

**Meeting Summary**  
**RURAL LEVEE REPAIR CRITERIA WORK GROUP MEETING #3**  
**JULY 31, 2013**  
**California Department of Water Resources, JOC Room 130**  
**3310 El Camino Ave. Sacramento, CA**

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**Summary of Action Items**

1. DWR will prepare draft RLRC document (narrative and templates) based on work group members comments and suggestions (from the July 31, 2013 meeting) to be shared with members before the next RLRC work group meeting.
2. CCP will distribute the July 31, 2013 meeting notes.

## **DWR welcome and opening comments**

Meeting Facilitator Adam Sutkus (Center for Collaborative Policy) welcomed members and interested parties to the meeting and led introductions around the room.

Dave Wheeldon (Department of Water Resources; lead of the work group) welcomed the work group participants. In the period since the last RLRC work group meeting, DWR has been working on draft templates and began drafting the narrative component of the criteria. The USACE provided comments on the templates that are shared with the work group for today's discussion.

Mr. Wheeldon reported on the RLRC work group progress to the Central Valley Flood Protection Board (Board) on July 12<sup>th</sup>. This update included a description of the membership and status of the criteria. As reported to the Board, the goal is to provide a draft document to the Board by November 2013.

During the Board presentation, Board member Emma Suarez raised a question regarding the representation of agricultural interests in the RLRC process. Mr. Wheeldon stated that DWR solicited widely for membership in the RLRC work group and asked for additional input regarding this issue from the members. It was also stated that the representatives of the Reclamation Districts that are part of the work group do represent the agricultural interests of their districts.

A work group member suggested that given the technical nature of the work group, it is unlikely that farmers would have joined work group discussions. It was recognized that issues covered in these discussions affect farming activities and that reclamation districts are sufficient representation of the farming interests. A member added that it is important to inform farmers about the RLRC work group through the farm bureaus. Farmers need to be informed and be allowed to provide feedback on the Criteria.

Mr. Sutkus reminded the group that farming interests can engage in the process through the interested party distribution list and website. The current interested party distribution list is minimal at this point.

A member suggested sending letters to agricultural interests with information on the RLRC process.

### **Suggestions:**

- **Engage farming interests through communication with agricultural interest groups.**

## **Agenda and process review**

Mr. Sutkus reviewed the member packet which included the meeting agenda, template review process handout, the draft templates, the initial narrative document, and the evaluation sheet. In addition, USACE comments on the draft templates were shared with the work group.

Mr. Sutkus stated that the goal of the meeting is to review the templates and the narrative table of contents. The two components (templates and narrative) will be combined into RLRC document that will be reviewed by members prior to the next RLRC work group meeting.

## General work group comments

Mr. Sutkus asked members for general comments regarding the process before addressing the specific templates.

### Question: How are the RLRC and FSRP related?

DWR response: The RLRC comes at the tail end of the FSRP (DWR's Flood System Repair Program). The FSRP provides agreements that are followed by planning and design. As levee problems are identified, the RLRC document will provide guidance for repair design and can be used by programs other than the FSRP.

### Question: How does the timeline of the Criteria development affect its use in project design?

DWR response: The Criteria is not creating new rules or standards but rather is a compilation of existing requirements into one document for ease of use. Project design does not hinge on the completion of RLRC. FSRP templates were used as a basis for RLRC templates.

Additional comments:

- The Criteria should match other programs' templates to avoid contradictions.
- FSRP addresses actions that are bigger than the RLRC scope. The RLRC broad scope relates to minor repairs, but is intended to be usable on all rural levees of the state.
- FSRP initial focus is rural levee but can be expanded to urban levees which generally have larger types of problems that are not addressed in the RLRC.

### Question: Will the use of the RLRC templates help facilitate a quicker permitting process?

Additional comments:

- Optimally, the information will support the permit application process. RLRC will not change regulatory requirements but provide consolidated information.
- It was suggested that the RLRC process should have follow up discussions on how to facilitate faster permitting requirements. Some of the repairs outlined in the Criteria may not require any specific permit. It could be useful to set a framework for the different permitting process levels.

DWR response: The final product of the RLRC work group is a manual and guideline. The work group may consider a report with next steps recommendations as a side product of this process.

Additional comments:

- The key issue to farmers and LMAs is the completion of projects within a reasonable timeframe.
- Scheduling concerns are generally due to environmental requirements rather than design and there may be other forums to discuss means for streamlining the permitting process.
- There are other processes that provide some process streamlining such as SERP.
- The permit process is required by law and cannot be circumvented. The Board reviews 15-20 projects a month. The USACE reviews more than 200 projects a year.

- The Board backlog of permit application has dropped and the record of turnaround time has improved significantly.

#### **Suggestions:**

- **Agenda item for future RLRC work group meeting: Development of next steps recommendations.**
- **Future conversation: Can permitting of rural levees repair be streamlined?**

## **Templates review**

### **Template process overview**

Mr. Sutkus reviewed the five focus areas that guide the repair alternative templates review:

- Applicable levee hazards are specified.
- Minimum information requirements are included.
- Potential permits requirements are addressed.
- Necessary details and flexibility in quantitative specifications are addressed.
- Other information to be included in the templates.

Below are work group comments and suggestions for each of the repair alternative templates.

### **Rock slope protection erosion repair (Figure 5-1)**

#### **Work group comments:**

- Restore the original slope with soil and then lay with rocks rather than sole use of rocks.
- Restore the levees with soil to initial slope and then add a two feet thick rock layer.
- The USACE will not approve a repair that does not have the original slope re-established with soil.
- Restoration above the waterline is cheaper. The levee slopes were not 3:1 originally and therefore a 2:1 ratio is suggested instead.
- Consider mitigation measures based on site specific conditions.
- Requirements of resource agencies should not be considered in the templates (i.e. planting requirements, habitat mitigation, etc.).
- Repair templates should not include willow plantings.
- Soil-filled rock slope protection with a soil cover has been utilized in conjunction with extensive site planting and seeding, and is likely beyond the scope and resources of rural levee repair, and therefore will not be considered for FSRP.
- The criteria templates should focus on minimum requirements for rural areas.
- This repair alternative should restore the existing levee cross section.
- Wave induced erosion cannot be repaired with soil because the soil will be washed with the next wave.

- The repair template is extensive. On the berm, repair manual suggests stabilizing the slope with rocks and over time the rocks become overgrown with vegetation and protect against erosion.
- The repair alternative should be divided into separate templates: minor repair (just rocks), eroded slope (soil and rock), and vegetation restoration options.
- Multiple templates provide choices in addressing different conditions including environment friendly options.
- It might be helpful to develop the narrative before the templates and include explanation on how the templates should be used. The narrative should include explanations on right of way and requirements for hydraulic analysis.
- Provide a narrative to describe the problem and repair options and accompany the narrative with multiple repair options sketches to reflect the differences.
- Hydraulic analysis is required when the encroachment exceeds one percent of overall channel conveyance area.

**Suggestions:**

- **Restore existing or original slope with soil and add a layer of rocks.**
- **Provide narrative description of problem and possible repairs options and include multiple sketches to reflect variety of conditions and repairs.**

**Widened Levee Erosion Repair (Figure 5-2)**

**Work group comments:**

- Backfill material should be of equal or greater permeability than the existing levee materials.
- Using improved fill may worsen the levee condition. Compacted clay should not be added.
- Permeability is an important issue and should be addressed either with drainage or with pervious materials.
- Drainage may be expensive and therefore permeable soil will be preferable.
- Delta levees may fail with substantial fill and may best be repaired by slope flattening.
- The narrative will provide a special consideration section to address the Delta levees.
- The repair should, at a minimum, match the existing levee system geometry.
- The slope, as shown on the sketch, is drawn incorrectly. The slope should start below the water level. Delta levees slopes are set as 2:1 not 3:1 as shown in the sketch.
- The sketch should reflect minimum requirements. Engineering design can be used to deviate from the RLRC.
- The repair should match existing slope and conditions to keep the levee system uniform.

**Suggestions:**

- **Permeability should be addressed either with drainage or pervious materials.**
- **Match existing levee system slope.**
- **Backfill material should be compatible with existing material.**
- **Top of levee should be called out “match existing” rather than 22’ min.**

- **Special consideration should address Delta levee conditions.**

### **Partial levee replacement repair (Figure 5-3)**

#### Work group comment:

- Levels of repair should be reflected in separate sketches to account for different conditions.
- In repairing non-stability related levee cracking, the levee needs to be excavated beyond the crack. This is a simple repair and should follow the O&M manual instructions.
- The problem description should include both cracks and slides, and the slide plane should be identified.
- Consider buttress or stability berm.
- The sketch, as provided, is very narrow and does not account for different failures such as vertical crack, slope plain, and foundation failure.
- Geotechnical investigation may be needed to identify the extent of the problem.
- Slope should be designated as match existing.

#### Suggestions:

- **The identification of slide plain is important for this repair.**
- **Cracks can be addressed through O&M manuals and should not be included in RLRC.**
- **Consider buttress or stability berm.**
- **Sketches should reflect levee/foundation options.**

### **Drained stability berm repair (Figure 5-4)**

#### Work group comment:

- This alternative repair requires compatible permeable material or a drainage option.
- Levee width should match the existing system rather than be defined as 10' min.
- Consideration of filter size is important.
- Filters should be designed to be compatible with the backfill materials.
- Three layers are needed including: filter, design, and geotextile.
- 2/3 height is marked as independent criteria but it should be related to the water level. Additional engineering analysis can be used to determine alternative height.
- Drainage is expensive whereas dirt is cheap. In some cases, it may be cheaper to construct a wider and flatter slope levee rather than install a drain.

#### Suggestions:

- **Levee width should match the existing system rather than defined as 10' min.**
- **Provide narrative description of the problem and repair options.**
- **Narrative text should explain that RLRC provides conservative standards that can be deviated from with engineering analysis. (Guiding principles).**

### **Undrained stability berm repair (Figure 5-5)**

#### Work group comment:

- Stability berms are needed where there is a failure. The failure needs to be defined and excavation should extend beyond the failure. It is important to establish if the failure has reached the foundation prior to repair.
- The berm has to be more permeable than the original levee.
- The configuration, as shown in the sketch, may not be the most efficient.
- The height of  $2/3 H$  may not fit all situations and a shorter berm may be preferable.
- Farmers are familiar with clay/sand levees and they know how to deal with the levees.
- Seepage and stability are tied together for the purpose of developing the templates.

#### **Suggestions:**

- **Flatten the slope to minimums.**
- **Investigation of failure is critical to repair.**
- **Levee width should match the existing system rather than defined as 10' min.**
- **Utilize slope stability berm for through seepage.**

#### **Seepage-stability combination berm repair (Figure 5-10)**

##### **Work group comments:**

- For rural environment undrained options, such as sand seepage or undrained slope flattening, should be provided.
- Slope flattening is inappropriate.
- The drain option is unfavorable due to material and construction costs.
- Replace 15-ft easement with a 10-ft easement. The 15-ft easement is generally provided to accommodate vegetation which is not a minimum requirement.
- Provide 6-in stripping of organic material. This should be consistent in all sketches.
- The 4H requirement for W2 is too excessive for rural areas.
- The 4H requirement is needed to avoid failure due to underseepage boils. This is a USACE standard regardless of where the levee is.
- The 4H requirement is conservative and can be reevaluated with an engineering analysis.
- In repairing rural levees, we need to consider the cost effectiveness of repairs.

#### **Suggestions:**

- **RLRC should provide an undrained option.**
- **Leave the 10-ft minimum easement requirement.**
- **Use 6-inches stripping depth of organic material for consistency.**
- **The narrative should address the role of engineering analysis in revising RLRC minimum design requirements.**
- **The work group did not reach an agreement on the 4H height requirement. Additional discussion may be needed.**

#### **Drained seepage berm repair (Figure 5-6)**

##### **Work group comments:**

- As shown in the sketch, the drain may get plugged and water will run over the top. This is an issue for sand levees (not a clay levee problem).
- Initiating conditions for the repair alternative should be provided in the narrative.
- This repair is tied to the seepage stability combination berm repair.

**Suggestions:**

- **Provide description in the narrative and describe the deficiencies that can be repaired with this alternative.**

**Sand seepage berm repair (Figure 5-7)**

**Work group comments:**

- Consider similar issues as with previous templates including: underseepage control and the 4H height requirements to avoid boils.
- The minimum height should be in relation to the height of the levee. The intent is to reduce rather than eliminate risk.
- A minimum height of 30-ft or 4H where feasible was suggested.
- Note 2 should be eliminated and the berm thickness should be designated as 3-ft.
- Backfill materials should be changed from sand to “more pervious than foundation material” or “semi-pervious”.
- Permeability should be evaluated based on existing condition. Special studies should not be required.
- Stripping depth should be 6-inches rather than 1-ft.
- Easement of 10-ft is sufficient.
- The length of the repair section needs to be discussed in the narrative. It was suggested that 50-ft on either side of the repair is appropriate.

**Suggestions:**

- **Note 2 should be eliminated and the berm thickness should be designated as 3-ft.**
- **Backfill materials should be changed from sand to “more pervious than foundation material” or “semi-pervious”.**
- **Stripping depth should be 6-inches rather than 1-ft.**
- **Easement of 10-ft is sufficient.**
- **Add a narrative section regarding the extent of the levee repair along the levee (50-ft on either side).**

**Pervious trench repair (Figure 5-12)**

**Work group comments:**

- Providing a non-design standard for this repair may not be appropriate.
- Underseepage repair may be best addressed with other alternatives.

**Suggestions:**

- **This template should be removed.**

## Crown depression repair (Figure 5-11)

### Work group comments:

- Crown depression is occurring and should be distinguished from subsidence.
- There are areas of local settlement or depression that need to be addressed.
- A sketch may not be needed for this repair alternative.
- It is helpful to have a typical section graphics.
- New AB surface should be changed to min 6-inches thick rather than 4-inches.
- Consistent terminology is needed when discussing backfill materials.
- It may be preferable to reuse existing AB if it is clean rather than bring in new AB. Recycling is cheaper than hauling costs.
- Add a dimension “match existing width” to the crest.
- The stripping depth should be called out as 6-inches.

### Suggestions:

- **Change “new AB” to “new or existing AB”.**
- **Change min 4-inches thick to min 6-inch thick of AB surface.**
- **Add “Match existing width of the crest”.**
- **Specify 6-inch stripping depth.**

## Narrative

Mr. Wheeldon introduced the draft RLRC table of contents with the intent of soliciting thoughts and comments from the work group regarding the tone and the topics to be included in the narrative. The narrative’s introduction includes language from the Charter as was defined at the beginning of the RLRC process. The document will include a definitions section that may overlap with Section 5 (Major Levee Repair Problems and Repair Templates).

The bulk of the narrative is Section 5 which outlines the problems and the alternative repairs. The section describes each specific problem and then follows up with associated repair options. A matrix may be used to tie the problems and repair options.

Section 6, Special considerations, is important because it explains which areas are not covered by the Criteria. The section will discuss: delta levees, non-project levees, and setback levees.

Mr. Wheeldon asked work group members to step back and consider the overall approach of developing the RLRC. Members were asked to identify issues that may have been overlooked.

A member stated that relief well was brought up and needs to be considered. Another member suggested the inclusion of toe drain. The work group discussed the role of animal damage in the criteria. Animal damage is variable and may be considered an O&M problem. Animal damage, according to some members, should not be included in RLRC.

The work group discussed the reference to O&M manuals in the Criteria narrative:

- Since some problems are described in the O&M manuals, it is appropriate to quote and/or reference the manual.

- Mary Perlea (USACE) offered to help with identifying O&M manual descriptions that can be used in the Criteria narrative.
- It may be helpful to refer to the O&M manual but the RLRC addresses issues that are beyond standard repair.
- Non-project levees may not have O&M manuals for reference and will need the text in the Criteria narrative.
- O&M Manual may be available online and a link can be provided for access.

It was suggested that the Criteria narrative will describe the RLRC guiding principles and the applicability of the minimums and standards that are suggested in the templates.

Mr. Wheeldon asked work group members to consider how the Criteria narrative should address environmental stewardship and permitting processes when reviewing the Criteria narrative and preparing for the next RLRC work group meeting. Specifically, should the Criteria narrative specify the permits or provide a general statement?

A member suggested that explaining the permitting process may be important and help avoid the misperception that RLRC is a permitting mechanism. In addition, the Criteria narrative should specify whether the Criteria applies to the Central Valley or the entire state.

Mr. Wheeldon repeated that there may be an opportunity to follow up the Criteria document with a next steps memorandum or a recommendations report to further the dialogue on policy issues. Developing such recommendations can be done after the Criteria is completed. Mr. Wheeldon added that the Board resolution requested a draft document and therefore there may be opportunities to continue revising the document in the future.

#### **Suggestions:**

- **Reference the O&M manual in the Criteria narrative.**
- **Include subsidence issues in the Criteria.**
- **Consider adding templates for relief wells and toe trench.**
- **Discuss costs in the Criteria narrative since it affects technical decisions.**

#### **Next steps**

Mr. Wheeldon thanked the work group for participating and contributing to the process.

DWR will revise the draft repair alternative templates and incorporate the members' suggestions. DWR will continue drafting the Criteria narrative. The narrative and templates will be combined into one document that will be sent out to the work group members prior to the next meeting.

The next two RLRC work group meetings as been scheduled (locations to be determined):

- Meeting 4: Tuesday, August 27th 1:00pm-4:30pm
- Meeting 5: Thursday, September 26th 1:00pm-4:30pm

## Attendance

### Work Group Members

1. Lewis Bair, RD 108
2. Gilbert Cosio, MBK Engineers
3. Joe Countryman , CVFPB, Board Member
4. Leslie Harder, Jr., HDR Engineering, Inc.
5. Reggie Hill, Lower San Joaquin Levee District
6. Scott R. Huntsman, Black & Veatch Corp.
7. Gilbert Labrie, DCC Engineering
8. Mary Perlea, USACE
9. Ali Porbaha, CVFPB
10. Ric Reinhardt, MBK Engineering
11. Steven Stadler, Kings River Conservation District
12. Rune Storesund, Storesund Consulting
13. Steven Sullivan, Mead & Hunt, Inc.

### Interested Parties

14. Khaled Chowdhry, for Richard Millet, DWR Geo-Levee

### Project Team

15. Dave Wheeldon, DWR-FMO
16. Syada Ara, DWR-FMO
17. Yung-Hsin Sun, MWH Americas, Inc.

### Facilitation Team

18. Adam Sutkus, CCP
19. Orit Kalman, CCP