



**U.S. Army Corps  
of Engineers**  
Sacramento District

**CATEGORICAL PERMISSION FOR SECTION 408 REQUESTS  
U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT**

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Public Review Draft: October, 2018

Prepared by:

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## TABLE OF CONTENTS

AUTHORITY .....	1
INTRODUCTION.....	1
GEOGRAPHIC AND TEMPORAL SCOPE OF THE CP .....	1
CATEGORICAL PERMISSION .....	2
CATEGORICAL PERMISSION ALTERATIONS .....	3
DISQUALIFYING CIRCUMSTANCES .....	5
Conditions .....	5
Engineering Conditions.....	5
Environmental Conditions.....	6
Blockage Calculation Procedures.....	7
IMPLEMENTING CATEGORICAL PERMISSION.....	7
Alteration Request .....	7
Technical And Environmental Reviews.....	7
Validation.....	7
DISTRICT COMMANDER DECISION.....	8

## LIST OF FIGURES

<b>Figure 1.</b> Map showing the USACE Sacramento District civil works boundary.....	2
<b>Figure 2.</b> Illustration of common terms for federal projects.....	4
<b>Figure 3.</b> Illustration of common terms for federal project channels. ....	5

## ATTACHMENTS

1. Detailed Alteration Descriptions

## **AUTHORITY:**

The authority to grant permission for temporary or permanent use, occupation or alteration of any U.S. Army Corps of Engineers (USACE) civil works project is contained in Section 14 of the Rivers and Harbors Act of 1899, as amended, codified at 33 U.S.C. 408 (“Section 408”). Section 408 authorizes the Secretary of the Army, on the recommendation of the Chief of Engineers, to grant permission for the alteration or occupation or use of a USACE project if the Secretary determines that the activity will not be injurious to the public interest and will not impair the usefulness of the project. The Secretary of the Army’s authority under Section 408 has been delegated to the USACE, Chief of Engineers. The USACE Chief of Engineers has further delegated the authority to the USACE, Directorate of Civil Works, Division and District Commanders, and supervisory Division Chiefs depending upon the nature of the proposed activity.

## **INTRODUCTION:**

The purpose of this document is to establish a categorical permission (CP) in order to expedite and streamline the review and decisions of Section 408 requests that are similar in nature and have similar impacts to the USACE project and environment. This CP requires approval by the Sacramento District Commander. There are numerous USACE federally authorized civil works projects (USACE federal projects) within the boundaries of the South Pacific Division, Sacramento District. Each year the Sacramento District receives requests through the non-federal project sponsors from private, public, tribal, and other federal entities (requesters) to alter USACE federal projects pursuant to Section 408. The majority of these requests are for relatively minor alterations of the levee or channel, such as installation of irrigation pipes, horizontal directional drilling for placement of utility lines, and private recreational boat docks.

## **GEOGRAPHIC AND TEMPORAL SCOPE OF THE CP:**

The Sacramento District’s area of responsibility covers a wide geographic area and includes portions of the states of Arizona, California, Colorado, Idaho, Nevada, Oregon, Utah, and Wyoming (Figure 1). The geographic scope of the decision to be made is limited to USACE federal projects under the responsibility of the Sacramento District. Federal projects within the Sacramento District are located in California, Colorado, Nevada, and Utah. The decision would only apply to the Sacramento District and would not apply to any other USACE district. The decision only applies to federal levee and channel alteration projects and does not apply to any lake projects. The temporal scope of the decision is five years; after five years the decision will be reevaluated and may be renewed or revised, if appropriate. While there is a definite plan for a comprehensive review of the CP at five years, nothing precludes USACE from reevaluation after a shorter time period if conditions so warrant.



**Figure 1.** Map showing the USACE Sacramento District civil works boundary.

**CATEGORICAL PERMISSION:**

When the Sacramento District receives a request to alter a USACE project, the district follows a review process outlined by *Engineering Circular (EC) 1165-2-220, Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408*. To streamline the review process, EC 1165-2-220, paragraph 10.a. states that USACE districts can develop categorical permissions to cover potential alterations that are similar in nature and that have similar impacts.

Categorical Permission. The district, division, and/or HQUSACE have the ability to create a “categorical permission” in order to expedite and streamline the review and decisions of Section 408 requests that are similar in nature and that have similar impacts to the USACE project and environment. An assessment of impacts to the usefulness of the USACE project, environmental compliance, and a public interest determination is conducted ahead of time for a common category of activities. For those individual Section 408 requests that are consistent with the

terms and conditions of an established categorical permission, the Section 408 request can be granted with a simplified validation process.

The environmental effects associated with the alterations covered in this CP have been analyzed and documented in the *Programmatic Environmental Assessment and Finding of No Significant Impact, Categorical Permission for Section 408 Sacramento District*.

### **CATEGORICAL PERMISSION ALTERATIONS:**

Alterations to federal civil works projects can negatively affect the federal flood risk management system in a number of ways. Some impacts of concern include: increased erosion, increased seepage, decreased stability, and interference with access and visibility which can negatively affect operations, maintenance, and flood fighting. Structures and other facilities that penetrate the levee may cause other adverse effects, such as piping of foundation or other material, cracking, or stability issues.

If a proposed alteration is considered normal operations and maintenance, as described in the Operations and Maintenance Manual for the USACE project, no Section 408 permission is necessary.

This CP encompasses alterations that are similar in nature and have similar impacts. The alterations listed are representative of the types of alterations and associated impacts that have been approved under Section 408 since issuance of EC 1165-2-220. The descriptions and criteria to be used to determine validation under the CP have been coordinated with Regulatory Division to ensure consistency between similar permitting actions.

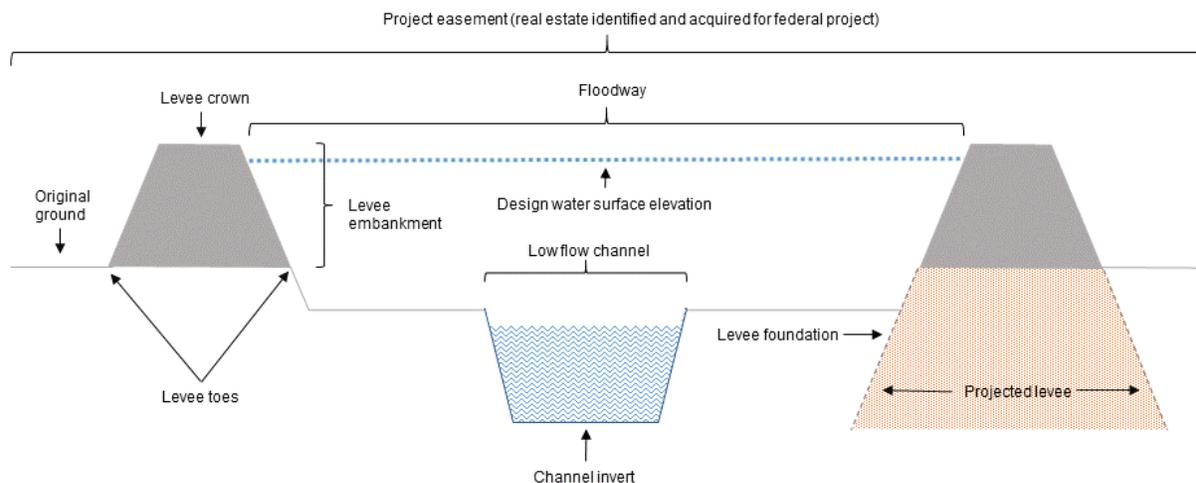
Proposed alteration requests that do not qualify under this CP would be reviewed and a decision made that follows the one of the other options for seeking Section 408 permission described in EC 1165-2-220.

For an alteration to be approved under this CP, the proposed design, construction, replacement and/or removal must meet the alteration descriptions (see attachment), have no disqualifying circumstances, and adhere to applicable standard engineering and environmental conditions (see Conditions Section). See Figures 2 and 3 for illustrations of common terms used throughout the alteration descriptions.

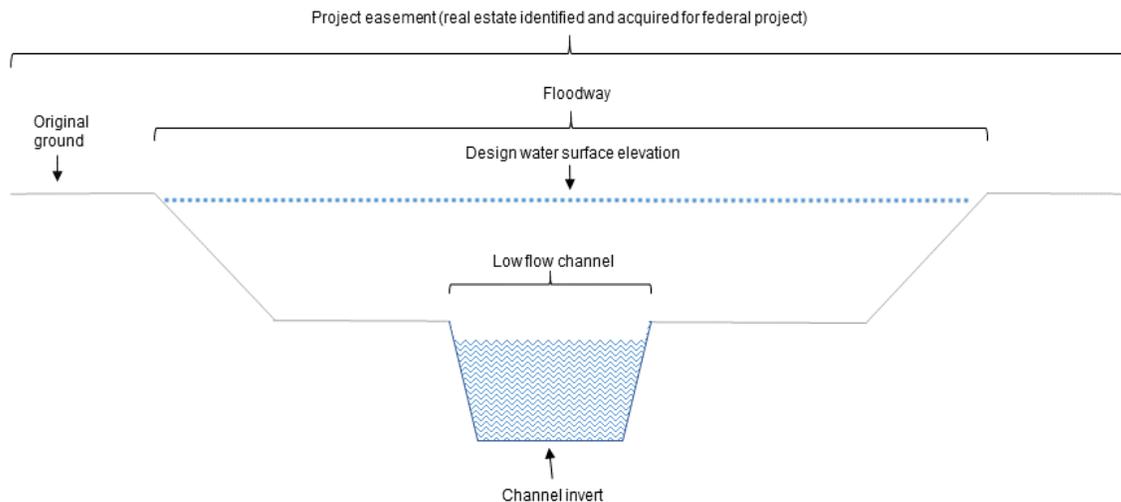
The alterations described under the proposed categorical permission could be stacked. A single proposed project could combine multiple categories of alterations (for example, a utility pole, a fence, and a maintenance shed) and still fit under the proposed categorical permission. Each individual alteration type contained within the overall project must adhere to the size limitations for that specific type of alteration. The total area associated with the overall project must not exceed the largest alteration size limit.

## Categorical Permission Alteration Types:

1. Agriculture and Landscaping
2. Borings, Levee Explorations and Instrumentation
3. Borrow Areas
4. Bridges
5. Buildings and Structures
6. Ditches and Canals
7. Docks
8. Environmental Restoration
9. Erosion Control
10. Fences, Gates, and Signage
11. Fiber Optic and Dry Utility Pipes
12. Fish Screens
13. Gravity Pipes
14. Horizontal Directional Drilling (HDD)
15. Landside Pump Stations
16. Pressurized Pipes
17. Research and Monitoring
18. Retaining Walls
19. Seepage and Stability Berms
20. Stairs and Handrails
21. Swimming Pools
22. Trails, Roads, and Ramps
23. Utility Poles
24. Water Supply Pump Stations
25. Wells



**Figure 2.** Illustration of common terms for federal projects.



**Figure 3.** Illustration of common terms for federal project channels.

### **DISQUALIFYING CIRCUMSTANCES:**

The following conditions would disqualify the use of this CP:

1. The alteration could not be decided at the District level.
2. The alteration is controversial.
3. The alteration would remove riparian or sensitive habitat.
4. The alteration would exceed federal *de minimis* air quality standards.
5. The alteration would construct a new structure for human habitation.
6. The alteration would adversely impact a public use facility.
7. The alteration would induce development in the floodplain.
8. The alteration would require an Environmental Assessment or Environmental Impact Statement.

### **CONDITIONS:**

The following engineering and environmental conditions must be met to qualify for this CP. Proposed alterations that do not meet these conditions will be evaluated under the individual alteration review process. USACE may impose project specific conditions in addition to the conditions below.

#### **ENGINEERING CONDITIONS:**

1. The alteration must not interfere with the integrity or hydraulic capacity of the flood risk management project; easement access; or maintenance, inspection, and flood fighting procedures.
2. If an alteration would affect the hydraulic capacity of the floodway whatsoever, the requester must prepare a blockage calculation or hydraulic analysis for review in accordance with current USACE guidance.

3. Construction or other work in the floodway cannot take place during the flood season unless approved in writing by the non-federal project sponsor.
4. No temporary staging, stockpiles of materials, temporary buildings, or equipment can remain on the levee or in the floodway during flood season unless approved in writing by the non-federal project sponsor.
5. Construction or other work must be coordinated with other work in the area.
6. Excavations and drilling must meet federal, state, and local criteria, USACE standards, and Office of Safety and Occupational Health standards.
7. The requester is responsible for removal and disposal of trees or brush cleared during construction. The removal and disposal must be to areas outside the limits of the federal project easement.
8. The requester is responsible for protecting the levee from being damaged by construction vehicles, equipment, construction activities, and storage of materials.
9. All material used for fill on levee slopes and the crown must be acceptable cohesive material (Unified Soil Classification System CL, CL-ML, or SC) and free of organics or other materials harmful to the levee.
10. Existing embankment material must be compacted to 95 percent Standard Proctor per ASTM D698 at -2% to +3% of optimum moisture content. Limit loose lifts to 6 inches for all work on the levee.
11. The proposed alteration should be backfilled under and around with controlled low-strength material (CLSM). Backfill above the alteration should consist of CLSM or suitable material compacted in 4- to 6-inch lifts, unless otherwise specified by USACE.
12. All structures, facilities, related equipment and other appurtenances must be properly anchored to prevent flotation within the floodway in the event of high water.
13. All companies/agencies whose existing utilities are located in the intended construction area(s) must be contacted to determine whether those utilities need to be relocated or modified to accommodate the proposed alteration, or whether they would pose any hazards to alteration construction workers or equipment.
14. Appropriate property rights must be acquired as needed for construction, operation, and maintenance of the alteration.
15. Areas disturbed during construction or other work associated with an alteration must be restored to pre-construction conditions once the work is complete.
16. The Section 408 request must include construction drawings that show details of all proposed activities within the project easement area, including any excavation details, a cross section of the levee and/or channel affected by the proposed alteration and associated appurtenances, a plan view of the existing levee easement with the proposed alteration shown.
17. Any damage caused by removal or modification of any alteration would need to be repaired as part of the removal or modification activity.
18. The preferred method for abandoning alterations is complete removal.

*ENVIRONMENTAL CONDITIONS:*

1. Access to the proposed alteration site must occur in previously disturbed areas, such as existing roads, access ramps, driveways, or the levee crown.
2. Upland areas may be temporarily cleared for staging of equipment and materials during construction.
3. Vegetation may be removed during construction; however, the alteration should be designed to minimize the amount of woody vegetation removal.
4. Excess material from construction must be removed from the floodway and disposed in an area outside the federal project easement.
5. Proposed alterations must be designed to minimize the introduction of exotic species (both plant and animal) and any seed mixes used in site restoration must consist only of native species.
6. Proposed alterations must incorporate Best Management Practices (BMPs) to control storm water runoff, erosion, and contaminant spills (e.g., diesel fuel spills).
7. In the event of an environmental spill, the requester must notify the USACE, the non-federal sponsor and the appropriate state agency immediately. Cleanup and repair is the requester's responsibility.
8. If artifacts or other culturally sensitive materials are found during excavation, work must stop immediately and the USACE must be notified.

#### ***BLOCKAGE CALCULATION PROCEDURES:***

All proposed alterations on the waterside of the levee or in the channel need to be assessed for hydraulic impacts. Hydraulic Analysis Section will review blockage calculations  $\geq 1\%$  and provide a memorandum for record to 408 Permission Section. 408 Permission Section will conduct the hydraulic review and prepare documentation for blockage calculations  $< 1\%$  that are not based on a hydraulic model geometry cross-sections.

Blockage calculations must include the effects of the blockage itself as well as any expected debris caught by the alteration as detailed in the USACE screening and analysis procedures for hydraulic impacts.

#### **IMPLEMENTING CATEGORICAL PERMISSION:**

***ALTERATION REQUEST:*** The requester must provide CP justification. USACE will review and verify the alteration to ensure it is covered under the CP and identify additional information required to process the request.

***TECHNICAL AND ENVIRONMENTAL REVIEWS:*** Required engineering and environmental reviews are completed, including initiation of any necessary consultations.

***VALIDATION:*** The Section 408 Validation Memorandum will be completed by 408 Permission Section with supporting technical review memoranda as required. If

approved, the decision making authority would sign the Section 408 Validation Memorandum and the letter of permission.

**DISTRICT COMMANDER DECISION:**

I have reviewed this categorical permission and determined that the proposed alterations, delegation and verification of the technical reviews, and the validation and decision process is consistent with USACE guidance. This categorical permission is effective immediately for all current and future qualifying alterations.

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David G. Ray, P.E.  
Colonel, U.S. Army  
District Commander

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Date Approved

DRAFT



**U.S. Army Corps  
of Engineers**  
Sacramento District

## **CATEGORICAL PERMISSION ALTERATION DESCRIPTIONS**

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### **CATEGORICAL PERMISSION FOR SECTION 408 REQUESTS SACRAMENTO DISTRICT**

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## TABLE OF CONTENTS

1. AGRICULTURE AND LANDSCAPING .....	1
2. BORINGS, LEVEE EXPLORATIONS AND INSTRUMENTATION.....	1
3. BORROW AREAS.....	2
4. BRIDGES.....	3
5. BUILDINGS AND STRUCTURES.....	4
6. DITCHES AND CANALS.....	4
7. DOCKS .....	5
8. ENVIRONMENTAL RESTORATION.....	6
9. EROSION CONTROL.....	6
10. FENCES, GATES AND SIGNAGE .....	8
11. FIBER OPTIC AND DRY UTILITY PIPES .....	8
12. FISH SCREENS .....	9
13. GRAVITY PIPES.....	10
14. HORIZONTAL DIRECTIONAL DRILLING (HDD).....	11
15. LANDSIDE PUMP STATIONS .....	12
16. PRESSURIZED PIPES.....	12
17. RESEARCH AND MONITORING .....	14
18. RETAINING WALLS.....	15
19. SEEPAGE AND STABILITY BERMS.....	15
20. STAIRS AND HANDRAILS.....	16
21. SWIMMING POOLS.....	16
22. TRAILS, ROADS AND RAMPS .....	17
23. UTILITY POLES .....	18
24. WATER SUPPLY PUMP STATIONS.....	18
25. WELLS.....	19

## **1. AGRICULTURE AND LANDSCAPING**

The categorical permission covers a variety of standard agricultural activities including, but not limited to, orchard installation and cultivation, orchard removal, planting and cultivation of row crops, animal grazing, installation of temporary or permanent irrigation lines, and landscaping associated with existing buildings or structures. The total area of work per proposed alteration must not exceed 350 acres in size. The categorical permission coverage is limited to work in land previously used for agriculture (fallow fields, row crops, etc.) and does not cover conversion of native habitat to cultivated land.

Grazing is not allowed during periods of prolonged rain. No structures, sheds, or troughs are allowed on the levee or within 15 feet of the levee toe. No livestock are permitted to be penned or corralled on the levee. Grazing practices must be discontinued if there is excessive damage to the levee.

Native grasses (maximum 12-inch height) are acceptable on levees from a flood risk management perspective. Orchards, flower gardens, and vegetable gardens are not permitted within 15 feet of the levee toes.

The USACE may request that non-compliant vegetation as well as all roots greater than a half inch in diameter be removed from the levee easement. Holes caused by removal of vegetation must be backfilled with suitable material and compacted in 4- to 6-inch lifts to at least the same density as the adjacent undisturbed soil.

## **2. BORINGS, LEVEE EXPLORATIONS AND INSTRUMENTATION**

The categorical permission covers geotechnical and similar borings, exploratory activities, as well as instrumentation. Work may be conducted within the levee embankment, adjacent to the levee toe, and/or in the floodway. Borings and levee explorations include, but are not limited to, conventional geotechnical borings, piezometer or inclinometer installation, cone penetration testing, hydrovac excavation, potholing, trenching, and cultural inventories. A maximum of 25 borings or explorations per proposed alteration may be covered by the categorical permission. Instrumentation used to monitor or test the levee and/or floodway is included in this alteration.

Borings in the levee and/or the levee foundation will require a Drilling Program Plan in accordance with ER 1110-1-1807 *Drilling in Embankments*, as part of the technical review of the proposed alteration.

All drilling should be designed to minimize the need for drilling fluid in the levee and/or the levee foundation, reducing the possibility of damage.

The requester must discontinue drilling and place grout or bentonite seals in all open borings, trenches, and other excavations if the river approaches flood stage. Drilling or other explorations should not begin if the river is approaching flood stage. The requester must keep borehole sealing materials and equipment at the site before drilling begins, in preparation for unexpected river stage increases.

Open boreholes and excavations cannot be left unattended for more than 24 hours and all open boreholes should be sealed before leaving the construction site at the end of a work week.

Boreholes that are awaiting backfill should be covered to prevent entry by small animals.

The requester must verify that drilling equipment will not disrupt overhead wires.

### **3. BORROW AREAS**

The categorical permission may cover borrow areas excavated in the floodway. Such proposals would require a geotechnical investigation to determine if the proposed borrow activity would increase seepage beneath the levee or expose soils susceptible to erosion. Special geotechnical requirements may apply to borrow areas proposed near a bridge, riverbank, pipeline or cable crossing beneath the channel, or a water control structure (e.g., a weir).

The minimum distance of the borrow area to the levee toe is 300 feet. Borrow sites authorized under this categorical permission may not exceed 5 acres in size. A geotechnical investigation is required before initiating any borrow activity within the federal project easement.

If the borrow material will be used to build or modify a levee, the borrow area should be cleared and grubbed to the extent needed to obtain fill material free of inappropriate matter including any type of vegetation. The proposed borrow area must not contain riparian habitat or woody vegetation. The borrow site must be revegetated with native species or returned to the previous use after material is removed.

Waterside borrow areas must be designed to fill slowly on a rising river and drain fully on a falling river. The borrow area must have side slopes of 3H:1V or flatter and a bottom that is sloped to drain away from the levee in a downstream direction. No ponding is permitted at the levee toe.

Excavation depth is determined by factors such as (1) depth to groundwater, (2) location of undesirable borrow material, (3) preservation of an adequate thickness of impervious layer, and (4) environmental considerations. An impervious layer of the thickness determined by geotechnical analysis should be left at the bottom of the borrow area in locations where the seepage gradients are critical.

Areas that contain soils exhibiting hazardous or toxic characteristics, even if naturally occurring, must not be used for borrow material. Areas where known historic or cultural resources are located must not be used for borrow.

Borrow areas should be located far enough away from the channel to prevent migration of water into the borrow area.

Borrow-related materials and equipment must not be stored:

- On the levee or within the waterside or landside easements

- In a way that could destabilize the riverbank
- Within the river flowage area during flood season
- In a way that could impede access to the levee

Levee patrolling, operation, maintenance, and flood-fighting take precedence over borrow-related hauling operations.

#### **4. BRIDGES**

The categorical permission covers alterations that include new construction, replacement, modification, or removal of vehicle, pedestrian, or railroad bridges, and actions that are similar in nature. Construction, modification or rehabilitation may occur on the approach to the bridge.

Bridge design, construction and use must not compromise the structural integrity of the levee or conveyance of the adjacent river channel. Drainage from the bridge must be directed away from the levee and channel bank. Adequate bank protection must be placed upstream, downstream, and under the bridge.

The area in and around the construction site must be kept clear to prevent erosion and/or a reduction in channel capacity.

The requester must prepare a scour analysis if bridge piers are proposed in the channel. The requester must prepare a slope stability analysis for review by the USACE for any modification(s) to the levee. Excavation of the levee crown that causes depression(s) is prohibited.

Piers and pile bents must be parallel to channel flow.

No pile driving is allowed in the levee, but piles may be auger cast/cast-in-drilled-hole to the bottom of the impervious layer.

Analysis of debris loading is required for piers, piles, and soffits less than two feet above the design water surface elevation (DWSE). Bents and piers may be equipped with debris deflectors.

Survey control point(s) installed along the levee crown prior to construction may be necessary. These would be used for monitoring levee elevation and cross section. The requester must repair any changes to the levee crown elevation or cross section.

Necessary bridge maintenance includes, but is not limited to, debris removal and inspections. Maintenance activities cannot impede access to the flood risk management project. Damage to a bridge that threatens channel capacity must be repaired or removed prior to the next flood season.

If a bridge is planned for replacement, the existing structure must be completely removed and disposed of outside the floodway and levee easement. When an existing bridge is to be widened, the new bridge piers and bents should be installed in line with existing piers and bents.

## **5. BUILDINGS AND STRUCTURES**

This categorical permission covers the construction, modification, and removal of buildings or other structures such as, solar arrays, artwork, patios, and decks, along with associated work, such as minor landscaping, within the federal project easement. The maximum area of construction must not exceed 2 acres. Structures must be constructed in previously disturbed areas, structures must not convert native habitat. New buildings and similar structures authorized under this categorical permission must not be used for human habitation. Modifications to existing buildings can be allowed so long as the habitable area of the structure is not increased.

New buildings within the levee embankment are not included in this categorical permission. For buildings outside the levee embankment, but within 300 feet of the levee (typically on the waterside of the levee), the requester should complete a geotechnical analysis that includes slope stability and seepage analyses to ensure that the proposed building does not pose a serious risk to the levee. If a geotechnical investigation is not possible, the following rule of thumb may be appropriate: add 10 feet of lateral distance from the levee toe for each foot of excavation. That is, at 10 feet from the toe, excavation is limited to one foot; 20 feet from the toe, two feet deep, and so on. A geotechnical analysis is not needed if the building is constructed on fill.

If an existing building or structure is damaged, due to any cause, cumulatively to more than 50% of its market value, the building or structure may not be reconstructed or replaced without the approval of the non-federal sponsor. If a damaged building or structure is not repaired or replaced, the entire building or structure, including all associated materials, must be completely removed within a reasonable period of time and the area restored so that there is no interference with the flood risk management project's function, operation, inspection, or flood-fighting.

The non-federal sponsor should be notified about removal of a building that is within the levee easement. Following removal, the area must be restored to pre-building conditions by filling any hole(s) with compacted material similar to the adjacent soil. Any damage to the federal civil works project caused by removal of the building must be repaired by the requester.

## **6. DITCHES AND CANALS**

The categorical permission covers the construction, modification, and filling of ditches and canals that meet certain terms and conditions. All ditches must be located outside the projected levee embankment. Ditches and/or canals may be a maximum length of 1000 linear feet. The requester should prepare a geotechnical analysis including seepage (through and underseepage) analysis and stability analysis to determine an

appropriate location and depth proposed for the ditch. Levees must meet requirements of EM 1110-2-1913 *Design and Construction of Levees* following construction of ditches or canals.

The requester must take every precaution to avoid puncturing the impervious layer during construction. If this is not possible, the ditch must be lined with concrete. The concrete should be placed on a drainage layer to prevent it from cracking due to uplift. Weep holes should be added to the concrete lining to relieve any pressure buildup. Other accommodations may be necessary to prevent damage to the levee from underseepage.

Drainage ditches must be maintained to ensure that the ditch is not obscured by heavy vegetation growth or sedimentation. Ditches must be cleared at regular intervals to restore the original channel design, grade and cross section. Concrete-lined canals should be routinely inspected for worn joint seals and damage to the concrete or weep holes to ensure they are functioning as designed.

If a ditch is to be filled, the area must be restored by filling the depression in 4- to 6-inch lifts with compacted material similar to the adjacent soil. The requester is responsible for repairing any damage to the levee caused by removal of the ditch.

## **7. DOCKS**

The proposed categorical permission would cover landing structures, gangways, the floating dock structure, small amounts of riprap, and debris booms associated with boat docks. The maximum dock size (including gangway, floating platform, and any associated covers), for both replacement of existing structures and new structures, is 2000 square feet. No part of the floating platform or pilings may penetrate into the levee or be within 15 feet of the waterside levee toe. Gangway supports may be located within the levee embankment.

The dock anchoring must be sufficient to prevent the dock from floating into the channel during high water.

Pilings must be a minimum of two feet taller than the levee crown so the dock doesn't float off its pilings during a high-water event. Pilings can go as deep as needed provided they do not penetrate the projected levee embankment. For pilings that are expected to penetrate the impervious layer, a geotechnical seepage analysis should be prepared to determine whether the risks can be mitigated. If a geotechnical investigation or analysis is not possible, piles must be cast in drilled holes against firm undisturbed soil. If possible, pilings should not be positioned skewed to the flow.

Pilings must be made of inert, non-reactive material. Materials coated with creosote are prohibited and any chemically treated material must be coated with an impact-resistant, biologically inert substance. Decking material must be made of metal grating, plastic, or other non-reactive (e.g., epoxy, wood) product; flotation devices must be of materials that will not disintegrate, such as plastic or closed cell foam encapsulated sun-resistant polyethylene.

If the dock design includes gangway supports proposed to penetrate more than 12 inches into the levee, a seepage and stability analysis must be completed. This analysis must demonstrate that the footings will not have a negative effect on the levee.

Grated gangways are recommended because they allow easy visual inspection of the levee.

The requester must demonstrate that the dock design will prevent debris from accumulating at the dock. Possible ways to prevent the accumulation of debris include adding a debris deflector or removing the gangway during flood season. After each period of high water, all debris caught by the boat dock must be removed and disposed of outside the limits of the federal project easement.

If material must be added to the levee crown (e.g., to cover a concrete footing), the added material must be sloped at a ratio of 10H:1V horizontal to vertical, in the upstream/downstream direction to prevent a “speed bump” effect and facilitate vehicle access.

In the event that levee or bank erosion injurious to the levee occurs at or adjacent to the dock, the eroded area must be repaired with adequate bank protection to prevent further erosion.

Any damage caused to the levee by removal or modification of a dock must be repaired as part of the removal or construction process.

## **8. ENVIRONMENTAL RESTORATION**

The categorical permission covers a variety of restoration activities, including, but not limited to, planting of native vegetation (grasses, forbs, shrubs, and/or trees), placement of spawning gravels in active stream channels and adjacent floodways, removal of invasive species, and restoration and enhancement of ponds, stream channels, and wetlands. Stream and wetland restoration activities may include removal of sediment, installation, removal, or modification of small, non-federal water control structures (e.g., dikes and berms), modification of stream beds and/or banks, and removal of stream barriers, among other activities. Any plantings on or near a levee must meet the standards outlined in ETL 1110-2-583, *Guidelines For Landscape Planting And Vegetation Management At Levees, Floodwalls, Embankment Dams, And Appurtenant Structures*. The total area of restoration must not exceed 500 acres in size or the total length of channel restoration must not exceed 5000 linear feet.

## **9. EROSION CONTROL**

The categorical permission covers a variety of erosion control activities including bank stabilization, erosion control features, and actions that are similar in nature. Alterations proposed for erosion control should be designed to withstand the velocity and stresses created by the flow of water at the DWSE. The maximum area of construction is 500 linear feet of bank. Rock slope protection (e.g., riprap) is the most common type of

erosion control; however, other types of erosion control and bank stabilization methods and materials may be used.

The following list illustrates some of the factors that must be taken into consideration when determining the rock type and quality for proposed erosion control:

- Asphalt and other petroleum-based products, floatable and refuse material must not be used for erosion control on a levee or within a floodway.
- Riprap should be sound and durable, free from cracks, seams, shale parting, and soil material. The rocks should be blocky and angular and be relatively free from thin slab-like pieces. Deleterious substances which include soft, friable particles, gravels (3 inches and smaller), inappropriate materials, such as vegetation, and other foreign matter should not exceed 5% of the total material placed for erosion control.
- Riprap should be obtained from appropriate sources.
- Other types of erosion control, such as bioengineering, may be considered.

The following list illustrates some of the factors that must be taken into consideration regarding the method for placing riprap:

- Rocks should be placed to full layer thickness measured normal to the slope by any method that will avoid segregation by rock size and avoid displacing the underlying material.
- The finished revetment should be free of pockets of small or large rocks. Larger rocks should be well distributed throughout.
- All rocks should be contained reasonably well within the riprap layer to provide maximum resistance against erosion.
- Abrupt bank line changes should be avoided.
- Rocks must not be grouted.

If erosion control is intended for the invert of the channel, the final profile of the material should be identical to the profile of the adjacent channel invert.

When needed to stabilize underlying soils, proper bedding should be provided under the riprap. Vegetation and other organic material must be removed before placing bedding. Geotextiles should not be used as filter layers; instead, a minimum 6-inch layer of sand-sized aggregate should be used.

Maintenance of erosion control is required when:

- Minor rock displacement or degradation is threatening the integrity of the erosion protection
- Significant displacement is exposing the bedding or seriously degrading the rocks
- Erosion control material has been displaced by vegetation
- Vegetation is interfering with inspection of the erosion control

## **10. FENCES, GATES AND SIGNAGE**

The categorical permission covers the installation, modification, replacement, and removal of fences, gates, and signage, and similar activities located within the federal project easement.

If a fence is approved in the levee easement the following requirements apply:

- Fences must be constructed of durable, see-through materials (e.g., chain link, wrought iron, barbed wire) to ensure adequate levee visibility.
- Where appropriate, fences must include gates for access
- All fences, including all pertinent features, on the waterside must be completely removable.
- Requests to install removable fences in critical levee areas will be considered by the USACE on a case by case basis.

Gates must be wide enough to allow personnel, equipment, and vehicle access. In general, swing gates are preferred to rolling gates.

The USACE, non-federal sponsor, and local maintaining agency must be given keys to all gates that lead to the floodway, levee ramps, levee toes, and the levee crown.

When required by the USACE, non-federal sponsor, or the local maintaining agency, gates must remain open for levee inspections, maintenance, construction, high water patrol, and flood-fighting.

After each period of high water, all debris caught by fences must be cleared and disposed of outside the limits of the federal project easement.

## **11. FIBER OPTIC AND DRY UTILITY PIPES**

The categorical permission covers the installation, replacement, modification, and removal of dry utility pipes, such as fiber optic cables, subject to certain terms and conditions. The total area of disturbance must not exceed 5 acres. Utility pipes should be designed to prevent (1) flotation from uplift, (2) scour or erosion, (3) damage from debris on the waterside, particularly during flood flows, (4) leakage, (5) seepage along proposed pipes, (6) corrosion, and (7) damage from vehicular loads.

All new fiber optic, electrical and other dry utility pipes must go up and over the levee design water surface elevation (DWSE).

Pipes installed through the levee should be as close to right angles to the levee centerline as practicable.

All pipes and related structures that cross the levee foundation at a depth less than or equal to two times the height of the levee should be analyzed for uplift; pipes crossing the levee surface must be designed to counteract buoyant forces at the DWSE.

Pipe location and orientation must be clearly marked in the field so they can be easily identified for flood fighting crews or maintenance (e.g., electrical pipes).

No plastic pipes (HDPE, PVC, etc.) are allowed in the levee embankment or its foundation unless they are embedded in concrete.

Pipes that pass above the DWSE must have 2 feet of cover (low permeability or controlled low-strength material [CLSM]) to prevent damage by vehicles and equipment. Cover material on the levee crown must be placed at a ratio of 10H:1V, in the upstream/downstream direction of the levee. Pipes on the sides of the levee should be covered with a minimum of 1 foot of low permeability material, compacted in 4- to 6-inch lifts or CLSM to protect them from debris during high water (waterside) or to keep them from interfering with or being damaged by operations or maintenance of the levee (landside). Fill must be compacted to at least 90% of maximum density as determined by ASTM D 1557, between -2 and +3% of optimum moisture content. All fill must be free of organics or other inappropriate materials. At the sponsor and levee maintaining agency's discretion, pipes on the levee slopes may be left exposed.

Pipes located within or beneath a levee must have watertight joints that can accommodate movement.

If a chemical or electrochemical reaction is expected, the pipe and pipe couplings must be protected.

The preferred method for abandoning pipes that pass through or over a levee is complete removal. If removal is not feasible, the pipes and other structures may be filled with a cement/bentonite-based grout or flowable fill. The grout needs to be sufficiently fluid so that it can be pumped to completely fill the pipe leaving no voids.

## **12. FISH SCREENS**

The categorical permission covers fish screens, including drums, plates, cylindrical, cones, or other designs proposed for installation, replacement, modification, or removal on water intake pipes. Associated facilities, such as maintenance structures, walkways, and supports, may be installed, replaced, modified, or removed as well.

When possible, fish screens should be positioned in the floodway in a fashion that results in a sweeping, eddy-free flow capable of moving fish and debris along and past the facility under all flow conditions.

Screens should be durable such that no individual component will detach from the structure or substructure of the screen during high water events.

Screens must be equipped with a manual or automatic apparatus to remove sediment and debris. With either type of apparatus, screens should be periodically cleared of accumulated debris which must be disposed of outside the limits of the project easement.

If heavy debris loading is anticipated, a trash rack should be installed in front of the screen.

Screens must be designed in a way to prevent them from being hazardous to recreational activities (e.g., boating, swimming) in the vicinity of the screens. The area of construction for fish screen support facilities must not exceed one acre.

If piles must be placed in the levee or the river bank near the levee to support the fish screen structure and/or pipes, those piles must be auger cast to the bottom of the impervious layer in the levee foundation. Beyond that point, piles may be driven.

If screens are proposed for installation on existing intake pipes, the pipes must be inspected to ensure that they are in good condition prior to retrofitting.

Maintenance requirements will vary depending on the type of equipment installed, but generally will include:

- Inspection of the screen and associated structure(s) for corrosion, wear, or other deterioration
- Maintenance of mechanical components and seals, with repair or replacement, as needed
- Checking the screen cleaning system for effectiveness
- Debris and sedimentation removal
- Inspection of the area around the screen for erosion and scour

### **13. GRAVITY PIPES**

The categorical permission covers the installation, modification, replacement and removal of gravity pipes and culverts that comply with certain terms and conditions. The total area of disturbance, including staging and access areas, must not exceed 2.5 acres.

Generally, cast-in-place reinforced concrete pipes are preferable for gravity lines where considerable settlement is expected. No plastic pipes are allowed in the levee embankment or its foundation unless they are embedded in concrete or encased in a steel conduit with the annular space completely grouted.

Pipe joints must have sufficient flexibility to adjust under expected settlement and stretching of the pipe. Pipes should be designed to counteract uplift of the empty pipe at the design high water stage. If a chemical or electrochemical reaction is expected, the pipe and pipe couplings should be protected.

All new and existing gravity-flowing culverts must have a flap gate on the waterside end with provisions for positive closure (slide gate or sluice gate). The slide gate or sluice gate should be housed in a gatewell at the waterside edge of the levee crown to provide access.

Internal inspections should occur to ensure the pipes are in good condition. Video inspection of the internal condition of the pipe or pressure testing should be undertaken at least once every five years. Air valves should be tested several times a year. Valves and gates should be periodically inspected and tested to ensure they are functioning properly. If the inspection indicates corrosion, alignment sag or heave, or separation at

joints, corrective action must be taken as soon as possible. In most cases, once a pipe begins to oval or flatten at the crown or has lost more than 5% of its original interior height, it should be replaced.

Periodically, debris must be removed and corrosion or other damage on trash screens repaired.

If maintenance indicates that pipe replacement is necessary, all replacement parts must be of equivalent or better quality than those to be replaced. All repairs must restore pipes and associated equipment to the standards of the original design, or better.

#### **14. HORIZONTAL DIRECTIONAL DRILLING (HDD)**

The categorical permission covers the installation of pipes installed via HDD. In general, the entry and exit points of the HDD pipe should be located no less than 300 feet from the landside toe of the levee. The pipeline should pass no less than 50 feet beneath the levee's landside toe. If the top of the pipe is less than 50 feet beneath the current channel invert, a scour analysis is required. This analysis must show that the maximum scour depth will not expose the buried pipe. The total area of disturbance must not exceed 5 acres.

Detailed subsurface investigations should be performed along the proposed directional drilling alignment to determine soil stratigraphy. Pertinent information may also be obtained from the design documents of the flood risk management project.

Other information necessary for USACE review include:

- Pipe material (e.g., concrete, steel), length, diameter, wall thickness
- Proposed method for monitoring drilling fluids
- Proposed method for monitoring ground surface movement (settlement or heave) caused by the drilling operation

The pumping rate, pressure at the drill rig, pressure in the annular space behind the drill bit and viscosity of drilling fluid must be monitored during drilling. In addition, as appropriate, density during the pilot bore, back reaming, and/or pipe installation stages must be monitored. Drilling mud pressure in the borehole should not exceed levels that can be supported by the levee foundation soils to prevent heaving or hydraulic fracturing of the soil.

Anti-seepage devices (seepage blankets or berms) must be used to reduce the risk of piping and erosion caused by the pipeline that could undermine the levee. High seepage pressures should be dissipated with relief wells.

Positive closure devices must be included on pipes that penetrate the foundation of the levee.

A contingency plan must be submitted with the permit application and, at a minimum, include instructions for the following:

- How to contain, clean up, and repair areas subject to spills of drilling or hydraulic fluids.
- How, when, and to whom to forward evidence of impending danger to the flood risk management project.
- Who is responsible for monitoring the river stage.
- Whom to contact for all other levee-related emergency notifications.

The requester is responsible for the restoration of a levee damaged by hydrofracture or any other aspect of the directional drilling operation. Plans for restoration or repair work must be approved before the work begins.

If a drill hole beneath a levee must be abandoned, the hole should be backfilled in accordance with all appropriate technical guidance.

## **15. LANDSIDE PUMP STATIONS**

The categorical permission covers the installation, maintenance, modification, and removal of landside pump stations that comply with certain terms and conditions, particularly current USACE standards. Disturbance associated with the pump station is limited to one acre.

Whenever possible, pump stations should be located outside the levee easement. Requests to locate a pump station within the levee easement must be accompanied by a geotechnical analysis that includes a seepage analysis. The site layout should provide adequate access for maintenance vehicles to refill fuel tanks and service/replace pumps, generators, etc.

Wet wells must be designed to avoid hydraulic uplift and inlet and outlet ditches must be designed to avoid causing an underseepage threat to the levee.

All flows to the landside pump station should be screened before they reach the pump(s). Trash racks (which must be regularly cleared of debris) are the preferred method of screening.

The operation and maintenance of the pump station should ensure that (1) the pump continues to function properly and (2) that it does not pose a threat to the levee.

## **16. PRESSURIZED PIPES**

The categorical permission covers the installation, modification, replacement and removal of pressurized pipes that comply with certain terms and conditions. Particularly, all pressurized pipes must be designed and installed in accordance with current USACE standards. The total area of disturbance, including staging and access areas, must not exceed 5 acres. Pressurized pipes must also be designed to prevent, (1) flotation from uplift, (2) scour or erosion, (3) damage from debris on the waterside, particularly during flood flows, (4) leakage, (5) seepage along proposed pipes, (6) corrosion, and (7) damage from vehicular loads.

All new pressurized pipes should go up and over the levee DWSE. Pressurized pipes passing over or within the freeboard zone of a levee (i.e., above the levee DWSE), should be made of metal, preferably ductile iron or coated steel, suitable for use with flexible couplings.

Pipes that pass above the DWSE must have 2 feet of cover (low permeability or CLSM) to prevent damage by vehicles and equipment. Cover material on the levee crown should be placed at a ratio of 10H:1V, in the upstream/downstream direction of the levee. Pipes on the sides of the levee should be covered with a minimum of 1 foot of low permeability material, compacted in 4- to 6-inch lifts or CLSM to protect them from debris during high water (waterside) or to keep them from interfering with or being damaged by operations or maintenance of the levee (landside). Fill should be compacted to at least 90% of maximum density as determined by ASTM D 1557, between -2 and +3% of optimum moisture content. All fill should be free of organics or other inappropriate materials. At the sponsor and levee maintaining agency's discretion, pipes on the levee slopes may be left exposed.

Pressurized pipes passing through the levee require a positive closure device on the waterside that is accessible from the levee crown. If the invert of the pipe is over the levee crown, the combination of a pump station on the waterside and a siphon breaker is considered an appropriate means of closure. Pipes located within or beneath a levee must have watertight joints that can accommodate movements resulting from settlement.

All pressurized pipes that cross the levee foundation at a depth less than or equal to two times the height of the levee should be evaluated for uplift. Pipes crossing the surface of the levee must be designed to counteract buoyancy forces of an empty pipe at the DWSE.

Pressurized pipelines running parallel to flood risk management projects should be located at least 15 feet beyond the levee toes. Pipe location and orientation must be clearly marked in the field so they can be easily identified for flood fighting crews.

If appropriate, the requester should prepare an excavation plan demonstrating the effects of excavation on the stability of the embankments.

The site layout should provide adequate access for maintenance vehicles to refill fuel tanks and service/replace pumps, generators, etc. Pressurized pipes must also allow easy access for rapid closure in the event of leakage or rupture.

No plastic pipes (HDPE, PVC, etc.) are allowed in the levee prism or its foundation unless they are embedded in concrete.

If an electrochemical or chemical reaction between the substratum or groundwater and pipe materials is expected, the pipe and pipe couplings should be protected.

After installation of pressurized pipes, the requester must demonstrate 0% pipe leakage in pipes in the levee. Pipes must be pressure tested to industry standards. Pipes must be regularly inspected, including the interior, if possible, looking for signs of maintenance issues. If an inspection indicates corrosion, alignment sag or heave, or

separation at joints, corrective action must be taken as soon as possible to avoid failure. Pipe valves must be periodically inspected and pressure tested to ensure that they are functioning properly. Pressure tests must show no significant loss in pressure. Leaks and other deficiencies must be addressed as soon as possible. All replacement parts must be of equivalent or better quality than those being replaced.

The preferred method for abandoning pipes that pass through or over a levee is complete removal. If removal is not feasible, the pipes and other structures may be filled with a cement/bentonite-based grout or flowable fill. The grout needs to be sufficiently fluid so that it can be pumped to completely fill the pipe leaving no voids.

## **17. RESEARCH AND MONITORING**

The categorical permission covers the installation, operation, replacement and removal of scientific devices whose purpose is to measure and record data, including staff gauges, tide and current gauges, meteorological stations, water quality and chemical and biological observation devices. Piezometer installation is not covered under this alteration description. See Alteration Description 2. Borings, Explorations, and Instrumentation for piezometers.

Also covered by the categorical permission are sonar, seismic, and other acoustic surveys, including installation, operation, and removal of equipment. Monitoring and exploration for natural resources are included. Fish and wildlife harvesting, enhancement, and study activities are covered, including fyke and screw fish traps, electrofishing, and netting.

All installation and operation should be designed to minimize adverse effects to the federal project and environment. For example, floating measuring devices must be securely anchored or tethered; deployment should be for the shortest time possible to achieve the desired goal; for longer term projects/research, regular inspections are necessary to ensure that the device(s) remain serviceable and intact. A device inspection schedule and a plan for navigational aids must be provided.

Upon completion of monitoring, the measuring device(s) and any associated structures and equipment (e.g., foundations, anchors, buoys, and lines) must be removed and the site restored to pre-alteration conditions.

To prevent damage to the levees, heavy equipment (e.g., backhoes) required for research and monitoring activities is not allowed on levees when heavy rainfall has occurred or if the levee is saturated.

The requester must verify that monitoring devices and associated equipment would not disrupt overhead wires or interfere with the public's access to navigation and/or recreation.

## **18. RETAINING WALLS**

The categorical permission covers the construction, modification/repair, and removal of retaining walls, subject to certain terms and conditions. Retaining walls within the levee embankment and toe must:

- Be constructed of reinforced concrete or equivalent durable material.
- Ensure proper drainage.
- Have a foundation adequate to prevent slides.
- Meet USACE requirements for stability demonstrated by appropriate modeling (including overturning, sliding, shear failure, global slope stability failure, and soil bearing capacity).
- Be designed by a licensed civil engineer regardless of height.

Retaining walls must not reduce the existing design flow capacity or the flowage area; if the intended wall is near the waterside or landside levee toe, a detailed geotechnical evaluation may be required.

Existing retaining walls that do not meet the above requirements may need to be removed. If a determination cannot be made of the impact of an existing retaining wall on the levee by visual inspection alone, a detailed geotechnical evaluation may be required.

Any excavation of the levee for installation of the retaining wall must be backfilled with material similar to the adjacent levee in 4- to 6-inch lifts and compacted to at least the same density as the adjacent undisturbed embankment or underlying foundation.

Upon recognition of signs that the retaining wall has become unstable, repairs must be undertaken as soon as possible. If the requester wishes to remove a retaining wall, the requester should contact the non-federal sponsor for information on removal and backfilling any excavation.

## **19. SEEPAGE AND STABILITY BERMS**

The categorical permission covers the construction, modification, and removal of seepage and stability berms within the easement of the federal project. The total area of ground disturbance must not exceed 5 acres. The construction site should be cleared and grubbed to a sufficient depth to remove vegetation, roots, and soil containing roots. This material must be removed from the easement area and must not be used as fill. The resulting ground surface in the area(s) where the berm is to be located should be scarified to a depth of at least six inches or the full depth of shrinkage cracks, whichever is deeper. If soft or yielding soils are encountered during subgrade preparation, they should be scarified, moisture-conditioned, and compacted or removed by excavation to expose firm, competent soil.

Berms must be constructed of material that is as permeable as, or more permeable, than the adjacent existing ground and designed in accordance with USACE standards. Seepage and stability berms may be drained or undrained. Both berm types must be

constructed at a 2% minimum slope to drain surface water away from the berm and the levee.

Proper maintenance of berms is necessary to ensure continued competency of the berm and associated levee. For example, after each high water event, berms must be inspected for cracks, depressions, settlement and other problems in need of repair. The design grade of the berm must be maintained to ensure proper drainage and seepage/stability control. Visibility of and accessibility to the berm must be ensured by maintaining grass and other vegetation at a height of 12 inches or less. Removal of material from the berm (e.g., by agricultural activities) that may reduce the berm's ability to function as designed is prohibited. Nearby vegetation should be regularly controlled (e.g., trees with roots that may interfere with a berm's function; blown over trees can remove a section of the berm). Filter layers, when present, must be retained intact during repairs.

## **20. STAIRS AND HANDRAILS**

The categorical permission covers the installation, modification, and removal of stairs and handrails that comply with certain terms and conditions. Stairs may be made of concrete, rock, brick, or other sufficiently durable inorganic materials. Wooden or wood-based products may not be used.

Waterside stairs must be built into the levee, flush with the slope to avoid creating eddy currents in the adjoining channel. No part of the stairs or its foundation may extend deeper than 12 inches into the levee. The profile of the stairs must not protrude above the face of the slope. Handrails are not allowed on the waterside levee slope or on the levee crown.

## **21. SWIMMING POOLS**

The categorical permission covers the installation, modification, and removal of swimming pools and associated support facilities (e.g., plumbing, pool patios), subject to certain terms and conditions. The total area of permanent disturbance associated with the proposed alteration must not exceed 2000 square feet

For pools within 300 feet of the levee embankment, the requester should provide a geotechnical analysis to ensure that the pool would not pose a serious risk to the levee. A slope stability analysis and seepage analysis for both through-seepage and underseepage are also necessary. If a geotechnical investigation, slope stability or seepage analysis are not possible, the following rule of thumb is recommended: add 10 feet of lateral distance from the levee toe for each foot of depth. That is, the pool can be no deeper than 1 foot, 10 feet from the toe; 2 feet deep, 20 feet from the toe, and so on. To be conservative, use the pool's deepest depth in the calculation.

For existing in-ground landside swimming pools built within the easement area, a geotechnical analysis is required to determine whether the risks can be mitigated or

whether the pool must be removed. Pools should remain full to minimize the potential for buckling and slope failure.

Above-ground pools must not be built in the levee easement area because they can obstruct levee operations, maintenance, and flood-fighting activities.

During construction of new in-ground pools, every precaution must be taken to avoid puncturing the impervious layer which could facilitate seepage and lead to sand boils and potential levee instability.

For swimming pool removal, the non-federal sponsor must be contacted for information about removal. The area must then be restored to pre-alteration conditions, including repair of any damage to the levee.

## **22. TRAILS, ROADS AND RAMPS**

The categorical permission covers the installation, modification, and removal of trails, roads, access ramps, and associated signage, lighting, etc., within the federal project easement. In preparation for construction of roads or trails, the levee crown should not be excavated beyond minimal stripping. The stripped crown should be proof rolled to check for imperfections before placing aggregate for the trail or road subbase. If excessive rutting occurs, that part of the trail must be removed and replaced with suitable material from an appropriate borrow location. To facilitate construction, all vegetation must be removed from the levee crown to a width two feet beyond the intended trail/road width. The total area of construction for ramps must not exceed 2.5 acres in size and the total length of trails/roads must not exceed two miles and must not convert riparian habitat.

Generally trails are topped with asphalt, but other surfaces may be acceptable. The structural section of the trail must consist of a minimum of six inches of aggregate base beneath two inches of asphalt concrete pavement, or equivalent, on a well-compacted levee crown. The crown must have a minimum 2% transverse slope to drain surface water away from the levee crown. Water must not be allowed to pond at or near the levee or ramp toes.

Roads, trails, and ramps should resist levee loading or heave and be cost-effective to maintain. They should be appropriate for all intended uses by bicyclists, pedestrians, people in wheelchairs, maintenance, and flood-fighting vehicles, etc. They must be able to withstand the weight of the heaviest piece of operation, maintenance or flood-fighting equipment expected to be used on the levee.

Pavement must not cover or conceal any structures necessary for operation or maintenance of the federal project (e.g., survey monuments, valves, relief wells). If covering these components is unavoidable, approved casings must be used to allow access.

Ramps that extend from the levee toe to the levee crown should be keyed into the existing levee to create a continuous well-integrated soil mass. All areas that are keyed in should match the slope of the embankment and consist of approved material

compacted to 95% Standard Proctor per ASTM D698. Loose-lift thickness should be limited to 6 inches for all work on the levee.

### **23. UTILITY POLES**

The categorical permission covers the installation, modification, and removal of utility poles that meet certain terms and conditions. A maximum of one acre of permanent disturbance may be associated with utility poles/towers within the project easement. When there is no alternative to placing a pole within the levee embankment and/or foundation, requesters must submit a seepage and stability analysis for USACE review that supports the request. The analysis should include boring logs of the area adjacent to the proposed pole location identifying the stratigraphy.

In order to avoid vibration that can cause cracking, new poles within the levee embankment and within 15 feet of the levee toe must be installed in pre-drilled holes. After installation, the entire hole should be filled with a cement-bentonite grout slurry. The slurry should fill the hole to the surrounding ground surface. When poles are removed the holes must be backfilled with concrete or CLSM. Alternatively, the upper 2 feet may be compacted soil. Soil should be mounded immediately adjacent to the pole to direct the water away from the pole. Guy wires should be anchored with concrete. Exceptions and alternate pole installation techniques may be approved by USACE under some circumstances, but only after appropriate engineering review.

In general, 25 feet is the minimum clearance allowed between the levee crown and the lowest point of the proposed utility wire crossing.

During regular levee maintenance, ensure that:

- Poles near the levee do not deteriorate and create holes in the impervious layer.
- Poles near the levee do not lean or fall over and cause utility lines or poles to interfere with levee inspections, operations, maintenance, or flood-fighting.
- The bases of the poles are kept clear of debris.
- Any necessary supports or anchors are maintained to prevent overturning by wind or water.
- Needed repairs are completed as soon as possible.

### **24. WATER SUPPLY PUMP STATIONS**

The categorical permission covers the installation, modification, and removal of water supply pump stations and associated facilities. The total area of disturbance must not exceed one acre.

A geotechnical report that includes a seepage and stability analysis may be required. Positive closure devices are required and must be accessible from the waterside hinge point.

Operation and maintenance of the pump station should ensure that (a) the pump continues to function properly and (b) it does not pose a threat to the levee.

## **25. WELLS**

The categorical permission covers the installation and removal of wells that comply with certain terms and conditions. Specifically, wells must not be installed within 300 feet of the landside levee toe. Wells must not be installed within 15 feet of the waterside levee toe

Any structures and fencing at well sites within the floodway must not impact the hydraulic functioning of the floodway. The location and design of wells must not interfere with access or with routine operation and maintenance of the levee and channel.

Abandoned wells in the project easement should be completely grouted and sealed to eliminate physical hazards and detrimental effects to the flood risk management system. Primary sealing materials consist of cement or cement-bentonite grout placed from the bottom upward. In general, abandoned wells should be grouted and sealed following procedures established by local, state, or federal regulatory agencies.