Meeting of the Central Valley Flood Protection Board
January 23, 2013

Staff Report

Three Rivers Levee Improvement Authority,
Western Pacific Interceptor Canal, West Levee Project
Request to Initiate Project Review Pursuant to Title 33, USC Section 408

1.0 – ITEM

Consider Central Valley Flood Protection Board (Board) approval of a letter to the U. S. Army Corps of Engineers (USACE) pursuant to federal Title 33, USC Section 408 requesting initiation of, in cooperation with Three Rivers Levee Improvement Authority and other federal agencies, a joint review of possible improvements to levees along the Western Pacific Interceptor Canal west levee (Attachment A).

2.0 – PROJECT PROPONENT

Three Rivers Levee Improvement Authority (TRLIA)

3.0 – PROJECT LOCATION

The Western Pacific Interceptor Canal (WPIC), west levee project is located within the six (6) mile stretch of levee that extends north from the confluence of the Bear River north levee to its terminus on the east side of State Route 70 in Yuba County (Attachment B).

4.0 –PROJECT DESCRIPTION

TRLIA is proposing to alter approximately two (2) miles of the WPIC west levee. Alterations to facilities of the State Plan of Flood Control and the federal flood control project could include construction of landside fill, installation of cutoff walls, installation of relief wells, and/or construction of a landside toe access road. The project has been divided into 7 reaches along the WPIC. The deficiencies and possible remediation measures for each segment are shown in the following table:

REACH	APPROXIMATE REACH LENGTH (feet)	DEFICIENCY	REMEDIATION MEASURES BEING CONSIDERED
Reach 1B	1,300	Underseepage	Cutoff wall; Relief wells; Seepage berm
Reach 2B	300	Underseepage	Landside fill
Reach 3	2,100	Underseepage	Cutoff wall; Landside fill, Relief wells; Stability berm; Seepage berm
Reach 4B	1,750	Through-seepage	Cutoff wall; Seepage berm
Reach 4E	800	Underseepage	Cutoff wall; Landside fill; Relief wells
Reach 5B	1,700	Slope Stability	Slope flattening; Stability berm
Reach 5D	2,350	Underseepage	Landside fill
Total Length	**10,300 (2 miles)**		

5.0 – STAFF RECOMMENDATIONS

Staff recommends the Board:

- **Approve** the draft letter to the USACE (Attachment A); and
- **direct** the Executive Officer to sign and send the letter to the USACE.

6.0 – LIST OF ATTACHMENTS

A. Draft Letter to the USACE
B. Project Location Map

Technical Review: Deb Biswas, PE, Engineer, WR, Planning Branch
Document Review: Nancy Moricz, PE, Senior Engineer, Planning Branch
Eric Butler, PE, Supervising Engineer, Planning Branch
Len Marino, PE, Chief Engineer
Nicole Rinke, Board Counsel
Leslie Gallagher, Acting Executive Officer

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY **EDMUND G. BROWN JR.,** GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-0685 FAX: (916) 574-0682

January 23, 2015

Colonel Michael J. Farrell, District Commander
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Written Request to Initiate Project Review pursuant to Title 33, USC Section 408 for the Three Rivers Levee Improvement Authority's Western Pacific Interceptor Canal Project

Dear Colonel Farrell:

Pursuant to Title 33, USC Section 408 (Section 408) as described by the U. S. Army Corps of Engineers (USACE) Engineering Circular 1165-2-216, §7c(2), the Three Rivers Levee Improvement Authority (TRLIA) has requested the Central Valley Flood Protection Board (Board) staff to initiate the Section 408 process for the joint review of possible alterations to approximately two (2) miles of the Western Pacific Interceptor Canal (WPIC) west levee. The purpose of this project is to reduce flood risk by providing protection up to the 200-year flood event. The enclosed documentation describes the project location along with proposed alterations.

Proposed alterations may include construction of landside fill, installation of cutoff walls, installation of relief wells, and/or construction of a landside toe access road. The proposed alterations are not part of an ongoing or authorized Federal project and are therefore not eligible for credit. Approval under Section 404 of the Clean Water Act is also anticipated to be required for these proposed alterations. The proposed project will require lands owned by the non-Federal sponsor, and will not require any lands owned by the USACE.

On behalf of TRLIA, the Board requests the USACE, in cooperation with TRLIA and other federal agencies, to initiate a joint review of possible alterations for the WPIC project. The Board, on behalf of TRLIA, will seek approval from the USACE to make necessary alterations to the levee system to achieve the project purpose.

Thank you for your attention to this request. We look forward to working with you, your staff, and the TRLIA staff on this project. If you have any questions regarding this request, please contact Ms. Nancy Moricz of my staff at (916) 574-2381 or by email at nancy.moricz@water.ca.gov.

Sincerely,

Leslie Gallagher, Acting Executive Officer

Enclosure: 33 USC § 408 Request from TRLIA dated September 18, 2014

cc: Mr. Paul Brunner, Executive Director
Three Rivers Levee Improvement Authority

Ms. Claire Marie Turner, MBK Engineers

ATTACHMENT A - Draft Letter to USACE

THREE RIVERS LEVEE IMPROVEMENT AUTHORITY
1114 Yuba Street, Suite 218
Marysville, CA 95901
Office (530) 749-7841 Fax (530) 749-6990

September 18, 2014

Ms. Leslie Gallagher, Acting Executive Officer
Central Valley Flood Control Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

Subject: *Letter Requesting U.S. Army Corps of Engineers Permission Pursuant to 33 USC 408*

Dear Ms. Gallagher,

The Three Rivers Levee Improvement Authority (TRLIA) is seeking permission from the U.S. Army Corps of Engineers (USACE) pursuant to 33 USC 408 (Section 408) for alteration of the Sacramento River Flood Control Project . We request your assistance in pursuing this permission by reviewing the enclosed documents and forwarding our request to the USACE Sacramento District.

TRLIA is proposing to alter approximately two miles of the Western Pacific Interceptor Canal to remediate levee seepage and stability issues as well as provide improved access to the landside toe of the levee. Alterations could include construction of landside fill, installation of cutoff walls, installation of relief wells, and/or construction of a landside toe access road. Enclosures 1 and 2 provide a more detailed description of the location and potential alterations. Approval under Section 404 of the Clean Water Act will be required for the proposed alteration.

The proposed alteration is not part of an ongoing or authorized Federal project and is therefore not eligible for credit. To this end, TRLIA is not seeking credit under Section 221 of the Flood Control Act of 1970. The proposed project will require the use of lands owned by the non-Federal sponsor, but will not require use of lands owned by the USACE. The proposed alteration is not part of a System-Wide Improvement Framework.

TRLIA has considered USACE Engineer Circular 1165-2-214 (EC 214) in preparing this written request. Based upon our review and knowledge of the project, we are requesting that permission be granted at the USACE Sacramento District. Enclosure 3 of this request presents our reasoning for this request.

Questions regarding this request can be made to myself at 530-749-5679 or pbrunner@co.yuba.ca.us, or to Ms. Claire Marie Turner, MBK Engineers, at turner@mbkengineers.com or 804-306-7709.

Sincerely,

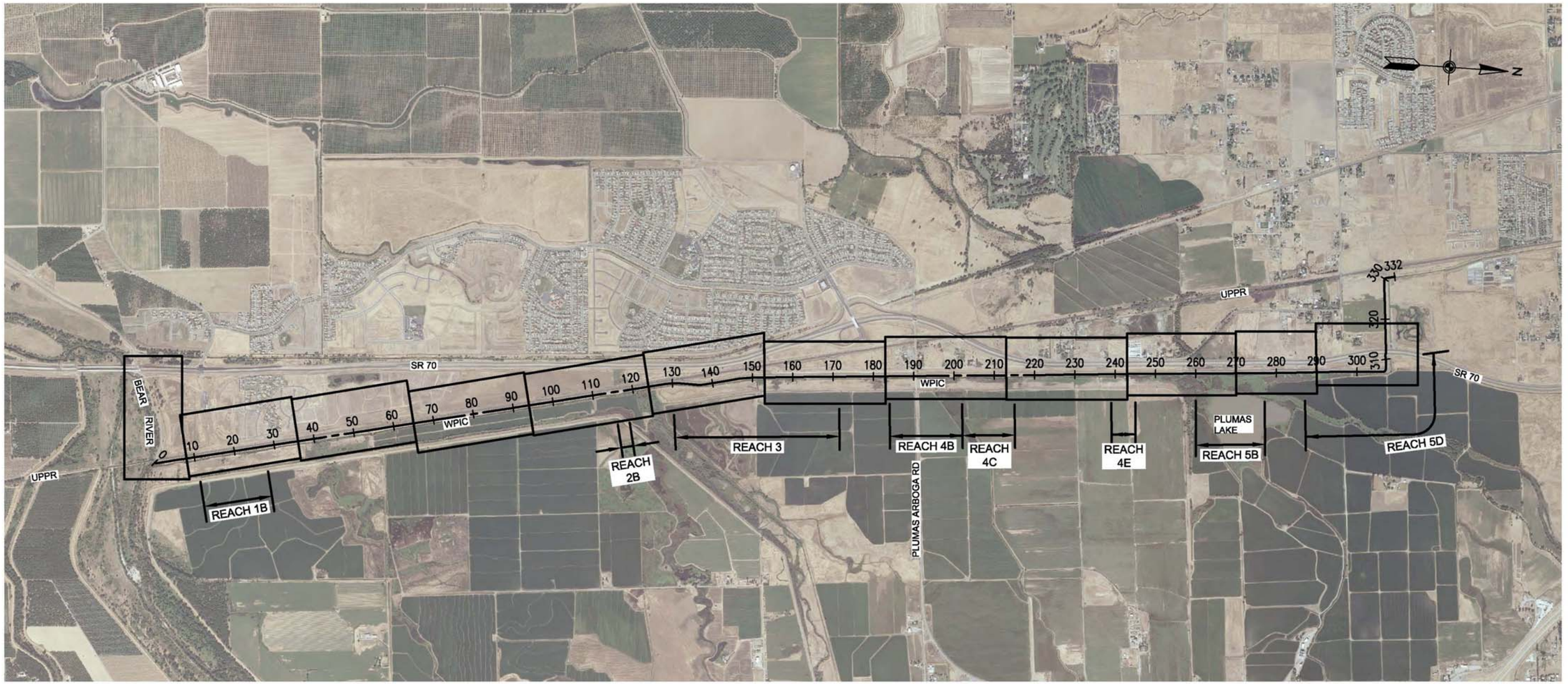
Paul G. Brunner
Executive Director

Enclosure 1 – Figure
Enclosure 2 – Preliminary Project Description
Enclosure 3 – Consideration for Type II IEPR

cc:

Mr. Steve Fordice, General Manager, Reclamation District 784
Ms. Kelly Fucciolo, Chief, Urban Flood Programs, Department of Water Resources

ENCLOSURE 1



SCALE: NTS

FIGURE: WPIC Remediation Reaches

(Source: HDR. May 2014.)

ENCLOSURE 2

Preliminary Project Description

The WPIC West Levee is approximately six miles long and extends north from the confluence of the Bear River North Levee (Station 0+00) to its terminus on the east side of SR 70 (approximate Station 311+00). The proposed alteration is a strengthening project to meet State of California Urban Level of Design Criteria (ULDC) (i.e., 200-year level of protection). Approximately two miles of the WPIC West Levee do not meet ULDC geotechnical criteria will require remedial construction. While remediation measures for criteria exceedance are still being developed and evaluated, based on our current understanding, we can offer potential solutions, as described below and summarized in **Table 1**.

Reach 1B has an underseepage exceedance due to a thin landside blanket. Proposed remedial measures include either a cutoff wall through the levee crown, a landside undrained (nonpervious) seepage berm to provide a thicker blanket layer or a seepage berm with pressure relief wells.

Reach 2B has a landside low spot that creates an isolated thin blanket. Proposed remedial measures include landside earthwork to fill in topographic low spots and potentially thicken the blanket.

Reach 3 has an underseepage exceedance due to a thin landside blanket. This reach also has a landside slope stability deficiency due to over-steepened slopes. Proposed remedial measures include either a cutoff wall through the levee crown, a landside fill to thicken the blanket between the levee and the railroad embankment, or pressure relief wells. A stability berm or slope flattening could be considered in combination with the landside fill option.

Reach 4B has a coarse-grained blanket, which may leak during a flood event. Proposed remedial measures include either a cutoff wall through the levee crown or a drained seepage berm to provide an outlet for water through the levee and blanket during a flood event.

Reach 4E has an underseepage exceedance due to a thin landside blanket. Proposed remedial measures include either a cutoff wall through the levee crown, landside fill to thicken the blanket, or landside fill with pressure relief wells.

Reach 5B has a slope stability exceedance due to over-steepened slopes. The proposed remedial measure is either a stability berm or slope flattening.

Reach 5D has an underseepage exceedance due to a thin landside blanket. The proposed remedial measure is a landside fill to thicken the blanket.

In addition to the remediation of ULDC exceedance in specific reaches, an access road along the landside of the levee toe, or the landside limit of any proposed berm or fill areas, for some or all of WPIC West Levee is proposed for the purpose of operations and maintenance.

Table 1: Summary of Remediation Measures by Reach

REACH	APPROXIMATE REACH LENGTH (feet)	ULDC CRITERIA EXCEEDANCE	REMEDIATION MEASURES BEING CONSIDERED
Reach 1B	1,300	Underseepage	Cutoff wall; Relief wells; Seepage berm
Reach 2B	300	Underseepage	Landside Fill
Reach 3	2,100	Underseepage	Cutoff wall; Landside fill, Relief wells; Stability berm; Seepage berm
Reach 4B	1,750	Through-seepage	Cutoff wall; Seepage berm
Reach 4E	800	Underseepage	Cutoff wall, Landside fill, Relief wells
Reach 5B	1,700	Slope Stability	Slope Flattening; Stability berm
Reach 5D	2,350	Underseepage	Landside Fill
TOTAL (Reaches – 7)	**10,300 (2 miles)**		

ENCLOSURE 3

Consideration for Type II IEPR

TRLIA has considered USACE Engineer Circular 1165-2-214 (EC 214) in evaluating the need for a Type II, Independent External Peer Review. EC 214 indicates that a Type II IEPR is required for any Federal action that would pose a significant threat to human life (public safety) and requires an assessment as to whether the threat is significant or not. In addition to this assessment, other considerations should be made related to innovative materials or techniques, novel methods, complex challenges, redundancy, resiliency, robustness, or unique sequencing.

The WPIC West Levee is one of five segments comprising the RD 784 Plumas Lakes Levee System which protects small urban centers and agricultural areas in Yuba County. The WPIC West Levee protects the area from backwater flooding from the Bear River which occurs on average, once every five years.

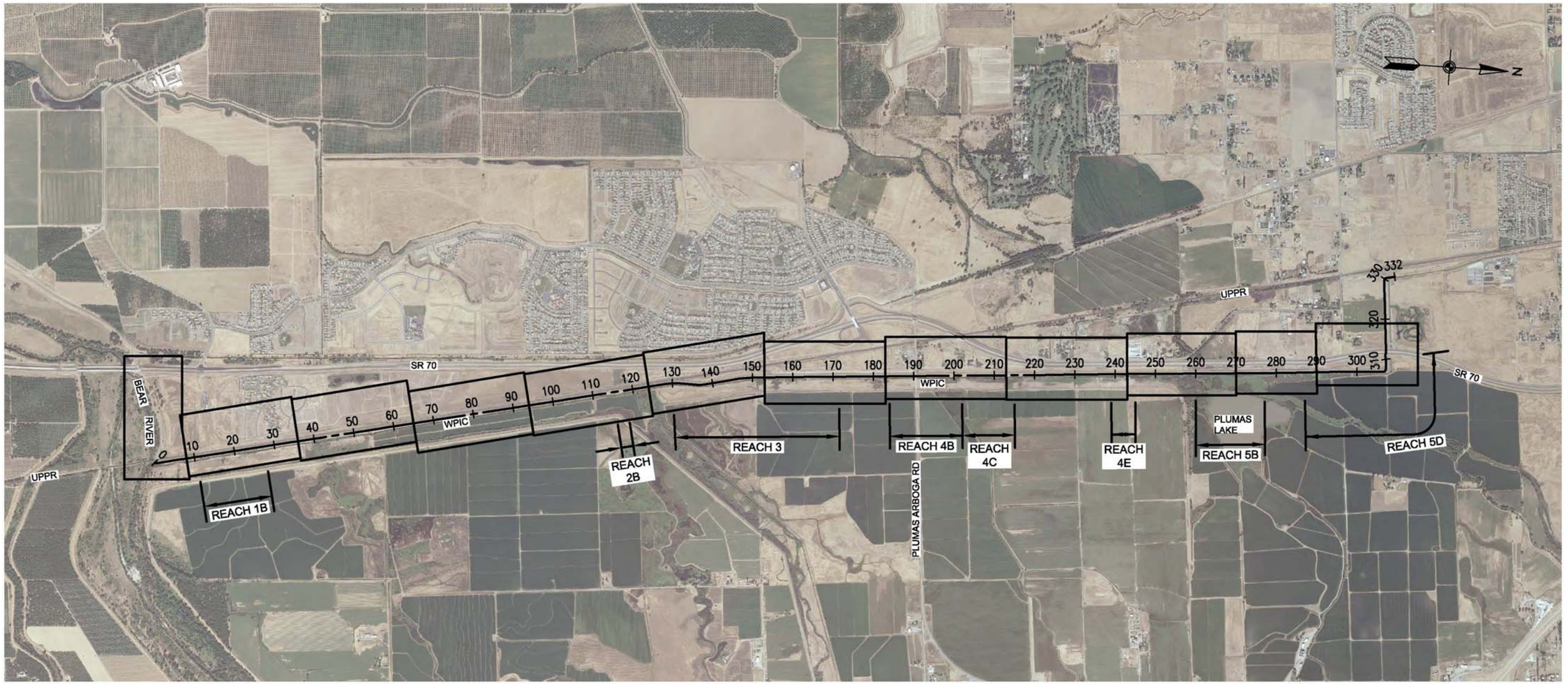
The proposed remediation for the WPIC West levee is less than two miles in total, with no remediation reach longer than one-half of a mile. Of the potential remediation measures (i.e. varying types of landside fill, relief wells, and cutoff walls), cutoff walls are the most intrusive.

Cutoff walls are being evaluated as potential remediation measures in four of the seven remediation reaches. Installation of the cutoff walls would be achieved using conventional trench, soil bentonite methods or deep soil mixing method with depths ranging from 25-75 feet. To install the cutoff walls, the levee would need to be degraded up to one-half its height to prevent hydro-fracturing and slope failures. Based on typical construction times, we can expect the levee to be in a degraded, “open” state for up to up to eight weeks in the dry, non-flood season.

Even when we consider a drastically, conservative approach, that is, failure or difficulties during construction, because the reaches are so short, the levee could be restored to its existing condition quickly should flood season be approaching.

While the work is more intrusive than landside fill, it’s for an extremely small reach of levee, for an extremely short period of time. TRLIA does not believe that installation of the cutoff walls presents a significant threat to public safety or human life. The work will not use innovative materials or techniques or novel methods. There are no complex challenges or unusual or unique construction sequencing.

ENCLOSURE 1



SCALE: NTS

FIGURE: WPIC Remediation Reaches

(Source: HDR. May 2014.)

ATTACHMENT B - Location Map