Meeting of the Central Valley Flood Protection Board
September 26, 2014

Staff Report

Extended Construction Time Variance
Sutter Butte Flood Control Agency, Feather River West Levee Project
Permit Nos. 18793-1, 2, and 3, Sutter and Butte Counties

1.0 – REQUESTED ITEM

Consider authorization to allow the Sutter Butte Flood Control Agency to continue construction activities related to Permit Nos. 18793-1, 2, and 3 of the Feather River West Levee Project past November 1.

2.0 – PERMITTEE

Sutter Butte Flood Control Agency (SBFCA)

3.0 – PROPOSED CONSTRUCTION SITE LOCATIONS

The projects are located along the right (west) bank of the Feather River in Sutter and Butte Counties (Attachment A).

3.1 – 19783-1, Project Area C (approximately 6,460 linear-feet)

*STA 1228+00 to 1230+00, Sutter County, Site ID – RH1C

*STA 1257+00 to 1261 +00, Sutter County, Site ID – FRWLP-CUL-11

*STA 1423+00 to 1433+00, Sutter County, Site ID – MH4C

*STA 1559+40 to 1608+00, Sutter County, Site ID – FRWLP-CUL-04 & 06

3.2 – 18793-2, Project Area B (approximately 4,200 linear-feet)

*STA 649+00 to 691+00, Sutter County, Site ID – IH2B

3.3 – 18793-3, Project Area D (approximately 5,300 linear-feet)

*STA 1848+00 to 1901+00, Butte County, Site ID – MH1D

*All stationing shown is approximate.

4.0 – AUTHORITY OF THE BOARD

California Water Code § 8350 and § 8370

California Code of Regulations, Title 23 (Title 23)

- § 112, Streams Regulated and Nonpermissible Work Periods

5.0 – REASON FOR BOARD ACTION

SBFCA is constructing levee improvements pursuant to Permit Nos. 18793-1, 2, and 3. The levee improvements have reached a critical point, because of delays, and need to be completed as soon as possible to afford the most protection to the surrounding area.

The following Board standard applies to SBFCA's requests (Attachment B):

> *§ 112(b)(2) – "The board, at the prior written request of the applicant, may allow work to be done during the flood season within the floodway, provided that, in the judgment of the board, forecasts for weather and river conditions are favorable."*

SBFCA has submitted an extended Time Variance Request (TVR) for Board action under this section in order to carry them through the estimated construction season's completion. The administrative process pursuant to Section 11(c), which does not require Board action, is insufficient in this case because staff generally limits the amount of TVRs to no longer than 15 days.

Per Title 23, Table 8.1, the flood season for the Feather River is November 1 to April 15. SBFCA has submitted a TVR that would extend the November 1 date to December 23, 2014, contingent upon site and weather conditions.

This request would allow the permittee to continue construction on these important Flood System Improvement Projects without having to return to the Board staff every two weeks for an additional time variance.

6.0 – REQUEST ANALYSIS

SBFCA has requested extensions for Permit Nos. 18793-1, 2, and 3 (Attachment C), Areas C, B, and D, respectively.

6.1 – Request Details

The main reason for considering these extended time variance requests is due to the unanticipated amount of cultural resource impacts encountered during the course of

implementing levee improvements. These impacts have delayed construction, but SBFCA has developed a specific schedule (Section 6.2) to complete this year's improvements, assuming favorable weather conditions.

SBFCA has provided site identification and details, comprehensive monitoring plans, and will continually monitor weather patterns and river forecasts. All levee segments will be graded to the 200-year Water Surface Elevation (WSE) no later than November 14, 2014 (see Section 6.2).

In addition to the data provided, SBFCA included in its requests, the following conditions:

- SBFCA will be responsible for any and all damages to the levees, floodway, and adjacent properties resulting from granting this time variance.
- The State of California (DWR) will have inspectors on site to monitor working conditions and will coordinate directly with SBFCA representatives if they determine that current weather conditions are not conducive to allow work on the levee system to safely continue.
- The State of California, its officers, agents, and employees shall not be held liable for any damages to the project or properties that might be affected by this project resulting from the granting of this variance.
- All other conditions of Permit No. 18793-1, 2, and 3 BD shall remain in effect.
- SBFCA understands that this time variance does not relieve it of the responsibility to obtain authorization from all concerned Federal, State, and local agencies; or to satisfy the California Environmental Quality Act (CEQA) requirements.

6.2 – Extended Construction Schedules

Construction Activity	Area C				Area B	Area D
	RH1C	FRWLP-CUL-11	MH4C	FRWLP-CUL-04 & FRWLP-CUL-06	IH2B	MH1D
Anticipated Wall Completion	9/25/2014	10/31/2014	10/17/2014	10/20/2014	10/8/2014	10/15/2014
Anticipated Grading to Reach 200-YR WSE	10/15/2014	11/14/2014	NA	NA	11/7/2014	NA
Anticipated Grading Completion	10/31/2014	11/21/2014	11/21/2014	11/15/2014	11/21/2014	11/15/2014
Anticipated Patrol Road Completion	11/15/2014	12/5/2014	12/5/2014	12/5/2014	12/5/2014	12/1/2014
Anticipated Completion of Erosion Control	12/5/2014	12/12/2014	12/12/2014	12/19/2014	12/15/2014	12/15/2014

Other associated levee improvement work required to be completed per the contract documents and to winterize the project sites will be permitted up to the requested extension date of December 23, 2014.

6.3 – Hydraulic Risks

Hydraulic risks for the proposed construction work are very minimal due to the incredibly low reservoir levels in both Lake Oroville and New Bullards Bar Reservoir. Based on SBFCA's analysis, Lake Oroville will have approximately 2.5 million acre-feet of storage by November 1 and Bullards Bar Reservoir would have approximately 596,000 acre-feet of storage. These storage values translate into Lake Oroville being able to contain anywhere from a 1,000-year, 1-day event to a 20-year, 30-day event and Bullards Bar Reservoir could contain anywhere from a 200-year, 1-day event to a 2-year, 30-day event.

6.4 – Staff Conclusions

In addition to the extended TVRs, SBFCA has also submitted their Flood Contingency and Emergency Levee Reconstruction Plans (Attachment D), which outline the triggers and methods for reconstructing the levee in an emergency situation.

Board staff has concluded that extended time variance for these Flood System Improvement Projects are in the Board, SBFCA's, and the public's best interest; it would save staff and SBFCA processing and review time; and the proposed work would be done at a very low-risk to public safety due to the low reservoir levels upstream of the project sites.

Staff also determined that the conditions SBFCA has included in the requests and the Flood Contingency and Emergency Levee Reconstruction Plans are sufficient to remediate any further concerns with regards to findings of favorable weather conditions. The river stage trigger levels and the ability of the inspectors to stop construction activities if weather conditions are not conducive to construction activities are very effective conditions for making sure work is done safely and in compliance with standards. It will also provide a continual assessment of the finding of favorable weather conditions.

7.0 – STAFF RECOMMENDATION

Staff recommends that the Board:

- **approve** the request from SBFCA to extend the window for possible construction activities to December 23, 2014, under the conditions and in the manner outlined

in Section 6.0 and Attachment B of this report, including favorable weather conditions; and

- **direct** the Board's Executive Officer to:
    - issue the extended time variance to SBFCA, as requested; and
    - coordinate with SBFCA and inspectors during the continuing construction and monitor the weather and river conditions during the variance period.

8.0 – LIST OF ATTACHMENTS

A. SBFCA FRWL Project Construction Phasing Map

B. Extended Time Variance Requests:

B1. 18793-1, Project Area C
B2. 18793-2, Project Area B
B3. 18793-3, Project Area D

C. Issued Permits (conditions for reference only):

C1. 18793-1, Project Area C
C2. 18793-2, Project Area B
C3. 18793-3, Project Area D

D. Flood Contingency and Emergency Levee Reconstruction Plans

Prepared by:	Nancy Moricz, PE, Senior Engineer, WR
Document Review:	Len Marino, PE, Chief Engineer
Legal Review:	Leslie Gallagher, Board Chief Counsel / Acting Executive Officer

Attachment A - Construction Phasing Map of Overall FRWLP

OROVILLE
THERMALITO AFTERBAY
OROVILLE WILDLIFE AREA
Reach 41
2368+00
STA 2368+26
Reach 39
Reach 40
2300+00
Reach 37
Reach 38
Reach 36
Reach 35
2200+00
BIGGS
PROJECT AREA D (D1 & D2) (PERMIT 18793-3)
Reach 34
2100+00
Reach 32
Reach 33
2000+00
Reach 31
GRIDLEY
1900+00
Reach 30
M.A.-7
1800+00
Reach 29
STA 1765+00
Reach 28
PROJECT AREA D3
Reach 27
Reach 26
1700+00
STA 1674+37
STA 1625+00
Reach 25
1600+00
Reach 24
Reach 23
LIVE OAK
1500+00
SUNSET PUMP STATION
Reach 22
M.A.-16
Reach 21
1400+00
PROJECT AREA C (PERMIT 18793-1)
Reach 20
1300+00
Reach 19
L.D.-9
1200+00
Reach 18
Reach 17
1100+00
MARYSVILLE
MARYSVILLE L.D.
Reach 16
1000+00
YUBA CITY
Reach 15
Reach 14
900+00
Reach 13
STA 845+00
SHANGHAI BEND
Reach 12
Reach 11
800+00
STA 832+40
Reach 10
L.D.-1
700+00
PROJECT AREA B (PERMIT 18793-2)
Reach 9
Reach 8
600+00
STA 512+00
Reach 7
500+00
STAR BEND
Reach 6
STA 478+68
Reach 5
400+00
PROJECT AREA A1
Reach 4
300+00
Reach 3
M.A.-3
200+00
STA 202+50
Reach 2
100+00
PROJECT AREA A2
10+00
Reach 1
STA 10+00
ANGEL SLOUGH
SAMBORN SLOUGH
WATERFOWL MANAGEMENT AREA
SUTTER BUTTES
SNAKE RIVER
BUTTE SLOUGH
LONG LAKE
SUTTER BYPASS
NELSON SLOUGH
SYCAMORE SLOUGH
HIATT LAKE
JACK SLOUGH
YUBA RIVER
BEAR RIVER
FEATHER RIVER
WHEATLAND
SUBJECT TO CHANGE

Legend

- Project Area A1, Future
- Project Area A2, Future
- Project Area B, 2014
- Project Area C, 2013
- Project Area D (D1&D2), 2014
- Project Area D3, Future
- No Levee Work Reaches

700+00 Levee Stationing
Reach 1 Reach Number
Major Streams
SBFCA Boundary
DWR Maintenance Areas
Levee Districts
Cities

DATA: ESRI ArcGIS Online; ESRI Maps and Data, 2008; USGS and © 2007 National Geographic Society; URS, 2010

Path: G:\143618_Sutter_Butte\map_docs\mxd\Arc10\FRWL_Const_phasing_Exhibit_20131008.mxd Date Saved: 10/11/2013 9:00:18 AM User: aarnold

0 1 2 3 4 5 Miles
1 in = 1.5 miles

N

HDR
ONE COMPANY | Many Solutions SM

Sutter Butte Flood Control Agency
Feather River West Levee
Construction Phasing Plan

October, 2013

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991
(530) 870-4425
sutterbutteflood.org

Counties
Butte County
Sutter County

Cities
City of Biggs
City of Gridley
City of Live Oak
City of Yuba City

Levee Districts
Levee District 1
Levee District 9

September 10, 2014

Mr. William Edgar
President
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

SUBJECT: Extension of Construction Time for Ongoing Work on the Feather River West Levee – Permit No. 18793-1 BD (Project Area C)

Dear Mr. Edgar:

The Sutter Butte Flood Control Agency (SBFCA) respectfully requests a variance to our Central Valley Flood Protection Board Encroachment Permit No. 18793-1 BD to allow work within the Feather River West Levee Project Area C to continue through December 23, 2014. The primary reason for this request stems from the unanticipated amount of cultural resources impacts encountered during the course of implementing the levee improvements. The SBFCA team has a firm handle on overcoming these impacts which will greatly improve public safety and minimize costs impacts to the project, however, an extension of our construction season past November 1st will be required in order to successfully complete our work.

During this extension period, SBFCA is prepared to implement the appropriate precautionary measures to ensure the integrity of the federal flood protection facilities consistent with our responsibilities as the Local Maintaining Agency for this levee:

- Site identification and details for specific activities planned under this permit extension are presented in Attachment A.
- Storm patterns, rainfall, stream flows, and reservoir storage will be continuously monitored.
- A comprehensive monitoring plan is presented in Attachment B and includes trigger water surface elevations and flows for each work site. Trigger water surface elevations will serve to initiate rehabilitation of any degraded portions of the levee.
- All levee segments are scheduled to be re-graded to 200-yr elevations by November 14, with the remaining finish grading to occur by the end of November.

From a risk-based standpoint, Lake Oroville is currently at a level well below historical averages and is expected to have storage availability for upwards of 2.5 million acre-feet by November 1, 2014 (see analysis in Attachment C). This is enough storage to contain anywhere from the 1,000-year, 1-day event to the 20-year, 30-day event without releasing any water. This assessment of storage potential suggests that the project sites are at low risk for flooding during the extension period.

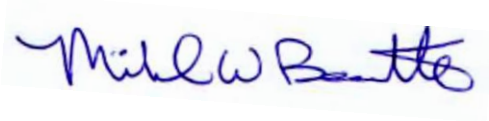
SBFCA understands and will comply with the following:

- SBFCA will be responsible for any and all damages to the levees, floodway, and adjacent properties resulting from granting this variance.
- The State of California will have inspectors on site to monitor working conditions and will coordinate directly with SBFCA representatives if they determine that current weather conditions are not conducive to allow work on the levee system to safely continue.
- The State of California, its officers, agents, and employees shall not be held liable for any damages to the project or properties that might be affected by this project resulting from the granting of this variance.
- All other conditions of Permit No. 18793-1 BD shall remain in effect.
- SBFCA understands that this letter of approval does not relieve it of the responsibility to obtain authorization from all concerned Federal, State, and local agencies; or to satisfy the California Environmental Quality Act (CEQA) requirements.

SBFCA requests the Central Valley Flood Protection Board's approval for a variance to Permit No. 18793-1 BD to extend the construction season to December 23, 2014 for the work described in Attachment A. Please indicate your decision below and return a copy to SBFCA.

Please contact me at: (916) 679-8861 or m.bessette@sutterbutteflood.org if you have any questions regarding this request.

Sincerely,



Michael W. Bessette, P.E.
Director of Engineering
Sutter Butte Flood Control Agency

Enclosures:

1. Attachment A – Site Identification
2. Attachment B – Monitoring Plan
3. Attachment C – Reservoir Storage Availability in Lake Oroville

The above request for a variance to Permit No. 18793-1 BD to extend the construction season to December 23, 2014 is hereby approved.

By: _____ Date: _____

ATTACHMENT A

SITE IDENTIFICATION

LOCATION

Feather River West Levee (FRWL) Project Area C extends upstream from Shanghai Bend (STA 844+75) for a distance of approximately 14.8 miles to ¼-mile north of Campbell Road in the City of Live Oak (STA 1628+00). [Figure A-1]

SITE DETAILS

Details for specific activities planned under this permit extension are included in the following table.

Table A-1. Site details for planned activities under this permit extension.

Site ID -->	RH1C	FRWLP-CUL-11	MH4C	FRWLP-CUL-04 & FRWLP-CUL-06
COUNTY	Sutter	Sutter	Sutter	Sutter
FROM APPROXIMATELY	1228+00	1257+00	1423+00	1559+40
TO APPROXIMATELY	1230+00	1261+00	1433+00	1608+00
LENGTH [FEET]	200	400	1000	4860
WALL TYPE	SB/DMM	SB	SB	SB
POTENTIAL WALL TYPE CHANGE	N/A	CB/DMM	CB/DMM	N/A
LEVEE CROWN ELEVATION [NAVD88]	87	88	91	94
APPROX PLATFORM ELEVATION [NAVD88]	78	79	85.5	89.5
200 YEAR WSE [NAVD88]	81	81	83.5	86.5
FREEBOARD [FEET]	-3	-2	2	3
PIPES	16" IRR	NONE	SUNSET	NONE
ANTICIPATED WALL COMPLETION	9/25/2014	10/31/2014	10/17/2014	10/20/2014
ANTICIPATED GRADING TO REACH 200 YEAR WSE	10/15/2014	11/14/2014	N/A	N/A
ANTICIPATED GRADING COMPLETION	10/31/2014	11/21/2014	11/21/2014	11/15/2014
ANTICIPATED PATROL ROAD COMPLETION	11/15/2014	12/5/2014	12/5/2014	12/5/2014
ANTICIPATED COMPLETION OF EROSION CONTROL	12/5/2014	12/12/2014	12/12/2014	12/19/2014

SB = SOIL BENTONITE; DMM = DEEP MIX METHOD; CB = CEMENT BENTONITE

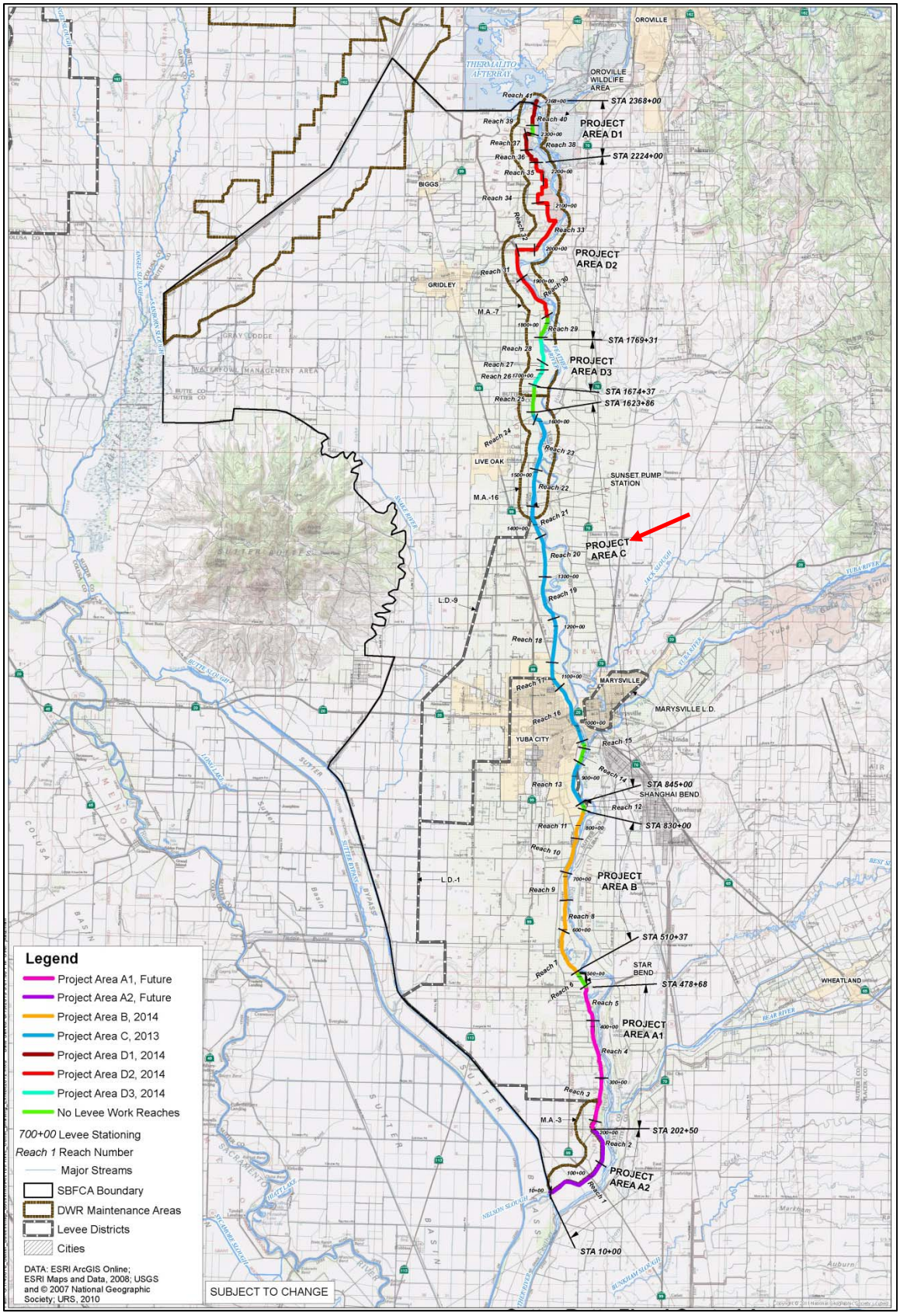


Figure A-1. SBFCA FRWL Construction Phasing Plan (Source: HDR, August 2013)

ATTACHMENT B

MONITORING PLAN

HYDROLOGIC MONITORING

Storm patterns, rainfall, stream flows, and reservoir storage will be continuously monitored through the available network of gages, including those listed in Table B-1.

Table B-1. Partial list of available gage data within the study area.

Gage Name	Code	River Stage	River Discharge	Precip.	Reservoir Storage	Reservoir Inflow/ Outflow	Reservoir Scheduled Release
Feather River Above Star Bend	FSB	✓	✓				
Feather River at Boyds Landing	FBL	✓	✓				
Feather River near Gridley	GRL	✓	✓				
New Bullards Bar	BUL			✓	✓	✓	✓
Oroville Dam	ORO			✓	✓	✓	✓
Yuba River at Parks Bar Bridge	YPB		✓				
Yuba River near Smartville	YRS	✓	✓				

In addition, a high flow event is typically accompanied by daily meetings at the Department of Water Resources' Flood Operations Center which are open to representatives of public agencies. From these meetings, SBFCA will have access to information regarding forecasted reservoir releases on a daily basis.

TRIGGER EVENTS

The following table includes details relating to an identified trigger event for each site relevant to this permit extension application. Triggers are set for when water surface elevations (WSELs) are projected to reach 3-feet below the elevation of the degraded levee at each site within the time required to restore the levee to full height (see Table B-2). Forecasted reservoir releases exceeding the trigger event will serve to initiate the closure of any degraded portions of the levee. Trigger elevations and flows are listed in Table B-2 for each site.

Table B-2. Trigger elevations and flows for each project site.

Site ID -->	RH1C	FRWLP-CUL-11	MH4C	FRWLP-CUL-04 & FRWLP-CUL-06
200 YEAR WSE [NAVD88]	81	81	83.5	86.5
APPROX PLATFORM ELEVATION [NAVD88]	78	79	85.5	89.5
TRIGGER WSEL [NAVD88]	75	76	82.5	86.5
TRIGGER FLOW [CFS]	150,000	150,000	175,000	180,000
ANTICIPATED TIME REQUIRED TO RE-GRADE UP TO 200 YEAR WSE FOLLOWING A TRIGGER EVENT	N/A[1]	2 DAYS	N/A[2]	N/A[2]
ANTICIPATED TIME REQUIRED TO RE-GRADE UP TO CROWN ELEVATION FOLLOWING A TRIGGER EVENT	N/A[1]	5 DAYS	4 DAYS	7 DAYS

[1]Grading scheduled to be completed before November 1st.

[2]Working platforms set above 200-year WSEL.

ATTACHMENT C

RESERVOIR STORAGE AVAILABILITY
IN LAKE OROVILLE

SUMMARY OF ANALYSIS

Lake Oroville is currently at a level well below historical averages and has the capability to significantly mitigate any incoming flood flows during the upcoming winter months. Current and historical reservoir storage data were obtained from the Department of Water Resources (DWR) California Data Exchange Center (CDEC)[1]. Current reservoir storage was projected to November based on historical trends. Lake Oroville is expected to have storage availability for upwards of 2.5 million acre-feet by November 1, 2014 (Figure C-1).

Unregulated flow-frequency curves at Oroville Dam (Figure C-2) were taken from the Central Valley Hydrology Study (CVHS)[2] and were used to estimate what size flood events could be completely contained by the reservoir *without spilling or releasing any water*. With 2.5 million acre-feet of available storage, Lake Oroville would be able to hold anywhere from a 1,000-year, 24-hour event to a 20-year, 30-day event. Table C-1 summarizes all frequency events that could be contained by Lake Oroville.

Table C-1. Flood events that could be completely contained by Lake Oroville (X) without any reservoir releases.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	X	X	X	X	X	X	X	X	X
3 Days	X	X	X	X	X	X	X	X	X
7 Days	X	X	X	X	X	X	X		
15 Days	X	X	X	X	X	X			
30 Days	X	X	X	X					

Given this assessment of storage potential, the project sites along the Feather River West Levee are at a low risk for flooding.

[1] Department of Water Resources (DWR). "Conditions for Major Reservoirs". Data obtained on 19AUG2014, http://cdec.water.ca.gov/cdecapp/resapp/getResGraphsMain.action.

[2] U.S. Army Corps of Engineers (USACE) Sacramento District & California Department of Water Resources (DWR). "Unregulated Rain-Flood Frequency Curves, Analysis Description". 12JUN2012. Data Obtained on 19AUG2014, http://cvhydrology.org/.

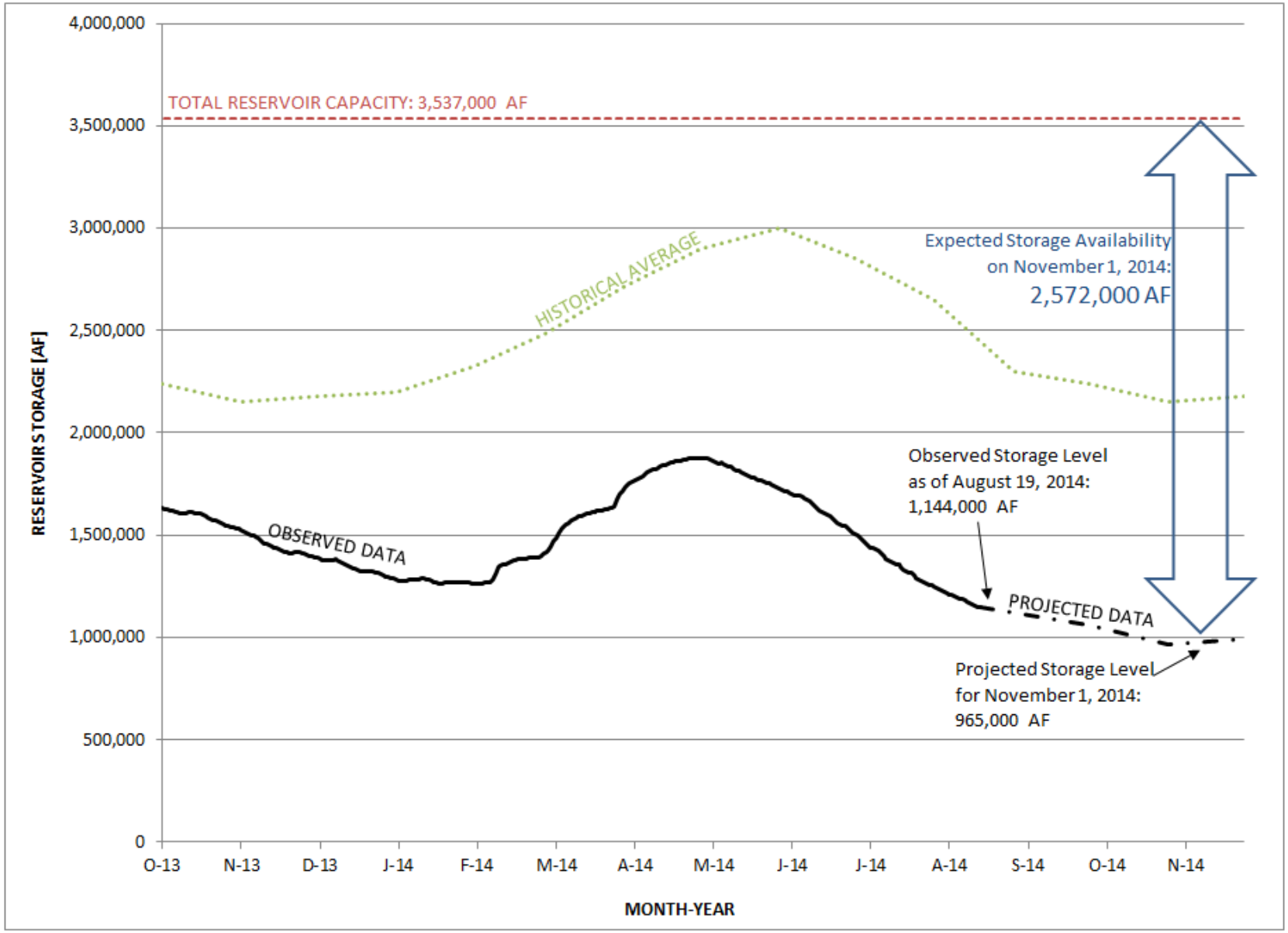


Figure C-1. Expected storage availability in Lake Oroville.

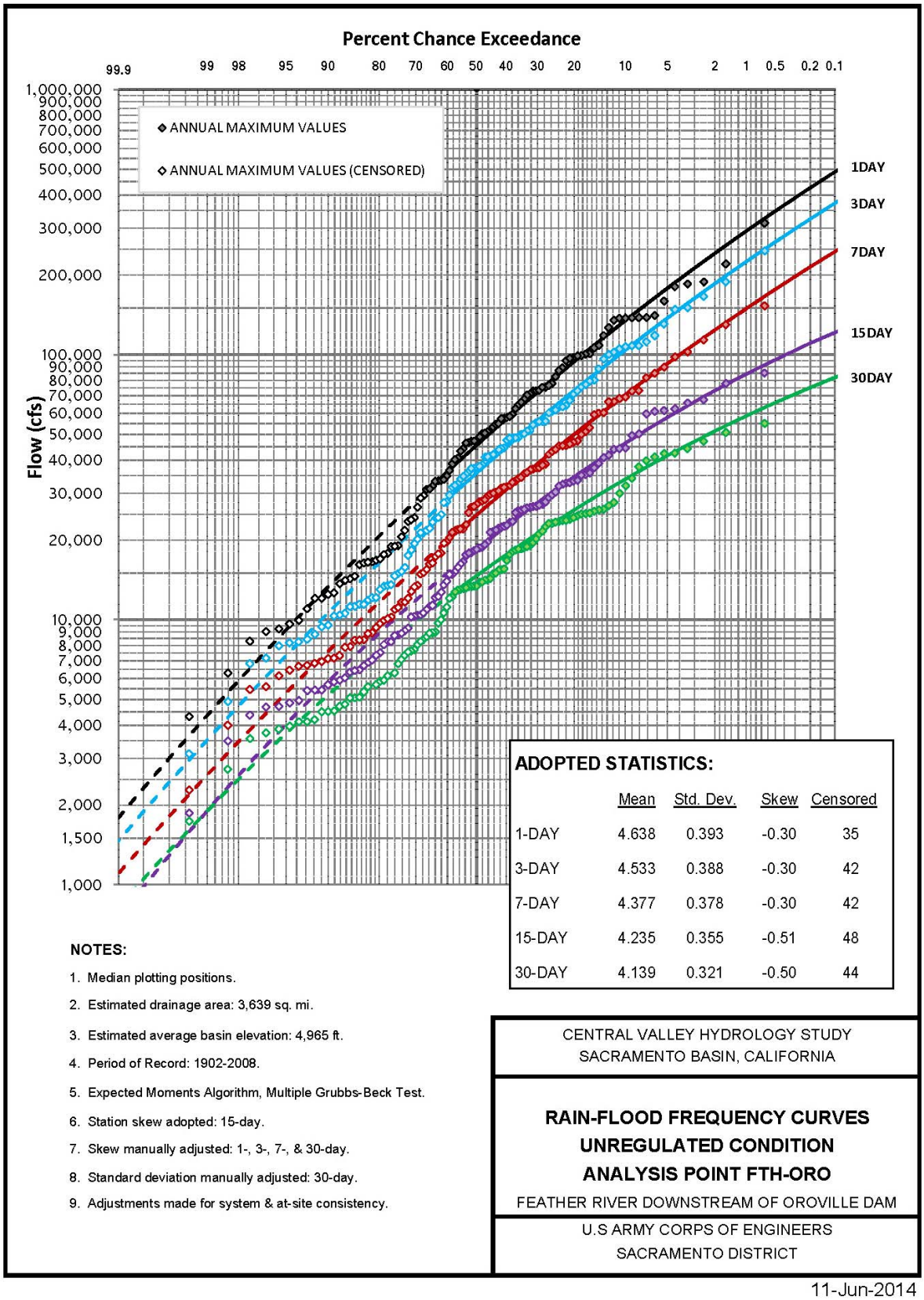


Figure C-2. Unregulated flow-frequency curve below Oroville Dam (Source: CVHS, 2014).

Table C-2. Estimated flows (cfs) taken from the CVHS unregulated flow-frequency curve below Oroville Dam.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	45,000	95,000	145,000	190,000	245,000	300,000	350,000	430,000	500,000
3 Days	35,000	70,000	110,000	145,000	190,000	230,000	260,000	325,000	380,000
7 Days	25,000	50,000	70,000	95,000	125,000	150,000	185,000	210,000	250,000
15 Days	18,000	34,000	45,000	60,000	70,000	85,000	95,000	110,000	125,000
30 Days	15,000	25,000	35,000	42,000	50,000	60,000	65,000	75,000	85,000

Table C-3. Estimated volumes (acre-feet) taken from the CVHS unregulated flow-frequency curve below Oroville Dam.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	89,256	188,430	287,603	376,860	485,950	595,041	694,215	852,893	991,736
3 Days	208,264	416,529	654,545	862,810	1,130,579	1,368,595	1,547,107	1,933,884	2,261,157
7 Days	347,107	694,215	971,901	1,319,008	1,735,537	2,082,645	2,568,595	2,915,702	3,471,074
15 Days	535,537	1,011,570	1,338,843	1,785,124	2,082,645	2,528,926	2,826,446	3,272,727	3,719,008
30 Days	892,562	1,487,603	2,082,645	2,499,174	2,975,207	3,570,248	3,867,769	4,462,810	5,057,851

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991
(530) 870-4425
sutterbutteflood.org

Counties
Butte County
Sutter County

Cities
City of Biggs
City of Gridley
City of Live Oak
City of Yuba City

Levee Districts
Levee District 1
Levee District 9

September 10, 2014

Mr. William Edgar
President
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

SUBJECT: Extension of Construction Time for Ongoing Work on the Feather River West Levee – Permit No. 18793-2 BD (Project Area B)

Dear Mr. Edgar:

The Sutter Butte Flood Control Agency (SBFCA) respectfully requests a variance to our Central Valley Flood Protection Board Encroachment Permit No. 18793-2 BD to allow work within the Feather River West Levee Project Area B to continue through December 23, 2014. The primary reason for this request stems from the unanticipated amount of cultural resources impacts encountered during the course of implementing the levee improvements. The SBFCA team has a firm handle on overcoming these impacts which will greatly improve public safety and minimize costs impacts to the project, however, an extension of our construction season past November 1st will be required in order to successfully complete our work.

During this extension period, SBFCA is prepared to implement the appropriate precautionary measures to ensure the integrity of the federal flood protection facilities consistent with our responsibilities as the Local Maintaining Agency for this levee:

- Site identification and details for specific activities planned under this permit extension are presented in Attachment A.
- Storm patterns, rainfall, stream flows, and reservoir storage will be continuously monitored.
- A comprehensive monitoring plan is presented in Attachment B and includes trigger water surface elevations and flows for each work site. Trigger water surface elevations will serve to initiate rehabilitation of any degraded portions of the levee.
- All levee segments are scheduled to be re-graded to 200-yr elevations by November 7th, with the remaining finish grading to occur by the end of November.

From a risk-based standpoint, Lake Oroville is currently at a level well below historical averages and is expected to have storage availability for upwards of 2.5 million acre-feet by November 1, 2014 (see analysis in Attachment C). This is enough storage to contain anywhere from the 1,000-year, 1-day event to the 20-year, 30-day event without releasing any water. Similarly, inflows from the Yuba River are regulated by New Bullards Bar Reservoir which, with 596,000 acre-feet of storage anticipated by November 1, 2014,

would be able to contain anywhere from the 200-year, 1-day event to the 2-year, 30-day event (see analysis in Attachment D). This assessment of storage potential suggests that the project sites are at low risk for flooding during the extension period.

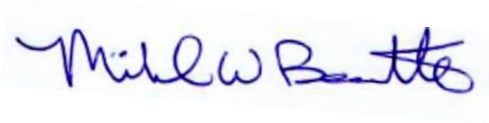
SBFCA understands and will comply with the following:

- SBFCA will be responsible for any and all damages to the levees, floodway, and adjacent properties resulting from granting this variance.
- The State of California will have inspectors on site to monitor working conditions and will coordinate directly with SBFCA representatives if they determine that current weather conditions are not conducive to allow work on the levee system to safely continue.
- The State of California, its officers, agents, and employees shall not be held liable for any damages to the project or properties that might be affected by this project resulting from the granting of this variance.
- All other conditions of Permit No. 18793-2 BD shall remain in effect.
- SBFCA understands that this letter of approval does not relieve it of the responsibility to obtain authorization from all concerned Federal, State, and local agencies; or to satisfy the California Environmental Quality Act (CEQA) requirements.

SBFCA requests the Central Valley Flood Protection Board's approval for a variance to Permit No. 18793-2 BD to extend the construction season to December 23, 2014 for the work described in Attachment A. Please indicate your decision below and return a copy to SBFCA.

Please contact me at: (916) 679-8861 or m.bessette@sutterbutteflood.org if you have any questions regarding this request.

Sincerely,



Michael W. Bessette, P.E.
Director of Engineering
Sutter Butte Flood Control Agency

Enclosures:

1. Attachment A – Site Identification
2. Attachment B – Monitoring Plan
3. Attachment C – Reservoir Storage Availability in Lake Oroville
4. Attachment D – Reservoir Storage Availability in New Bullards Bar

The above request for a variance to Permit No. 18793-2 BD to extend the construction season to December 23, 2014 is hereby approved.

By: _____ Date: _____

ATTACHMENT A

SITE IDENTIFICATION

LOCATION

Feather River West Levee (FRWL) Project Area B extends from Star Bend Road (STA 512+00) for a distance of approximately 6.1 miles to Shanghai Bend (STA 832+40) in Yuba City, CA. [Figure A-1]

SITE DETAILS

Details for specific activities planned under this permit extension are included in the following table.

Table A-1. Site details for planned activities under this permit extension.

Site ID -->	IH2B
COUNTY	Sutter
FROM APPROXIMATELY	649+00
TO APPROXIMATELY	691+00
LENGTH [FEET]	4200
WALL TYPE	SB
POTENTIAL WALL TYPE CHANGE	N/A
LEVEE CROWN ELEVATION [NAVD88]	73
APPROX PLATFORM ELEVATION [NAVD88]	66
200 YEAR WSE [NAVD88]	68
FREEBOARD [FEET]	-2
PIPES	FWD
ANTICIPATED WALL COMPLETION	10/8/2014
ANTICIPATED GRADING TO REACH 200 YEAR WSE	11/7/2014
ANTICIPATED GRADING COMPLETION	11/21/2014
ANTICIPATED PATROL ROAD COMPLETION	12/5/2014
ANTICIPATED COMPLETION OF EROSION CONTROL	12/15/2014

SB = SOIL BENTONITE; FWD = FEATHER WATER DISTRICT

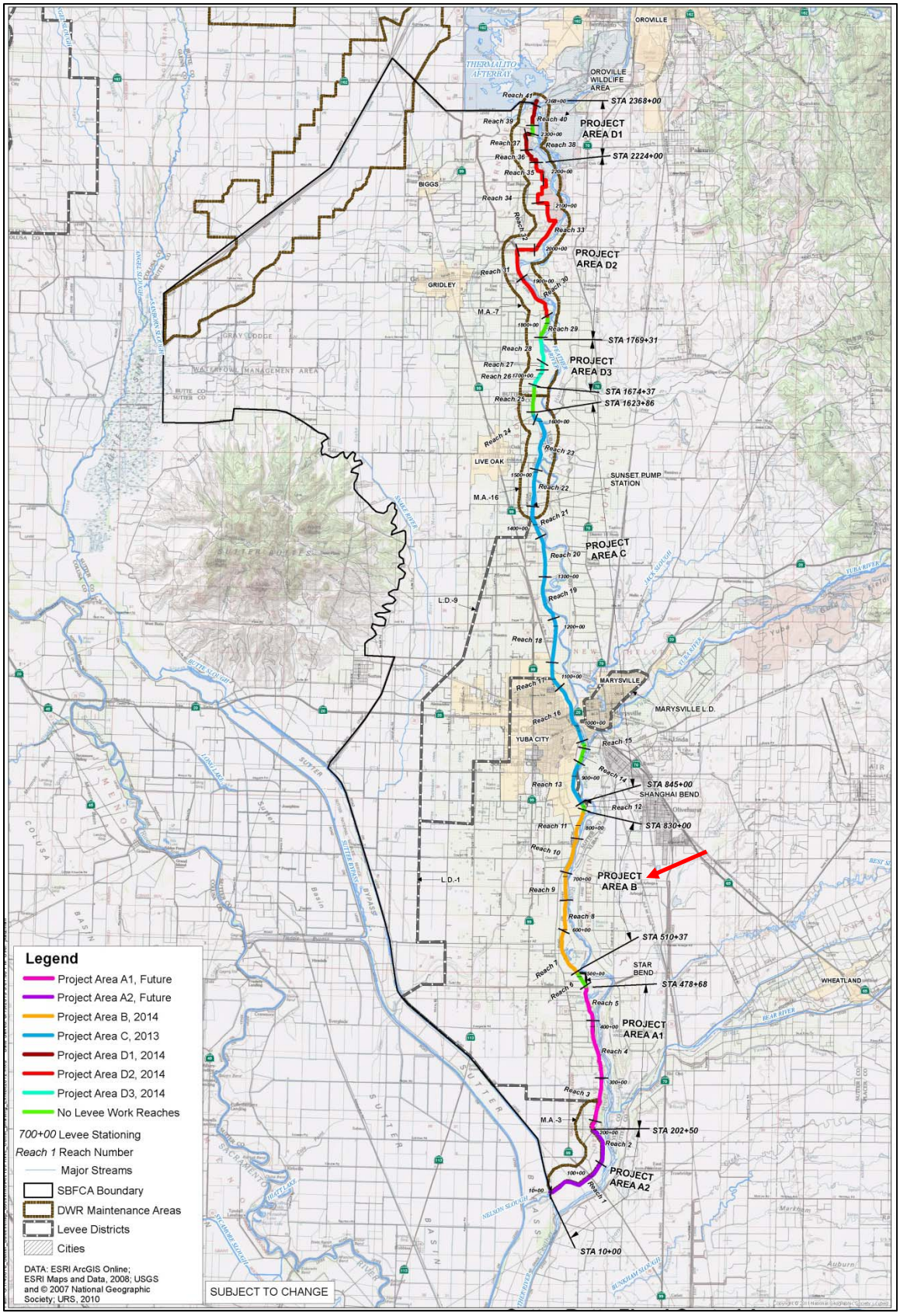


Figure A-1. SBFCA FRWL Construction Phasing Plan (Source: HDR, August 2013)

ATTACHMENT B

MONITORING PLAN

HYDROLOGIC MONITORING

Storm patterns, rainfall, stream flows, and reservoir storage will be continuously monitored through the available network of gages, including those listed in Table B-1.

Table B-1. Partial list of available gage data within the study area.

Gage Name	Code	River Stage	River Discharge	Precip.	Reservoir Storage	Reservoir Inflow/ Outflow	Reservoir Scheduled Release
Feather River Above Star Bend	FSB	✓	✓				
Feather River at Boyds Landing	FBL	✓	✓				
Feather River near Gridley	GRL	✓	✓				
New Bullards Bar	BUL			✓	✓	✓	✓
Oroville Dam	ORO			✓	✓	✓	✓
Yuba River at Parks Bar Bridge	YPB		✓				
Yuba River near Smartville	YRS	✓	✓				

In addition, a high flow event is typically accompanied by daily meetings at the Department of Water Resources' Flood Operations Center which are open to representatives of public agencies. From these meetings, SBFCA will have access to information regarding forecasted reservoir releases on a daily basis.

TRIGGER EVENTS

The following table includes details relating to an identified trigger event for each site relevant to this permit extension application. Triggers are set for when water surface elevations (WSELs) are projected to reach 3-feet below the elevation of the degraded levee at each site within the time required to restore the levee to full height (see Table B-2). Forecasted reservoir releases exceeding the trigger event will serve to initiate the closure of any degraded portions of the levee. Trigger elevations and flows are listed in Table B-2 for each site.

Table B-2. Trigger elevations and flows for each project site.

Site ID -->	IH2B
200 YEAR WSE [NAVD88]	68
APPROX PLATFORM ELEVATION [NAVD88]	66
TRIGGER WSEL [NAVD88]	63
TRIGGER FLOW [CFS]	320,000
ANTICIPATED TIME REQUIRED TO RE-GRADE UP TO 200 YEAR WSE FOLLOWING A TRIGGER EVENT	7 DAYS
ANTICIPATED TIME REQUIRED TO RE-GRADE UP TO CROWN ELEVATION FOLLOWING A TRIGGER EVENT	14 DAYS

ATTACHMENT C

RESERVOIR STORAGE AVAILABILITY
IN LAKE OROVILLE

SUMMARY OF ANALYSIS

Lake Oroville is currently at a level well below historical averages and has the capability to significantly mitigate any incoming flood flows during the upcoming winter months. Current and historical reservoir storage data were obtained from the Department of Water Resources (DWR) California Data Exchange Center (CDEC)[1]. Current reservoir storage was projected to November based on historical trends. Lake Oroville is expected to have storage availability for upwards of 2.5 million acre-feet by November 1, 2014 (Figure C-1).

Unregulated flow-frequency curves at Oroville Dam (Figure C-2) were taken from the Central Valley Hydrology Study (CVHS)[2] and were used to estimate what size flood events could be completely contained by the reservoir *without spilling or releasing any water*. With 2.5 million acre-feet of available storage, Lake Oroville would be able to hold anywhere from a 1,000-year, 24-hour event to a 20-year, 30-day event. Table C-1 summarizes all frequency events that could be contained by Lake Oroville.

Table C-1. Flood events that could be completely contained by Lake Oroville (X) without any reservoir releases.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	X	X	X	X	X	X	X	X	X
3 Days	X	X	X	X	X	X	X	X	X
7 Days	X	X	X	X	X	X	X		
15 Days	X	X	X	X	X	X			
30 Days	X	X	X	X					

Given this assessment of storage potential, the project sites along the Feather River West Levee are at a low risk for flooding.

[1] Department of Water Resources (DWR). "Conditions for Major Reservoirs". Data obtained on 19AUG2014, http://cdec.water.ca.gov/cdecapp/resapp/getResGraphsMain.action.

[2] U.S. Army Corps of Engineers (USACE) Sacramento District & California Department of Water Resources (DWR). "Unregulated Rain-Flood Frequency Curves, Analysis Description". 12JUN2012. Data Obtained on 19AUG2014, http://cvhydrology.org/.

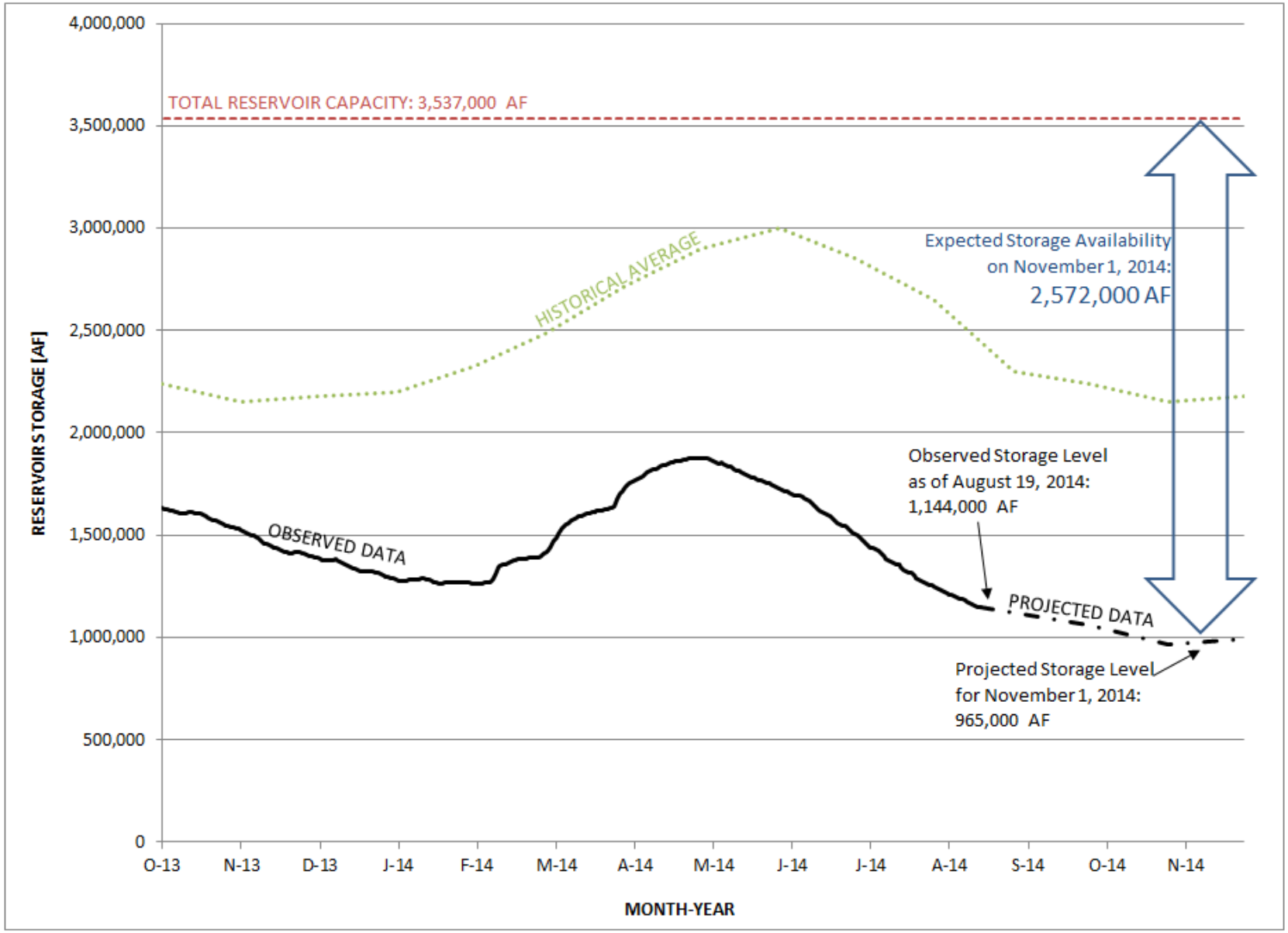


Figure C-1. Expected storage availability in Lake Oroville.

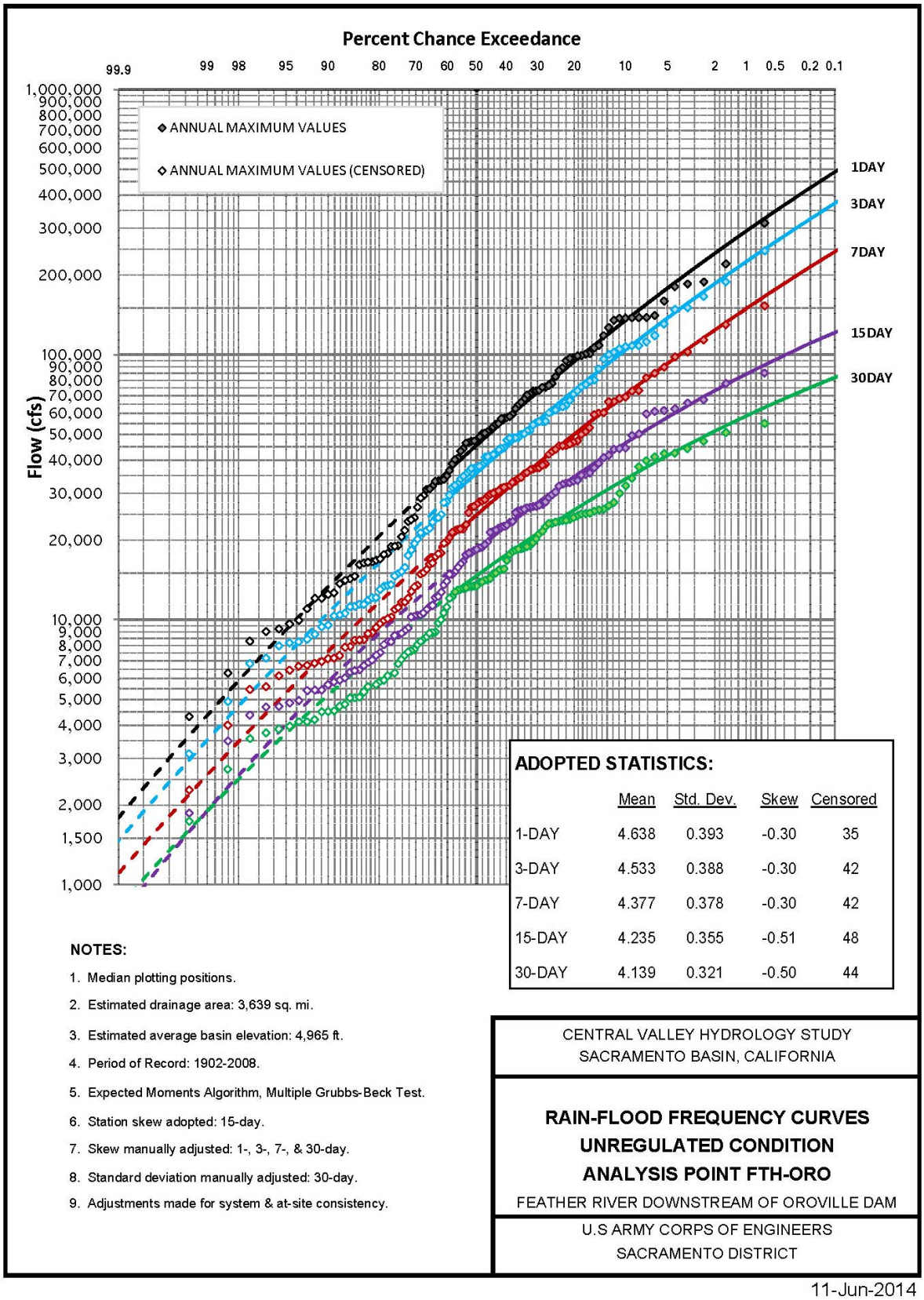


Figure C-2. Unregulated flow-frequency curve below Oroville Dam (Source: CVHS, 2014).

Table C-2. Estimated flows (cfs) taken from the CVHS unregulated flow-frequency curve below Oroville Dam.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	45,000	95,000	145,000	190,000	245,000	300,000	350,000	430,000	500,000
3 Days	35,000	70,000	110,000	145,000	190,000	230,000	260,000	325,000	380,000
7 Days	25,000	50,000	70,000	95,000	125,000	150,000	185,000	210,000	250,000
15 Days	18,000	34,000	45,000	60,000	70,000	85,000	95,000	110,000	125,000
30 Days	15,000	25,000	35,000	42,000	50,000	60,000	65,000	75,000	85,000

Table C-3. Estimated volumes (acre-feet) taken from the CVHS unregulated flow-frequency curve below Oroville Dam.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	89,256	188,430	287,603	376,860	485,950	595,041	694,215	852,893	991,736
3 Days	208,264	416,529	654,545	862,810	1,130,579	1,368,595	1,547,107	1,933,884	2,261,157
7 Days	347,107	694,215	971,901	1,319,008	1,735,537	2,082,645	2,568,595	2,915,702	3,471,074
15 Days	535,537	1,011,570	1,338,843	1,785,124	2,082,645	2,528,926	2,826,446	3,272,727	3,719,008
30 Days	892,562	1,487,603	2,082,645	2,499,174	2,975,207	3,570,248	3,867,769	4,462,810	5,057,851

ATTACHMENT D

RESERVOIR STORAGE AVAILABILITY
IN NEW BULLARDS BAR

SUMMARY OF ANALYSIS

New Bullards Bar reservoir is currently at a level well below historical averages and has the capability to significantly mitigate any incoming flood flows during the upcoming winter months. Current and historical reservoir storage data were obtained from the Department of Water Resources (DWR) California Data Exchange Center (CDEC)[1]. Current reservoir storage was projected to November based on historical trends. New Bullards Bar is expected to have storage availability for upwards of 596,000 acre-feet by November 1, 2014 (Figure D-1).

Unregulated flow-frequency curves on the Yuba River downstream of New Bullards Bar dam (Figure D-2) were taken from the Central Valley Hydrology Study (CVHS)[2] and were used to estimate what size flood events could be completely contained by the reservoir *without spilling or releasing any water*. With 596,000 acre-feet of available storage, New Bullards Bar would be able to hold anywhere from a 200-year, 24-hour event to a 2-year, 30-day event. Table D-1 summarizes all frequency events that could be contained by New Bullards Bar without any reservoir releases.

Table D-1. Flood events that could be completely contained by New Bullards Bar (X) without any reservoir releases.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	X	X	X	X	X	X	X		
3 Days	X	X	X	X					
7 Days	X	X	X						
15 Days	X	X							
30 Days	X								

Given this assessment of storage potential within New Bullards Bar and Lake Oroville (see Attachment C), the project sites along the Feather River West Levee are at a low risk for flooding.

[1] Department of Water Resources (DWR). "New Bullards Bar (BUL)". Data obtained on 27AUG2014, http://cdec.water.ca.gov/cgi-progs/stationInfo?station_id=BUL.

[2] U.S. Army Corps of Engineers (USACE) Sacramento District & California Department of Water Resources (DWR). "Unregulated Rain-Flood Frequency Curves, Analysis Description". 12JUN2012. Data Obtained on 19AUG2014, http://cvhydrology.org/.

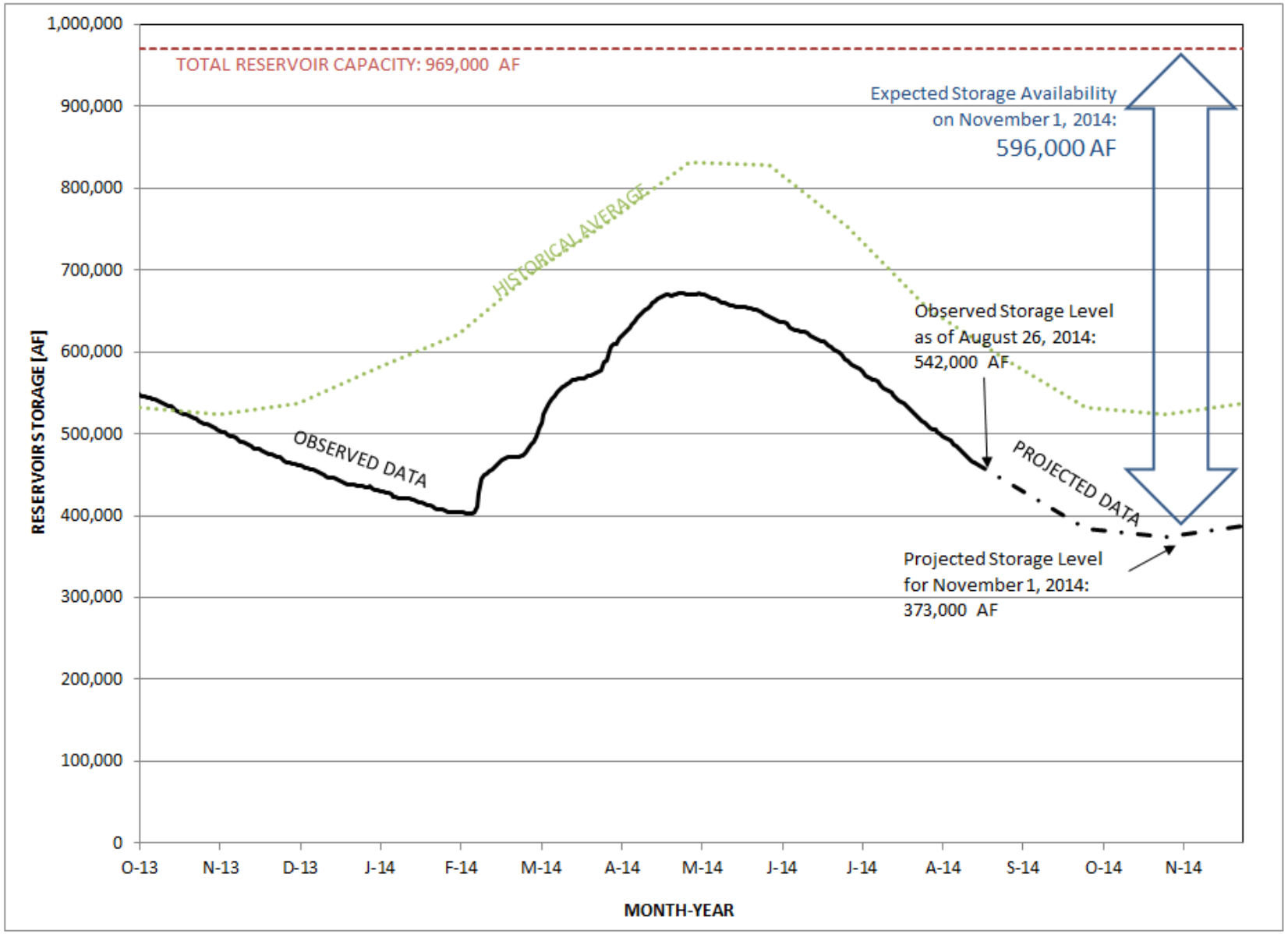


Figure D-1. Expected storage availability in New Bullards Bar.

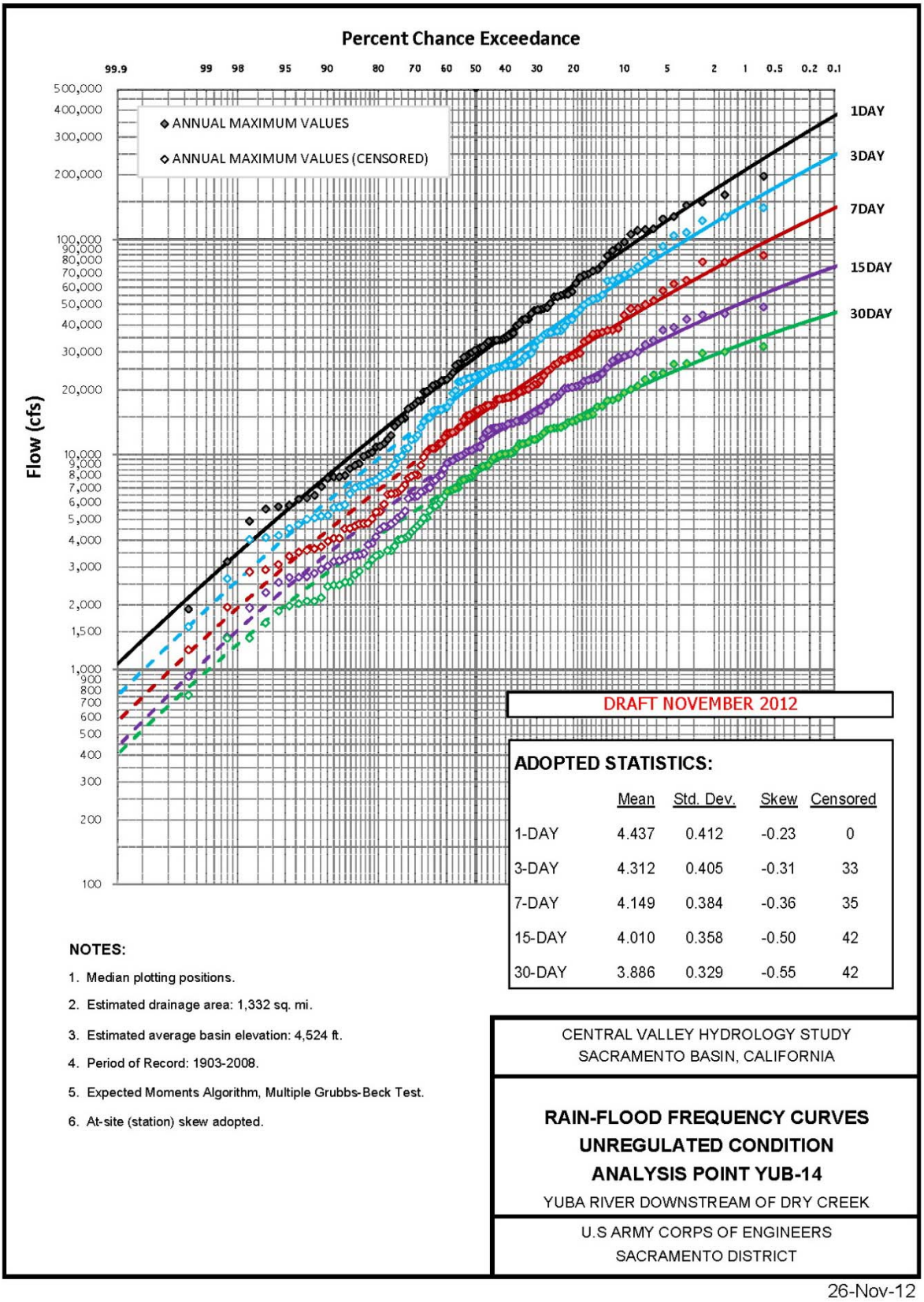


Figure D-2. Unregulated flow-frequency curve below New Bullards Bar Dam (Source: CVHS, 2012).

Table D-2. Estimated flows (cfs) taken from the CVHS unregulated flow-frequency curve below New Bullards Bar Dam.

	Frequency (n-year)								
Duration	**2**	**5**	**10**	**20**	**50**	**100**	**200**	**500**	**1,000**
1 Day	30,000	60,000	90,000	120,000	170,000	205,000	255,000	340,000	380,000
3 Days	25,000	45,000	67,000	89,000	115,000	150,000	180,000	210,000	250,000
7 Days	15,000	29,000	42,000	55,000	72,000	86,000	100,000	130,000	140,000
15 Days	10,000	20,000	28,000	35,000	44,000	51,000	60,000	70,000	75,000
30 Days	8,000	15,000	19,000	24,000	29,000	34,000	36,000	42,000	45,000

Table D-3. Estimated volumes (acre-feet) taken from the CVHS unregulated flow-frequency curve below New Bullards Bar Dam.

	Frequency (n-year)								
Duration	**2**	**5**	**10**	**20**	**50**	**100**	**200**	**500**	**1,000**
1 Day	59,504	119,008	178,512	238,017	337,190	406,612	505,785	674,380	753,719
3 Days	148,760	267,769	398,678	529,587	684,298	892,562	1,071,074	1,249,587	1,487,603
7 Days	208,264	402,645	583,140	763,636	999,669	1,194,050	1,388,430	1,804,959	1,943,802
15 Days	297,521	595,041	833,058	1,041,322	1,309,091	1,517,355	1,785,124	2,082,645	2,231,405
30 Days	476,033	892,562	1,130,579	1,428,099	1,725,620	2,023,140	2,142,149	2,499,174	2,677,686

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991
(530) 870-4425
sutterbutteflood.org

Counties
Butte County
Sutter County

Cities
City of Biggs
City of Gridley
City of Live Oak
City of Yuba City

Levee Districts
Levee District 1
Levee District 9

September 10, 2014

Mr. William Edgar
President
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

SUBJECT: Extension of Construction Time for Ongoing Work on the Feather River West Levee – Permit No. 18793-3 BD (Project Area D)

Dear Mr. Edgar:

The Sutter Butte Flood Control Agency (SBFCA) respectfully requests a variance to our Central Valley Flood Protection Board Encroachment Permit No. 18793-3 BD to allow work within the Feather River West Levee Project Area D to continue through December 23, 2014. The primary reason for this request stems from the unanticipated amount of cultural resources impacts encountered during the course of implementing the levee improvements. The SBFCA team has a firm handle on overcoming these impacts which will greatly improve public safety and minimize costs impacts to the project, however, an extension of our construction season past November 1st will be required in order to successfully complete our work.

During this extension period, SBFCA is prepared to implement the appropriate precautionary measures to ensure the integrity of the federal flood protection facilities consistent with our responsibilities as the Local Maintaining Agency for this levee:

- Site identification and details for specific activities planned under this permit extension are presented in Attachment A.
- Storm patterns, rainfall, stream flows, and reservoir storage will be continuously monitored.
- A comprehensive monitoring plan is presented in Attachment B and includes trigger water surface elevations and flows for each work site. Trigger water surface elevations will serve to initiate rehabilitation of any degraded portions of the levee.
- Working platforms for all levee segments are set above the 200-yr water surface elevation, with the remaining finish grading to occur by mid-November.

From a risk-based standpoint, Lake Oroville is currently at a level well below historical averages and is expected to have storage availability for upwards of 2.5 million acre-feet by November 1, 2014 (see analysis in Attachment C). This is enough storage to contain anywhere from the 1,000-year, 1-day event to the 20-year, 30-day event without releasing any water. This assessment of storage potential suggests that the project sites are at low risk for flooding during the extension period.

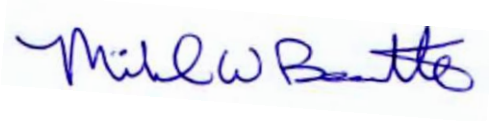
SBFCA understands and will comply with the following:

- SBFCA will be responsible for any and all damages to the levees, floodway, and adjacent properties resulting from granting this variance.
- The State of California will have inspectors on site to monitor working conditions and will coordinate directly with SBFCA representatives if they determine that current weather conditions are not conducive to allow work on the levee system to safely continue.
- The State of California, its officers, agents, and employees shall not be held liable for any damages to the project or properties that might be affected by this project resulting from the granting of this variance.
- All other conditions of Permit No. 18793-3 BD shall remain in effect.
- SBFCA understands that this letter of approval does not relieve it of the responsibility to obtain authorization from all concerned Federal, State, and local agencies; or to satisfy the California Environmental Quality Act (CEQA) requirements.

  SBFCA requests the Central Valley Flood Protection Board's approval for a variance to Permit No. 18793-3 BD to extend the construction season to December 23, 2014 for the work described in Attachment A. Please indicate your decision below and return a copy to SBFCA.

Please contact me at: (916) 679-8861 or m.bessette@sutterbutteflood.org if you have any questions regarding this request.

Sincerely,



Michael W. Bessette, P.E.
Director of Engineering
Sutter Butte Flood Control Agency

Enclosures:

1. Attachment A – Site Identification
2. Attachment B – Monitoring Plan
3. Attachment C – Reservoir Storage Availability in Lake Oroville

The above request for a variance to Permit No. 18793-3 BD to extend the construction season to December 23, 2014 is hereby approved.

By: _____ Date: _____

ATTACHMENT A

SITE IDENTIFICATION

LOCATION

Feather River West Levee (FRWL) Project Area D extends from East Evans Reimer Road (STA 1765+00) for a distance of approximately 11.4 miles to Thermalito Afterbay (STA 2368+26) in Gridley, CA. [Figure A-1]

SITE DETAILS

Details for specific activities planned under this permit extension are included in the following table.

Table A-1. Site details for planned activities under this permit extension.

Site ID -->	MH1D
COUNTY	BUTTE
FROM APPROXIMATELY	1848+00
TO APPROXIMATELY	1901+00
LENGTH [FEET]	5300
WALL TYPE	SB
POTENTIAL WALL TYPE CHANGE	N/A
LEVEE CROWN ELEVATION [NAVD88]	104
APPROX PLATFORM ELEVATION [NAVD88]	100
200 YEAR WSE [NAVD88]	97
FREEBOARD [FEET]	3
PIPES	NONE
ANTICIPATED WALL COMPLETION	10/15/2014
ANTICIPATED GRADING TO REACH 200 YEAR WSE	N/A
ANTICIPATED GRADING COMPLETION	11/15/2014
ANTICIPATED PATROL ROAD COMPLETION	12/1/2014
ANTICIPATED COMPLETION OF EROSION CONTROL	12/15/2014

SB = SOIL BENTONITE

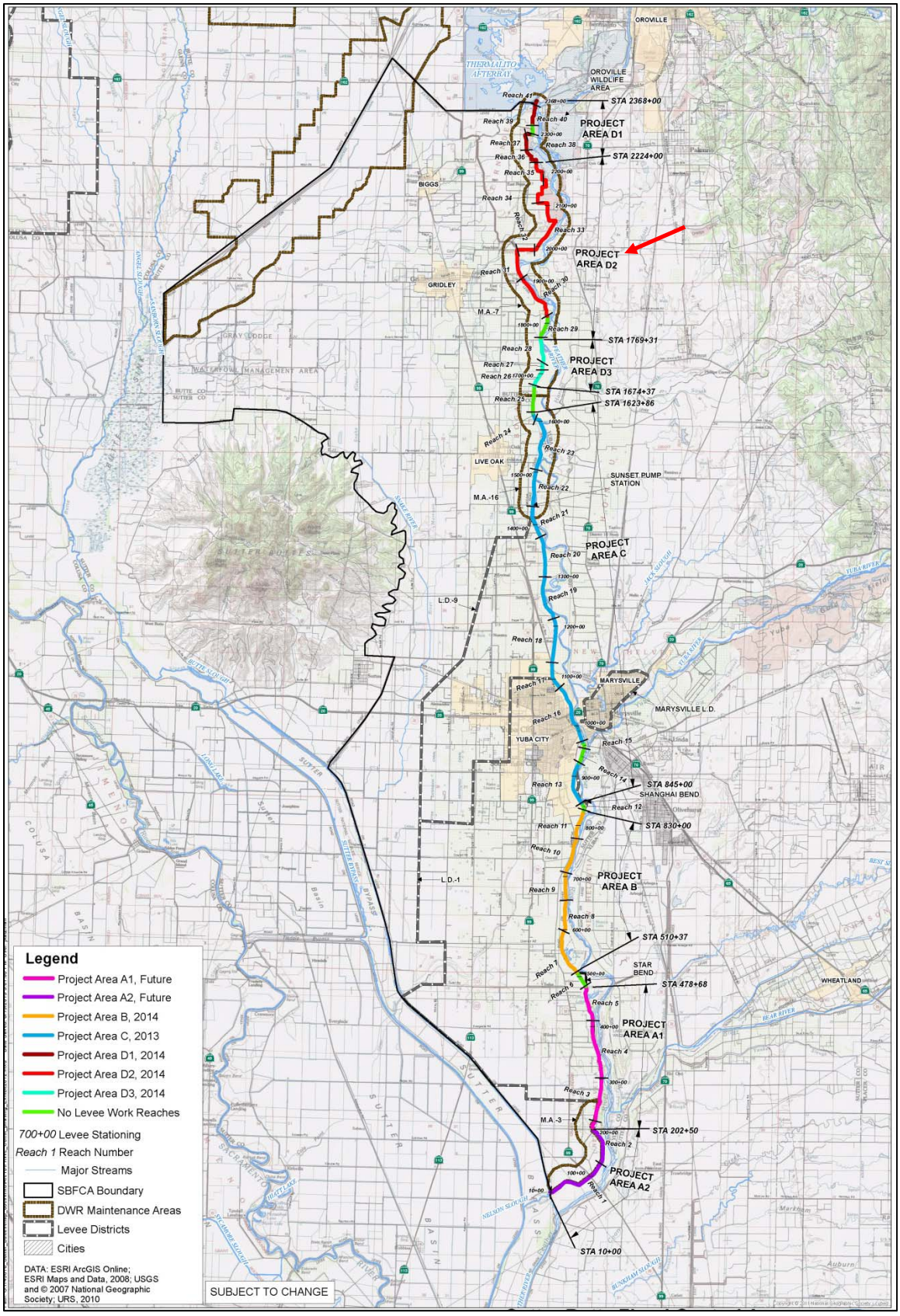


Figure A-1. SBFCA FRWL Construction Phasing Plan (Source: HDR, August 2013)

ATTACHMENT B

MONITORING PLAN

HYDROLOGIC MONITORING

Storm patterns, rainfall, stream flows, and reservoir storage will be continuously monitored through the available network of gages, including those listed in Table B-1.

Table B-1. Partial list of available gage data within the study area.

Gage Name	Code	River Stage	River Discharge	Precip.	Reservoir Storage	Reservoir Inflow/ Outflow	Reservoir Scheduled Release
Feather River Above Star Bend	FSB	✓	✓				
Feather River at Boyds Landing	FBL	✓	✓				
Feather River near Gridley	GRL	✓	✓				
New Bullards Bar	BUL			✓	✓	✓	✓
Oroville Dam	ORO			✓	✓	✓	✓
Yuba River at Parks Bar Bridge	YPB		✓				
Yuba River near Smartville	YRS	✓	✓				

In addition, a high flow event is typically accompanied by daily meetings at the Department of Water Resources' Flood Operations Center which are open to representatives of public agencies. From these meetings, SBFCA will have access to information regarding forecasted reservoir releases on a daily basis.

TRIGGER EVENTS

The following table includes details relating to an identified trigger event for each site relevant to this permit extension application. Triggers are set for when water surface elevations (WSELs) are projected to reach 3-feet below the elevation of the degraded levee at each site within the time required to restore the levee to full height (see Table B-2). Forecasted reservoir releases exceeding the trigger event will serve to initiate the closure of any degraded portions of the levee. Trigger elevations and flows are listed in Table B-2 for each site.

Table B-2. Trigger elevations and flows for each project site.

Site ID -->	MH1D
200 YEAR WSE [NAVD88]	97
APPROX PLATFORM ELEVATION [NAVD88]	100
TRIGGER WSEL [NAVD88]	97
TRIGGER FLOW [CFS]	165,000
ANTICIPATED TIME REQUIRED TO RE-GRADE UP TO 200 YEAR WSE FOLLOWING A TRIGGER EVENT	N/A[1]
ANTICIPATED TIME REQUIRED TO RE-GRADE UP TO CROWN ELEVATION FOLLOWING A TRIGGER EVENT	4 DAYS

[1]Working platform set above 200-year WSEL.

ATTACHMENT C

RESERVOIR STORAGE AVAILABILITY
IN LAKE OROVILLE

SUMMARY OF ANALYSIS

Lake Oroville is currently at a level well below historical averages and has the capability to significantly mitigate any incoming flood flows during the upcoming winter months. Current and historical reservoir storage data were obtained from the Department of Water Resources (DWR) California Data Exchange Center (CDEC)[1]. Current reservoir storage was projected to November based on historical trends. Lake Oroville is expected to have storage availability for upwards of 2.5 million acre-feet by November 1, 2014 (Figure C-1).

Unregulated flow-frequency curves at Oroville Dam (Figure C-2) were taken from the Central Valley Hydrology Study (CVHS)[2] and were used to estimate what size flood events could be completely contained by the reservoir *without spilling or releasing any water*. With 2.5 million acre-feet of available storage, Lake Oroville would be able to hold anywhere from a 1,000-year, 24-hour event to a 20-year, 30-day event. Table C-1 summarizes all frequency events that could be contained by Lake Oroville.

Table C-1. Flood events that could be completely contained by Lake Oroville (X) without any reservoir releases.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	X	X	X	X	X	X	X	X	X
3 Days	X	X	X	X	X	X	X	X	X
7 Days	X	X	X	X	X	X	X		
15 Days	X	X	X	X	X	X			
30 Days	X	X	X	X					

Given this assessment of storage potential, the project sites along the Feather River West Levee are at a low risk for flooding.

[1] Department of Water Resources (DWR). "Conditions for Major Reservoirs". Data obtained on 19AUG2014, http://cdec.water.ca.gov/cdecapp/resapp/getResGraphsMain.action.

[2] U.S. Army Corps of Engineers (USACE) Sacramento District & California Department of Water Resources (DWR). "Unregulated Rain-Flood Frequency Curves, Analysis Description". 12JUN2012. Data Obtained on 19AUG2014, http://cvhydrology.org/.

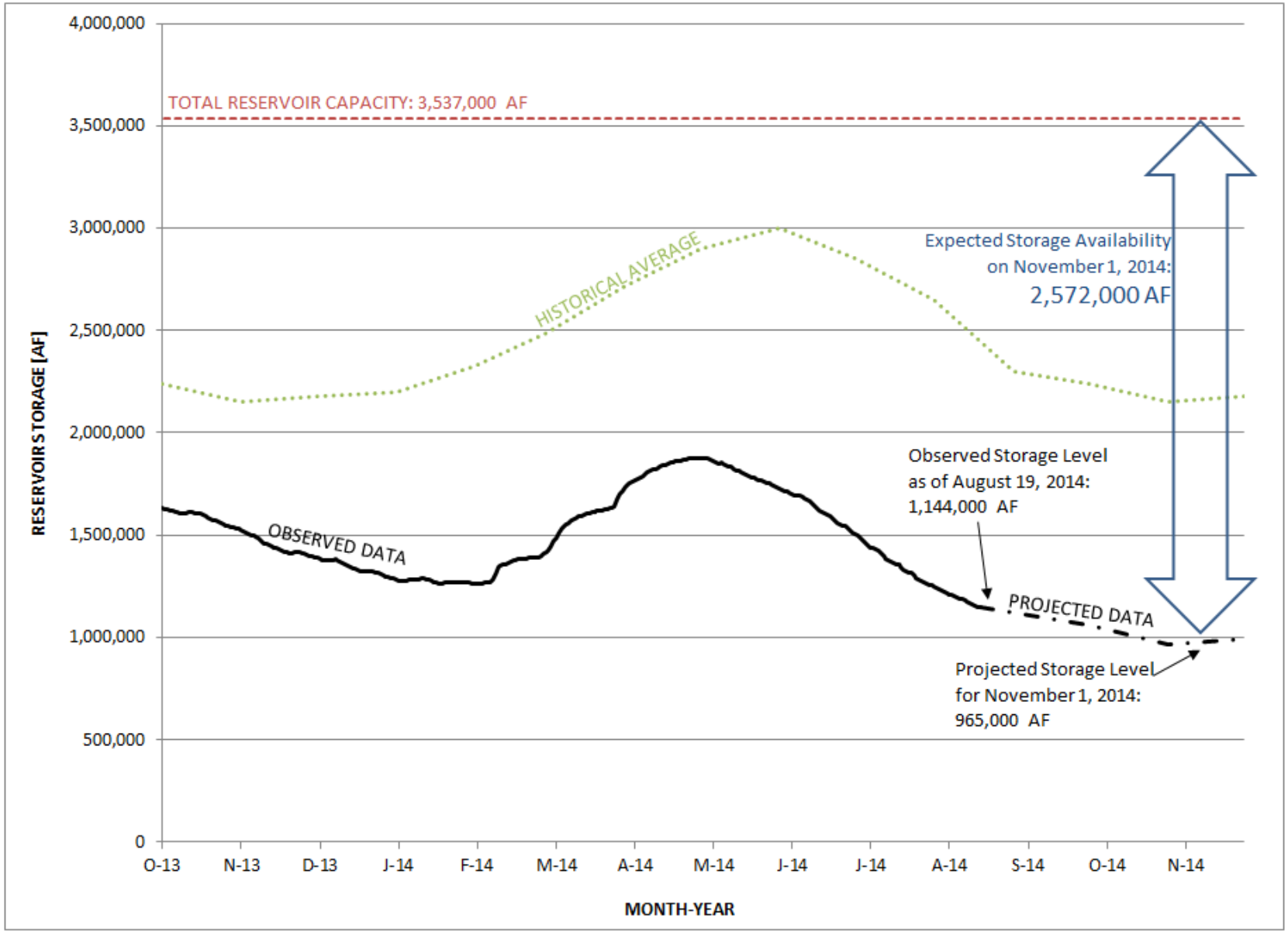


Figure C-1. Expected storage availability in Lake Oroville.

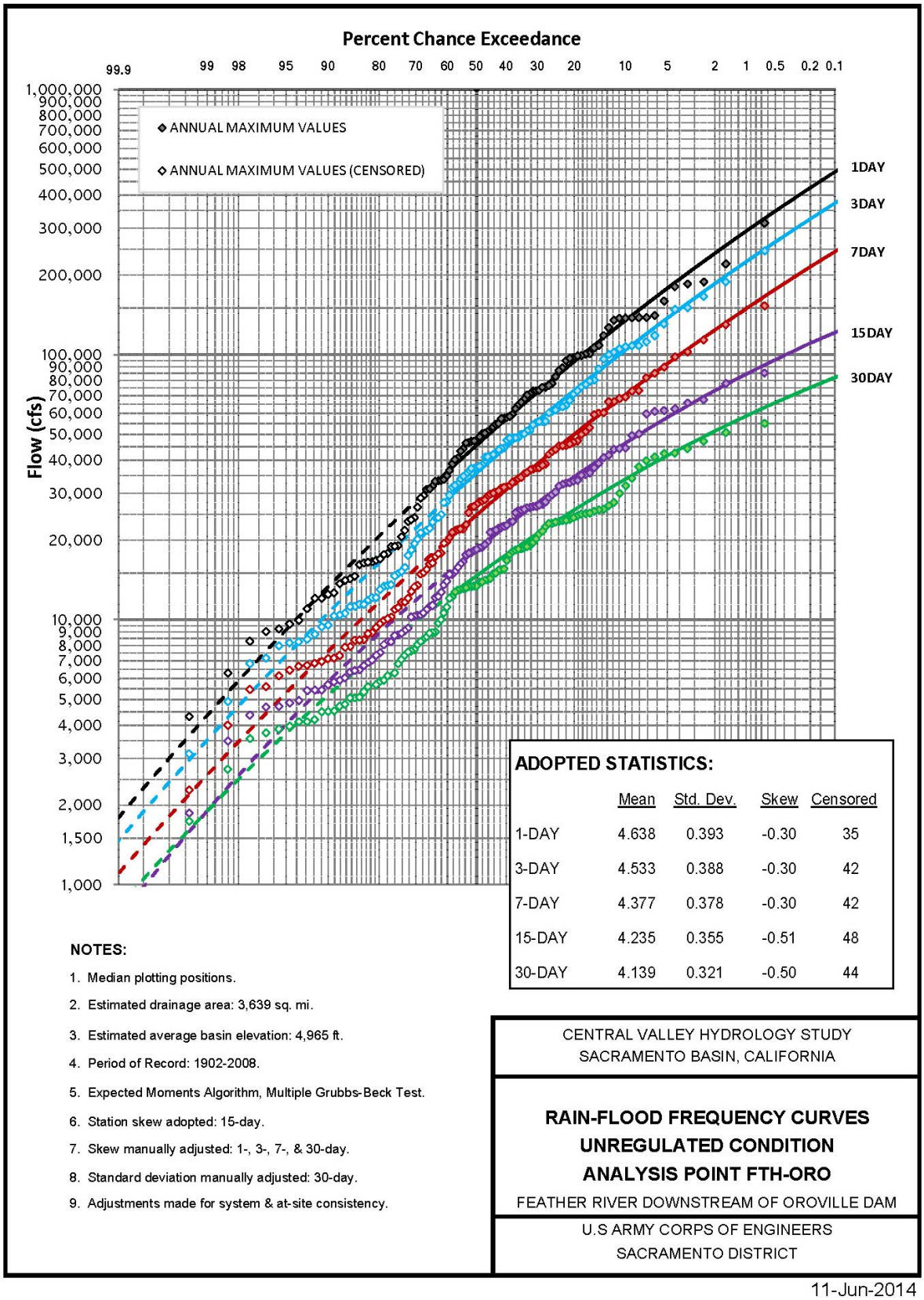


Figure C-2. Unregulated flow-frequency curve below Oroville Dam (Source: CVHS, 2014).

Table C-2. Estimated flows (cfs) taken from the CVHS unregulated flow-frequency curve below Oroville Dam.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	45,000	95,000	145,000	190,000	245,000	300,000	350,000	430,000	500,000
3 Days	35,000	70,000	110,000	145,000	190,000	230,000	260,000	325,000	380,000
7 Days	25,000	50,000	70,000	95,000	125,000	150,000	185,000	210,000	250,000
15 Days	18,000	34,000	45,000	60,000	70,000	85,000	95,000	110,000	125,000
30 Days	15,000	25,000	35,000	42,000	50,000	60,000	65,000	75,000	85,000

Table C-3. Estimated volumes (acre-feet) taken from the CVHS unregulated flow-frequency curve below Oroville Dam.

	Frequency (n-year)								
Duration	2	5	10	20	50	100	200	500	1,000
1 Day	89,256	188,430	287,603	376,860	485,950	595,041	694,215	852,893	991,736
3 Days	208,264	416,529	654,545	862,810	1,130,579	1,368,595	1,547,107	1,933,884	2,261,157
7 Days	347,107	694,215	971,901	1,319,008	1,735,537	2,082,645	2,568,595	2,915,702	3,471,074
15 Days	535,537	1,011,570	1,338,843	1,785,124	2,082,645	2,528,926	2,826,446	3,272,727	3,719,008
30 Days	892,562	1,487,603	2,082,645	2,499,174	2,975,207	3,570,248	3,867,769	4,462,810	5,057,851

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18793-1 BD

This Permit is issued to:

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, California 95991

This flood system improvement permit is granted to the Sutter Butte Flood Control Agency (SBFCA) to construct the first phase (Project Area C) of the Feather River West Levee Project (FRWLP) to reduce flood risk in the Sutter Basin. The project includes construction of cut-off walls and seepage berms to remediate levee through-seepage and under-seepage problems, and removal, relocation, and modification of several existing levee encroachments to bring them into compliance with federal and State standards through revised or new Board encroachment permits. Other existing encroachments will be relocated or removed in their entirety. These additional encroachment permits will be issued to the individual encroachment owners as required through the Project Area C schedule.

THIS PERMIT IS VALID FOR ALL OF PROJECT AREA C, REACHES 13 to 24.

FRWLP Area C extends upstream from Shanghai Bend (Project Reach 13, Station 844+75 in Sutter County) for a distance of approximately 14.83 miles to approximately 1/4 mile north of Campbell Road in the City of Live Oak (Project Reach 24, Station 1628+00 in Butte County). The levee is operated and maintained by Levee Districts 1 and 9 (Sutter), and by the California Department of Water Resources (Maintenance Area 16).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: OCT 4 2013

Jay S. Punia
Executive Officer

DWR 3784 (Rev. 9/85)

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18793-1 BD

THIRTEEN: This permit conditions construction of Project Area C, Reaches 13 to 24 of the Feather River West Levee Project, which includes the area from Plan Station 844+75 (Shanghai Bend) to Station 1628+00 (1,700 feet north of Campbell Road) and equals 7,900 feet (14.83 miles) of refurbished levee development. This permit is issued subject to the approvals and conditions as specified in (1) the U.S. Army Corps of Engineers (USACE) Letter of Permission (LOP) dated July 22, 2013 and Record of Decision (ROD) dated July 19, 2013 (Exhibits A1 and A2) which approved alterations to Reach 13, and (2) the USACE LOP dated September 19, 2013 and ROD dated September 13, 2013 (Exhibits A3 and A4) which approved alterations to Reaches 14 to 24.

LIABILITIES / IMDEMNIFICATION

FOURTEEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the Central Valley Flood Protection Board, the Department of Water Resources, the United States of America, a local district or other maintaining agencies and the

officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN, above.

FIFTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SIXTEEN: The permittee is responsible for all liability and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all such claims and damages arising from construction of the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SEVENTEEN: The Central Valley Flood Protection Board, Department of Water Resources, and Levee Districts 1 and 9 (Sutter) shall not be held liable for damages to the permitted alterations resulting from releases of water from reservoirs, flood fight, operation, maintenance, inspection, or emergency repair.

EASEMENT, LICENSE OR TEMPORARY ENTRY PERMIT

EIGHTEEN: If the construction project extends onto land owned in fee and / or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (hereafter Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar at (916) 653-5782.

BOARD CONTACTS

NINETEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

PERMITTING AND AGENCY CONDITIONS

TWENTY: Project Area C in its entirety is the first phase of the Sutter Butte Flood Control Agency's Feather River West Levee Project, permitted pursuant to 33 U.S.C. Section 408 authority of the U.S. Army Corps of Engineers. The Feather River west levee is a facility of the Sacramento River Flood Control Project and State Plan of Flood Control regulated by the Board. By acceptance of this permit, the permittee acknowledges the authority of the Board to regulate all future flood system improvement projects and encroachments along the project levee reach.

TWENTY-ONE: The permittee shall comply with all conditions set forth in the Letters of Permission dated July 22, 2013 (Exhibit A1) and September 19, 2013 (Exhibit A3), and Records of Decision dated July 19, 2013 (Exhibit A2) and September 13, 2013 (Exhibit A4) from the Department of the Army (U.S. Army Corps of Engineers, Sacramento District), which are attached to this permit and are incorporated by reference.

TWENTY-TWO: The permittee shall address all concerns expressed by the Department of Water Resources (Maintenance Area 16) in its letter dated May 16, 2013, which is attached to the permit as Exhibit B and is incorporated by reference.

TWENTY-THREE: The endorsements of Levee Districts 1 and 9 (Sutter), dated April 13, 2013, are attached to this permit as Exhibit C and are incorporated by reference.

TWENTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

TWENTY-FIVE: The permittee agrees to incur all costs for compliance with local, State, and federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations they administer and enforce.

TWENTY-SIX: The permittee shall cooperate with the Board such that any encroachment that must be relocated, modified or otherwise altered to accommodate construction of flood system improvements permitted herein is relocated, modified or otherwise altered in a manner that complies with current applicable State and federal standards. If the affected encroachment has an existing Board permit or is subject to some other applicable Board authorization, the permittee shall cooperate with the Board such that the permit or other authorization is appropriately amended to reflect the changed condition as shown on as-built drawings for the encroachment and overall project. If the encroachment does not have a Board permit or other Board authorization, the permittee shall cooperate with the Board to determine whether a Board permit is required. If so, the permittee shall cooperate with the Board to ensure that the required permit application is made and, if granted, the permit reflects the changed condition as shown on as-built drawings for the encroachment and the overall project.

TWENTY-SEVEN: If the permittee or successor does not comply with the conditions of the permit and enforcement by the Board is required, the permittee or successor shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

TWENTY-EIGHT: Upon completion of this flood system improvement project, the permittee will cooperate with the Board to update the applicable project Operations and Maintenance Manual covering the project area, and to cooperate with the Board to obtain federal acceptance of the project works into the Sacramento River Flood Control Project by the U.S. Army Corps of Engineers, followed by federal turnover to the State for Operations and Maintenance through existing assurance agreements.

TWENTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation,

or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

PRE-CONSTRUCTION

THIRTY: The permittee shall provide construction supervision and inspection services acceptable to the Board.

THIRTY-ONE: The permittee shall contact the U. S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to an existing federal flood control project that will be incorporated into the Sacramento River Flood Control Project, a facility of the State Plan of Flood Control.

THIRTY-TWO: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of the levee conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 30 days of beginning the project.

THIRTY-THREE: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior written approval of the Board. This condition excludes removal and replacement of four pipeline crossings approved by the Board pursuant to Title 23, Section 11 under variance to Title 23, Section 112 to perform work during the flood season, at stations 1430+40, 1430+47, 1430+55, and 1610+92. Board Staff Report Attachment K describes these variances and is attached to this permit as Exhibit D and is incorporated by reference. Other construction time variances may be requested by the permittee and approved by the Board's Chief Engineer for two-week periods dependent on weather forecasts. Such time variances may be revoked at any time if inclement weather is pending.

THIRTY-FOUR: Thirty (30) calendar days prior to the start of any demolition and / or construction activities within the floodway or within the existing levee prism, the permittee shall submit to the Board's Chief Engineer two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through April 15. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) working days.

THIRTY-FIVE: A profile of the existing levee crown roadway and access ramps that will be utilized for access to and from the borrow area shall be submitted to the Board prior to commencement of excavation.

THIRTY-SIX: Keys shall be provided to local levee maintenance agencies and the Department of Water Resources for all locks on gates providing access to the floodway, levee ramp, levee toe, and along the levee crown.

CONSTRUCTION

THIRTY-SEVEN: All work approved by this permit shall be in accordance with the final (100% "Issued For Bid" set) of submitted drawings and specifications dated March 13, 2013, and including Addenda Nos. 1, 2, and 3 except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Board.

THIRTY-EIGHT: All addenda and contract change orders made to the submitted documents by the permittee after Board approval of this permit shall be submitted to the Board's Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

THIRTY-NINE: Any additional project features proposed by the permittee in the floodway, on or in the levee section, and within thirty (30) feet of the landward levee toe will require either incorporation by amendment to this permit, or will require issuance of a separate encroachment permit to the encroachment owner from the Board.

FORTY: Existing or proposed utility poles and guy anchors shall be relocated or installed a minimum distance of 10 feet landward of the landward levee toe.

FORTY-ONE: All debris generated by this project shall be disposed of outside the floodway, levee prism and proposed right-of-way.

FORTY-TWO: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior approval from the Central Valley Flood Protection Board.

FORTY-THREE: During construction of the project, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Board inspector immediately and prior to continuation of construction. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Board inspector.

FORTY-FOUR: The stability of the levee shall be maintained at all times during construction.

FORTY-FIVE: Excavations below the design flood plain and within the levee section or within fifty (50) feet of the projected waterward and landward levee slopes shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation.

FORTY-SIX: Any damage to the levee crown roadway or access ramps that will be utilized for access

for this project shall be promptly repaired to the condition that existed prior to this project.

FORTY-SEVEN: Equipment used in the construction of the cutoff wall shall not exceed the live-load surcharge to a level that causes or contributes to the instability of the levee during construction operations.

FORTY-EIGHT: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

FORTY-NINE: All fencing, gates and signs removed during construction of this project shall be replaced in kind and at the original locations. If it is necessary to relocate any fence, gate or sign, the permittee is required to obtain written approval from the Board prior to installation at a new location if not shown on the submitted drawings.

FIFTY: Any pipe or conduit being reinstalled by permittee in the levee section or within fifteen (15) feet and thirty (30) feet of the waterward and landward levee toes, respectively, shall meet CCR 23 standards or have a Board variance approval per CCR 23 Sections 11(a) and (b). Board Staff Report Attachment K describes these variances and is attached to this permit as Exhibit D and is incorporated by reference.

FIFTY-ONE: Fill on the levee slopes shall be keyed into the existing levee section with each lift or as specified in the approved contract plans and specifications.

FIFTY-TWO: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

FIFTY-THREE: Some existing levee slopes are less than 2 horizontal to 1 vertical on the land side, or less than 3 horizontal to 1 vertical on the water side, and will remain so after the work permitted herein. This permit approves these steeper slopes by a variance to Board standards.

FIFTY-FOUR: A pipeline or conduit to be filled with concrete must have a minimum cover of (3) three feet below the waterward levee slope and (1) foot below the landward levee slope.

CONSTRUCTION MATERIALS

FIFTY-FIVE: All fill material shall be as stated in the Project Area C contract specifications Division 31 - Earthwork (amended, September 27, 2013) and free of lumps or stones exceeding 8 inches in greatest dimension, vegetative matter, or other unsatisfactory material.

FIFTY-SIX: Backfill material for excavations within the existing and to be constructed levee sections and within fifty (50) feet of the levee toes shall be placed in 12-inch layers, moisture conditioned ranging from 3 above to 1 below optimum moisture content, and compacted to a minimum of 95 percent relative compaction as measured by ASTM Method D698, or as provided for in the contract specifications Division 31 - Earthwork, and utilizing a method specification (refer to Special Conditions EIGHTY SIX and EIGHTY SEVEN) for newly defined Type-3 soils within the levee prism and imported top soil.

FIFTY-SEVEN: Earthen material meeting the requirements designated in this permit and included Project Area C specifications shall be used when constructing or reconstructing the waterside levee

slope and levee crown fill areas, and no cuts shall remain in the levee section upon completion.

FIFTY-EIGHT: Fill material shall be placed only within the area indicated in the 100% "Issued For Bid" approved plans and specifications including Addenda Nos. 1, 2, 3, and Exhibit A5 to this permit. Placement of additional fill in excess of 500 cubic yards beyond what is specified in these plans shall require written authorization from the Board's Chief Engineer.

FIFTY-NINE: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the levee section and within fifty (50) feet of the levee toes. A method specification will be utilized in Type-3 zone fills for the upper waterside surficial zone and the imported topsoil layer to be placed on the upper landside slope.

SIXTY: The reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of 4 inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A).

SIXTY-ONE: Fluid pressures in the cutoff wall construction zone shall be monitored and controlled to minimize the potential for hydrofracturing.

SIXTY-TWO: Excess bentonite or other cutoff wall fluids shall be properly disposed of outside of the floodway. The bentonite or other cutoff wall fluids can be used as Type-1 or Type-2 backfill material for levee reconstruction if properly mixed within borrow or stockpile sites, and per the requirements within the contract specification for gradation, moisture and compaction.

SIXTY-THREE: Aggregate base material shall be compacted to a relative compaction of not less than 95 percent per ASTM Method D1557-91, with a moisture content sufficient to obtain the required compaction, or per the Project Area C contract specifications Division 32 - Exterior Improvements, Aggregate base course.

VEGETATION / ENVIRONMENTAL MITIGATION

SIXTY-FOUR: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

SIXTY-FIVE: The permittee shall replant or re-seed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

SIXTY-SIX: The mitigation measures approved by the permittee and found in its Mitigation and Monitoring Reporting Program (MMRP) are made a condition of this permit. The permittee shall implement all such mitigation measures. The measures in the MMRP may be modified without triggering the need for subsequent or supplemental analysis under CEQA Guidelines section 15162(c). The permittee shall notify the Board's Environmental Section staff in advance of any proposed changes and shall submit supporting documentation for staff review and comment.

SIXTY-SEVEN: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

SIXTY-EIGHT: In the event that levee or bank erosion injurious to facilities of the State Plan of Flood

Control occurs at or adjacent to and as a result of the permitted flood system improvement project or related encroachment work, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

CONSTRUCTION COMPLETION

SIXTY-NINE: All temporary fencing, gates and signs shall be removed upon completion of project.

SEVENTY: The project site including the levee section and access ramps shall be restored to at least the condition that existed prior to commencement of work.

SEVENTY-ONE: Upon completion of the project, the permittee shall perform a levee crown profile survey and create a photo record, including associated descriptions, of "as-built" levee conditions. The levee crown profile survey and photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 120 days of project completion.

SEVENTY-TWO: The permittee acknowledges that some portions of the levee improvements may be overbuilt to account for settlement. At least twelve (12) months after completion the permittee shall perform a third levee crown profile survey of the completed Project Area C and provide it and a comparison against the pre-construction levee crown profile. The permittee shall ensure that the final levee crown profile does not exceed the pre-construction profile, as this permit does not authorize any levee raises.

SEVENTY-THREE: When DWR releases the completed Central Valley Floodplain Evaluation and Delineation Program (CVFED) data the permittee will recalculate freeboard using only that data for both cross section and top of levee elevations. The permittee will develop a plan for Board approval to correct any freeboard deficiencies under this or a future phase of construction.

SEVENTY-FOUR: The potential for earthquake-induced levee damage and displacement along the Feather River West Levee Project will be incorporated into an Emergency Action Plan (EAP) in accordance with DWR Urban Levee Design Criteria (ULDC) requirements. The permittee shall submit the EAP to the Board staff for review and comment 180 days after completion of Project Area C construction.

SEVENTY-FIVE: Upon completion of the construction contract for Project Area C the permittee will conduct a Final Construction Walk-through for Board, Department of Water Resources, and U.S. Army Corps of Engineers staff. The walk-through is a condition for Board project acceptance, State funding, and as predecessor to U.S. Army Corps of Engineers system wide acceptance and eligibility for Public Law 84-99 rehabilitation and inspection program. This walk-through is critical to successful permit and project close-out.

POST-CONSTRUCTION

SEVENTY-SIX: Within 120 days of completion of the project, the permittee shall submit to the Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with Board permit conditions and the permittee's submitted drawings and specifications, addenda and contract change

orders.

SEVENTY-SEVEN: Within three years from completion of the construction of the work authorized under this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through the Board, a permanent easement or joint use agreement granting all flood control rights upon, over and across the property to be occupied by the existing or to-be-reconstructed levee, including the area of the cutoff wall and levee raise and realignment fill areas. The easement must include the levee section, the area ten (10) feet from the waterward levee toe adjacent to waterside berms which may be used for staging flood protection activities, and the area thirty (30) feet in width adjacent to the existing landward levee toe if the area is not presently encumbered by a Board easement. For information regarding Board easements please contact Angelica Aguilar at (916) 653-5782.

SEVENTY-EIGHT: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor(s) shall abandon the project under direction of the Board and Department of Water Resources, at the permittee's or successor's cost and expense.

OPERATIONS AND MAINTENANCE

SEVENTY-NINE: The permittee shall maintain the permitted project works in the manner required and as requested by the authorized representative of the Department of Water Resources, Levee District Nos. 1 and 9 (Sutter), or any other agency responsible for maintenance while under contract to do so.

EIGHTY: Haul ramps and utilized levee crown roadway shall be maintained during construction in a manner prescribed by authorized representatives of the Board, Department of Water Resources, Levee District or any other agency responsible for maintenance.

EIGHTY-ONE: Within 180 days of completion of the project, the permittee shall submit to the Board proposed revisions to the U. S. Army Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, and the associated "as-built" drawings for system alterations approved by Exhibits A1 through A5 that are to be incorporated into the federal Sacramento River Flood Control Project.

EIGHTY-TWO: The improvements permitted herein are designed to manage flows from a storm with a probability of occurrence of .005 in any year (200-year protection). Permittee's design assumed that non-urban existing upstream levees will not be raised above the design for the Sacramento River Flood Control Project as shown on the 1957 profile. Permittee's design flow and calculations assumed no upstream levee overtopping where permittee's design storm water surface elevation exceeds the 1957 profile top of levee elevation. Permittee acknowledges that the adopted 2012 Central Valley Flood Protection Plan will be regularly updated by the State and that the plan and future updates could include improvements that would change the flow and water surface elevation associated with permittee's design storm, possibly reducing the level of protection provided by the permitted improvements. Permittee agrees to participate in future modifications to these levees as may be required by the Central Valley Flood Protection Plan and its subsequent updates. Permittee's level of participation shall be equivalent to the level required of other local jurisdictions by the Plan. Permittee further agrees that should the Plan include measures that reduce the level of protection provided by the permitted improvements, permittee shall have no basis for a claim of hydraulic

impacts.

EIGHTY-THREE: The Sutter Butte Main Canal District (SBMCD) is in close proximity to the federal levee and in some cases the east bank of the canal and the landside of the Feather River west levee are one and the same. The Sutter Butte Flood Control Agency has agreed to help coordinate and develop an agreement between the Department of Water Resources (Maintenance Area 16), levee districts(s), and SBMCD regarding the distinction and separation of maintenance responsibilities between the LMAs and SBMCD prior to the Board's acceptance of the Feather River West Levee Project Area C. The Board shall have up to 30 days after receipt of the agreement for comment. The Board and / or the Department of Water Resources may extend this review period up to 45 days by written notification.

ADDITIONAL CONDITIONS FOR APPROVAL TO CONSTRUCT PROJECT AREA C

EIGHTY-FOUR: Construction Drawing No. C-102, Note-6 indicates the removal and replacement of existing cobble rip-rap from the waterside levee slope from Stations 850+00 to 855+60. The replaced cobble rip-rap shall meet current CCR 23 requirements of Section 121(a),(1),(6),(12), and Figure 8.02 of that section. The code specifically requires a bedding material under the rip-rap, a 15-inch graded cobblestone gradation, a minimum 18-inch revetment thickness, and a toe key trench.

EIGHTY-FIVE: Potholing will be required in Project Area C, Reaches 14 to 24, to determine whether the proposed levee degrade material meets current specifications. Potholes shall be performed perpendicular to the levee centerline at a minimal spacing of 2,500 LF. If the investigation results reveal deviations in soil materials from the current specifications, the permittee shall notify the Board in writing, shall decribe the nature and extent of the deviations, and shall propose a detailed solution and path forward for Board consideration.

EIGHTY-SIX: Pursuant to USACE approval dated October 2, 2013 (Exhibit A5) to deviate from the final plans and specifications due to changes in field conditions during construction, this approval includes revisions to Special Conditions FIFTY FIVE, FIFTY SIX, AND FIFTY NINE.

EIGHTY-SEVEN: This permit now allows for a method specification to be utilized for placement of Type-3 soils in the upper waterside surficial zone and the imported topsoil. To achieve desired relative density of levee backfill under the method specification the permittee shall make three passes with selected compaction equipment at specified speed and moisture content. The imported top soil will only require two passes.

EIGHTY-EIGHT: Placement of reconstructed levee fill shall be limited to the existing levee footprint and shall be done so as to not result in unstable outer levee slopes. All excess soil materials shall be hauled off site.

EIGHTY-NINE: All cobbles greater than eight (8) inches in size shall be utilized in approved waterside slope protection areas or hauled off site.

NINETY: Pursuant to Exhibit A3, USACE Letter of Permission, September 19, 2013, Special Condition "d", the permittee shall, if any cultural artifact or an unusal amount of bone, shell, or nonnative stone is uncovered during construction, halt work in that area so that a professionally qualified archaeologist approved by the USACE can determine the significance of the find. If human

bone is uncovered the coroner and California Native American Heritage Commission shall be contacted immediately. Refer to Exhibit A3 for complete requirements.

NINETY-ONE: Pursuant to Exhibit A3, USACE Letter of Permission, September 19, 2013, Special Condition "m", the permittee shall develop and submit a Floodplain Mangement Plan by September 19, 2014. Refer to Exhibit A3 for complete requirements.

NINETY-TWO: Pursuant to Exhibit A3, USACE Letter of Permission, September 19, 2013, "Further Information, paragraph c", page 3, the USACE may reevaluate its decision to approve the work permitted herein at any time the circumstances warrant. Should field conditions or future investigations require a deviation from the Final Plans, this deviation must be approved by the USACE through a request from the Board. Refer to Exhibit A3 for complete requirements.

NINETY-THREE: Pursuant to Exhibit A4, USACE Record of Decision, September 13, 2013, Item III, Section B "Mitigation for Significant Effects", the permittee shall abide by all terms and conditions, and shall ensure that all conservation measures and long-term management and maintenance are implemented in perpetuity. Refer to Exhibt A4 for complete requirements.

NINETY-FOUR: The permittee shall develop a Stormwater Water Pollution and Prevention Plan and shall make a copy readily available for review at the project site during construction.

END OF CONDITIONS

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18793-2 BD

This Permit is issued to:

Sutter Butte Flood Control Agency
1227 Bridge Street
Suite C
Yuba City, California 95991

This flood system improvement permit is granted to the Sutter Butte Flood Control Agency (SBFCA) to construct approximately 6.1 miles of levee improvements on the west levee of the Feather River (Reaches 7 through 12) from Station 512+00 to 832+40. The proposed work includes: degrading of the levee by approximately one third of its overall height; construction of a cutoff wall ranging from 47 to 78 feet in depth along the centerline of the levee; reconstruction of the levee; installation of 28 new relief wells between Station 543+60 and 568+30; reconstruction of approximately 3,100 linear-feet of an existing concrete relief well drainage ditch; and construction of an additional 2,500 linear-feet of new concrete relief well drainage ditch. In addition to the project construction removal, relocation, and modification of several existing levee encroachments to bring them into compliance with federal and State standards through revised or new Board encroachment permits will also be necessary. Other existing encroachments will be relocated or removed in their entirety. These additional encroachment permits will be issued to the individual encroachment owners as required through the Project Area B construction schedule.

The project extends from Star Bend Road to Shanghai Bend in Yuba City, CA. (Sta 512+00 to 832+40) Reaches 7 through 12 (Section 2, T 14N, R3E, MDB&M, Levee District 1 Sutter, Feather River, Sutter County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

MAR 26 2013

Dated: _____

Jay S. Punia
Executive Officer

DWR 3784 (Rev. 9/85)

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18793-2 BD

LIABILITIES / IMDEMNIFICATION

THIRTEEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the Central Valley Flood Protection Board, the Department of Water Resources, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN.

FOURTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection

Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

FIFTEEN: The permittee is responsible for all liability and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all such claims and damages arising from construction of the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SIXTEEN: The Central Valley Flood Protection Board, Department of Water Resources, and Levee District 1 shall not be held liable for damages to the permitted alterations resulting from releases of water from reservoirs, flood fight or emergency operations, maintenance, inspection, or repair.

EASEMENT, LICENSE, TEMPORARY ENTRY PERMIT, AND LAND ACQUISITION

SEVENTEEN: If the construction project extends onto land owned in fee and / or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (hereafter Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar at (916) 653-5782.

EIGHTEEN: Prior to construction, the permittee, shall have obtained legal possession of all property where work to be performed under this permit is located.

BOARD CONTACTS

NINETEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

PERMITTING AND AGENCY CONDITIONS

TWENTY: Project Area B of the Sutter Butte Flood Control Agency's Feather River West Levee Project (FRWLP) is permitted pursuant to 33 U.S.C. Section 408 authority of the U.S. Army Corps of Engineers. The Feather River west levee is a facility of the Sacramento River Flood Control Project and State Plan of Flood Control regulated by the Board. By acceptance of this permit, the permittee acknowledges the authority of the Board to regulate all future flood system improvement projects and encroachments along the project levee reach.

TWENTY-ONE: The permittee shall comply with all conditions set forth in the U.S. Army Corps of Engineers (USACE) Record of Decision dated September 13, 2013, which is attached to this permit as Exhibit A and is incorporated by reference.

TWENTY-TWO: The permittee shall comply with all general and special conditions set forth in the USACE Letter of Permission dated March 3, 2014, which is attached to the permit as Exhibit B and is incorporated by reference.

TWENTY-THREE: The permittee shall comply with all conditions set forth in the Levee District 1 endorsement letter dated February 10, 2014, which is attached to the permit as Exhibit C and is incorporated by reference.

TWENTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

TWENTY-FIVE: The permittee agrees to incur all costs for compliance with local, State, and federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations they administer and enforce.

TWENTY-SIX: The permittee shall cooperate with the Board such that any encroachment that must be relocated, modified or otherwise altered to accommodate construction of flood system improvements permitted herein is relocated, modified or otherwise altered in compliance with current applicable State and federal standards. If the affected encroachment has an existing Board permit or is subject to other Board authorization, the permittee shall cooperate with the Board such that the permit or other authorization is appropriately amended to reflect the changed condition as shown on as-built drawings for the encroachment and FRWLP. If the encroachment does not have a Board permit or other Board authorization the permittee shall cooperate with the Board to determine whether a Board permit is required. If required the permittee shall cooperate with the Board to ensure that the permit application is made and, if granted, the permit reflects the changed condition(s) as shown on as-built drawings for the encroachment and the FRWLP project.

TWENTY-SEVEN: If the permittee does not comply with the conditions of this permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

TWENTY-EIGHT: Upon completion of this flood system improvement project, the permittee will cooperate with the Board to update the supplement to the standard Operations and Maintenance Manual covering the project area, and to cooperate with the Board to obtain federal acceptance of the project works into the Sacramento River Flood Control Project by the U.S. Army Corps of Engineers, followed by federal turnover to the State for Operations and Maintenance through existing assurance agreements.

TWENTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

THIRTY: The permittee shall develop a Stormwater Water Pollution and Prevention Plan and shall

make a copy readily available for review at the project site during construction.

PRE-CONSTRUCTION

THIRTY-ONE: The permittee shall provide construction supervision and inspection services acceptable to the Board.

THIRTY-TWO: The permittee shall contact the U. S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to an existing federal flood control project that will be incorporated into the Sacramento River Flood Control Project, a facility of the State Plan of Flood Control.

THIRTY-THREE: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of the levee conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 30 days of beginning the project.

THIRTY-FOUR: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior written approval of the Board. This condition excludes the work authorized as described in Special Condition SEVENTY-THREE.

THIRTY-FIVE: Thirty (30) calendar days prior to the start of any demolition and / or construction activities within the floodway or within the existing levee prism, the permittee shall submit to the Board's Chief Engineer two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through April 15. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) working days.

THIRTY-SIX: A profile of the existing levee crown roadway and access ramps that will be utilized for access to and from the borrow area shall be submitted to the Board prior to commencement of excavation.

THIRTY-SEVEN: Keys shall be provided to local levee maintenance agencies and the Department of Water Resources for all locks on gates providing access to the floodway, levee ramp, levee toe, and along the levee crown.

CONSTRUCTION

THIRTY-EIGHT: All work approved by this permit shall be in accordance with the approved plans and specifications, except as modified by special permit conditions herein. Any subsequent plans, specifications, and / or addenda shall be submitted immediately to the Board's Chief Engineer as outlined in Special Condition FORTY-THREE. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Board.

THIRTY-NINE: All addenda and contract change orders made to the approved plans and / or specifications by the permittee after Board approval of this permit shall be submitted to the Board's

Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

FORTY: Any additional project features proposed by the permittee in the floodway, on or in the levee section, and within the project right of way as shown on the approved plans (typically 20 feet in fee plus 10 feet in easement from the landward levee toe, but less in selected areas as described in the approved plans) will require either incorporation by amendment to this permit, or will require issuance of a separate encroachment permit to the encroachment owner from the Board.

FORTY-ONE: Existing or proposed utility poles and guy anchors shall be relocated or installed a minimum distance of 10 feet landward of the landward levee toe.

FORTY-TWO: All debris generated by this project shall be disposed of outside the floodway, levee prism and proposed right-of-way.

FORTY-THREE: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior approval from the Central Valley Flood Protection Board.

FORTY-FOUR: During construction of the project, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Board inspector immediately and prior to continuation of construction. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Board inspector.

FORTY-FIVE: The stability of the levee shall be maintained at all times during construction.

FORTY-SIX: Excavations below the design flood plain and within the project right of way owned in fee (as described in Special Condition FORTY-FOUR) shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation. Authorized activities such as farming may occur in the portion of the project right of way obtained in easement (as described in Special Condition FORTY-FOUR).

FORTY-SEVEN: Any damage to the levee crown roadway or access ramps that will be utilized for access for this project shall be promptly repaired to the condition that existed prior to this project.

FORTY-EIGHT: Equipment used in the construction of the cutoff wall shall not exceed the live-load surcharge to a level that causes or contributes to the instability of the levee during construction operations.

FORTY-NINE: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

FIFTY: All existing fencing, gates and signs removed during construction of this project, which are shown on the approved plans to be replaced, shall be replaced in kind and at the locations indicated on the approved plans. If it is necessary to relocate any fence, gate or sign that is not shown on the approved plans or to a location different than shown on the approved plans, the permittee is required to obtain written authorization from the Board's Chief Engineer prior to installation at a new location. All fencing, gates, and sign locations shall be accurately shown on any submitted as-built plans.

FIFTY-ONE: Any construction work by the permittee within the project right of way (as described in Special Condition FORTY-FOUR) shall meet California Code of Regulations, Title 23 (hereafter referred to as Title 23) standards or shall have an approved Board variance per Title 23, Sections 11(a) and (b). The permittee has requested specific construction variances to Title 23, Sections 108, 120, and 123 that are described in Board Staff Report Section 7.7 and Attachment H.

FIFTY-TWO: Any pipeline or conduit which is to be abandoned by filling with concrete, must have a minimum cover of three (3) feet below the waterward levee slope and one (1) foot below the landward levee slope.

FIFTY-THREE: Fill on the levee slopes shall be keyed into the existing levee section with each lift or as specified in the approved contract plans and specifications.

FIFTY-FOUR: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

FIFTY-FIVE: Some existing levee slopes are less than 2 horizontal to 1 vertical on the land side, or less than 3 horizontal to 1 vertical on the water side, and will remain so after the work permitted herein. This permit approves these steeper slopes by a variance to Board standards.

CONSTRUCTION MATERIALS

FIFTY-SIX: All fill material shall be as stated in the Project Area B contract specifications and free of lumps or stones exceeding 8 inches in greatest dimension, vegetative matter, or other unsatisfactory material, with the exception of materials and locations approved under Board variance per Title 23, Sections 11(a) and (b).

FIFTY-SEVEN: Backfill material for excavations within the existing levee sections and within the project right of way (as described in Special Condition FORTY-FOUR) shall be placed in 12-inch layers, moisture conditioned ranging from 3 above to 1 below optimum moisture content, and compacted to a minimum of 95 percent relative compaction as measured by ASTM Method D698, or as provided for in the contract specifications, and utilizing a method specification (refer to Special Condition SIXTY-TWO) for newly defined Type 3 soils within the levee prism and imported top soil.

FIFTY-EIGHT: This permit allows for a method specification to be utilized for placement of Type 3 soils in the upper waterside surficial zone and the imported topsoil. To achieve desired relative density of levee backfill under the method specification the permittee shall make three passes with selected compaction equipment at specified speed and moisture content, excluding four (4) to six (6) inches of topsoil.

FIFTY-NINE: All cobbles greater than eight (8) inches in size shall be utilized in approved waterside slope protection areas or hauled off site.

SIXTY: Placement of reconstructed levee fill shall be limited to the existing levee footprint and adjacent landside toe area and shall be done so as to not result in unstable outer levee slopes.

SIXTY-ONE: Earthen material meeting the requirements designated in this permit and included Project Area B specifications shall be used when constructing or reconstructing the waterside levee slope and levee crown fill areas, and no cuts shall remain in the levee section upon completion.

SIXTY-TWO: Fill material shall be placed only within the area indicated in the approved plans and specifications. Placement of additional fill in excess of 1,500 cubic yards beyond what is specified in these plans shall require written authorization from the Board's Chief Engineer.

SIXTY-THREE: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the project right of way (as described in Special Condition FORTY-FOUR, above). A method specification will be utilized in Type 3 zone fills for the upper waterside surficial zone and the imported topsoil layer to be placed on the upper landside slope.

SIXTY-FOUR: The reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of three (3) inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A or equivalent) over three (3) inches of salvaged aggregate base.

SIXTY-FIVE: Fluid pressures in the cutoff wall construction zone shall be monitored and controlled to minimize the potential for hydrofracturing.

SIXTY-SIX: Excess bentonite or other cutoff wall fluids shall be properly disposed of outside of the floodway. The bentonite or other cutoff wall fluids can be used as Type 1 or Type 2 backfill material for levee reconstruction if properly mixed within borrow or stockpile sites, and per the requirements within the contract specification for gradation, moisture and compaction.

SIXTY-SEVEN: Aggregate base material shall be compacted to a relative compaction of not less than 95 percent per ASTM Method D1557 (2012) or equivalent, with a moisture content sufficient to obtain the required compaction, or per the Project Area B contract specifications for exterior improvements, aggregate base course.

SIXTY-EIGHT: Potholing may be required to determine whether the proposed levee degrade material meets current specifications. If potholing is required, potholes shall be performed perpendicular to the levee centerline at a minimal spacing of 2,500 linear-feet. If the investigation results reveal deviations in soil materials from the current specifications, the permittee shall notify the Board in writing, shall describe the nature and extent of the deviations, and shall propose a detailed plan for Board consideration.

VEGETATION / ENVIRONMENTAL MITIGATION

SIXTY-NINE: On January 16, 2014 the Board's Chief Engineer authorized advanced elderberry transplant work for Project Areas B, C, and D. The work is described in the Advanced Elderberry

Transplant Authorization package and the Planting Details and Consultation Documents, which are attached to this permit as Exhibits D and E, respectively, and incorporated by reference.

SEVENTY: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

SEVENTY-ONE: The permittee shall replant or re-seed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

SEVENTY-TWO: The mitigation measures approved by the permittee and found in its Mitigation and Monitoring Reporting Program (MMRP) are made a condition of this permit. The permittee shall implement all such mitigation measures. The measures in the MMRP may be modified without triggering the need for subsequent or supplemental analysis under CEQA Guidelines section 15162. The permittee shall notify the Board's Environmental Section staff in advance of any proposed changes and shall submit supporting documentation for staff review and comment.

SEVENTY-THREE: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

SEVENTY-FOUR: In the event that levee or bank erosion injurious to facilities of the State Plan of Flood Control occurs at or adjacent to and as a result of the permitted flood system improvement project or related encroachment work, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

CONSTRUCTION COMPLETION

SEVENTY-FIVE: All temporary fencing, gates and signs shall be removed upon completion of project.

SEVENTY-SIX: The project site including the levee section and access ramps shall be restored to at least the condition that existed prior to commencement of work.

SEVENTY-SEVEN: Upon completion of the project, the permittee shall perform a levee crown profile survey and create a photo record, including associated descriptions, of "as-built" levee conditions. The levee crown profile survey and photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 120 days of project completion.

SEVENTY-EIGHT: The permittee acknowledges that the levee improvements are designed to be constructed to match the existing levee crown profile and any settlement over time shall be addressed through future operations and maintenance or subsequent Board authorization. Per DWR's October 2013 Urban Level of Protection Criteria (ULOP), all findings determining an urban level of flood protection require a review every five (5) years including a written report and determination by a California licensed Professional Engineer. The report must either confirm that the urban level of flood protection for the specified project meets the guidelines pursuant to the ULOP or identify remediation measures to be completed over the subsequent five (5) years. The permittee or Levee District 1, shall submit a comparison of the as-built survey to any subsequent surveys that may be required to confirm the urban level of flood protection and a copy of the written report to the

Board's Chief Engineer within 30 days of its completion.

SEVENTY-NINE: When DWR releases the completed Central Valley Floodplain Evaluation and Delineation Program data the permittee will recalculate levee freeboard using only that data for both cross section and top of levee elevations. If inconsistencies or deficiencies are found the permittee will develop and present a plan for Board approval to correct any freeboard deficiencies under this or a future phase of construction.

EIGHTY: The potential for earthquake-induced levee damage and displacement along the Feather River West Levee Project will be incorporated into an Emergency Action Plan (EAP) in accordance with DWR Urban Levee Design Criteria (ULDC) requirements. The permittee shall submit the EAP to the Board staff for review and comment 180 days after completion of Project Area B construction.

EIGHTY-ONE: Upon completion of the construction contract for Project Area B the permittee will conduct a Final Construction Walk-through for Board, Department of Water Resources, and U.S. Army Corps of Engineers staff. The walk-through is a condition for Board project acceptance, State funding, and as predecessor to U.S. Army Corps of Engineers system wide acceptance and eligibility for Public Law 84-99 rehabilitation and inspection program. This walk-through is critical to successful permit and project close-out.

POST-CONSTRUCTION

EIGHTY-TWO: Within 120 days of completion of the project, the permittee shall submit to the Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with Board permit conditions and the permittee's submitted drawings and specifications, addenda and contract change orders.

EIGHTY-THREE: Within three years from completion of the construction of the work authorized under this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through the Board, a permanent easement or joint use agreement granting all flood control rights upon, over and across the property to be occupied by the existing or to-be-reconstructed levee. The easement must include the project right of way (as described in Special Condition FORTY-FOUR) if the area is not presently encumbered by a Board easement. For information regarding Board easements please contact Angelica Aguilar at (916) 653-5782.

EIGHTY-FOUR: If the project, or any portion thereof, is to be abandoned in the future, the permittee or Levee District 1 shall abandon the project under direction of the Board and Department of Water Resources, at the permittee's cost and expense.

OPERATIONS AND MAINTENANCE

EIGHTY-FIVE: The permittee shall operate and maintain the permitted project works in the manner required by the current "Supplement to Standard Operation and Maintenance Manual," while under contract to do so. At the time maintenance responsibilities are transferred to Levee District 1, they shall operate and maintain the project works (excluding encroachments described in Special Condition TWENTY-SIX) pursuant to the "Supplement to Standard Operation and Maintenance Manual" as revised to reflect project completion or any revisions thereto.

EIGHTY-SIX: Haul ramps and utilized levee crown roadway shall be maintained during construction in a manner prescribed by authorized representatives of the Board, Department of Water Resources, Levee District 1 or any other agency responsible for maintenance.

EIGHTY-SEVEN: Within 180 days of completion of the project, the permittee shall submit to the Board proposed revisions to the U. S. Army Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, and the associated "as-built" drawings for system alterations to be incorporated into the federal Sacramento River Flood Control Project.

EIGHTY-EIGHT: The improvements permitted herein are designed to manage flows from a storm with a probability of occurrence of .005 in any year (200-year protection). Permittee's design assumed that non-urban existing upstream levees will not be raised above the design for the Sacramento River Flood Control Project as shown on the 1957 profile. Permittee's design flow and calculations assumed no upstream levee overtopping where permittee's design storm water surface elevation exceeds the 1957 profile top of levee elevation. Permittee acknowledges that the adopted 2012 Central Valley Flood Protection Plan will be regularly updated by the State and that the plan and future updates could include improvements that would change the flow and water surface elevation associated with permittee's design storm, possibly reducing the level of protection provided by the permitted improvements. Permittee agrees to participate in future modifications to these levees as may be required by the Central Valley Flood Protection Plan and its subsequent updates. Permittee's level of participation shall be equivalent to the level required of other local jurisdictions by the Plan. Permittee further agrees that should the Plan include measures that reduce the level of protection provided by the permitted improvements, permittee shall have no basis for a claim of hydraulic impacts.

EIGHTY-NINE: Due to the limited performance data associated with the requested variances to Title 23 approved for this project, following three (3) high water events (as defined in the Supplement to Standard Operation and Maintenance Manual) after completion of construction the permittee or Levee District 1 shall provide the Board's Chief Engineer with the information described in Special Condition EIGHTY-TWO and a written evaluation of levee performance and stability. The written evaluation must be stamped and signed by a California licensed Professional Engineer stating whether the levee is performing in the manner intended by the approved plans and specifications.

END OF CONDITIONS

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18793-3 BD

This Permit is issued to:

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, California 95991

This flood system improvement permit is granted to the Sutter Butte Flood Control Agency (SBFCA) to construct approximately 11.4 miles of levee improvements on the west levee of the Feather River (reaches 29 through 41) from Station 1765+00 to 2368+26. The proposed work includes: degrading of the levee by approximately one third of its overall height; construction of a cutoff wall ranging from 17 to 99 feet in depth along the centerline of the levee; reconstruction of the levee; construction of seepage berms from 100 to 170 feet in width; and correction of various encroachments which do not comply with California Code of Regulations, Title 23 (CCR 23). In addition to the project construction removal, relocation, and modification of several existing levee encroachments to bring them into compliance with federal and State standards through revised or new Board encroachment permits will also be necessary. Other existing encroachments will be relocated or removed in their entirety. These additional encroachment permits will be issued to the individual encroachment owners as required through the Project Area D construction schedule.

The project extends from East Evans Reimer Road to Thermalito Afterbay in Gridley, CA. (Sta 1765+00 to 2368+26) Reaches 29 through 41 (Section 2, T14N, R3E, MDB&M, Maintenance Area 7, Feather River, Butte County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: MAR 26 2013

Jay S. Punia
Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18793-3 BD

LIABILITIES / IMDEMNIFICATION

THIRTEEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the Central Valley Flood Protection Board, the Department of Water Resources, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN.

FOURTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe

and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

FIFTEEN: The permittee is responsible for all liability and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all such claims and damages arising from construction of the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SIXTEEN: The Central Valley Flood Protection Board and Department of Water Resources shall not be held liable for damages to the permitted alterations resulting from releases of water from reservoirs, flood fight or emergency operations, maintenance, inspection, or repair.

EASEMENT, LICENSE, TEMPORARY ENTRY PERMIT, AND LAND ACQUISITION

SEVENTEEN: If the construction project extends onto land owned in fee and / or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (hereafter Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar at (916) 653-5782.

EIGHTEEN: Prior to construction, the permittee shall have obtained legal possession of all property where work to be performed under this permit is located.

BOARD CONTACTS

NINETEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

PERMITTING AND AGENCY CONDITIONS

TWENTY: Project Area D of the Sutter Butte Flood Control Agency's Feather River West Levee Project (FRWLP) is permitted pursuant to 33 U.S.C. Section 408 authority of the U.S. Army Corps of Engineers. The Feather River west levee is a facility of the Sacramento River Flood Control Project and State Plan of Flood Control regulated by the Board. By acceptance of this permit, the permittee acknowledges the authority of the Board to regulate all future flood system improvement projects and encroachments along the project levee reach.

TWENTY-ONE: The permittee shall comply with all conditions set forth in the U.S. Army Corps of Engineers (USACE) Record of Decision dated September 13, 2013, which is attached to this permit as Exhibit A and is incorporated by reference.

TWENTY-TWO: The permittee shall comply with all general and special conditions set forth in the

USACE Letter of Permission dated March 3, 2014, which is attached to the permit as Exhibit B and is incorporated by reference.

TWENTY-THREE: The permittee shall comply with all conditions set forth in the Depatment of Water Resources Maintenance Area 7 endorsement letter dated February 6, 2014, which is attached to the permit as Exhibit C and is incorporated by reference.

TWENTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

TWENTY-FIVE: The permittee agrees to incur all costs for compliance with local, State, and federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations they administer and enforce.

TWENTY-SIX: The permittee shall cooperate with the Board such that any encroachment that must be relocated, modified or otherwise altered to accommodate construction of flood system improvements permitted herein is relocated, modified or otherwise altered in compliance with current applicable State and federal standards. If the affected encroachment has an existing Board permit or is subject to other Board authorization, the permittee shall cooperate with the Board such that the permit or other authorization is appropriately amended to reflect the changed condition as shown on as-built drawings for the encroachment and FRWLP. If the encroachment does not have a Board permit or other Board authorization the permittee shall cooperate with the Board to determine whether a Board permit is required. If required the permittee shall cooperate with the Board to ensure that the permit application is made and, if granted, the permit reflects the changed condition(s) as shown on as-built drawings for the encroachment and the FRWLP project.

TWENTY-SEVEN: If the permittee does not comply with the conditions of this permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

TWENTY-EIGHT: Upon completion of this flood system improvement project, the permittee will cooperate with the Board to update the supplement to the standard Operations and Maintenance Manual covering the project area, and to cooperate with the Board to obtain federal acceptance of the project works into the Sacramento River Flood Control Project by the U.S. Army Corps of Engineers, followed by federal turnover to the State for Operations and Maintenance through existing assurance agreements.

TWENTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

THIRTY: The permittee shall develop a Stormwater Water Pollution and Prevention Plan and shall make a copy readily available for review at the project site during construction.

PRE-CONSTRUCTION

THIRTY-ONE: The permittee shall provide construction supervision and inspection services acceptable to the Board.

THIRTY-TWO: The permittee shall contact the U. S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to an existing federal flood control project that will be incorporated into the Sacramento River Flood Control Project, a facility of the State Plan of Flood Control.

THIRTY-THREE: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of the levee conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 30 days of beginning the project.

THIRTY-FOUR: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior written approval of the Board. This condition excludes the work authorized as described in Special Condition SEVENTY-THREE.

THIRTY-FIVE: Thirty (30) calendar days prior to the start of any demolition and / or construction activities within the floodway or within the existing levee prism, the permittee shall submit to the Board's Chief Engineer two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through April 15. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) working days.

THIRTY-SIX: A profile of the existing levee crown roadway and access ramps that will be utilized for access to and from the borrow area shall be submitted to the Board prior to commencement of excavation.

THIRTY-SEVEN: Keys shall be provided to local levee maintenance agencies and the Department of Water Resources for all locks on gates providing access to the floodway, levee ramp, levee toe, and along the levee crown.

CONSTRUCTION

THIRTY-EIGHT: All work approved by this permit shall be in accordance with the approved plans and specifications, except as modified by special permit conditions herein. Any subsequent plans, specifications, and / or addenda shall be submitted immediately to the Board's Chief Engineer as outlined in Special Condition FORTY-THREE. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Board.

THIRTY-NINE: All addenda and contract change orders made to the approved plans and / or specifications by the permittee after Board approval of this permit shall be submitted to the Board's Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical,

hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

FORTY: Any additional project features proposed by the permittee in the floodway, on or in the levee section, and within the project right of way as shown on the approved plans (typically 20 feet in fee plus 10 feet in easement from the landward levee toe, but less in selected areas as described in the approved plans) will require either incorporation by amendment to this permit, or will require issuance of a separate encroachment permit to the encroachment owner from the Board.

FORTY-ONE: Existing or proposed utility poles and guy anchors shall be relocated or installed a minimum distance of 10 feet landward of the landward levee toe.

FORTY-TWO: All debris generated by this project shall be disposed of outside the floodway, levee prism and proposed right-of-way.

FORTY-THREE: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior approval from the Central Valley Flood Protection Board.

FORTY-FOUR: During construction of the project, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Board inspector immediately and prior to continuation of construction. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Board inspector.

FORTY-FIVE: The stability of the levee shall be maintained at all times during construction.

FORTY-SIX: Excavations below the design flood plain and within the project right of way owned in fee (as described in Special Condition FORTY-FOUR) shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation. Authorized activities such as farming may occur in the portion of the project right of way obtained in easement (as described in Special Condition FORTY-FOUR).

FORTY-SEVEN: Any damage to the levee crown roadway or access ramps that will be utilized for access for this project shall be promptly repaired to the condition that existed prior to this project.

FORTY-EIGHT: Equipment used in the construction of the cutoff wall shall not exceed the live-load surcharge to a level that causes or contributes to the instability of the levee during construction operations.

FORTY-NINE: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

FIFTY: All existing fencing, gates and signs removed during construction of this project, which are shown on the approved plans to be replaced, shall be replaced in kind and at the locations indicated on the approved plans. If it is necessary to relocate any fence, gate or sign that is not shown on the approved plans or to a location different than shown on the approved plans, the permittee is required to obtain written authorization from the Board's Chief Engineer prior to installation at a new location. All fencing, gates, and sign locations shall be accurately shown on any submitted as-built plans.

FIFTY-ONE: Any construction work by the permittee within the project right of way (as described in Special Condition FORTY-FOUR) shall meet California Code of Regulations, Title 23 (hereafter referred to as Title 23) standards or shall have an approved Board variance per Title 23, Sections 11(a) and (b). The permittee has requested specific construction variances to Title 23, Sections 108, 112, 120, and 123 that are described in Board Staff Report Section 7.7 and Attachment H.

FIFTY-TWO: Any pipeline or conduit which is to be abandoned by filling with concrete, must have a minimum cover of three (3) feet below the waterward levee slope and one (1) foot below the landward levee slope.

FIFTY-THREE: Fill on the levee slopes shall be keyed into the existing levee section with each lift or as specified in the approved contract plans and specifications.

FIFTY-FOUR: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

FIFTY-FIVE: Some existing levee slopes are less than 2 horizontal to 1 vertical on the land side, or less than 3 horizontal to 1 vertical on the water side, and will remain so after the work permitted herein. This permit approves these steeper slopes by a variance to Board standards.

CONSTRUCTION MATERIALS

FIFTY-SIX: All fill material shall be as stated in the Project Area D contract specifications and free of lumps or stones exceeding 8 inches in greatest dimension, vegetative matter, or other unsatisfactory material, with the exception of materials and locations approved under Board variance per Title 23, Sections 11(a) and (b), and materials used to construct berms in Reaches 38, 40, and 41.

FIFTY-SEVEN: Backfill material for excavations within the existing levee sections and within the project right of way (as described in Special Condition FORTY-FOUR) shall be placed in 12-inch layers, moisture conditioned ranging from 3 above to 1 below optimum moisture content, and compacted to a minimum of 95 percent relative compaction as measured by ASTM Method D698, or as provided for in the contract specifications, and utilizing a method specification (refer to Special Condition SIXTY-TWO) for newly defined Type 3 soils within the levee prism and imported top soil.

FIFTY-EIGHT: This permit allows for a method specification to be utilized for placement of Type 3 soils in the upper waterside surficial zone and the imported topsoil. To achieve desired relative density of levee backfill under the method specification the permittee shall make three passes with selected compaction equipment at specified speed and moisture content, excluding four (4) to six (6) inches of topsoil.

FIFTY-NINE: All cobbles greater than eight (8) inches in size shall be utilized in approved waterside

slope protection areas, landside berms, or hauled off site.

SIXTY: Placement of reconstructed levee fill shall be limited to the existing levee footprint and adjacent landside toe area and shall be done so as to not result in unstable outer levee slopes.

SIXTY-ONE: Earthen material meeting the requirements designated in this permit and included Project Area D specifications shall be used when constructing or reconstructing the waterside levee slope and levee crown fill areas, and no cuts shall remain in the levee section upon completion.

SIXTY-TWO: Fill material shall be placed only within the area indicated in the approved plans and specifications. Placement of additional fill in excess of 1,500 cubic yards beyond what is specified in these plans shall require written authorization from the Board's Chief Engineer.

SIXTY-THREE: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the project right of way (as described in Special Condition FORTY-FOUR, above). A method specification will be utilized in Type 3 zone fills for the upper waterside surficial zone. Density testing will not be required for seepage berm material, seepage berm platform fill, random fill - dredge tailing material, and for levee embankment fill (Soil Type 3).

SIXTY-FOUR: The reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of 3 inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A or equivalent) over three (3) inches of salvaged aggregate base.

SIXTY-FIVE: Fluid pressures in the cutoff wall construction zone shall be monitored and controlled to minimize the potential for hydrofracturing.

SIXTY-SIX: Excess bentonite or other cutoff wall fluids shall be properly disposed of outside of the floodway. The bentonite or other cutoff wall fluids can be used as Type 1 or Type 2 backfill material for levee reconstruction if properly mixed within borrow or stockpile sites, and per the requirements within the contract specification for gradation, moisture and compaction.

SIXTY-SEVEN: Aggregate base material shall be compacted to a relative compaction of not less than 95 percent per ASTM Method D1557 (2012) or equivalent, with a moisture content sufficient to obtain the required compaction, or per the Project Area D contract specifications for Exterior Improvements, Aggregate base course.

SIXTY-EIGHT: Potholing may be required to determine whether the proposed levee degrade material meets current specifications. If potholing is required, potholes shall be performed perpendicular to the levee centerline at a minimal spacing of 2,500 linear-feet. If the investigation results reveal deviations in soil materials from the current specifications, the permittee shall notify the Board in writing, shall describe the nature and extent of the deviations, and shall propose a detailed plan for Board consideration.

VEGETATION / ENVIRONMENTAL MITIGATION

SIXTY-NINE: On January 16, 2014 the Board's Chief Engineer authorized advanced elderberry transplant work for Project Areas B, C, and D. The work is described in the Advanced Elderberry Transplant Authorization package and the Planting Details and Consultation Documents, which are

attached to this permit as Exhibits D and E, respectively, and incorporated by reference.

SEVENTY: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

SEVENTY-ONE: The permittee shall replant or re-seed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

SEVENTY-TWO: The mitigation measures approved by the permittee and found in its Mitigation and Monitoring Reporting Program (MMRP) are made a condition of this permit. The permittee shall implement all such mitigation measures. The measures in the MMRP may be modified without triggering the need for subsequent or supplemental analysis under CEQA Guidelines section 15162(c). The permittee shall notify the Board's Environmental Section staff in advance of any proposed changes and shall submit supporting documentation for staff review and comment.

SEVENTY-THREE: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

SEVENTY-FOUR: In the event that levee or bank erosion injurious to facilities of the State Plan of Flood Control occurs at or adjacent to and as a result of the permitted flood system improvement project or related encroachment work, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

CONSTRUCTION COMPLETION

SEVENTY-FIVE: All temporary fencing, gates and signs shall be removed upon completion of project.

SEVENTY-SIX: The project site including the levee section and access ramps shall be restored to at least the condition that existed prior to commencement of work.

SEVENTY-SEVEN: Upon completion of the project, the permittee shall perform a levee crown profile survey and create a photo record, including associated descriptions, of "as-built" levee conditions. The levee crown profile survey and photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 120 days of project completion.

SEVENTY-EIGHT: The permittee acknowledges that the levee improvements are designed to be constructed to match the existing levee crown profile and any settlement over time shall be addressed through future operations and maintenance or subsequent Board authorization. Per DWR's October 2013 Urban Level of Protection Criteria (ULOP), all findings determining an urban level of flood protection require a review every five (5) years including a written report and determination by a California licensed Professional Engineer. The report must either confirm that the urban level of flood protection for the specified project meets the guidelines pursuant to the ULOP or identify remediation measures to be completed over the subsequent five (5) years. The permittee or Maintenance Area 7, shall submit a comparison of the as-built survey to any subsequent surveys that may be required to confirm the urban level of flood protection and a copy of the written report to the Board's Chief Engineer within 30 days of its completion.

SEVENTY-NINE: When DWR releases the completed Central Valley Floodplain Evaluation and Delineation Program data the permittee will recalculate levee freeboard using only that data for both cross section and top of levee elevations. If inconsistencies or deficiencies are found the permittee will develop and present a plan for Board approval to correct any freeboard deficiencies under this or a future phase of construction.

EIGHTY: The potential for earthquake-induced levee damage and displacement along the Feather River West Levee Project will be incorporated into an Emergency Action Plan (EAP) in accordance with DWR Urban Levee Design Criteria (ULDC) requirements. The permittee shall submit the EAP to the Board staff for review and comment 180 days after completion of Project Area D construction.

EIGHTY-ONE: Upon completion of the construction contract for Project Area D the permittee will conduct a Final Construction Walk-through for Board, Department of Water Resources, and U.S. Army Corps of Engineers staff. The walk-through is a condition for Board project acceptance, State funding, and as predecessor to U.S. Army Corps of Engineers system wide acceptance and eligibility for Public Law 84-99 rehabilitation and inspection program. This walk-through is critical to successful permit and project close-out.

POST-CONSTRUCTION

EIGHTY-TWO: Within 120 days of completion of the project, the permittee shall submit to the Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with Board permit conditions and the permittee's submitted drawings and specifications, addenda and contract change orders.

EIGHTY-THREE: Within three years from completion of the construction of the work authorized under this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through the Board, a permanent easement or joint use agreement granting all flood control rights upon, over and across the property to be occupied by the existing or to-be-reconstructed levee. The easement must include the project right of way (as described in Special Condition FORTY-FOUR) if the area is not presently encumbered by a Board easement. For information regarding Board easements please contact Angelica Aguilar at (916) 653-5782.

EIGHTY-FOUR: If the project, or any portion thereof, is to be abandoned in the future, the permittee or Maintenance Area 7 shall abandon the project under direction of the Board and Department of Water Resources, at the permittee's cost and expense.

OPERATIONS AND MAINTENANCE

EIGHTY-FIVE: The permittee shall operate and maintain the permitted project works in the manner required by the current "Supplement to Standard Operation and Maintenance Manual," while under contract to do so. At the time maintenance responsibilities are transferred to Maintenance Area 7, they shall operate and maintain the project works (excluding encroachments described in Special Condition TWENTY-SIX) pursuant to the "Supplement to Standard Operation and Maintenance Manual" as revised to reflect project completion or any revisions thereto.

EIGHTY-SIX: Haul ramps and utilized levee crown roadway shall be maintained during construction

in a manner prescribed by authorized representatives of the Board, Department of Water Resources, or any other agency responsible for maintenance.

EIGHTY-SEVEN: Within 180 days of completion of the project, the permittee shall submit to the Board proposed revisions to the U. S. Army Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, and the associated "as-built" drawings for system alterations to be incorporated into the federal Sacramento River Flood Control Project.

EIGHTY-EIGHT: The improvements permitted herein are designed to manage flows from a storm with a probability of occurrence of .005 in any year (200-year protection). Permittee's design assumed that non-urban existing upstream levees will not be raised above the design for the Sacramento River Flood Control Project as shown on the 1957 profile. Permittee's design flow and calculations assumed no upstream levee overtopping where permittee's design storm water surface elevation exceeds the 1957 profile top of levee elevation. Permittee acknowledges that the adopted 2012 Central Valley Flood Protection Plan will be regularly updated by the State and that the plan and future updates could include improvements that would change the flow and water surface elevation associated with permittee's design storm, possibly reducing the level of protection provided by the permitted improvements. Permittee agrees to participate in future modifications to these levees as may be required by the Central Valley Flood Protection Plan and its subsequent updates. Permittee's level of participation shall be equivalent to the level required of other local jurisdictions by the Plan. Permittee further agrees that should the Plan include measures that reduce the level of protection provided by the permitted improvements, permittee shall have no basis for a claim of hydraulic impacts.

EIGHTY-NINE: Due to the limited performance data associated with the requested variances to Title 23 approved for this project, following three (3) high water events (as defined in the Supplement to Standard Operation and Maintenance Manual) after completion of construction the permittee or Maintenance Area 7 shall provide the Board's Chief Engineer with the information described in Special Condition EIGHTY-TWO and a written evaluation of levee performance and stability. The written evaluation must be stamped and signed by a California licensed Professional Engineer stating whether the levee is performing in the manner intended by the approved plans and specifications.

NINETY: An irrigation canal owned and operated by Butte Water District, Sutter Extension Water District, and the Joint Water District (Irrigation Districts) is in close proximity to the federal levee and in some cases the east bank of the canal and the landside of the Feather River west levee are one and the same. The Sutter Butte Flood Control Agency has agreed to help coordinate and develop an agreement between the Department of Water Resources, levee districts(s), and the Irrigation Districts regarding the distinction and separation of maintenance responsibilities between the LMAs and the Irrigation Districts prior to the Board's acceptance of the Feather River West Levee Project Area D. The Board shall have up to 30 days after receipt of the agreement for comment. The Board and / or the Department of Water Resources may extend this review period up to 45 days by written notification.

END OF CONDITIONS

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991
(530) 870-4425
sutterbutteflood.org

Counties
Butte County
Sutter County

Cities
City of Biggs
City of Gridley
City of Live Oak
City of Yuba City

Levee Districts
Levee District 1
Levee District 9

September 17, 2014

Ms. Nancy Moricz
Supervising Civil Engineer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

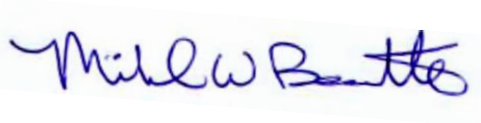
SUBJECT: Extension of Construction Time for Ongoing Work on the Feather River West Levee – Permit No. 18793-1, 2, 3 BD (Project Areas B, C, and D)

Dear Ms. Moricz:

As requested, and in support of SBFCA's request for an extension of construction time for ongoing work on the above listed projects, please find attached the contractor submitted Flood Safety Plans and Emergency Levee Reconstruction Plan.

Please contact me at: (916) 679-8861 or m.bessette@sutterbutteflood.org if you have any questions regarding this information.

Sincerely,



Michael W. Bessette, P.E.
Director of Engineering
Sutter Butte Flood Control Agency

Enclosures:
1. Flood Stage Contingency Plan (Contract C)
2. Flood Stage Contingency Plan (Contract B-D)
3. Emergency Levee Reconstruction Plan

Flood Stage Contingency Plan

Nordic Industries, Inc./Magnus Pacific JV
Feather River West Levee
Contract No. 01-2013C
July 5, 2013

This Plan was developed in accordance with Special Provision Section 50
Preconstruction Submittal

1. **General**

This Flood Stage Contingency Plan has been prepared to identify and mitigate potential problems that may occur as a result of unanticipated high water stages in the Feather River during levee construction of Feather River West Levee Project Area C.

Contract 01-2013C FRWL will extend over two construction seasons with an intervening winter flood season. Specific work activities will result in temporary reduction in the level of flood protection afforded by the existing flood control features. It is essential that the level of flood protection be restored during the winter so that it is no lower than the pre-project level.

2. Project Scope

Contract 01-2013C proposes to make levee improvements over two construction seasons from station 844+75 near Shanghai Bend at the southern end of Yuba City to station 1625+00 just north of Cambell Road; approximately 78,000 feet. Levee improvements will consist of clearing and grubbing, levee degrade, slurry walls, seepage berms, levee reconstruction, replacement of utility crossings and levee slope erosion protection.

By utilizing all of the available resources for the reconstruction, the levee could be rebuilt within 24 to 156 hours. This time frame is estimated with 40,000 CY being moved in one 10 hour shift and with one shift per day. The reconstruction process can vary based on the required amount of levee that has to be rebuilt.

3. Work Activities of Particular Concern

The work activities of particular concern relative to high water elevations in the Feather River are discussed below:

A. Levee Excavation

The existing FRWL will be excavated/degraded to working platform as shown on the typical Plan Sheets C301**.**

B. Excavation For Utility Crossings

The FRWL improvement project includes replacement of utility force mains within the construction easements

C. S-B Cutoff Wall Construction

The cutoff wall can be constructed using two methods, the conventional slurry trench method the deep soil mixing (DSM) method. The conventional slurry trench method utilizes the

hydraulic fluid pressure of bentonite slurry against the walls of the trench to keep the trench from collapsing. As river and/or ground water levels rise, the effective pressure against the side walls is reduced. The working platform for the cutoff wall is approximately at one-half the original levee height. Calculations show that as long as the ground water levels are three feet below the ground surface at the levee toe, the trench should remain stable.

4. River Stage Monitoring

A. Gaging Station

The Feather River stage is reported to by the USGS gaging station "Live Oak" located on the FR northern end of the project site and gaging station "Yuba City" located on the FR southern end of the project site. The data for the Live Oak gaging station and Yuba City gaging station are reported on the California Data Exchange Center, available on the web at http://cdec.water.ca.gov . The station reports in USACE datum.

B. Monitoring Interval

Nordic /Magnus will monitor the Feather River stage on a daily basis and maintain a record of the daily level and the river stage forecast reports. The data will be reviewed and compared with the design of the dewatering system and the slurry trench operations to make sure that the groundwater levels are not exceeding the design parameters.

In the event of a forecasted rain event, the river stage levels will also be monitored daily for flood stage potential. During the periods of no precipitation, the river stage levels will be monitored weekly.

5. Flood Contingency Operations and Considerations

A. Levee Reconstruction Materials

Earthen materials from levee excavation operations will stockpiled onsite adjacent to the levee and would be the source of material to conduct an expedited levee re-construction. If additional soil is needed due to losses of soil from handling and recompaction, Nordic/Magnus will utilize the identified borrow sites for this contract as needed during emergency reconstruction. Since it will be impractical during an expedited levee reconstruction to meet the designation of Type I or Type II materials as required by the contract, Nordic/Magnus will reconstruct the levee with the available fill regardless of the designation. After the water has receded below the emergency water level, the emergency rebuild will be dismantled and the levee will be built per the plans and specifications.

Also the project will be constructed over two constructions seasons. Levee excavation will be divided up into multiple reaches were cutoff wall installation will follow directly after excavation and then levee reconstruction after completion of cutoff wall installation (See Project Schedule submitted separately).

B. Utility Crossing Backfill

Excavations for utility crossings for the construction of force main crossings onto the water-side of the FRWL are relatively small. These excavations will typically require one to two days to backfill to the pre-project level

C. Cutoff Wall Backfill

With the backfill in place, even in a "fresh" condition, water surfaces below the elevation of the working platform should not cause levee stability or seepage problems. The contractor is allowed to have the backfill toe between thirty and one hundred feet from the current working face of slurry trench.. The depth of slurry wall will dictate the length of open trench. The backfill slope on an average will be between a 7/1 to 10/1 slopes. Normal backfill operations can backfill this length of trench in less than a 24 hour time period. .

D. Equipment and Methods

Nordic/Magnus's full spread of earthmoving and compaction equipment will be available to expeditiously reconstruct the levee. Embankment material will be delivered to the levee using scrapers and/or trucks. Once at the levee, the embankment material will be spread and compacted using a combination of motor graders and heavy sheeps-foot compactors.

E. Contingency Implementation Triggers

Elevated Ground Water
Elevated River Stage
Direction from SBFCA

F. Emergency Reconstruction

Nordic/Magnus will review river level data at both the Live Oak station and the Boyd's Landing Station. The Yuba City station "Danger Stage" river level elevation is 81.2 and the "Flood Stage" river level elevation is 80.2. Should predictions indicate a risk of flooding Nordic will mobilize to re-build any degraded levee and will commence re-building at the "Danger Stage" or as directed by the Agency.

G. Excavation for Utility Crossing

Excavation for emergency action plan has been submitted under a separate plan.

Flood Stage Contingency Plan

Nordic Industries, Inc./Magnus Pacific JV
Feather River West Levee
Contract No. 01-2014B-D
April 9, 2014

This Plan was developed in accordance with Special Provision Section 56
Preconstruction Submittal

1. **General**

This Flood Stage Contingency Plan has been prepared to identify and mitigate potential problems that may occur as a result of unanticipated high water stages in the Feather River during levee construction of Feather River West Levee Project Area B & D.

Contract 01-2014B-D FRWL will extend over two construction seasons with an intervening winter flood season. Specific work activities will result in temporary reduction in the level of flood protection afforded by the existing flood control features. It is essential that the level of flood protection be restored during the winter so that it is no lower than the pre-project level.

2. Project Scope

Contract 01-2014B-D proposes to make levee improvements over two construction seasons from station 512+00 near Star Bend Road to station 832+40 near Shanghai Bend at the southern end of Yuba City and station 1765+00 near E. Evans Reimer Road to station 2368+26 near E. Hamilton Road; approximately 17 miles. Levee improvements will consist of clearing and grubbing, levee degrade, slurry walls, seepage berms, levee reconstruction, replacement of utility crossings and levee slope erosion protection.

3. Work Activities of Particular Concern

The work activities of particular concern relative to high water elevations in the Feather River are discussed below:

A. Levee Excavation

The existing FRWL will be excavated/degraded to working platform as shown on the typical Plan Sheets C301 in Volume 3 (for Project B) and Sheets C601 in Volume 4 (for Project D)**.**

B. Excavation For Utility Crossings

The FRWL improvement project includes replacement of utility force mains within the construction easements

C. Cutoff Wall Construction

The cutoff wall can be constructed using two methods, the conventional slurry trench method or the deep soil mixing (DSM) method. The conventional slurry trench method utilizes the hydraulic fluid pressure of bentonite slurry against the walls of the trench to keep the trench from collapsing. As river and/or ground water levels rise, the effective pressure against the side walls is reduced. The working platform for the cutoff wall is

approximately at one-third the original levee height. Calculations show that as long as the ground water levels are three feet below the ground surface at the levee toe, the trench should remain stable.

4. River Stage Monitoring

A. Gaging Station

The Feather River stage is reported to by the USGS gaging station "Star Bend" located on the FR southern end of the project B site and gaging station "Yuba City" located on the FR northern end of the project B site. Project D gaging stations will be "Live Oak" located on the FR southern end of the project site and gaging station "Gridley" located on the FR northern end of the project site. The data for the Star Bend, Yuba City, Live Oak and Gridley gaging station are reported on the California Data Exchange Center, available on the web at http://cdec.water.ca.gov . The station reports in USACE datum.

B. Monitoring Interval

Nordic/Magnus will monitor the Feather River stage on a daily basis and maintain a record of the daily level and the river stage forecast reports. The data will be reviewed and compared with the design of the dewatering system and the slurry trench operations to make sure that the groundwater levels are not exceeding the design parameters.

The river stage levels will also be monitored for flood stage potential.

5. Flood Contingency Operations and Considerations

A. Levee Reconstruction Materials

Earthen materials from levee excavation operations will be stockpiled onsite adjacent to the levee and would be the source of material to conduct an expedited levee re-construction. During the two constructions seasons of the project, levee excavation will be divided up into multiple reaches were cutoff wall installation will follow directly after excavation and then levee reconstruction after completion of cutoff wall installation (See Project Schedule submitted separately).

B. Utility Crossing Backfill

Excavations for utility crossings for the construction of force main crossings onto the water-side of the FRWL are relatively small. These excavations will typically require one to two days to backfill to the pre-project level

C. Cutoff Wall Backfill

With the backfill in place, even in a "fresh" condition, water surfaces below the elevation of the working platform should not cause levee stability or seepage problems. The contractor is allowed to have the backfill toe between thirty and one hundred feet from the current working face of slurry trench. The depth of slurry wall will dictate the length of open trench. The backfill slope on an average will be between a 7/1 to 10/1 slopes. Normal backfill operations can backfill this length of trench in less than a 24 hour time period.

D. Equipment and Methods

Nordic/Magnus's full spread of earthmoving and compaction equipment will be available to expeditiously reconstruct the levee. Embankment material will be delivered to the levee using scrapers and/or trucks. Once at the levee, the embankment material will be spread and compacted using a combination of motor graders and heavy sheeps-foot compactors.

E. Contingency Implementation Triggers

Elevated Ground Water
Elevated River Stage

F. Emergency Reconstruction

Nordic/Magnus will review river level data at the Live Oak station, the Gridley station and the Star Bend station. The Yuba City station "Danger Stage" river level elevation is 81.2, the "Flood Stage" river level elevation is 80.2 and the "Monitor Stage" river level elevation is 65.0. Should predictions indicate a risk of flooding the JV will mobilize to re-build any degraded levee and will commence re-building at the "Monitor Stage" or as directed by the Agency.

EMERGENCY LEVEE RECONSTRUCTION PLAN

Nordic Industries, Inc. /Magnus Pacific JV
Feather River West Levee
Contract No. 01-2013C
July 25, 2013
Revision 2

This Plan was developed in accordance with Specification Section 01 11 00.01
SD-09 Preconstruction Submittal

1. **General**

This Emergency Levee Reconstruction Plan has been prepared to provide the Agency with Nordic/Magnus's plan to reconstruct the levee in case of unanticipated high water stages in the Feather River during levee construction of the Feather River West Levee Project Area C or other levee failure; in which case the levee shall be degraded/rebuilt and/or buttressed as necessary and as approved by the Agency. Nordic / Magnus have also prepared a Flood Stage Contingency Plan that reviews the river elevations that would trigger an emergency levee reconstruction. Please Reference Transmittal Sub-11.1 "Flood Stage Contingency Plan".

2. Project Scope

Contract 01-2013C proposes to make levee improvements from station 844+75 near Shanghai Bend at the southern end of Yuba City to station 1625+00 just north of Cambell Road; approximately 78,000 feet. Levee improvements will consist of clearing and grubbing, levee degrade, slurry walls, seepage berms, levee reconstruction, replacement of utility crossings and levee slope erosion protection.

3. Work Activities of Particular Concern

The work activities of particular concern relative to high water elevations in the Feather River or the interior drainage canals are discussed below:

A. Levee Excavation

The existing FRWL will be excavated/degraded to a working platform as shown on the typical Plan Sheets C301. From Station 895+20 to 924+20, 1077+30 to 1127+30, and 1135+45 to 1376+00 the levee will be degraded below the 200 year storm event water level. From station 844+00 to 897+00 and 1455+00 – 1461+00 the levee will be completely degraded. At this time we are currently in the process of Value Engineering Cost Proposal that would propose to only degrade the levee from station 844+00 to 897+00 to elevation 69 (half degrade).

Schedule of Levee Excavation:

- 2013 Construction levee excavation between levee stations 844+00 to 897+00. If the Value Engineering Proposal is approved additional levee degrade will also take place between levee stations 896+00 to 924+00.
    - Volume of excavation for the 2013 construction season is approximately 394,000 CY. If the Value Engineering Proposal is approved, the volume of excavation will be reduced to approximately 256,334 CY.
- 2014 Construction levee excavation between levee stations 896+00 to 924+00 and 1078+00 – 1625+00.

- Volume of excavation for the 2014 construction season is approximately 179,697 CY. If the Value Engineering Proposal is approved, the volume of excavation will be reduced to approximately 98,900 CY.

See Project Schedule submitted separately for levee excavation sequencing.

B. Excavation For Utility Crossings

The FRWL improvement project includes replacement of utility forcemains within the construction easements

C. S-B Cutoff Wall Construction

The cutoff wall can be constructed using two methods, the conventional slurry trench method the deep soil mixing (DSM) method. The conventional slurry trench method utilizes the hydraulic fluid pressure of bentonite slurry against the walls of the trench to keep the trench from collapsing. As river and/or ground water levels rise, the effective pressure against the side walls is reduced. A slurry wall cutoff work plan has been submitted which addresses any potential hydraulic fracturing and mitigation measures.

4. Emergency Levee Reconstruction Contingency Operations and Considerations

A. Levee Reconstruction Materials

Earthen materials from levee excavation operations will be stockpiled onsite adjacent to the levee and would be the source of material to conduct an expedited levee reconstruction. The stockpiled materials will be sealed and track footed to protect during inclement weather. If needed due to losses of soil during soil handling and re-compaction, Nordic/Magnus will utilize the identified borrow sites for this contract as needed during emergency reconstruction.

The river level will be monitored in accordance with the approved Flood Contingency Plan. Once the water level in the Feather River reaches Monitor Stage at Station ID YUB. Nordic/Magnus will deploy all avaialbe resources to assist in reconstruction, which would immediately begin. Depending on the amount of levee requiring reconstruction, it is estimated that the levee could be reconstructed within 24 – 156 hrs moving 40,000 CY in one 10 hour shift and assuming one shift per day.

The project will be constructed over two constructions seasons. Levee excavation will be divided up into multiple reaches were cutoff wall installation will follow directly after excavation and then levee reconstruction after completion of cutoff wall installation (See Project Schedule Submitted Separately). A maximum of 8,200 LF of excavation maybe open at any given time for the 2013 construction season. A maximum of 54,000 LF of excavation maybe open at any given time during the 2014 construction season.

Since it will be impractical during an expedited levee reconstruction to try to meet the designation of Type I or Type II fill material as required by the contract, Nordic/Magnus will utilize whatever fill material available to reconstruct the levee. The fill material will be compacted using a combination of equipment listed in Section 4, Part D. The material will be compacted making at least four passes over it but, not to a specific density. After the

trigger event subsides, the emergency fill material will be removed and the levee rebuilt to specification requirements.

B. Utility Crossing Backfill

Excavations for utility crossings for the construction of forcemain crossings onto the water-side of the FRWL are relatively small. These excavations will typically require one to two days to backfill to the pre-project level and additional Emergency Action Plans have been submitted under separate transmittals as required by the contract.

C. Cutoff Wall Backfill

With the backfill in place, even in a "fresh" condition, water surfaces below the elevation of the working platform should not cause levee stability or seepage problems. The contractor is allowed to have between thirty and one hundred feet of continuous slurry trench open at one time. Normal backfill operations can backfill this length of trench in less than one day.

D. Equipment and Methods

Nordic/Magnus's full spread of earthmoving and compaction equipment will be available to expeditiously reconstruct the levee. The equipment listed below will be on site throughout construction and will be available for any expeditious reconstruction. Additional equipment needed, such as a sheeps foot compactor will be available within 24 hrs. Embankment material will be delivered to the levee using scrapers and/or trucks. Once at the levee, the embankment material will be spread and compacted using a combination of the equipment listed below making at least four passes.

- (1) CAT 14H Motor Grader
- (2) JD 600 Excavator
- (1) CAT D8T Dozer
- (1) CAT D6R Dozer
- (1) JD 270LC Excavator
- (1) JD 370LC Excavator
- (3) CAT D350C Haul Trucks
- (1) Kamatsu PC1250

E. Contingency Implementation Triggers

Monitor Stage @ Feather River Monitor at Yuba City (YUB)
http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=YUB
Levee Failure
Direction from SBFCA