIR and the VEIA and reconnaissance study, HDR's environmental team will work closely with NCFCWCD and the design team in the reevaluation of the proposed floodwall design for Increment 3. HDR will compare the Project Description from the 1999 SEIS/EIR with updated information from preliminary design for the Increment 3 Floodwalls to determine the extent of changes. Due to the time that has transpired since the 1999 SEIS/EIR was completed, the changes within the project design, and changes within the regulatory context, HDR recommends reevaluating environmental impacts and preparing a supplemental CEQA document. To determine the appropriate level of CEQA supplemental documentation, HDR recommends preparing an Initial Study (IS) based on the information available to date.

If no new or greater impacts are identified in the IS, then the IS will serve as documentation that an Addendum to the 1999 SEIS/EIR is the appropriate course of action. If similar or greater impacts are identified in the IS and additional mitigation can be implemented to offset those greater impacts to less-than-significant levels, then a Subsequent Initial Study/Mitigated Negative Declaration (IS/MND) will be the appropriate course of action. If new or greater impacts are identified in the IS that are significant and possibly unavoidable, and mitigation can be implemented but will not fully offset those impacts to less-than-significant levels, then a Subsequent Environmental Impact Report (SEIR) will be the appropriate course of action.

Based on the information known to date and for the purposes of this scope of work and fee, the following scope provides the tasks related to preparation of an IS leading to a Mitigated Negative Declaration (MND) for approval. If it is determined that a different level of analysis and documentation is required (i.e., SEIR) by NCFCWCD, HDR will submit additional or revised scope and budget to NCFCWCD for review and approval, as necessary. NCFCWCD will be the CEQA lead agency for the supplemental documentation.

Draft Project Description

HDR will prepare a draft project description as required by CEQA. The draft project description will provide the background for the project, NCFCWCD project objectives, and the location and boundaries of the project area and related construction activities (i.e., laydown and staging areas, work limits), which will be shown on 11x17 figures. The project description will describe the alternatives to be considered (if any) and provide a general description of the proposed project's technical, environmental, and construction details, including construction sequencing. The draft project description will include information regarding the project schedule and adequate information to assess the proposed project's potential impacts on the environment.

HDR will submit the draft project description electronically to NCFCWCD for review. Upon receipt of NCFCWCD's comments in track changes in Microsoft Word, HDR will incorporate comments and will prepare a revised draft project description for use in the Administrative Draft IS (Chapters 1 and 2). HDR will submit the revised draft project description with track changes electronically to NCFCWCD with the Draft IS.

Deliverables:

- Draft and Revised Draft Project Description (Microsoft Word).

Initial Study Checklist

HDR will conduct a desktop review and field analysis (see part B below) and evaluate the potential impacts of the Proposed Project through analysis of the environmental resources topics defined in the CEQA Guidelines, Appendix G Environmental Checklist. The IS will review the Proposed Project as it is currently in comparison to the existing conditions and what was proposed originally in the 1999 SEIS/EIR. Based on our current understanding of the Proposed Project, it will likely result in construction impacts (e.g., air quality, noise, transportation and traffic) and potential impacts to biological and cultural/historic resources. Therefore, air quality and greenhouse gas (GHG) emissions modeling for construction activities related to the Proposed Project would be conducted utilizing CalEEMod. Construction noise would be estimated and evaluated qualitatively and quantitatively for the Proposed Project in comparison to the local thresholds and noise ordinances based on Project Area land uses. Construction-related traffic will also be estimated and evaluated qualitatively and quantitatively for the Proposed Project's contribution to vehicle miles traveled (VMT) in the Project area. Long-term traffic and circulation due to anticipated traffic flow changes as a result of the Proposed Project will be reviewed under Task 3C and carried forward for analysis in the IS.

Biological resources and cultural resources impacts will be summarized in the IS based on the results of the surveys and reports prepared under Part B – Environmental Technical Studies described below.

The IS will include a description of the environmental setting and explanations for potential impacts (i.e., Potentially Significant Impact, Less than Significant Impact with Mitigation Incorporated, Less than Significant Impact, and No Impact). For each resource topic in the CEQA Environmental Checklist, HDR will evaluate available data that has been collected and compiled to evaluate whether there is substantial evidence that the Proposed Project may have a significant effect on the environment. As necessary, mitigation measures will be identified and the discussion of each measure will explain how implementation of the mitigation measure will reduce the related environmental impacts to a less-than-significant level.

As specified in Section 15064(a) of the state CEQA Guidelines, if there is substantial evidence (such as the results of the IS) that a project, either individually or cumulatively, could have a significant effect on the environment that cannot effectively be mitigated to a less-than-significant level, the lead agency must prepare an EIR.

HDR will submit the Draft IS Checklist electronically to NCFCWCD for review and comment. Based off the findings of the Draft IS, the NCFCWCD will determine the appropriate level of CEQA documentation required for the Project (i.e., Addendum, IS/MND or EIR). HDR proposes to host a virtual meeting with NCFCWCD to discuss the findings of the Draft IS and the recommended CEQA documentation approach. The goal of this validation step and meeting is to select a defensible level of

analysis and CEQA documentation for the Project. Based on the information HDR has at this time regarding Increment 3, we anticipate that the Project will result in potential impacts that are greater than was determined in the 1999 SEIS/EIR but that can be mitigated to a less-than-significant level. Therefore, our scope and fee anticipate that the IS will lead to a Mitigated Negative Declaration (MND) and the following tasks are in accordance with this approach.

Deliverables:

- Draft IS Checklist (Microsoft Word).

Public Draft Subsequent IS/MND

After the validation meeting and upon receipt of NCFCWCD's comments on the Draft IS, HDR will incorporate comments and prepare the Public Draft Subsequent IS/MND. As part of this process, HDR will provide NCFCWCD with an electronic copy of a screen check Public Draft Subsequent IS/MND to review and determine if NCFCWCD's comments have been addressed prior to finalization of the Public Draft Subsequent IS/MND. The screen check Public Draft Subsequent IS/MND will include the Notice of Intent (NOI) to Adopt an MND to meet the requirements of CEQA. The NOI will be reviewed and approved by NCFCWCD. Upon approval, HDR will finalize the NOI.

Once NCFCWCD reviews and approves the screen check Public Draft Subsequent IS/MND, HDR will finalize the Public Draft Subsequent IS/MND and prepare a Notice of Completion (NOC). The Public Draft Subsequent IS/MND will be circulated to the public for a 30-day public review period as required by CEQA. On behalf of NCFCWCD, HDR will submit the Public Draft Subsequent IS/MND to the State Clearinghouse through CEQAnet along with the NOC transmittal form and Summary form. NCFCWCD will be responsible for submitting the NOC and Public Draft Subsequent IS/MND with NOI to the County Clerk. HDR will utilize the mailing list/notice list from Increment 2. NCFCWCD will notify HDR if there are additions to the mailing list/notice list. NCFCWCD will send out the NOI to Adopt an MND electronically to those included on the mailing list. NCFCWCD will upload the Public Draft Subsequent IS/MND to their website and will be responsible for distribution of the Public Draft Subsequent IS/MND to interested parties, if required. HDR will also develop the legal ad for the Napa Valley Register to notice the availability of the Public Draft Subsequent IS/MND for review.

Deliverables:

- Screen Check Public Draft Subsequent IS/MND (Microsoft Word and PDF).
- Public Draft Subsequent IS/MND and NOI (Microsoft Word and PDF).
- Notice of Completion and Summary Form for CEQAnet (Microsoft Word and PDF).

Response to Comments, Final Subsequent IS/MND, and Mitigation, Monitoring and Reporting Program (MMRP)

After the 30-day public review period for the Public Draft Subsequent IS/MND, HDR will review public and agency comments received. HDR will develop a Comment-Response Matrix and work with NCFCWCD to develop responses. Due to the uncertainties associated with the level of effort needed to respond to comments, HDR has provided a contingency estimate of 32 hours for this effort. HDR will then prepare the Administrative Final Subsequent IS/MND that will include a Comment-Response chapter.

The Administrative Final Subsequent IS/MND may include minor corrections, changes, or revisions to the Public Draft Subsequent IS/MND as result of comments. HDR will submit the Administrative Final Subsequent IS/MND electronically to NCFCWCD for review. Upon receipt of comments, HDR will revise the Administrative Final Subsequent IS/MND to incorporate NCFCWCD's comments and will prepare the Final Subsequent IS/MND. HDR will submit the Final Subsequent IS/MND electronically to NCFCWCD for approval.

HDR will also prepare an MMRP for the project in accordance with CEQA. The MMRP will specify the project impacts to be mitigated, initiation/timing of mitigation, monitoring frequency, responsibility for verification of compliance, performance criteria, the date compliance is completed, and other specifications, as necessary. The Draft MMRP will be submitted electronically to the NCFCWCD for review. Upon receipt of comments, HDR will revise and prepare the Final MMRP.

Once the project is approved by NCFCWCD and the MMRP is adopted, HDR will prepare a Notice of Determination (NOD). HDR will submit the NOD to NCFCWCD for review and signature. NCFCWCD will be responsible for submitting the signed NOD and the Final Subsequent IS/MND with MMRP to the County Clerk. The California Department of Fish and Wildlife (CDFW) filing fees for adoption of a Subsequent IS/MND must accompany the NOD when filing it with the County Clerk and will be paid by NCFCWCD. NCFCWCD will upload the Final Subsequent IS/MND to their website and will be responsible for distribution of the Final Subsequent IS/MND to interested parties, if required.

Once the NOD is filed with the County Clerk and the CDFW filing fees are paid, HDR will submit the NOD, receipt of acceptance of the NOD by the County Clerk, and receipt of payment of the CDFW filing fees to the State Clearinghouse through CEQAnet for compliance with CEQA.

Deliverables:

- Comment-Response Matrix (Microsoft Word and PDF)
- Administrative Final Subsequent IS/MND and Final Subsequent IS/MND (Microsoft Word and PDF)
- Draft and Final MMRP (Microsoft Word and PDF)
- NOD (PDF)

NEPA Documentation

After completion of the CEQA Draft IS, HDR will assist the USACE with compliance with the National Environmental Policy Act (NEPA) for the Project, as the USACE will be the NEPA lead agency. For the purposes of this scope and fee, HDR has assumed that a Supplemental Environmental Assessment (SEA) leading to a Finding of No Significant Impact (FONSI) can be prepared for Increment 3 that builds from the 1999 SEIS/EIR and is the appropriate level of documentation to be prepared for compliance with NEPA.

Administrative Draft SEA/FONSI

HDR will prepare an Administrative Draft SEA following USACE NEPA implementing guidelines and based off the IS/MND described above. The Administrative Draft SEA will include:

- A description of the purpose and need for the proposed action.
- A description of the proposed action alternative, including project location with maps and

figures, and construction details, with proposed schedule, staffing, and equipment to be used during construction.
- A description of the no action alternative (as required by NEPA), including relevant maps and figures. Based on previous direction from the USACE it is assumed that the no action alternative will consist of the 1998 SGDM Preferred Alternative.
- An overview of the general affected environment as relevant to the resources potentially affected.
- Disclosure of potential environmental consequences and cumulative effects by resource area for both the proposed action alternative and the no action alternative.
- Identification of proposed measures to mitigate potential adverse environmental effects
- Demonstration of compliance with federal, state, and local laws and regulations.
- Draft FONSI included with the Administrative Draft SEA, which summarizes the environmental effects of the proposed action.

The Administrative Draft SEA/FONSI will be compliant with Section 508 of the Rehabilitation Act of 1973 (as amended in 1998). Under this Act, Federal agencies must give disabled employees and members of the public access to information comparable to the access available to others. HDR will conduct a thorough Section 508 review of the Administrative Draft SEA/FONSI per the USACE Digital Library Checklist requirements.

HDR will submit the Administrative Draft SEA/FONSI electronically to USACE Environmental Staff for review and comment.

Deliverables:
- Administrative Draft SEA/FONSI for review by USACE Environmental Staff (Microsoft Word and PDF).

Public Draft SEA/FONSI
Upon receipt of USACE Environmental Staff's comments on the Administrative Draft SEA/FONSI, HDR will revise the Administrative Draft SEA/FONSI and prepare the Backcheck Administrative Draft SEA/FONSI. HDR will work with USACE Environmental Staff to conduct the backcheck review to resolve comments. Once the backcheck review is complete, HDR will prepare the Revised Administrative Draft SEA/FONSI for USACE Office of Counsel review. Upon receipt of USACE Office of Counsel's review of the Revised Administrative Draft SEA/FONSI, HDR will respond to Office of Counsel comments and incorporate edits. HDR will then prepare the Backcheck Revised Administrative Draft SEA/FONSI to facilitate USACE Office of Counsel's backcheck review. Once USACE Office of Counsel, approves the document for public review, the USACE Environmental Staff will circulate it to USACE Environmental Branch and Planning Division Leadership for review. Upon receipt of USACE Environmental Branch and Planning Division Leadership approval of the document for public review, HDR will finalize it and prepare the Public Draft SEA/FONSI. HDR will also work with USACE Staff to make sure the Public Draft SEA/FONSI meets the accessibility checker requirements and is cleared for posting to the USACE Project website.

The Public Draft SEA/FONSI will be circulated to the public for a 30-day public review period as required by NEPA. The USACE will develop a press release and will email the press release to interested parties included in the mailing list/notice list developed as part of the CEQA process. The

USACE will upload the Public Draft SEA/FONSI to their website and will be responsible for distribution of the Public Draft SEA/FONSI to interested parties, if required.

Deliverables:

- Backcheck Administrative Draft SEA/FONSI (Microsoft Word and PDF).
- Revised Administrative Draft SEA/FONSI for Office of Counsel Review (Microsoft Word and PDF).
- Backcheck Revised Administrative Draft SEA/FONSI for OC review and ERB/PD Leadership review (Microsoft Word and PDF).
- Public Draft SEA/FONSI (Microsoft Word and PDF).

Final SEA/FONSI

Upon completion of the 30-day public review period, HDR will work with USACE and NCFCWCD to consider public and agency comments received on the Public Draft SEA/FONSI. HDR will review comments received on the Public Draft SEA/FONSI and prepare draft responses to these comments. HDR will include a Responses to Public and Agency Comments Appendix in the Final SEA/FONSI. Due to the uncertainties associated with the level of effort needed to respond to comments, HDR has provided a contingency estimate of 32 hours for this effort.

HDR assumes no changes to the project description, technical analyses, or substantial modifications will be necessary for preparation of the Administrative Final SEA/FONSI. The Administrative Final SEA/FONSI may include minor corrections, changes, or revisions to the Public Draft SEA/FONSI as result of comments.

HDR will submit the Administrative Final SEA/FONSI electronically to USACE Environmental Staff for review and comment. Upon receipt of USACE Environmental Staff's comments on the Administrative Final SEA/FONSI, HDR will revise the Administrative Final SEA/FONSI and prepare the Backcheck Administrative Final SEA/FONSI. HDR will work with USACE Environmental Staff to conduct the backcheck review to resolve comments. Once the backcheck review is complete, HDR will prepare the Revised Administrative Final SEA/FONSI for USACE Office of Counsel review. Upon receipt of USACE Office of Counsel's review of the Revised Administrative Final SEA/FONSI, HDR will respond to Office of Counsel comments and incorporate edits. HDR will then prepare then Backcheck Revised Administrative Final SEA/FONSI to facilitate USACE Office of Counsel's backcheck review. Once USACE Office of Counsel, approves the document, the USACE Environmental Staff will circulate it to USACE Environmental Branch and Planning Division Leadership for review. Upon receipt of USACE Environmental Branch and Planning Division Leadership approval of the document, HDR will finalize it and prepare the Final SEA/FONSI. HDR assumes that the USACE will distribute and post the FONSI in the Federal Register.

Deliverables:

- Backcheck Administrative Final SEA/FONSI (Microsoft Word and PDF).
- Revised Administrative Final SEA/FONSI for OC review (Microsoft Word and PDF).
- Backcheck Revised Administrative Final SEA/FONSI for OC review and ERB/PD Leadership review (Microsoft Word and PDF).
- Final SEA/FONSI (Microsoft Word and PDF).
-

Environmental Documentation Assumptions:

- HDR will support NCFCWCD in validating the environmental documentation approach and findings to support the CEQA process. It is assumed that a Subsequent IS/MND can be prepared for the Project to comply with CEQA. If higher level documentation is necessary (i,e, EIR), HDR will work with NCFCWCD to determine the additional level of effort and will provide scope and fee to support this effort.
- HDR will support USACE in validating the environmental documentation approach and findings to support the NEPA process. It is assumed that a SEA can be prepared to comply with NEPA. If higher level documentation is necessary (i,e, EIS), HDR will work with NCFCWCD to determine the additional level of effort and will provide scope and fee to support this effort.
- A one-day site visit for up to three staff members is included in this task to allow resource leads to review the project site and local area, and to take photos that may be used in the CEQA and NEPA documentation.
- No scoping will be completed for this project. If heightened interest is noted or a scoping meeting is deemed necessary, a renegotiated scope and fee estimate.
- Only the proposed action and no action alternatives will be included and evaluated in the SEA. Based on previous direction from the USACE it is assumed that the no action alternative will consist of the 1998 SGDM Preferred Alternative.
- The project description will be based on information provided by the project design team and the NCFCWCD.
- No public meetings are planned as part of the Subsequent IS/MND or SEA scope. If a public meeting is requested, additional scope and fee will be required.
- It is assumed NCFCWCD and USACE will distribute the Subsequent IS/MND and SEA, if requested to interested parties.
- It is assumed that NCFCWCD and USACE will post the Subsequent IS/MND and SEA to their respective websites.
- Per 33 CFR Section 333.15(d) the SEA will be 75 pages to meet the page limit requirements under NEPA per the USACE's implementing guidelines.
- HDR assumes no changes to the project description, technical analyses, or substantial modifications will be necessary for preparation of the Final Subsequent IS/MND and SEA. It is also assumed that recirculation of the Draft Subsequent IS/MND and SEA will not be required due to the public and agency comments received.
- There will be one collective NCFCWCD review cycle for each deliverable, and comments will be consolidated and provided to HDR electronically in a single tracked-changes Microsoft Word document(s) to be kept on SharePoint to maintain version control.
- There will be one collective USACE review cycle for each deliverable, and comments will be consolidated and provided to HDR electronically in a single tracked-changes Microsoft Word document(s) to be kept on SharePoint to maintain version control.
- NCFCWCD will be the Lead Agency for CEQA and is the only reviewing agency for the Subsequent IS/MND. No other CEQA Responsible or Trustee Agencies will be included in the Subsequent IS/MND development.
- The USACE will be the Lead Agency for NEPA and is the only reviewing agency for the SEA. No other NEPA Responsible or Cooperating Agencies will be included in the SEA development.
- Expenses - placement (fees) of ad in one newspaper for the NOI, County Clerk posting and filing fees, and CDFW filing fees for the MND will be paid by the NCFCWCD.

- USACE will be responsible for posting the SEA/FONSI in the Federal Register.
- Monthly project meetings for the up to 14-month CEQA/NEPA schedule will be virtual, via Microsoft Teams or telephone.
- Subsequent IS/MND will need to be compliant with AB 434 for accessibility and therefore, this effort is included in the fee.
- Schedule is dependent on the timeliness of the USACE and NCFCWCD response to data needs and review of documents.

B – ENVIRONMENTAL TECHNICAL STUDIES

Biological Resources Surveys

HDR will conduct a biological resources assessment to inventory botanical, fish, and wildlife species and sensitive habitats that may be affected by the project.

The first phase of the assessment will include a desktop analysis of the project site. During this phase applicable data from the U.S. Geological Survey, National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Native Plant Society, and other publicly available data will be reviewed, compiled, and analyzed. This data will then be used to develop preliminary delineations of onsite land uses, and further refine special-status species with the potential to occur in the project vicinity.

The second phase of the assessment will include field surveys of the project area to ground-truth and refine data collected during the desktop analysis; District staff will be included as part of the field surveys as appropriate. This data will be used to prepare a biological resources assessment that will summarize the existing conditions in the proposed project area, in addition to the CEQA biological resources section and permitting packages. The draft version of the biological resources assessment will be submitted electronically to NCFCWCD for review and comment. Comments will be addressed, and the final version of the document will be prepared and submitted to NCFCWCD and used in subsequent permitting efforts.

An aquatic resources delineation will also be completed by HDR biologists concurrently with the biological resources assessment. Aquatic resources delineations utilize standardized methods to identify wetlands and other water features that may be considered waters of the U.S. and subject to Clean Water Act jurisdiction. Guidance on identifying aquatic resources is provided in the *1987 USACE Wetlands Delineation Manual*, the *2008 Regional Supplement to the USACE Wetland Delineation Manual: Arid West (Version 2.0)*, the USACE's regulatory guidance letter regarding *Ordinary High Water Mark Identification* (2005), and *2007 USACE Jurisdictional Determination Form Instructional Guidebook*.

The methodologies outlined in these reference documents will be utilized to delineate the extent and location of aquatic resources in the survey area. Additionally, the extent of CDFW jurisdiction will also be mapped; however, these data will only be incorporated into the CDFW 1602 permit application package and will not be incorporated into the delineation report. Positional data will be collected using a GPS antenna with sub-meter accuracy. The draft version of the aquatic resources delineation report will be submitted electronically to NCFCWCD for review and comment. Comments will be addressed, and the final version of the delineation report will be prepared and submitted to the USACE for verification by HDR on NCFCWCD's behalf.

Deliverables:

- Draft and Final Biological Resources Assessment Report (Microsoft Word and PDF)
- Draft and Final Aquatic Resources Delineation Report (Microsoft Word and PDF)
- Associated spatial data (Microsoft Word and PDF)

Assumptions:

- Access to the project area will be provided by other prior to field mobilization.
- Field surveys can be completed by two HDR biologists in no more than two 10-hour field days, including travel time. If additional time is required to complete the field work due to unforeseen circumstances, additional fee will be needed.
- One round of NCFCWCD review of the technical report has been assumed.
- A tree survey and report is not included in this scope.
- Protocol-level surveys for listed species are not included in this scope.
- HDR assumes that impact determinations from the 1999 SEIS/EIR and Project Description for Increment 3 still stand and will be implemented as so, therefore, no new or additional biological impacts are anticipated.
- HDR assumes that an ARDR is needed and will include USACE, RWQCB, and CDFW jurisdictional boundaries to support the permitting process for the WDR and 1600 Streambed Alteration Agreement.

Cultural and Tribal Resources Surveys

HDR will prepare cultural and tribal documentation consistent with Section 106 and CEQA, which require federal and state agencies to consider the effects/impacts of their projects on historic properties and historical resources.

HDR's approach will identify and evaluate, to the extent possible, previously recorded and/or newly discovered archaeological sites and historic built environment resources. Prior to fieldwork, HDR will request an archaeological records search from the Northwest Information Center of the California Historical Resources Information Center at Sonoma State University to identify previously conducted studies and previously recorded archaeological sites and built environment resources. The field survey will follow the Secretary of the Interior's S*tandards and Guidelines for Archaeology and Historic Preservation* and will be conducted at no more than 15-meter-wide survey transects.

Documentation of encountered sites and built resources will follow the California Office of Historic Preservation's (OHP's) Instructions for Recording Historical Resources, utilizing Department of Parks and Recreation 523 series forms. The resource locations will be recorded with a Global Positioning System receiver using the North American Datum 83 and the Universal Transverse Mercator system, and the data downloaded into a Geographical Information System database for conversion into relevant graphics. The results of these surveys will be provided in a technical report of findings following the OHP's *Archaeological Resources Management Report Guidelines*.

If identified, precontact and historic-era archaeological sites will be evaluated for CRHR and NRHP eligibility at the survey level. If identified, historic built environment resources will be evaluated for significance through the development of a historic context, identification of a period of significance, and assessment of the resource's significant qualities.

To identify tribal resources as part of the Native American consultation requirements under federal and state guidelines (including Assembly Bill [AB] 52) HDR will support NCFCWCD by conducting a Sacred Lands File search with the Native American Heritage Commission. HDR will provide the information from the Sacred Lands File search to NCFCWCD to aid in NCFCWCD's development of consultation letters. NCFCWCD will send consultation letters to interested tribal groups and representatives. NCFCWCD will be responsible for conducting follow up calls to each of the identified individuals requesting information regarding known tribal resources in the vicinity of the project. HDR will support NCFCWCD in the AB 52 tribal consultation process, but for the purposes of this scope of work and fee, will not facilitate tribal consultation telephone calls and/or in-person meetings.

Deliverables:

- Draft and Final Cultural Resource Historic Properties Inventory Report (HPIR) (Microsoft Word and PDF)
- Spatial data (GIS shapefiles)

Assumptions:

- Access to the project area will be granted prior to field mobilization. If additional mobilizations are required, additional fee will be needed.
- Archaeological field surveys can be completed by two HDR archaeologists in no more than one 10-hour field day, including round-trip travel time. If additional time is required to complete the field work due to factors unforeseen circumstances, additional fee will be needed.
- No more than one previously recorded or newly discovered archaeological resource requiring either updating or full documentation will be encountered during fieldwork.
- Built environment field surveys can be completed by two HDR architectural historians in no more than three 8-hour field days including round-trip travel time.
- Up to five historic built environment resources will be identified that intersect with or are immediately adjacent to the Area of Potential Effects (APE), including the Napa Valley Yacht Club (100 Riverside Drive) and the Sea Scout parcel (402 Riverside Drive), that will require documentation and significance evaluation.
- The proposed floodwall is not anticipated to impact the NRHP-listed Hatt Building (REF# 77000316) and no further studies on this structure are included.
- Additional archaeological field studies beyond the field survey (i.e., boundary definition, Phase 2/3 excavations) are not included. If required, additional fee will be needed.
- HDR assumes that NCFCWCD will also conduct follow up calls to each of the identified individuals requesting information regarding known tribal resources in the vicinity of the project.
- Preparing mitigation and/or treatment plans for adverse effects/significant impacts to archaeological or built environment resources is not included. If required, additional fee will be needed.
- Cultural resource specific permits are not required (e.g., Archaeological Resources Protection Act, Fieldwork Authorization).
- One round of NCFCWCD review of the technical report is included.
- HDR will only serve as a support function to NCFCWCD for the AB 52 tribal consultation effort and NCFCWCD will lead this effort. HDR will participate in two AB 52 tribal consultation meetings with NCFCWCD.

C – ENVIRONMENTAL PERMITTING

Clean Water Act Permitting

USACE Section 404 Permiting

Based on the USACE, NCFCWCD and our understanding of the Section 204 agreement, a Clean Water Act Section 404 Permit does not need to be obtained for the project, even if the project results in fill of waters of the U.S.

Regional Water Quality Control Board Permitting Support

NCFCWCD and USACE were issued Order No. 99-074 through the Waste Discharge Requirements (WDR) Program in September 1999. NCFCWCD has continued to coordinate with the San Francisco Bay Regional Water Quality Control Board (RWQCB) under this order and is planning to utilize this order for the project. Therefore, it is our understanding that a Section 401 Water Quality Certification is not required for the project. HDR will provide support to NCFCWCD and USACE for the additional coordination efforts with the RWQCB to address updates to the project since 1999 and when the WDR was issued. Support will include up to three meetings with RWQCB.

Deliverables:

- None

Assumptions:

- HDR assumes that impact determinations from the 1999 SEIS/EIR and Project Description for Increment 3 still stand and will be implemented as so, therefore, no new or additional impacts to WOUS are anticipated and no additional Section 404 permitting through USACE will be required (per Section 204). If design changes are required at a later date and additional impacts result in USACE jurisdiction requiring Section 404 permitting, then HDR can provide support under a separate scope and cost.
- HDR will only provide support to NCFCWCD for their coordination with the RWQCB and will not prepare a 401 water quality certification application under this task. If this assumption changes, then additional fee will be needed.
- HDR will attend up to three meetings with the District and the RWQCB with two environmental staff per meeting.

NMFS ESA Section 7 Consultation

The central California coast steelhead and the southern distinct population segment of green sturgeon are federally listed species that may be affected by the project and require Section 7(a)(2) consultation. In addition, the project may affect designated Essential Fish Habitat (EFH) for Pacific salmon, which includes Chinook and Coho salmon, as well as Pacific Coast groundfish species.

Data from previous project documentation will be utilized to the extent practicable; however, a habitat assessment for NMFS regulated federally listed species will be conducted concurrently with the aquatic resources delineation to capture data gaps. HDR will prepare a Supplemental Biological Assessment (SBA) in accordance with agency standards. The SBA will analyze potential impacts on federally listed or candidate species along with avoidance, minimization, and conservation measures. The draft SBA will be submitted to NCFCWCD and USACE for review. Comments will be addressed, and the final version of the SBA will be prepared for submittal by the USACE to facilitate their consultation with NMFS. HDR will also prepare the reinitiation of Section 7 consultation letter for the USACE's review and use in transmittal to NMFS.

Deliverables:

- Draft and Final NMFS SBA (Microsoft Word and PDF)

Assumptions:

- One round of review of the draft SBA is included.
- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with NCFCWCD and USACE prior to initiation of documentation.
- HDR assumes that Increment 3 can rely on previous Section 7 consultation with NMFS and that a not likely adversely affect determination will be upheld, only requiring a NLAA Letter of Concurrence from NMFS. If design changes are required at a later date and additional impacts result in a determination of may affect, likely to adversely affect listed fish species under NMFS purview requiring an amended BiOp, then HDR can provide support under a separate scope and cost.

USFWS ESA Section 7 Consultation

Section 7(a)(2) of the ESA requires federal agencies to consult with USFWS to make sure that the activities they authorize, fund, or carry out do not jeopardize the continued existence of federally protected species or their critical habitats. The federally listed species or candidate species that may be affected by the project are Delta smelt *(Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleichthys*), Western pond turtle (*Actinemys marmorata*), and Monarch Butterfly (*Danaus Plexippus*). Data provided in previous project documentation will be utilized to the extent practicable; however, a habitat assessment for USFWS regulated federally listed species will be conducted concurrently with the aquatic resources delineation to capture data gaps.

Therefore, HDR will prepare an SBA in accordance with agency standards. The SBA will analyze potential impacts on federally listed or candidate species along with proposed avoidance, minimization, and conservation measures. The draft version of the SBA will be submitted to the NCFCWCD and USACE for review. Comments and edits will be addressed, and the final version of the SBA will be prepared for submittal by the USACE to facilitate their consultation with USFWS. HDR will also prepare the reinitiation of Section 7 consultation letter for the USACE's review and use in transmittal to USFWS.

Deliverables:

- Draft and Final USFWS SBA (Microsoft Word and PDF)
- Written response to comments.

Assumptions:

- Only one round of review of the SBA is included.
- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with NCFCWCD and USACE prior to initiation of documentation.

CDFW 2081 Incidental Take Permit

Section 2081 subdivision (b) of the Fish and Game Code allows CDFW to authorize take of species listed as endangered, threatened, candidate, or a rare plant, if that take is incidental to otherwise lawful activities and if certain conditions are met. State-listed species have the potential to occur at the proposed project location. Therefore, HDR will prepare a CDFW 2081 incidental take permit

application package in accordance with agency standards. Data from previous project documentation will be utilized to the extent practicable. A habitat assessment for state-listed species will be conducted concurrently with the aquatic resources delineation to capture data gaps needed for the permit package. The 2081 application package will analyze potential impacts on state-listed species along with proposed avoidance, minimization, and conservation measures. The draft version of the 2081 permit package will be submitted to NCFCWCD for review. Comments and edits will be addressed, and the final version of the permit package will be prepared for submittal to CDFW.

Deliverables:

- Draft and Final CDFW 2081 Permit Package (Microsoft Word and PDF)
- Written response to comments

Assumptions:

- Only one round of review of the 2081 permit package is included.
- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with NCFCWCD and USACE prior to initiation of documentation.
- Associated permit fees will be paid by NCFCWCD.

CDFW 1602 Lake and Streambed Alteration Agreement

The Project is expected to require a CDFW 1602 permit; therefore, HDR will prepare a notification package for submittal to CDFW. The draft version of the 1602 permit package will be submitted to NCFCWCD for review. Comments will be addressed, and the final version of the permit package will be prepared for submittal to CDFW by HDR on NCFCWCD's behalf. The 1602 permit package will be entered into the CDFW Environmental Permit Information Management System (EPIMS) portal.

Deliverables:

- Draft and Final Streambed Alteration Agreement (PDF and final version in electronic version in EPIMS portal).

Assumptions:

- Only one round of review of the 1602 permit package is included.
- This task will commence once the 65% design milestone has been achieved.
- Associated permit fees will be paid by NCFCWCD.

Resource Agency Coordination

HDR's senior biologist will coordinate directly with resource agency staff to facilitate permit issuance. This coordination is anticipated to involve:

- One, one-hour, virtual pre-application coordination meeting with each resource agency – USACE, CDFW, NMFS, and USFWS – to discuss the proposed project, site conditions, and anticipated impacts, along with proposed avoidance, minimization, and mitigation measures to obtain early feedback that can be incorporated into the permitting documents.
- One, one-day site visit with each resource agency (i.e., USACE, RWQCB, USFWS, and CDFW) to verify site conditions and assess impacts for a total of up to 4 site visits.
- Up to two, one-hour virtual post-application coordination meeting with each resource agency – USACE, CDFW, NMFS, and USFWS – to reconcile comments on the proposed project and

permit applications.

- Post-application submittal coordination time for each resource agency – USACE, RWQCB, CDFW, NMFS, and USFWS – to provide written responses to resource agency comments necessary to deem the applications complete.
- Additional time for permitting support to get final permits.

Section 106 of the NHPA

In accordance with the project's Programmatic Agreement (PA), upon review and acceptance of the HPIR and if requested, HDR will draft a transmittal letter and prepare a submittal package for the 30-day State Historic Preservation Officer (SHPO) to include review and comment on the APE, review and comment on the adequacy of the identification effort, and concurrence on NRHP eligibility recommendations. If requested, HDR will support USACE Cultural Resources Staff with Section 106 Tribal consultation by providing information to USACE staff to assist with drafting tribal consultation letters, contacting tribes, attending consultation meetings, and preparing summaries of findings.

Deliverables:

- Draft and Final Native American and SHPO consultation letters and consultation summaries (Microsoft Word and PDF), if requested.

Assumptions:

- No more than one round of review per letter will be necessary.
- HDR will attend up to three virtual consultation meetings.
- More extensive consultation efforts including site visits, interviews, and ethnographic research into descendent communities are not included. If required, additional fee will be needed.

PROJECT DELIVERY TEAM

Key members of the HDR project delivery team have been involved in the VEIA and the resonance design effort for Increment 3. The HDR project team members and their disciplines are presented in Table 5. The project management team will consist of the following:

- Principal-in-Charge – Tom Chapman will provide oversight for the project and be responsible for client relations, team leadership and strategic direction of the team. Tom will engage with NCFCWCD at key points in the project development and on an as needed basis to support the project team.
- Project Manager – Lee Frederiksen will manage the overall project and project team and will be the key point of contact with NCFCWCD. Lee will provide technical guidance and strategic support to the team and NCFCWCD, including coordination with USACE.
- Deputy Project Manager – Anthony Quintrall will support Lee Frederiksen with the management of the scope, budget and schedule for the project as well as with communication of the project status with NCFCWCD. Anthony will support the team with coordination throughout the design.
- Engineer of Record – Vinson Russo will continue to lead the technical aspects of the overall project and be the main point of contact with NCFCWCD for technical direction of the project.

Table 5. HDR Team

Discipline	Role	Name	Agency/ Company	Phone/Email
Project Management				
Project Management	Principal-in-Charge	Tom Chapman	HDR	(916) 679-8825 Tom.Chapman@hdrinc.com
	Project Manager	Lee Frederiksen	HDR	(916) 213-0569 Lee.Frederiksen@hdrinc.com
	Deputy Project Manager	Anthony Quintrall	HDR	(916) 817-4795 Anthony.Quintrall@hdrinc.com
	Project Accountant	Megan Rogers	HDR	(916) 817-4794 Megan.Rogers@hdrinc.com
	Project Coordinator & QA/QC Manager	Stella Gardenour	HDR	(916) 817-4951 Stella.Gardenour@hdrinc.com
Delivery Team / Quality Control (QC) Reviewers				
USACE Liaison	Discipline Lead	Tom Chapman	HDR	(916) 679-8825 Tom.Chapman@hdrinc.com
Geotechnical	Discipline Lead	Vic Crosariol	HDR	(916) 817-4721 Victor.Crosariol@hdrinc.com
	Delivery Team	Olen Gover	HDR	(916) 817-4930 Olen.Gover@hdrinc.com
	Delivery Team	Jimmy Wong	HDR	(925) 974-2583 Jimmy.Wong@hdrinc.com
	QC Reviewer	Mark Stanley	HDR	(916) 817-4952 Mark.Stanley@hdrinc.com
Structural	Discipline Lead	Mayank Tanwar	HDR	(916) 817-4748 Mayank.Tanwar@hdrinc.com

Discipline	Role	Name	Agency/ Company	Phone/Email
	Delivery Team	Jason Abendroth	HDR	(225) 465-6359 Jason.Abendroth@hdrinc.com
	Delivery Team	Upamanyu Barman	HDR	(916) 817-4700 Upamanyu.Barman@hdrinc.com
	QC Reviewer	Wes Jacobs	HDR	(225) 465-6361 Wesley.Jacobs@hdrinc.com
Scour	Discipline Lead	Renato Espinoza Torres	HDR	(916) 679-8835 Renato.EspinozaTorres@hdrinc.com
	Delivery Team	David Mueller	HDR	(916) 679-8814 David.Mueller@hdrinc.com
	QC Reviewer	Dragoslav Stefanovic	HDR	(858) 712-8318 Dragoslav.Stefanovic@hdrinc.com
Civil	Discipline Lead/Engineer of Record	Vinson Russo	HDR	(916) 817-4771 Vinson.Russo@hdrinc.com
	Discipline Lead (Utilities)	Brandon Hale	HDR	(916) 679-8797 Brandon.Hale@hdrinc.com
	Delivery Team (Utilities)	Jason Nettleton	HDR	(916) 817-4865 Jason.Nettleton@hdrinc.com
	QC Reviewer	Mark Salmon	HDR	(916) 337-8473 Mark.Salmon@hdrinc.com
	QC Reviewer	Daniel Jabbour	HDR	(916) 817-4943 Daniel.Jabbour@hdrinc.com
Cost Estimating	Discipline Lead	Nick Gooding	HDR	(916) 539-3388 Nicholas.Gooding@hdrinc.com
	Delivery Team	Jim Lorenzen	HDR	Jim.Lorenzen@hdrinc.com
	QC Reviewer	Stephen Young	HDR	Stephen.Young@hdrinc.com
CADD	Discipline Lead	Anilea Bennett	HDR	(916) 817-4839 Anilea.Bennett@hdrinc.com
	Delivery Team	Eric Snyder	HDR	(916) 817-4803 Eric.Snyder@hdrinc.com
	QC Reviewer	Alicia Jackson	HDR	(916) 817-4949 Alicia.Jackson@hdrinc.com
Hazardous	Discipline Lead	Charlie O'Neill	HDR	(916) 817-4764 Charles.Oneill@hdrinc.com
H&H	Discipline Lead	Jake Gusman	River Focus	(619) 212-7939 jgusman@riverfocus.com
	Delivery Team	Darren Bertrand	River Focus	(619) 694-8543 dbertrand@riverfocus.com

Discipline	Role	Name	Agency/ Company	Phone/Email
	Delivery Team	Evie Croft	River Focus	(720) 862-7408 ecroft@riverfocus.com
	QC Reviewer	Jon Viducich	River Focus	(503) 619-9610 ecroft@riverfocus.com
	QC Reviewer	Joanna Leu	HDR	(279) 399-7039 Joanna.Leu@hdrinc.com
Survey	Discipline Lead	Christopher Tibbits	RSA+	(707) 252-3301 CTibbits@rsacivil.com
	Delivery Team	Anthony Patrick	RSA+	(707) 252-3301 APatrick@rsacivil.com
	Delivery Team	David Hinman	RSA+	(707) 252-3301 DHinman@rsacivil.com
	Delivery Team	Sarah Brown	RSA+	(707) 252-3301 SBrown@rsacivil.com
	QC Reviewer	Forrest Beresini	RSA+	(707) 252-3301 FBeresini@rsacivil.com
Consequences and Risk Assessment	Discipline Lead	Elena Sossenkina	HDR	(303) 318-6282 Elena.Sossenkina@hdrinc.com
	Delivery Team	Barnard Mondal	HDR	(919) 985-8998 Barnard.Mondal@hdrinc.com
	Delivery Team	Kevin Gerst	HDR	(916) 817-4948 Kevin.Gerst@hdrinc.com
Project Controls Specialist	Delivery Team	Dalton Bradley	HDR	Dalton.Bradley@hdrinc.com
Landscaping	Discipline Lead	Adrian Suzuki	HDR	(213) 239-5852 Adrian.Suzuki@hdrinc.com
	Delivery Team	Matt Gurrad	HDR	(206)-826-4723 Matthew.Gurrad@hdrinc.com
	Delivery Team	Caitlin Smith	HDR	Caitlin.Smith@hdrinc.com
	QC Reviewer	April Cottini	HDR	(813)-262-2729 April.Cottini@hdrinc.com
Environmental	Discipline Lead	Linda Fisher	HDR	Linda.fisher@hdrinc.com
	Delivery Team	Ariel Cohen	HDR	Ariel.Cohen@hdrinc.com
	Bio Team Lead	Danielle Tannourji	HDR	Danielle.Tannourji@hdrinc.com
	Cultural Resources Team Lead	Jay Lloyd	HDR	John.Lloyd@hdrinc.com
	QC Reviewer	Terry Farmer	HDR	Terry.farmer@hdrinc.com

PROJECT SCHEDULE

It is anticipated that the final design of Increment 3 will be completed within 24 months. A detailed schedule for the associated tasks will be provided with the PMP. The schedule will be significantly affected by the time required to complete the DQA, ATR, and SAR reviews and documentation.

PROJECT COST

A summary of the total estimated fees is provided in Table 6.

TABLE 6 Estimated Project Fees

Napa River/Napa Creek Flood Protection Project North of the Bypass Floodwall Design Fee Comparison Table		Amendment No. 5 Design Period 8/12/2025 to 08/12/2027	
NCFCWCD_Napa River Flood Protection 35% Thru 100% Design		Amendment Amount	Revised Contract Fee Estimate
1	Project Management	$ 319,807	$ 319,807
2	Project Meetings and Site Visits	$ 590,098	$ 590,098
3	Finalize Preferred Alternative for Increment 3	$ 146,707	$ 146,707
4	Hazardous and Toxic Materials Support	$ 2,306	$ 2,306
5	Supplemental Survey	$ 146,362	$ 146,362
6	Hydrology and Hydraulics	$ 193,004	$ 193,004
7	Scour and Erosion Protection	$ 161,703	$ 161,703
8	Geotechnical	$ 1,224,661	$ 1,224,661
9	Structural	$ 1,539,574	$ 1,539,574
10	Roadway Transportation Design	$ 168,180	$ 168,180
11	Civil Design	$ 1,012,081	$ 1,012,081
12	Landscaping Design	$ 186,743	$ 186,743
13	OPCC and Construction Schedule	$ 65,344	$ 65,344
14	Risk Assessment/Risk Informed Design	$ 317,351	$ 317,351
15	OMRR&R Manual Updates	$ 24,592	$ 24,592
16	Induced Flooding/Takings Analysis	$ 85,510	$ 85,510
17	Environmental Documentation and Permitting	$ 800,688	$ 800,688
	Increment 3 Subtotal	**$ 6,984,710**	**$ 6,984,710**

EXHIBIT "B-2"

COMPENSATION AND EXPENSE REIMBURSEMENT – AMENDMENT NO. 5

Napa River/Napa Creek Flood Protection Project				
HDR Classification	**HDR 2025 Billing Rate**	**HDR 2026 Billing Rate***	**HDR 2027 Billing Rate***	**HDR 2028 Billing Rate***
Accounting	$164.60	$169.54	$174.63	$179.87
Administrative	$151.94	$156.50	$161.20	$166.04
Sr. CADD/GIS	$244.37	$251.70	$259.25	$267.03
CADD/GIS I	$163.86	$168.78	$173.84	$179.06
CADD/GIS II	$126.36	$130.15	$134.05	$138.07
Graphic Designer	$151.94	$156.50	$161.20	$166.04
Civil Engineer I	$188.39	$194.04	$199.86	$205.86
Civil Engineer II	$166.42	$171.41	$176.55	$181.85
Sr. Civil Engineer I	$213.21	$219.61	$226.20	$232.99
Sr. Civil Engineer II	$194.99	$200.84	$206.87	$213.08
Comms Coordinator	$154.35	$158.98	$163.75	$168.66
Comms QA/QC	$222.60	$229.28	$236.16	$243.24
Construction Manager	$362.86	$373.75	$384.96	$396.51
Construction Quality Manager	$297.60	$306.53	$315.73	$325.20
Construction Inspector	$297.60	$306.53	$315.73	$325.20
Cost Estimator	$202.55	$208.63	$214.89	$221.34
Sr. Environmental Planner I	$278.16	$286.50	$295.10	$303.95
Sr. Environmental Planner II	$268.42	$276.47	$284.76	$293.30
Environmental Planner I	$180.39	$185.80	$191.37	$197.11
Environmental Planner II	$151.94	$156.50	$161.20	$166.04
Environmental Planner III	$110.22	$113.53	$116.94	$120.45
Geologist/Geotechnical Engineer I	$257.02	$264.73	$272.67	$280.85
Geologist/Geotechnical Engineer II	$183.58	$189.09	$194.76	$200.60
Sr. Geologist/Geotechnical Engineer I	$360.85	$371.68	$382.83	$394.31
Sr. Geologist/Geotechnical Engineer II	$348.18	$358.63	$369.39	$380.47
Project Manager	$367.19	$378.21	$389.56	$401.25
Deputy Project Manager	$277.28	$285.60	$294.17	$303.00
Principal In Charge	$367.19	$378.21	$389.56	$401.25
Sr. Cultural Resources Specialist I	$259.95	$267.75	$275.78	$284.05
Sr. Cultural Resources Specialist II	$216.29	$222.78	$229.46	$236.34
Cultural Resource Specialist I	$155.79	$160.46	$165.27	$170.23
Cultural Resource Specialist II	$132.82	$136.80	$140.90	$145.13
Economist I	$268.42	$276.47	$284.76	$293.30
Economist II	$110.66	$113.98	$117.40	$120.92
Mechanical Engineer I	$135.54	$139.61	$143.80	$148.11
Sr. Mechanical Engineer I	$316.37	$325.86	$335.64	$345.71
Structural Engineer I	$216.30	$222.79	$229.47	$236.35
Sr. Structural Engineer I	$360.85	$371.68	$382.83	$394.31
Sr. Structural Engineer II	$227.61	$234.44	$241.47	$248.71
Sr. Technical Advisor I	$360.86	$371.69	$382.84	$394.33
Sr. Technical Advisor II	$311.47	$320.81	$330.43	$340.34
Sr. Water Resources Engineer I	$311.47	$320.81	$330.43	$340.34
Sr. Water Resources Engineer II	$267.80	$275.83	$284.10	$292.62
Sr. Water Resources Engineer III	$236.90	$244.01	$251.33	$258.87

Sr. Biologist I	$270.62	$278.74	$287.10	$295.71
Sr. Biologist II	$196.12	$202.00	$208.06	$214.30
Sr. Biologist III	$161.42	$166.26	$171.25	$176.39
Biologist I	$129.78	$133.67	$137.68	$141.81
Biologist II	$114.64	$118.08	$121.62	$125.27
Technical Editor	$188.91	$194.58	$200.42	$206.43
Project Controls Specialist	$190.25	$195.96	$201.84	$207.90
Sr. Landscape Architect	$222.87	$229.56	$236.45	$243.54
Landscape Architect	$178.52	$183.88	$189.40	$195.08
Sr. Traffic Planner I	$346.03	$356.41	$367.10	$378.11
Sr. Traffic Planner II	$208.65	$214.91	$221.36	$228.00
Traffic Analyst	$124.87	$128.62	$132.48	$136.45
Sr. Transportation Engineer I	$297.77	$306.70	$315.90	$325.38
Transportation Engineer I	$197.94	$203.88	$210.00	$216.30