

**Meeting of the Central Valley Flood Protection Board
October 25, 2013
Staff Report – Encroachment Permit 18878
Tulare County Resources Management Agency
Outside Creek Bridge Replacement at Road 148, Tulare County**

1.0 – ITEM

Consider approval of Permit No. 18878 (Attachment B).

2.0 – APPLICANT

Tulare County Resources Management Agency

3.0 – LOCATION

The project is located in Tulare County at the Road 148 crossing of Outside Creek (see Attachment A). The Road 148 Bridge is approximately 0.14 miles south of East Bardsley Avenue and 4.84 miles east of State Route 99. Outside Creek is a downstream tributary of the Kaweah River located below Terminus Dam.

4.0 – DESCRIPTION

The applicant proposes to replace the existing bridge built in 1950 with a new bridge (Bridge No. 46C-0186, see Attachment C). The proposed bridge will be a double 8- by 14-foot reinforced box culvert, approximately 35-foot wide by 36-foot long, which will accommodate two travel lanes. Wingwalls approximately 15-feet in length are proposed to be constructed to tie into the existing channel banks. In-channel work includes 15 to 25 feet of concrete channel lining, up to 10 feet of rock slope protection. The bridge will conform to the existing approach road width of 20 feet.

5.0 – PROJECT ANALYSIS

5.1 – Authority of the Board

- California Code of Regulations, Title 23 (CCR 23), §112, Regulated Streams, Table 8.1
- CCR 23, §128, Bridges

Board staff has determined that the overall design of the proposed project is in compliance with CCR 23 standards as described below.

5.2 – Hydraulic Analysis

The U.S. Army Corps of Engineers, Hydrologic Engineering Center River Analysis System (HEC-RAS) model was used to perform a one-dimensional hydraulic analysis. A Manning's roughness coefficient of 0.03 was used for the channel and overbank areas for both existing and proposed conditions. The analysis used a design flow of 700 cubic feet per second (cfs) to model the 100-year flood event (see Attachment D).

The proposed bridge is designed with a minimum soffit elevation of 300.0 feet. At this height the hydraulic modeling predicts 2.1 feet of freeboard. This meets the CCR 23 freeboard requirement of at least 2.0 feet of clearance between the bridge soffit and the 100-year water surface elevation for minor streams.

The proposed project also results in a decrease in water surface elevation upstream of the bridge up to 0.16 feet. This decrease compared to the existing conditions is due to the increased cross sectional area of the double box culverts, and installation of the warped wing walls which decrease hydraulic losses.

The average channel velocities upstream of the bridge range from 4.8 to 5.8 feet per second (fps), and immediately upstream of the proposed bridge the modeled velocity increase is approximately 1.1 fps. The analysis concluded that scouring is not critical and its hydraulic impact is negligible on the floodway.

Board staff reviewed the hydraulic analysis and concurs with the applicant's conclusion that the proposed bridge replacement will result in no adverse hydraulic impacts to the channel and banks of Outside Creek.

5.3 – Geotechnical Analysis

The general soil profile encountered by the subsurface exploration consisted of silty sand to sandy silt with laterally discontinuous layers of poorly graded sand, poorly graded sand with silt, clayey sand and sandy lean clay. The soils generally had a relative density of medium dense to dense.

Board staff reviewed the design plans and concurs with the applicant's conclusion that the proposed bridge replacement will result in no adverse geotechnical impacts to the channel and banks of Outside Creek. All work will be performed in a manner that will not threaten the structural integrity of the channel, structures, or floodway. Earthwork will be completed in compliance with the conditions of Draft Permit No. 18878 (Attachment B) and CCR 23 Standards.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- The U.S. Army Corps of Engineers comment letter has not been received for this application. Staff anticipates receipt of a letter indicating that the USACE District Engineer has no objection to the project, subject to conditions. Upon receipt of the letter, staff will review to ensure conformity with the permit language and incorporate it into the permit as Exhibit A.
- Tulare Irrigation District maintains Outside Creek, but does not act as a local levee maintaining agency through any agreement with the Board, and no endorsement is required.

7.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA findings:

The Board, as a responsible agency under CEQA, has reviewed Initial Study/Mitigated Negative Declaration (IS/MND) (SCH Number: 2012121050, November 2012) and Mitigation Measures for the Outside Creek Bridge Replacement Project prepared by the lead agency, Tulare County. These documents, including project designs, may be viewed or downloaded from the Central Valley Flood Protection Board website at <http://www.cvfpb.ca.gov/meetings/2013/10-25-2013.cfm> under a link for this agenda

item. These documents are also available for review in hard copy at the Board and the Tulare County offices.

Tulare County determined that the project would not have a significant effect on the environment on February 26, 2013, adopted Resolution 2013-0078, and filed a Notice of Determination on March 1, 2013 with the Tulare County Clerk. Board staff finds that although the proposed project could have a potentially significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. The project proponent has incorporated mandatory mitigation measures into the project plans to avoid identified impacts or to mitigate such impacts to a point where no significant impacts will occur. These mitigation measures are included in the project proponent's IS/MND and address impacts to biological resources, cultural resources, hazards and hazardous materials, hydrology and water quality, transportation and traffic, and utilities and service systems. The description of the mitigation measures are further described in the adopted IS/MND.

8.0 – SECTION 8610.5 CONSIDERATIONS

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.

2. The best available science related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

In making its findings, the Board has used the best available science relating to the issues presented by all parties, and the design is in compliance with these standards.

3. Effects of the decision on the facilities of the State Plan of Flood Control, and consistency of the proposed project with the Central Valley Flood Protection Plan as adopted by Board Resolution 2012-25 on June 29, 2012:

Since the proposed project does not impair the hydraulic or geotechnical functions of the Outside Creek floodway, the project has no adverse effect on facilities of the

State Plan of Flood Control, and is consistent with the Central Valley Flood Protection Plan.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

There are no foreseeable projected future events that would impact this project.

9.0 – STAFF RECOMMENDATION

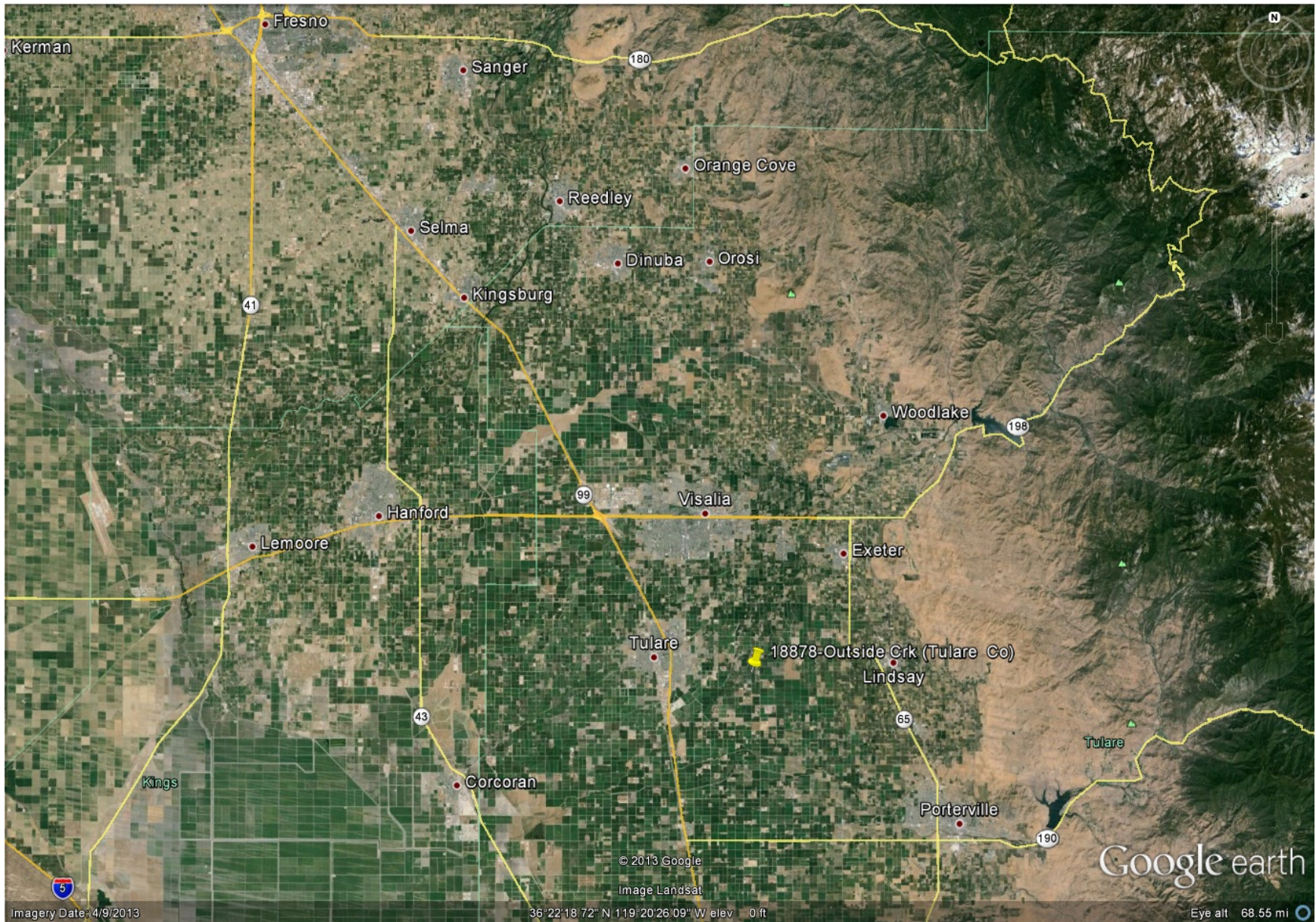
Staff recommends that the Board:

- adopt the CEQA findings,
- approve the permit in substantially the form provided, conditioned upon receipt of a U.S. Army Corps of Engineers comment letter indicating that the District Engineer has no objection to the project, subject to conditions,
- direct staff to file a Notice of Determination with the State Clearinghouse

10.0 – LIST OF ATTACHMENTS

- A. Vicinity and Location Maps
- B. Draft Permit No. 18878
- C. General Plan and Log of Boring
- D. Profile and HEC-RAS Output

Technical Review:	Lee Sungho, Engineer, WR
Environmental Review:	Andrea Mauro, Environmental Scientist
Document Review:	David R. Williams, PE, Projects Section Chief
	Eric Butler, PE, Projects and Environmental Branch Chief
	Len Marino, PE, Chief Engineer





DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18878 BD

This Permit is issued to:

Tulare County Resources Management Agency
5961 South Mooney Boulevard
Visalia, California 93277

The existing bridge will be replaced with a 35-foot wide and 45-foot long box culvert. The bridge will conform to the existing approach road width of 20 feet. The project will include 15 to 25 feet of concrete channel lining, up to 15 feet of rock slope protection, and 15-foot long warped wingwalls that conform to the existing channel banks.

The project is located at the Road 148 crossing of Outside Creek (Bridge No. 46C-0186 (Section 14/15, T20S, R23E, MDB&M, Outside Creek, Tulare 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: _____

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. 18878 BD

THIRTEEN: All work completed under this permit, as directed by the general and special conditions herein, shall be accomplished to ensure that the work is not injurious to adopted plans of flood control, regulated streams, and designated floodways under Board jurisdiction, as defined in California Code of Regulations, Title 23. This permit only applies to the completion of work in the project description located within, or adjacent to and having bearing on Board jurisdiction, and which directly or indirectly affects the Board's jurisdiction. This special condition shall apply to all subsequent conditions herein.

LIABILITY AND INDEMNIFICATION

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 associated with construction, operation, and maintenance of the permitted facilities 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 claims and damages arising from 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 any damages to the permitted encroachment(s) resulting from flood fight, operation, maintenance, inspection, or emergency repair.

PERMITTING AND AGENCY CONDITIONS

SEVENTEEN: The letter from the Department of the Army (U.S. Army Corps of Engineers, Sacramento District) dated xxxxx is attached to this permit as Exhibit A in reference to this project.

EIGHTEEN: 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.

NINETEEN: 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: 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 it administers and enforces.

PRE-CONSTRUCTION

TWENTY-ONE: The permittee shall contact the Central Valley Flood Protection Board by telephone at (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

TWENTY-TWO: Thirty (30) calendar days prior to start of any demolition and/or construction activities within the channel and banks of Outside Creek, the permittee shall submit to the Chief Engineer two sets of plans, specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel cofferdam(s), gravel work pad(s), work trestle(s), scaffolding, piles, and/or other appurtenances that are to remain in the floodway during the flood season from November 1 through July 15. The Central Valley Flood Protection Board shall acknowledge receipt of this 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 Central Valley Flood Protection Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agency when necessary. The Central Valley Flood Protection Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days.

TWENTY-THREE: Prior to commencement of work, the permittee shall create a photo record, including associated descriptions of project conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or licensed civil engineer registered in the State of California and submitted to the Central Valley Flood Protection Board within thirty (30) calendar days of beginning the project.

TWENTY-FOUR: All work approved by this permit shall be in accordance with the submitted drawings and specifications 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 Central Valley Flood Protection Board.

TWENTY-FIVE: All addenda or other changes made to the submitted documents by the permittee after issuance of this permit shall be submitted to the Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include supplemental plans, specifications, and supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Central Valley Flood Protection 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 Central Valley Flood Protection Board may request additional information as needed. The Central Valley Flood Protection Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

CONSTRUCTION

TWENTY-SIX: No construction work of any kind shall be done during the flood season from November 1 to July 15 without prior approval of the Central Valley Flood Protection Board.

TWENTY-SEVEN: Temporary staging, formwork, stockpiled material and/or equipment shall not remain in the floodway during the flood season from November 1st to July 15.

TWENTY-EIGHT: 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 July 15.

TWENTY-NINE: All debris generated by this project shall be disposed outside of the channel and banks of Outside Creek.

THIRTY: At all times during construction, at least one lane of Road 148 shall be kept clear for vehicular access.

VEGETATION / ENVIRONMENTAL MITIGATION

THIRTY-ONE: The mitigation measures approved by the CEQA lead agency and the permittee are found in its Mitigation and Monitoring Reporting Program (MMRP) adopted by the CEQA lead agency. The permittee shall implement all such mitigation measures.

POST-CONSTRUCTION

THIRTY-TWO: The permittee shall be responsible for repair of any damages to the Outside Creek channel and floodway due to construction, operation, or maintenance of the proposed project.

THIRTY-THREE: Except with respect to the activities expressly allowed under this permit, the work

area shall be restored to the condition that existed prior to start of work.

THIRTY-FOUR: Within 120 days of completion of the project, the permittee shall submit to the Central Valley Flood Protection Board as-built drawings and 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 the Central Valley Flood Protection Board permit conditions and submitted drawings and specifications.

OPERATIONS AND MAINTENANCE

THIRTY-FIVE: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Central Valley Flood Protection Board, Department of Water Resources, or any other agency responsible for maintenance.

THIRTY-SIX: If the bridge is damaged to the extent that it may impair the channel or floodway capacity, it shall be repaired or removed prior to the next flood season.

THIRTY-SEVEN: Trees, brush, sediment, and other debris shall be kept cleared from the bridge site and disposed of outside the floodway to maintain the design flow capacity and flowage area.

THIRTY-EIGHT: After each period of high water, debris that accumulates at the site shall be completely removed from the floodway.

THIRTY-NINE: If erosion occurs adjacent to the permitted encroachment(s), the permittee shall repair the eroded areas and place adequate revetment on the affected areas to prevent further erosion.

FORTY: If the permitted structure results in any adverse hydraulic impact or scouring the permittee shall provide appropriate mitigation measures subject to review and approval of the Central Valley Flood Protection Board.

FORTY-ONE: The permitted encroachment(s) shall not interfere with the flood conveyance capability of the Outside Creek channel. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

FORTY-TWO: At the request of either the permittee or Central Valley Flood Protection Board the permittee and Board shall conduct joint inspections of the project and channel after significant flood events or flood seasons to assess the integrity and operation of the project, and to assess and respond to any adverse impacts on the channel or adjacent properties.

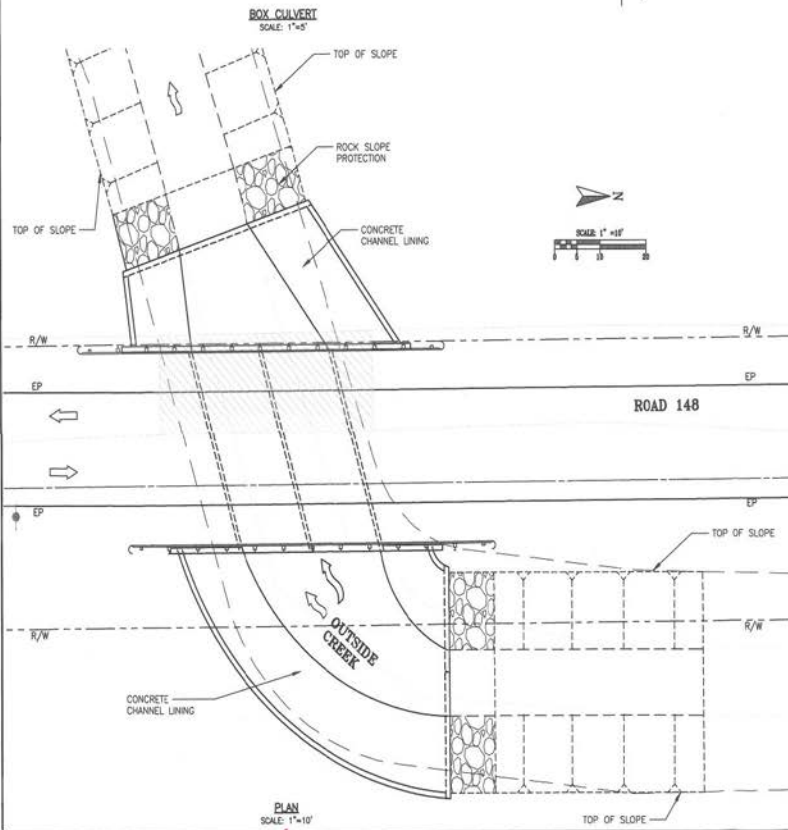
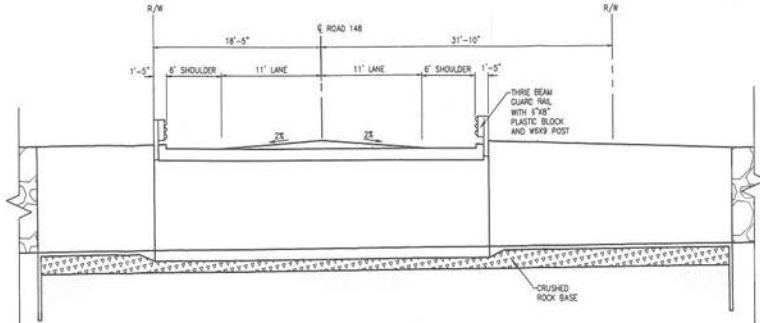
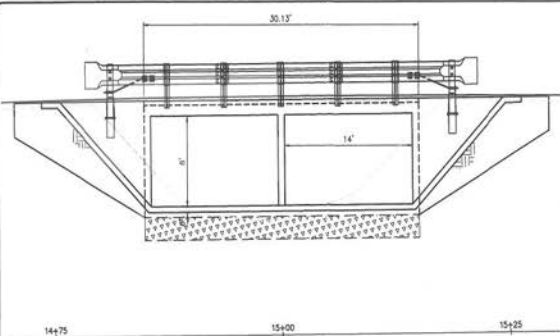
PROJECT ABANDONMENT, CHANGE IN PLAN OF FLOOD CONTROL

FORTY-THREE: If the project, or any portion thereof, is to be abandoned in the future, the permittee shall abandon the project under direction of the Central Valley Flood Protection Board and

Department of Water Resources, at the permittee's cost and expense.

FORTY-FOUR: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

END OF CONDITIONS



LONGITUDINAL SECTION
SCALE: 1"=5'

BOX CULVERT
SCALE: 1"=5'

PLAN
SCALE: 1"=10'

NOTES:

- DESIGN: BRIDGE DESIGN SPECIFICATIONS LFD VERSION APRIL 2000 (1996 SIXTEEN EDITION AASHTO WITH INTERIMS AND REVISIONS BY CALTRANS.)
- BOX CULVERT LIVE LOADING: HS 20-44
- THE CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS, LAYOUT DIMENSIONS AND COORDINATION WITH ROAD PLANS PRIOR TO START OF CONSTRUCTION OR ORDERING OR FABRICATING ANY MATERIAL. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
- TRANSVERSE REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO BOX CULVERT AND SPACING SHALL BE MEASURED ALONG \bar{C} OF BOX CULVERT.
- FOR FINISHED GRADE AB, CREEK IMPROVEMENTS AND FLOWLINE ELEVATIONS, SEE ROAD PLANS.

NOTES:

- SEE ROAD PLANS FOR CHANNEL GRADING.
- SEE ROAD PLANS FOR ROCK SLOPE PROTECTION.

INDEX TO CULVERT PLANS

SHEET TITLE	TITLE
S1	GENERAL PLAN
S2	BOX CULVERT DETAILS NO.1
S3	BOX CULVERT DETAILS NO.2
S4	LOG OF TEST BORING

STANDARD PLANS DATED MAY 2006
A-10A ABBREVIATIONS

LEGEND

- ← DIRECTION OF TRAVEL
- EXIST STRUCTURE TO BE REMOVED
- NEW CONSTRUCTION

REVISIONS

NO.	DATE	DESCRIPTION

THUARE COUNTY
RESOURCE MANAGEMENT AGENCY
9081 SOUTH MOONEY BLVD.
VADALA, CA 92377

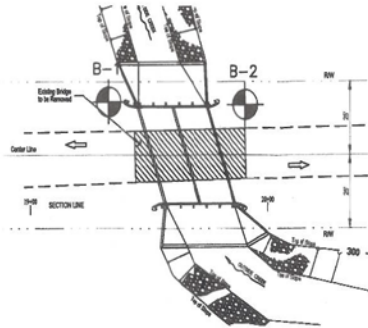


SHEET TITLE
GENERAL PLAN
OUTSIDE CREEK CULVERT
AT ROAD 148
THUARE COUNTY

SCALE	AS SHOWN
DRAWN	RAH DES/DA
APP. NO.	20030003
DESIGNED	LAG
DRAWN	LAG
CHECKED	RF
FILE	13001-13001.00
DATE	8-8-12
SHEET NO.	S1



- NOTES: 1. EB of Existing Bridge, Elevation 300.5 feet.
 2. Groundwater was encountered at the depths indicated.
 3. Hanner type - Automatic safety hanner with a 140 lb weight dropping 30 inches.



PLAN
1" = 20'

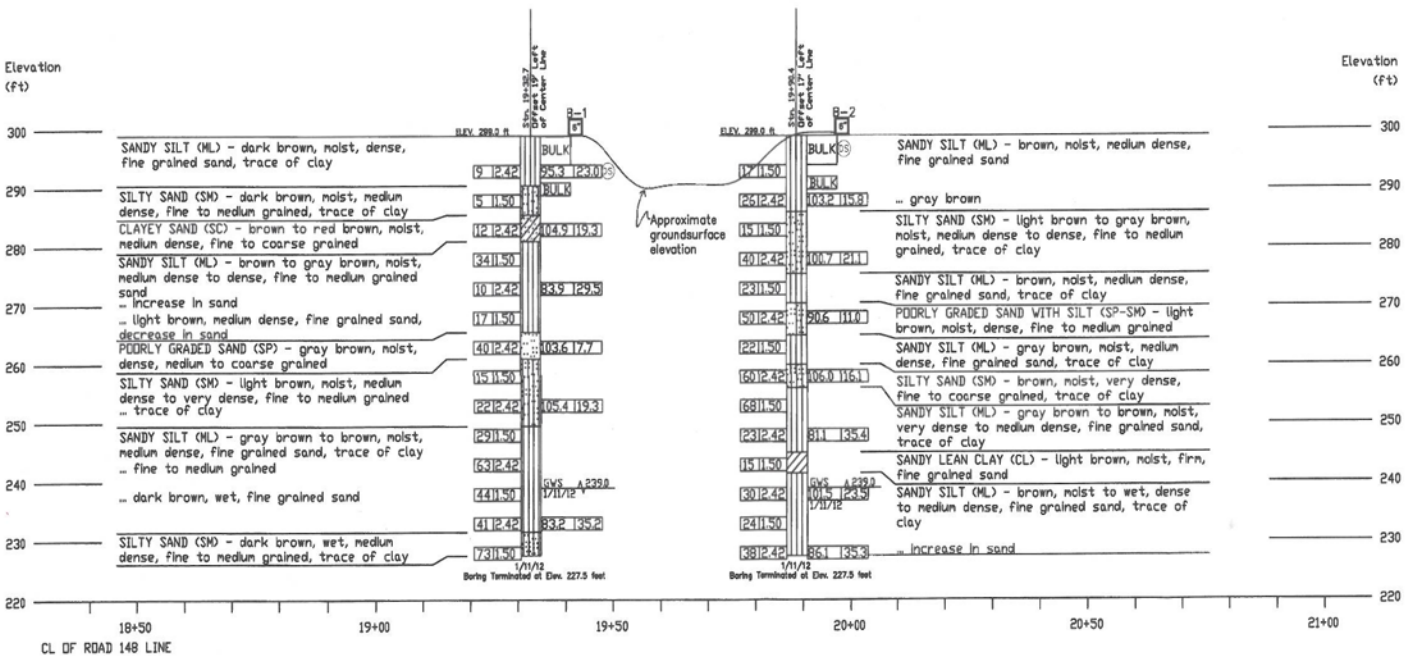
POST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	TUL	---	---	13	---

David L. Klenfelder
 CERTIFIED GEOTECHNICAL ENGINEER

6/28/12
 PLANS APPROVAL DATE

KLENFELDER
 5125 N. Gales Ave., Suite 102
 Fresno, California 93722

NO.	DATE	REVISIONS

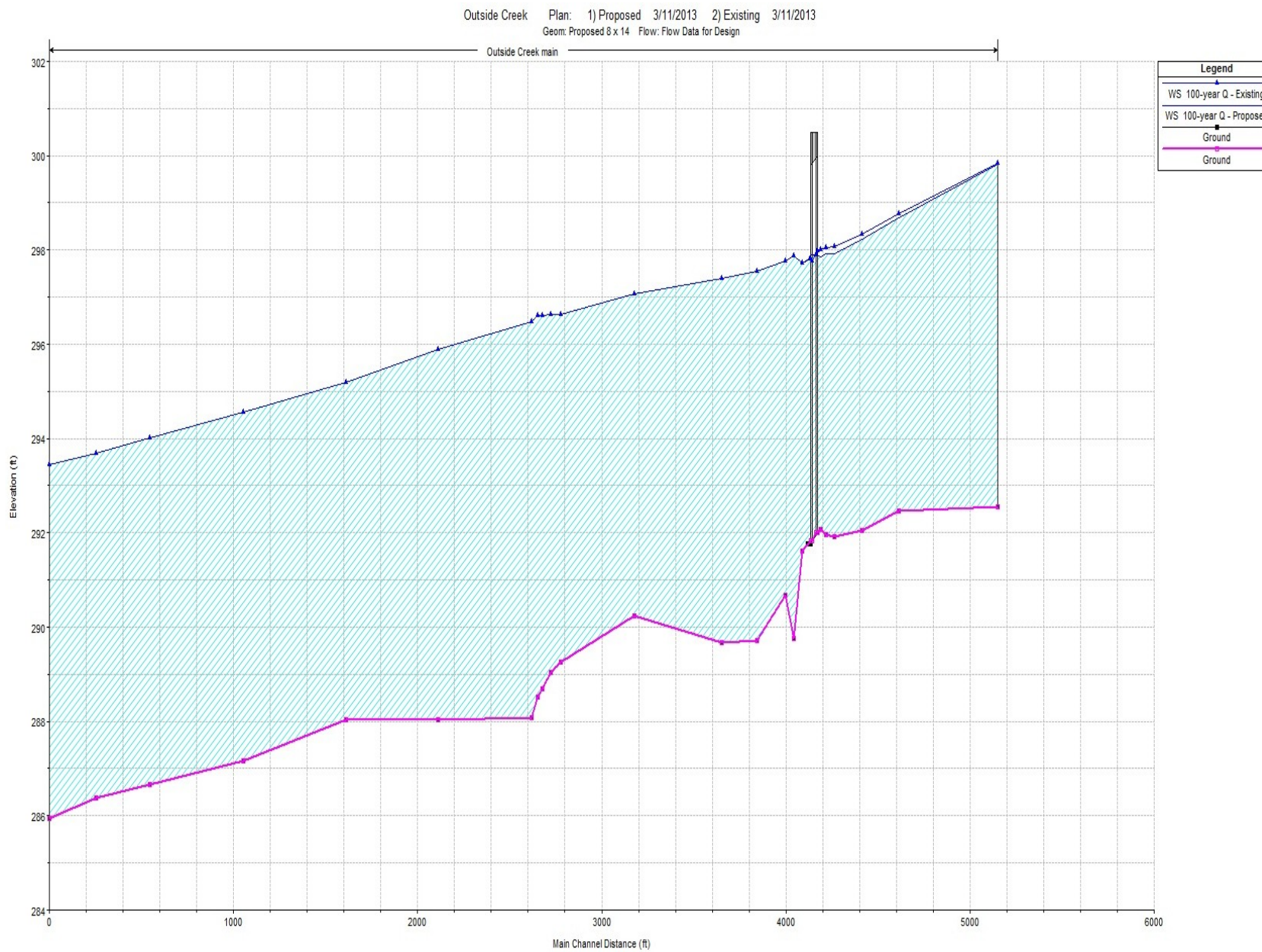


PROFILE
 Vertical 1" = 10'
 Horizontal 1" = 10'

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
 2000 W. WASHINGTON, OAK GROVE, CA 93227

LOG OF TEST BORINGS 1 OF 3
 ROAD 148 BRIDGE OVER OUTSIDE CREEK
 TULARE COUNTY, CALIFORNIA

SCALE AS SHOWN
 DRAWN BY
 CHECKED BY
 DESIGNED BY
 PROJECT SUPERVISOR
 CHECKED BY
 DATE 06/29/12
 SHEET NO. 1



Attachment D

HEC-RAS River: Outside Creek Reach: main Profile: 100-year Q

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
main	7010	100-year Q	Proposed	700.00	292.56	299.81		300.13	0.001257	4.56	153.73	33.15	0.37
main	7010	100-year Q	Existing	700.00	292.56	299.84		300.16	0.001233	4.52	154.86	33.36	0.37
main	6475	100-year Q	Proposed	700.00	292.46	298.69		299.20	0.002429	5.76	121.57	30.45	0.51
main	6475	100-year Q	Existing	700.00	292.46	298.77		299.26	0.002299	5.64	124.09	30.90	0.49
main	6276	100-year Q	Proposed	700.00	292.06	298.22		298.73	0.002328	5.76	121.54	28.64	0.49
main	6276	100-year Q	Existing	700.00	292.06	298.33		298.82	0.002162	5.60	124.89	28.97	0.48
main	6125	100-year Q	Proposed	700.00	291.92	297.92		298.38	0.002111	5.43	128.98	31.77	0.47
main	6125	100-year Q	Existing	700.00	291.92	298.07		298.49	0.001915	5.24	133.68	32.27	0.45
main	6080	100-year Q	Proposed	700.00	291.97	297.91		298.27	0.001513	4.80	145.85	33.48	0.41
main	6080	100-year Q	Existing	700.00	291.97	298.06		298.39	0.001378	4.64	150.85	33.92	0.39
main	6048	100-year Q	Proposed	700.00	292.07	297.86	295.54	298.22	0.001533	4.78	146.48	34.39	0.41
main	6048	100-year Q	Existing	700.00	292.07	298.02		298.35	0.001387	4.61	151.81	34.85	0.39
main	6035	100-year Q	Existing	700.00	292.01	297.99	295.54	298.33	0.001412	4.64	150.78	34.76	0.39
main	6032			Culvert									
main	5995	100-year Q	Existing	700.00	291.83	297.81		298.18	0.001607	4.87	143.88	34.20	0.42
main	5981	100-year Q	Proposed	700.00	291.77	297.78		298.15	0.001642	4.90	142.86	34.17	0.42
main	5949.5	100-year Q	Proposed	700.00	291.62	297.71		298.10	0.001727	4.98	140.67	34.18	0.43
main	5949.5	100-year Q	Existing	700.00	291.62	297.71		298.10	0.001727	4.98	140.67	34.18	0.43
main	5904	100-year Q	Proposed	700.00	289.76	297.87		297.99	0.000349	2.82	247.80	40.26	0.20
main	5904	100-year Q	Existing	700.00	289.76	297.87		297.99	0.000349	2.82	247.80	40.26	0.20
main	5858	100-year Q	Proposed	700.00	290.67	297.78		297.96	0.000623	3.47	201.83	38.44	0.27
main	5858	100-year Q	Existing	700.00	290.67	297.78		297.96	0.000623	3.47	201.83	38.44	0.27
main	5703	100-year Q	Proposed	700.00	289.71	297.55		297.83	0.001021	4.27	164.01	32.13	0.33
main	5703	100-year Q	Existing	700.00	289.71	297.55		297.83	0.001021	4.27	164.01	32.13	0.33
main	5512	100-year Q	Proposed	700.00	289.67	297.39		297.64	0.000886	4.01	174.66	34.33	0.31
main	5512	100-year Q	Existing	700.00	289.67	297.39		297.64	0.000886	4.01	174.66	34.33	0.31
main	5039	100-year Q	Proposed	700.00	290.23	297.06		297.26	0.000687	3.56	196.35	38.99	0.28
main	5039	100-year Q	Existing	700.00	290.23	297.06		297.26	0.000687	3.56	196.35	38.99	0.28
main	4637	100-year Q	Proposed	700.00	289.25	296.63		296.91	0.001028	4.28	163.48	31.92	0.33
main	4637	100-year Q	Existing	700.00	289.25	296.63		296.91	0.001028	4.28	163.48	31.92	0.33
main	4584	100-year Q	Proposed	700.00	289.05	296.62		296.85	0.000765	3.81	183.75	34.65	0.29
main	4584	100-year Q	Existing	700.00	289.05	296.62		296.85	0.000765	3.81	183.75	34.65	0.29
main	4537	100-year Q	Proposed	700.00	288.70	296.60		296.81	0.000735	3.65	191.83	38.53	0.29
main	4537	100-year Q	Existing	700.00	288.70	296.60		296.81	0.000735	3.65	191.83	38.53	0.29
main	4513	100-year Q	Proposed	700.00	288.51	296.62		296.78	0.000506	3.18	219.93	40.74	0.24
main	4513	100-year Q	Existing	700.00	288.51	296.62		296.78	0.000506	3.18	219.93	40.74	0.24
main	4481	100-year Q	Proposed	700.00	288.09	296.49	292.56	296.75	0.000888	4.10	170.57	30.89	0.31
main	4481	100-year Q	Existing	700.00	288.09	296.49		296.75	0.000888	4.10	170.57	30.89	0.31
main	3972	100-year Q	Proposed	700.00	288.03	295.90	292.63	296.22	0.001192	4.54	154.03	30.49	0.36
main	3972	100-year Q	Existing	700.00	288.03	295.90		296.22	0.001192	4.54	154.03	30.49	0.36
main	3471	100-year Q	Proposed	700.00	288.04	295.19	292.36	295.56	0.001449	4.87	143.82	30.06	0.39
main	3471	100-year Q	Existing	700.00	288.04	295.19		295.56	0.001449	4.87	143.82	30.06	0.39
main	2913	100-year Q	Proposed	700.00	287.16	294.56	291.50	294.84	0.001086	4.24	165.23	35.63	0.35
main	2913	100-year Q	Existing	700.00	287.16	294.56	291.50	294.84	0.001086	4.24	165.23	35.63	0.35
main	2408	100-year Q	Proposed	700.00	286.66	294.02		294.30	0.001046	4.20	168.94	49.52	0.34
main	2408	100-year Q	Existing	700.00	286.66	294.02		294.30	0.001046	4.20	168.95	49.52	0.34
main	2114	100-year Q	Proposed	700.00	286.38	293.70		293.98	0.001111	4.27	163.90	39.06	0.35
main	2114	100-year Q	Existing	700.00	286.38	293.70		293.98	0.001111	4.27	163.90	39.07	0.35
main	1861	100-year Q	Proposed	700.00	285.95	293.44	290.24	293.71	0.001002	4.12	170.61	46.60	0.33
main	1861	100-year Q	Existing	700.00	285.95	293.44	290.25	293.71	0.001002	4.12	170.61	46.60	0.33