US Army Corps of Engineers®
South Pacific Division

REGIONAL CATEGORICAL PERMISSION FOR SECTION 408 REQUESTS U.S. ARMY CORPS OF ENGINEERS SOUTH PACIFIC DIVISION

FINAL

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Acronyms

CLSM	controlled low-strength material
DWSE	design water surface elevation
EC	Engineer Circular
RCP	regional categorical permission
Section 408	Section 408 of the Rivers and Harbors Act of 1899
SPD	South Pacific Division
USC	United States Code
USACE	U.S. Army Corps of Engineers

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 Title 33 of the United States Code (USC) § 408 ("Section 408"). Section 408 authorizes the Secretary of the Army, on the recommendation of the USACE Chief of Engineers, to grant permission for the use, occupation, or alteration 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. The Commander and Division Engineer of the South Pacific Division (SPD), USACE is the approval authority for the regional categorical permission (RCP) for Section 408 requests in the SPD.

INTRODUCTION

There are numerous USACE federally authorized Civil Works projects (USACE projects) within the boundaries of the SPD (Figure 1). These projects have been federally authorized by the U.S. Congress and, for projects with a non-federal sponsor, then turned over to a non-federal sponsor to operate and maintain.

Each year the districts within the SPD receive requests through the non-federal sponsors from private, public, tribal, and other federal entities (requesters) to alter USACE projects pursuant to Section 408. Most of the requests for minor alterations are changes to an embankment or channel, such as installing irrigation pipes or horizontal directional drilling for the placement of utility lines, trails, roads, fences, and landscaping.

Alterations to USACE projects can negatively affect the federal flood risk management system. Impacts of concern including, but not limited to, increased erosion, increased seepage, decreased stability, and interference with access and visibility, can negatively affect operations, maintenance, and flood-fighting activities. Structures and other facilities that penetrate the embankment may cause other adverse effects, such as erosion of foundation or other material, cracking, or stability issues.

Many of the project descriptions for proposed alterations are similar and the effects of the alterations tend to be negligible. The current review and approval process, however, is time intensive and can take months. The purpose of this document is to establish an RCP to expedite and streamline qualifying reviews under this RCP by eliminating the need for alteration-specific public notices and review plans, and by programmatically making certain findings under the National Environmental Policy Act. Consultation under Section 106 of the National Historical Preservation Act and Section 7 of the Endangered Species Act continue to be required for all 408 Permissions.

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

Figure 1. USACE South Pacific Division area with Civil Works projects.

CATEGORICAL PERMISSION

When a district receives a request to alter a USACE project, it follows the review process outlined in Engineer 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.*[1] To simplify the review process and reduce review times, EC 1165-2-220 states that a USACE district, division, or USACE Headquarters can develop a categorical permission for potential alterations that are similar in nature and have similar effects on a USACE Civil Works project or on the environment. The USACE Director of Civil Works has extended the use of EC 1165-2-220 until the Section 408 policy is published in the Code of Federal Regulations.[2]

The environmental effects associated with implementing the RCP will be analyzed and documented in a Programmatic Environmental Assessment expected for public release in Spring 2025.

[1] https://www.publications.usace.army.mil/Portals/76/Publications/EngineerCirculars/EC_1165-2-220.pdf?ver=2018-09-07-115729-890

[2] https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/6583

GEOGRAPHIC AND TEMPORAL SCOPE OF THE REGIONAL CATEGORICAL PERMISSION

The SPD's area of responsibility covers a wide geographic area and includes Arizona, California, New Mexico, and portions of Colorado, Idaho, Nevada, Oregon, Texas, Utah, and Wyoming (Figure 1). The geographic scope of the RCP applies to USACE Albuquerque, Los Angeles, Sacramento, and San Francisco District federal projects. The RCP does not apply to any USACE-owned reservoir or lake projects, only to federal embankment, channel, and coastal alteration projects. If approved, the RCP will apply for a period of 5 years, after which time it may be renewed or revised, as appropriate. While there is a definite plan for a comprehensive review of the RCP at 5 years, nothing precludes the USACE from reevaluation after a shorter time if conditions warrant.

REGIONAL CATEGORICAL PERMISSION ALTERATIONS

This RCP encompasses alterations that are similar in nature and would have similar impacts. They are representative of the types of alterations and associated impacts that have been approved previously under Section 408. The descriptions and criteria used to determine validation under the RCP have been coordinated with the USACE Regulatory Division to ensure consistency between similar permitting actions.

For an alteration to be approved under this RCP, the proposed project must align with the predefined alteration descriptions (see "List of Alterations"), have no disqualifying circumstances (see "Disqualifying Circumstances"), and comply with standard engineering and environmental conditions as applicable (see "Conditions"). Requesters are encouraged to engage in pre-application meetings with their USACE District, non-federal sponsors, and any other stakeholders that may have an interest in the proposed alteration. All Section 408 RCPs require a statement of no objection and review by the non-federal sponsor prior to submitting the request to USACE. Figures 2 and 3 illustrate common terms used throughout the alteration descriptions.

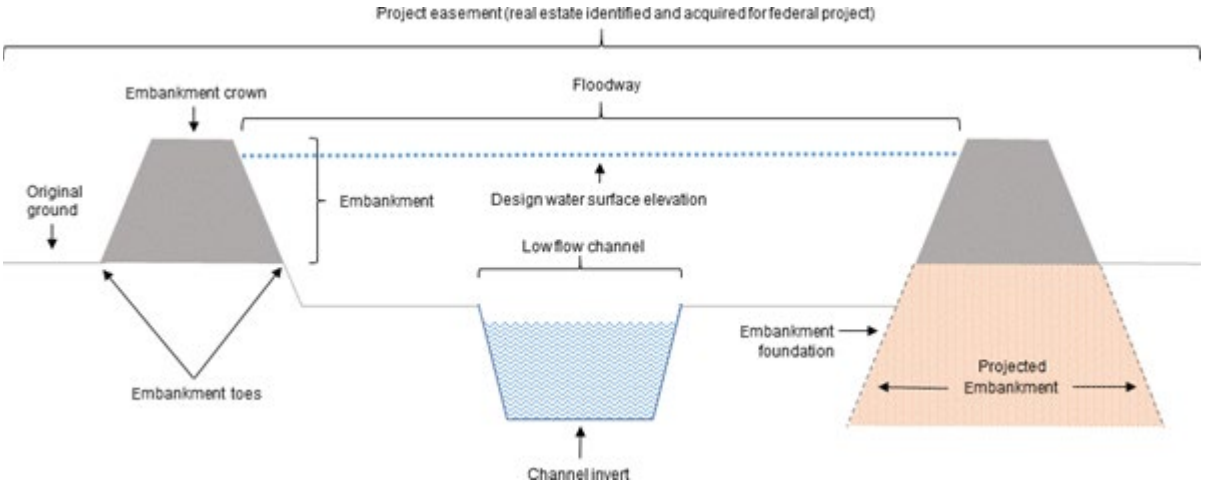

Figure 2. Illustration of common terms for federal projects.

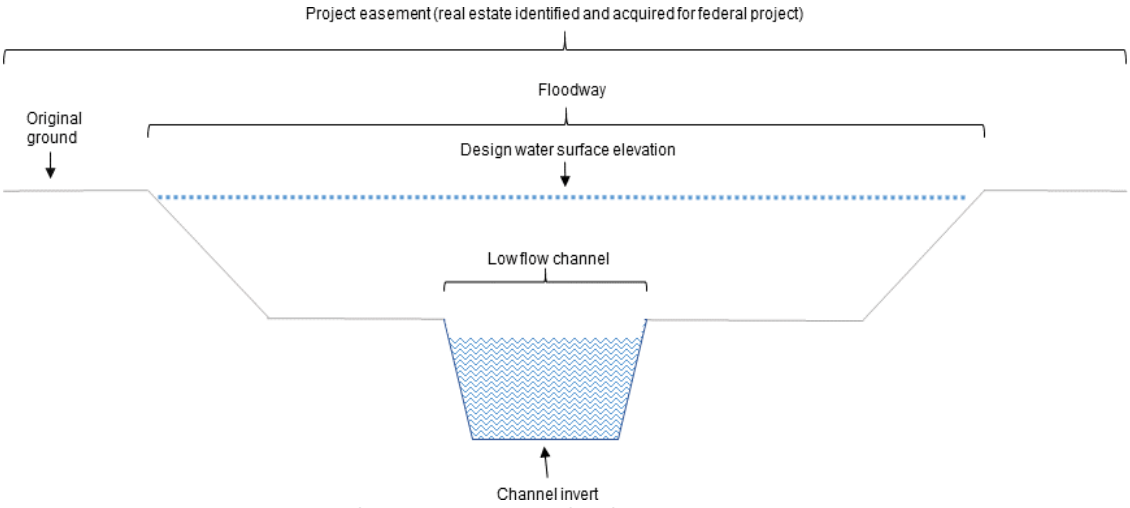

Figure 3. Illustration of common terms for federal project channels.

A proposed project may combine multiple categories of alterations based on the project description and still be eligible. For example, a project proposing construction of a maintenance shed with fence and utility pole could use RCP alterations 6, 11, and 24 (see "List of Alterations"). Within the overall project, each individual alteration type must adhere to the size limitations for that specific type and the project's total area must not exceed the size limit of the largest alteration. Proposed alteration requests that do not qualify for Section 408 permission under this RCP will be reviewed and a decision made based on either the single-phased or multi-phased review process, as described in EC 1165-2-220.

REGIONAL CATEGORICAL PERMISSION ALTERATION DESCRIPTIONS

The proposed RCP would encompass the following types of alterations:

1. Agriculture and Landscaping

The RCP covers a variety of standard agricultural and landscaping activities associated with site improvements, including animal grazing, installation of temporary and permanent irrigation lines, site grading, landscaping associated with existing buildings and structures, orchard installation and cultivation, and planting and cultivation of row crops. The total area of work for the proposed alteration must not exceed 350 acres for agricultural activities or 5 acres for landscape activities. Coverage for agricultural activities under the RCP is limited to work on land previously used for agriculture (fallow fields, row crops, and so forth) and does not cover conversion to cultivated land.

Animal grazing is not allowed during periods of prolonged rain. No livestock are permitted to be penned or corralled on a levee. No sheds, structures, or troughs are allowed on a levee embankment or within 15 feet of the toe of the landward most flood risk management structure. Grazing practices must be discontinued if there is excessive damage to a 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 toe.

The USACE may request that noncompliant vegetation as well as all roots more than a one-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 4–6-inch lifts to at least the same density as the adjacent undisturbed soil.

2. Beach Nourishment

The RCP covers the placement of suitable fill material on or in the near-shore environment. Fill material must be placed to stabilize coastal shorelines on eroding beaches or on beaches where USACE-accepted models predict erosion. The maximum cubic volume of material depends on various factors, including the extent of erosion and wave energy. Engineering modeling and designs must be performed to illustrate the cross-sectional area of the beach or dunes, ensuring they can withstand storm surges and wave action. Use of surplus sand from upland construction, development, or dredge projects would be allowed if grain sizes are consistent with existing material. Conventional earth-moving equipment must be used to spread the nourishment material.

3. Soil Investigations, Borings, Explorations, and Instrumentation

The RCP covers exploratory activities, geotechnical and similar borings, and instrumentation. Work may be conducted within the embankment, adjacent to the toe, in the floodway, or in lined channels. Borings and explorations may include but are not limited to cone penetration testing, conventional geotechnical borings, cultural inventories, hydrovac excavation, potholing, and trenching. Installation of instrumentation such as piezometers or inclinometers and associated equipment used to monitor or test the embankment or floodway would be included in this type of alteration.

Borings in the levee, embankment, or the embankment foundation would require a Drilling Program Plan in accordance with Engineer Regulation 1110-1-1807, *Drilling and Invasive Activities at Dams and Levees*, as part of the technical review of the proposed alteration.

All drilling should be designed to minimize the need for drilling fluid in the embankment or the embankment 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. In preparation for unexpected river stage increases, the requester must ensure borehole sealing materials and equipment are on-hand at the site before drilling begins.

Open boreholes and excavations must be covered when personnel leave the site at the end of each day, and all open boreholes should be sealed before personnel leave the construction site at the end of a work week.

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

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

4. Borrow Areas

The RCP 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, pipeline, or cable crossing beneath the channel, riverbank, or water control structure (e.g., a weir).

A minimum distance of 300 feet is required between the borrow area and levee toe. Borrow sites authorized under this RCP may not exceed 5 acres in size. A geotechnical investigation is required before any borrow activity can be initiated within the federal project easement.

If the borrow material will be used to build or modify a levee, it 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 three-to-one, horizontal-to-vertical ratio side slopes 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 adequate thickness of impervious layer, and (4) environmental considerations. In locations where the seepage gradients are critical, the impervious layer thickness, determined by geotechnical analysis, should be left at the bottom of the borrow area.

Soils exhibiting hazardous or toxic characteristics, even if they are naturally occurring, must not be used for borrow material. Areas with known historic or cultural resources must not be used for borrow material.

Borrow areas should be located far enough 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 levee easements;
- In a manner potentially destabilizing to the riverbank;
- Within the active channel of the river during flood season; or
- So as to impede access to the levee.

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

5. Bridges

The RCP covers alterations that include modification, new construction, and replacement of pedestrian, bicycle, equestrian, railroad, or vehicular bridges and actions that are similar in nature. This alteration also includes bridge widening and pier nose extensions. Construction, modification, and rehabilitation

may occur on the approach to the bridge, adjacent to, or within, lined channels. The total area of ground disturbance must not exceed 15 acres.

Bridge design, construction, and operation 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.

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

The requester must prepare a scour analysis if the alteration proposes bridge structures in the channel as well as a slope stability analysis for USACE review and approval of any proposed 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 or cast-in-drilled-hole to the bottom of the impervious layer.

Analysis of debris loading is required for piers and piles. Bents and piers may be equipped with debris deflectors.

Survey control points installed along the levee crown prior to construction may be necessary. They 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 replacement is planned, 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.

6. Buildings and Other Structures

This RCP covers the construction and modification of buildings and other structures, such as artwork, raptor perches, owl boxes, decks, patios, solar arrays, and diversion structures, along with associated work, such as minor landscaping, within the federal project easement. The maximum area of construction must not exceed 5 acres. Structures must be constructed in previously disturbed areas and must not convert native habitat. Buildings and similar structures authorized under this RCP must not be used for human habitation. Modifications to existing buildings can be allowed if the habitable area of the structure is not increased.

New buildings within the levee embankment are not included in this RCP. For buildings outside the levee embankment, but within 300 feet of the levee (typically located on the waterside), 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 a depth of 1 foot; at 20 feet from the toe, a depth of 2 feet, and so on. A geotechnical analysis is not needed if the building is constructed on fill.

If for any reason an existing building or structure is cumulatively damaged to more than 50 percent of its market value, the building or structure may not be reconstructed or replaced without the approval of the non-federal sponsor if there is a non-federal sponsor for the project. 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 timeframe and the area restored to pre-building conditions so that there is no interference with the flood risk management project's function, inspection, operation, or flood fighting.

Following removal, the area must be restored to pre-building conditions by filling any holes 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.

7. Ditches and Canals

The RCP covers the construction, fill, and modification of ditches and canals that meet certain terms and conditions. All ditches must be located outside the projected embankment. Ditches and canals may be a maximum length of 1,000 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. Embankments must meet requirements of Engineer Manual 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 that is not possible, the ditch must be lined with concrete. The concrete should be placed on a drainage layer to prevent it from cracking from 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 obstructed 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 and 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 4–6-inch lifts with compacted material similar to the adjacent soil. The requester is responsible for repairing any damage to the embankment caused by removal of the ditch.

8. Docks

The proposed RCP covers the debris boom, floating dock structure, gangways, landing structures, and small amounts of riprap associated with boat docks. The maximum dock size (including floating platform, gangway, and any associated covers) for both replacement of existing structures and new structures is 2,000 square feet. No part of the floating platform or pilings may penetrate the levee or be

within 15 feet of the waterside levee toe or placed in the navigation channel. 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 2 feet taller than the levee crown to prevent the dock from floating off its pilings during a high-water event. There are no restrictions on piling depth provided the pilings do not penetrate the projected levee embankment and a geotechnical seepage analysis is prepared for pilings expected to penetrate the impervious layer 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, nonreactive material. Creosote-coated materials 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 nonreactive product (e.g., epoxy or wood); flotation devices must be made of materials that will not disintegrate, such as closed-cell, foam-encapsulated, sun-resistant polyethylene or plastic.

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

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

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

If levee or bank erosion damaging to the levee occurs at or adjacent to the dock, the eroded area must be repaired with adequate bank protection to prevent further erosion.

Dredging within a federal navigation channel (including areas within authorized boundaries and any established setbacks) incidental to installation, maintenance, or removal of docks, other water based structures (including mooring buoys, dolphins, boat hoists, and boat storage), protective structures (including seawalls, fenders, and piles), and aids to navigation to previously authorized depth of the channel or controlling depths necessary for ingress/egress, whichever is less. The total disturbance area for dredging activities specifically must not exceed 4,000 square feet.

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

9. Environmental Restoration

The RCP covers a variety of restoration activities, including placement of spawning gravels in active stream channels and adjacent floodways, planting of native vegetation (forbs, grasses, shrubs, or trees), and restoration and enhancement of ponds, stream channels, and wetlands. Stream and wetland restoration activities may include installation, modification, or replacement of small, non-federal water control structures (e.g., dikes and berms); modification of stream beds or banks; and other activities. Any plantings on or near a levee must meet the standards outlined in Engineer Technical Letter 1110-2-583, *Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures*. The total area must not exceed 500 acres for non-channel restoration activities or 5,000 linear feet for channel restoration activities.

10. Erosion Control

The RCP covers a variety of erosion control activities, including bank stabilization, erosion control features, repairs, and actions 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 design water surface elevation (DWSE). The maximum area of construction is 2,000 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 the rock type and quality for proposed erosion control are being determined:

- Asphalt and other petroleum-based products, floatable, or refuse material must not be used for erosion control on a levee or within a floodway.
- Riprap should be sound and durable and free of cracks, seams, shale parting, and soil material. The rocks should be angular, blocky, and relatively free of thin slab-like pieces. Deleterious substances, including soft and friable particles, should be minimized in erosion control measures. Gravel, up to 3 inches in size, is allowed but should be limited. Inappropriate materials, such as vegetation and other foreign matter, must also be minimized. The total amount of deleterious substances, friable particles, gravel, vegetation, and foreign matter should not exceed 5 percent of the overall 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 and 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; or
- Vegetation is interfering with inspection of the erosion control.

11. Fences, Gates, and Signage

The RCP covers the installation, modification, and replacement 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, or 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 where appropriate. 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 levee crown.

When required by the USACE, the 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.

12. Fiber Optic and Dry Utility Pipes

The RCP covers the installation, modification, and replacement of dry utility pipes, such as fiber optic cables, subject to certain terms and conditions including periodic inspections to ensure USACE requirements are met. The total area of disturbance must not exceed 5 acres. Utility pipes should be designed to prevent (1) flotation from uplift; (2) scour and 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 installed by open trench methods must go up and over the levee DWSE.

Pipe installation 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 (e.g., high-density polyethylene [HDPE] or polyvinyl chloride [PVC]) are allowed in the levee embankment or its foundation unless they are embedded in concrete.

Backfill under and around the proposed pipe (to 1 foot) must be controlled low-strength material (CLSM). 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 must be placed at a 10-to-1, horizontal-to-vertical ratio 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 4–6-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 free of deleterious materials and construction debris and placed in 4–6-inch-thick loose lifts and compacted to not less than 95 percent of the maximum density at moistures between 2 percent less and 3 percent more than optimum moisture content obtained from ASTM D698, *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort* (the USACE preferred method) or, alternately, 90 percent of the maximum density at moistures between 2 percent less to 3 percent more than the optimum moisture content obtained from ASTM D1557, *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort*. At the discretion of the non-federal sponsor and levee maintaining agency, pipes on the levee slopes may be left exposed.

Only suitable material must be used as levee fill materials. Fill must be free of roots and other organic matter, contaminated hazardous and toxic material, debris, frozen materials, and trash. Satisfactory fill material must have a plasticity index between 8 and 25, a liquid limit less than 45, a minimum fines content of 20 percent, and 100 percent passing the 3-inch sieve.

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 it can be pumped to completely fill the pipe, leaving no voids.

13. Fish Screens

The RCP covers fish screens, including cones, cylinders, drums, plates, and other designs, proposed for installation, modification, or replacement on water intake pipes. Associated facilities, such as maintenance structures, supports, and walkways, may be installed, modified, or replaced as well. The area of construction for fish screen support facilities must not exceed 5 acres.

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

Screens should be durable so 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 to prevent them from being hazardous to recreational activities in the vicinity of the screens (e.g., boating and swimming).

If piles must be placed in the levee or the riverbank near the levee to support the fish screen structure 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 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; and
- Inspection of the area around the screen for erosion and scour.

14. Gravity Pipes

The RCP covers the installation, modification, and replacement 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 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.

Backfill under and around the proposed pipe (to 1 foot) must be CLSM.

Suitable material must be used as levee fill materials. Fill must be free of roots and other organic matter, contaminated hazardous and toxic material, debris, frozen materials, and trash. Satisfactory fill material must have a plasticity index between 8 and 25, a liquid limit less than 45, a minimum fines content of 20 percent, and 100 percent passing the 3-inch sieve.

Fill must be free of deleterious materials and construction debris and placed in 4–6-inch-thick loose lifts and compacted to not less than 95 percent of the maximum density at moistures between 2 percent less than and 3 percent more than the optimum moisture content obtained from ASTM D698 (the USACE preferred method) or, alternately, 90 percent of the maximum density at moistures between 2 percent less than and 3 percent more than the optimum moisture content obtained from ASTM D1557.

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 must 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 must be conducted 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 5 years. Valves and gates should be periodically inspected and tested to ensure they are functioning properly. If the inspection indicates alignment sag or heave, corrosion, 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 percent of its original interior height, it should be replaced.

Periodically, debris must be removed and corrosion and 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 or better than the original design.

15. Horizontal Directional Drilling

The RCP covers the installation of pipes installed via horizontal directional drilling. In general, the entry and exit points of the horizontal directional drilling 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 or federal channel depth. If the top of the pipe is less than 50 feet beneath the current channel invert, a scour analysis is required demonstrating that the maximum scour depth will not expose the buried pipe. The total area of disturbance must not exceed 15 acres.

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

Other information necessary for USACE review include:

- Pipe diameter, length, material (e.g., concrete and steel), and wall thickness;

- Proposed method for monitoring drilling fluids; and
- 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, 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.

Positive closure devices must be included on pipes that carry liquids and gases and 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 and 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 hydrofracturing or any other aspect of the directional drilling operation. Plans for restoration and 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.

16. Landside Pump Stations

The RCP covers the installation, modification, and replacement of landside pump stations and associated facilities that comply with certain terms and conditions, particularly current USACE standards. Disturbance associated with the pump station is limited to 5 acres.

Whenever possible, pump stations should be located outside the levee easement. Requests to locate a pump station within 15 feet of the levee toe 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 and replace pumps, generators, and so forth.

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 are the preferred method of screening and must be regularly cleared of debris.

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

17. Pressurized Pipes

The RCP covers the installation, modification, and replacement of pressurized pipes. 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 also must 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.

Backfill under and around the proposed pipe (to 1 foot over) must be CLSM. 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 must be placed at a 10-to-1, horizontal-to-vertical ratio 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 4–6-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 free of deleterious materials and construction debris and placed in 4–6-inch-thick loose lifts and compacted to not less than 95 percent of the maximum density at moistures between 2 percent less than and 3 percent more than the optimum moisture content obtained from ASTM D698 (the USACE preferred method) or, alternately, 90 percent of the maximum density at moistures between 2 percent less than and 3 percent more than the optimum moisture content obtained from ASTM D1557. At the discretion of the non-federal sponsor and the levee maintaining agency, pipes on the levee slopes may be left exposed.

Only suitable material must be used as levee fill materials. Fill must be free of roots and other organic matter, contaminated hazardous and toxic material, debris, frozen materials, and trash. Satisfactory fill material must have a plasticity index between 8 and 25, a liquid limit less than 45, a minimum fines content of 20 percent, and 100 percent passing the 3-inch sieve.

Pressurized pipes terminating in the channel require a positive closure device on the waterside that is accessible from the levee crown. Pressurized pipes transporting product completely across or through the federal project easement require positive closure devices located landward of any levees and channel. The positive closure device shall be located within 1 mile on both sides of the federal project. 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, with water at the DWSE.

Pressurized pipelines running parallel to flood risk management projects should be located at least 15 feet beyond the levee toe. 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 and replace pumps, generators, and so forth. Pressurized pipes also must allow easy access for rapid closure in the event of leakage or rupture.

No plastic pipes (e.g., HDPE or PVC) are allowed in the levee embankment 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 must be protected.

After installation of pressurized pipes, the requester must demonstrate zero percent 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 alignment sag or heave, corrosion, 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 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.

18. Research and Monitoring

The RCP covers:

- Installation, operation, and replacement of devices whose purpose is to measure and record data, including meteorological stations, staff gauges, tide and current gauges, and wet weather, water quality, and chemical and biological observation devices.
- Sonar, seismic, and other acoustic surveys, including installation, operation, replacement, and removal of equipment.
- Monitoring and exploration for natural resources.
- Fish and wildlife harvesting, enhancement, and study activities are covered, including electrofishing, fyke and screw fish traps, and netting.

Piezometer installation is not covered under this alteration description. See “3. Borings, Explorations, and Instrumentation” for information on piezometers.

All installation and operation should be designed to minimize adverse effects on 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; and, for longer term projects and 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 or recreation.

19. Retaining Walls, Seawalls, and Other Wall Structures

The RCP covers the construction, modification/repair, and replacement of retaining walls, seawalls, and other wall structures. Any of these structures within the levee embankment and toe must meet the following criteria:

- 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.

Walls must not reduce the existing design flow capacity or the flowage area. Walls must resist wave action elevated by storm surge. If the intended wall is near the waterside or landside levee toe or where landward protection is warranted, a detailed geotechnical evaluation may be required.

Existing wall structures 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 or of a seawall where a high level of landward protection is warranted, 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 4–6-inch lifts and compacted to at least the same density as the adjacent undisturbed embankment or underlying foundation.

Excavation in and around wall structures must be backfilled with material similar to adjacent structures in 4–6-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, seawall, or other wall structure has become unstable, repairs or removal must be undertaken as soon as possible. If the requester wishes to remove a retaining wall, seawall, or other wall structure, the requester should contact the non-federal sponsor for information on removal and backfilling any excavation.

20. Seepage and Stability Berms

The RCP covers the construction, modification, and replacement of seepage and stability berms within the easement of the federal project. The total area of ground disturbance must not exceed 10 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 6 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 percent 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 and blown over trees can remove a section of the berm). Filter layers, when present, must be retained intact during repairs.

21. Stairs and Handrails

The RCP covers the installation, modification, and replacement of stairs and handrails that comply with certain terms and conditions. Stairs must be made of brick, concrete, rock, or other sufficiently durable inorganic material. Wooden or wood-based products must not be used.

Waterside stairs must be built into the levee, flush with the slope to avoid creating eddy currents in the adjoining channel. 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.

No part of the stairs or their foundation may extend deeper than 12 inches into the levee.

22. Swimming Pools

The RCP covers the installation, modification, and replacement of swimming pools and associated support facilities (e.g., plumbing and pool patios), subject to certain terms and conditions. The total area of permanent disturbance associated with the proposed alteration must not exceed 1 acre.

For pools within 300 feet of the landside levee embankment toe or berm toe, 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 also are necessary. If a geotechnical investigation, slope stability analysis, or seepage analysis is 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, at 10 feet from the toe, the pool can be no deeper than 1 foot; at 20 feet from the toe, 2 feet deep; 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.

Aboveground 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 the process. The area must then be restored to pre-alteration conditions, including repair of any damage to the levee.

23. Trails, Roads, and Ramps

The RCP covers the installation, modification, and replacement of access ramps, roads, trails, and associated paving, lighting, signage, and so forth within the federal project easement. In preparation for construction of roads and 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 2 feet beyond the intended trail or road width. The total area of construction for ramps must not exceed 5 acres and the total length of trails or roads must not exceed 5 miles.

Generally, roads and trails are topped with asphalt, but other surfaces also may be acceptable. For roads and trails on the levee crown, the structural section must consist of a minimum of 6 inches of aggregate base beneath 2 inches of asphalt concrete pavement or equivalent. The crown must have a minimum 2 percent transverse slope to drain surface water away from the levee crown. Water must not be allowed to pond at or near the levee.

Ramps, roads, and trails 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, flood-fighting vehicles, and so forth. They must be able to withstand the weight of the heaviest piece of flood-fighting, maintenance, or operation 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, and 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. Ramps must be designed to drain water away from the

levee embankment. All areas that are keyed in should match the slope of the embankment and consist of approved material compacted to 95 percent of the maximum density at moistures between 2 percent less than and 3 percent more than the optimum moisture content obtained from ASTM D698 (the USACE preferred method) or, alternately, 90 percent of the maximum density at moistures between 2 percent less than and 3 percent more than the optimum moisture content obtained from ASTM D1557. Loose-lift thickness should be limited to 6 inches for all work on the levee.

24. Utility Poles

The RCP covers the installation, modification, and replacement of utility poles that meet certain terms and conditions. A maximum of 5 acres of permanent disturbance may be associated with utility poles and towers within the project easement. When there is no alternative to placing a pole within the levee embankment 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.

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 predrilled holes. After installation, each 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 the 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, maintenance, operations, or flood fighting;
- The bases of the poles are kept clear of debris;
- Any necessary anchors or supports are maintained to prevent overturning by wind or water; and
- Needed repairs are completed as soon as possible.

25. Water Side Pump Stations

The RCP covers the installation, modification, and replacement of pump stations and associated facilities. The total area of disturbance must not exceed 5 acres.

A geotechnical report that includes 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 (1) the pumps continue to function properly and (2) it does not pose a threat to the levee.

26. Wells

The RCP covers the installation 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 new surface area of a concrete pad must not exceed 200 square feet.

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 on the flood risk management system. Primary sealing materials consist of cement or cement-bentonite grout placed from the bottom upward. In general, abandoned wells must be grouted and sealed following procedures established by federal, state, and local regulatory agencies.

DISQUALIFYING CIRCUMSTANCES

Use of this RCP is disqualified by any of the following conditions:

- The alteration could not be decided at the USACE district level.
- The alteration is controversial or known to have considerable public or tribal interest.
- The alteration would result in a direct or indirect cause for jeopardy to a species that is listed or proposed for listing.
- The alteration would result in a loss of sensitive habitat or a net loss in riparian habitat.
- The alteration would exceed federal *de minimis* air quality standards.
- The alteration would construct a new structure for human inhabitation.
- The alteration would adversely impact a public use facility.
- The alteration proposes development in the floodplain.

ENGINEERING AND ENVIRONMENTAL CONDITIONS FOR APPROVAL

To qualify for this RCP, the alteration must meet the following engineering and environmental conditions. Proposed alterations that do not meet all these conditions will be evaluated under the single-phased or multi-phased review process as described in EC 1165-2-220. The USACE may impose project-specific conditions in addition to the conditions below.

Engineering Conditions

ENG-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.

ENG-2. If an alteration would affect the hydraulic capacity of the floodway whatsoever, the requester must prepare a blockage calculation (detailed below) or hydraulic analysis for review in accordance with current USACE guidance.

ENG-3. Construction or other work in the floodway cannot take place during the flood season unless approved in writing by the non-federal sponsor.[3]

ENG-4. No equipment, stockpiles of materials, temporary buildings, or temporary staging can remain on the levee or in the floodway during flood season unless written approval has been obtained by the non-federal project sponsor.

ENG-5. Construction or other work must be coordinated with other work in the area.

ENG-6. Drilling and excavations must meet federal, state, and local criteria; USACE standards; and USACE Safety and Occupational Health Office standards.

ENG-7. The requester is responsible for the removal and disposal of trees or brush cleared during construction. Removal and disposal must be to areas outside the limits of the federal project easement.

ENG-8. The requester is responsible for protecting the embankment from damage by construction activities, construction vehicles, equipment, and storage of materials.

ENG-9. All fill material used on embankment slopes or the crown must be acceptable cohesive material (Unified Soil Classification System CL, CL-ML, or SC)[4] and free of organics or other materials harmful to the embankment.

ENG-10. The proposed alteration should be backfilled under and around with CLSM. Backfill above the alteration should consist of CLSM or suitable material compacted in 4– to 6-inch lifts, unless otherwise specified by USACE.

ENG-11. All structures, facilities, related equipment, and other appurtenances must be securely anchored or tethered to prevent flotation within the floodway during high water.

ENG-12. All agencies and companies with existing utilities in the proposed construction area(s) must be contacted to determine if relocation of or modification to accommodate the proposed alteration is needed or whether those utilities pose a hazard to construction workers or equipment.

ENG-13. Necessary property rights must be acquired for the construction, operation, and maintenance of the alteration.

ENG-14. Disturbed areas must be restored to preconstruction conditions once the alteration construction work is complete.

ENG-15. The Section 408 request must include:

- Construction drawings showing details of all proposed activities within the project easement area, including any excavation details.
- A cross section of the embankment or channel affected by the proposed alteration and associated appurtenances.
- A plan view of the existing Civil Works project features overlaid with the proposed alteration.

ENG-16. Any damage caused by removal or modification of any alteration must be repaired as part of the removal or modification activity.

[3] For information on what is considered the flood season for a particular location, the 408 Coordinator for the USACE district with jurisdiction over the area should be contacted.

[4] https://dot.ca.gov/-/media/dot-media/programs/maintenance/documents/office-of-concrete-pavement/pavement-foundations/uscs-a11y.pdf

ENG-17. The preferred method for abandoning alterations is complete removal.

Blockage Calculation Procedures

All proposed alterations on the waterside of the embankment and in the channel need to be assessed for hydraulic impacts. The district's Hydraulic Analysis staff will review blockage calculations greater than or equal to 1 percent and provide a Memorandum for Record. The district 408 Coordinator will initiate a hydraulic review and prepare documentation for blockage calculations less than 1 percent that are not based on hydraulic model geometry cross sections.

Blockage calculations must include the effects of the blockage itself and any expected debris caught by the alteration, as detailed in the USACE screening and analysis procedures for hydraulic impacts. The appendix to this document outlines the procedures for calculating RCP blockages. It specifies the level of screening and analysis that non-federal sponsors should include in Section 408 requests sent to the USACE for review under the RCP.

Environmental Conditions

ENV-1. Previously disturbed areas must be used to access the proposed alteration site as much as practicable, such as existing access ramps, driveways, the levee crown, or roads.

ENV-2. Upland areas should be temporarily cleared to the minimum extent practicable. Preference should be given to already developed or disturbed areas before siting staging and stockpiling in an area that needs to be cleared.

ENV-3. If vegetation must be removed, minimize the amount of vegetation taken out. Restore disturbed areas with native vegetation to the extent practicable.

ENV-4. The removal and disposal of excess construction material must be done outside the boundaries of the federal project easement.

ENV-5. Proposed alterations must be designed to minimize the introduction of exotic animal and plant species and only seed mixes of native species approved by the local sponsor shall be used in site restoration.

ENV-6. Proposed alterations must incorporate best management practices that meet federal, state, and local criteria to control stormwater runoff, erosion, and contaminant spills (e.g., diesel fuel spills).

ENV-7. If an environmental spill occurs, the requester must notify the USACE, the non-federal sponsor, and the appropriate state agency immediately. The requester is responsible for any cleanup and repair.

ENV-8. If artifacts or other culturally sensitive materials are found during excavation, work must stop immediately and the USACE and the non-federal sponsor must be notified.

ENV-9. Landowner permission and any other applicable federal, state, and local permits must be secured before work can begin.

ENV-10. To avoid effects to migratory birds, and bald and golden eagles, the requester shall perform biological pre-construction surveys and avoid vegetation removal during the primary nesting season. The requester is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

IMPLEMENTING REGIONAL CATEGORICAL PERMISSION

The process for reviewing individual alteration requests under the RCP:

1) Alteration Request:

a) The requester must provide justification for the RCP.
b) The USACE district will review and verify the alteration is covered under the RCP and identify additional information required to process the request.
c) The USACE district will notify non-federal sponsors if an application from a private developer or other entity is received for a project managed by a non-federal sponsor. A signed statement of no objection is required from the non-federal sponsor.

2) Technical and Environmental Reviews:

a) The USACE district will complete all necessary and applicable reviews.
b) This includes initiating any required consultations.

3) Validation

a) The 408 Coordinator will complete the *Section 408 Validation of Categorical Permission Memorandum*, including supporting technical review memoranda as needed.
b) If approved, the decision-making authority will sign the *Section 408 Validation Memorandum* and the *Decision Letter* for the individual alteration request.
c) Requirements resulting from Section 7 of the Endangered Species Act, Essential Fish Habitat or National Historic Preservation Act consultations, or other consultations required under applicable federal law, will be included to the validation of this categorical permission.

DISTRICT COMMANDER DECISION

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

James J. Handura, PMP
Colonel, U.S. Army
Commander and Division Engineer

3/28/25

Date approved

APPENDIX

REGIONAL CATEGORICAL PERMISSION BLOCKAGE CALCULATION PROCEDURES

The purpose of this appendix is for the U.S. Army Corps of Engineers (USACE) to clarify the level of screening and analysis that non-federal sponsors should be including on Section 408 requests covered under the regional categorical permissions sent to the USACE for review. Ensuring that the requested analysis is included in the alteration request when appropriate will facilitate USACE's review of the hydraulic impacts of requested alteration permissions. The USACE requests the information described below to more accurately reflect the possible conditions at a proposed alteration location.

There are two different levels of calculations that may be required:

1. Screening (blockage calculation) and
2. Analysis (such as 1-D hydraulic modeling).

For any encroachment on the waterside of the levee, a preliminary (screening) hydraulic blockage calculation (blockage) should be provided. The blockage is calculated as a percentage by dividing the blockage area by the total cross-sectional area of the floodway conveyance up to the design water surface elevation (DWSE) or discharge elevation at the encroachment location. The resultant percentage is used to identify the information the USACE requires for review as follows:

1. **Screening.** If the blockage screening calculation indicates a floodway conveyance blockage of less than 1% at the design discharge, typically no additional analysis will be required.

   The blockage screening calculation should be done at the critical cross-section for flow within the requesters proposed encroachment area. The critical cross- section is defined as the cross-section with the minimum hydraulic conveyance when considering both the encroachment blockage and the channel cross-sectional area. In other words, the critical cross-section is the location where the calculated blockage percentage is the greatest. If it is not clear which cross-section is critical, blockage calculations should be made at other possible locations, upstream and downstream, before selecting the critical cross section location.

2. **Analysis.** If the blockage screening calculation indicates a conveyance blockage of more than 1%, then a hydraulic analysis will be required. The Hydrologic Engineering Center-River Analysis System (HEC-RAS) program is the preferred one-dimensional analysis tool. UNET will no longer be accepted as it is an outdated program. There is no preferred program for two-dimensional hydraulic analysis. A hydraulic summary document should be provided with all hydraulic analyses including assumptions, engineering parameters, references, tabulated results, and plots. In addition, the hydraulic model files should be provided. Both the existing condition and proposed condition should be contained in a single model run at the design flow. Requesters should consider blockages as discussed in the following sections in the hydraulic analysis calculations and provide logic for debris assumptions.

Blockage calculations at the project location, for either screening or analysis, should include the effects of both physical blockage and assumed blockages for debris. The following is some guidance on how to calculate the blockage:

1. Effects of physical blockage.

a. Vertical elements in line and parallel to the direction of flow should be included in the blockage calculation as a single element. For vertical elements that are skewed to the direction of flow, the blockage calculation must include the area of each element. Note that vessels need not be included in the blockage calculation because they are not permanent structures (Figure 1).

b. For the submerged portion of any floating element of the proposed encroachment (for example, the draft of a floating dock or platform), if the depth of submergence cannot be estimated, use 75% of the full height of the floating element (Figures 4 and 5).

c. Any authorized rip-rap layer placed (or replaced) that is above existing grade or any other modification that increases the existing ground surface elevations should be included in the blockage calculation. Authorized rip-rap includes, but is not limited to, previously permitted rip-rap, rip-rap present in the project files and rip-rap required by the Operations and Maintenance Manual.

2. Effects of debris build-up.

a. Debris is likely to collect on vertical elements in the floodway and block more than just the surface area of the vertical element. For vertical elements, such as piles, double the width of the element extending down 2-feet below the DWSE (Figure 2).

b. When vertical elements are close together, debris can get caught on both and block the entire area between the elements. For vertical elements with less than 10-feet clearance between them, assume the area between the elements is completely blocked (Figure 3).

c. If a horizontal element is close to the debris floating near the water surface during a flood, the debris can get caught and block portions of the floodway. If a horizontal element is within 2-0feet of the DWSE, two feet of debris blockage should be added for the length of blockage within two feet of the DWSE (Figures 4 and 5).

Additional Considerations:

1. For encroachments that are permanent structures (e.g., buildings and bridges) not including structures that move with the water surface (e.g., docks), the blockage calculation or hydraulic analysis should consider including the space above the DWSE reserved for freeboard as specified in the O&M manual. This is typically 2 to 3 feet for riverine systems and 5 to 6 feet for the bypasses above the DWSE.

2. If there is a levee on only one side of the cross section at the encroachment location, the screening or analysis should be calculated using the DWSE and design discharge. If there are no levees at the encroachment location, the analysis should be calculated using the design discharge as appropriate.

3. In a designated floodway, blockage may be calculated based on top width of the encroachment and critical cross section rather than area. The DWSE should be extended to high ground to determine the cross section width.

4. If the requester is proposing to add an encroachment to an already permitted encroachment project, then all features associated with that encroachment project should be included in the new blockage calculation. This includes previously authorized/permitted elements of the encroachment project in the vicinity of the proposed encroachment. This will help to account for the cumulative effects of multiple encroachments at a given location.

While specific supporting calculations are not being required, we typically require that all elements of the encroachment must be sufficiently anchored to avoid breaking away during a flood. We will continue to require scour analyses for encroachment permit applications on a case-by-case basis.

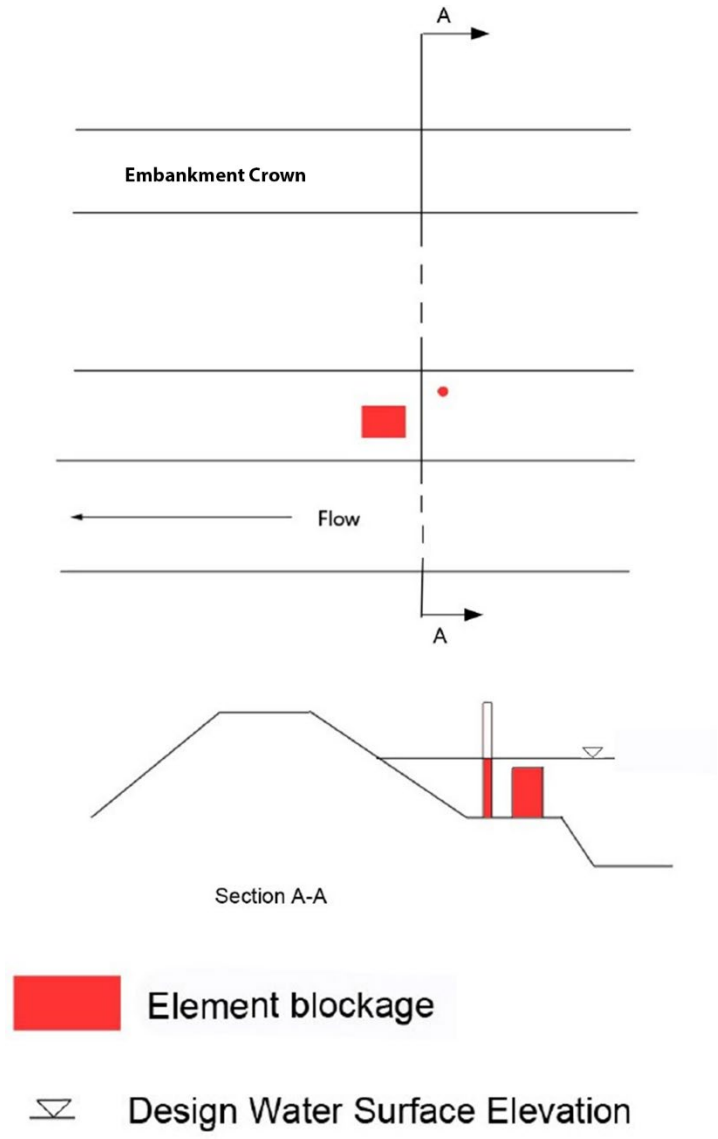

Figure 1. Aerial plan view and cross section of assumptions for flow blockage. If there are two obstructions, both perpendicular to the flow of the water, then the sum of those blockages must be assumed during the blockage calculation. The cross section area is calculated for area below the DWSE.

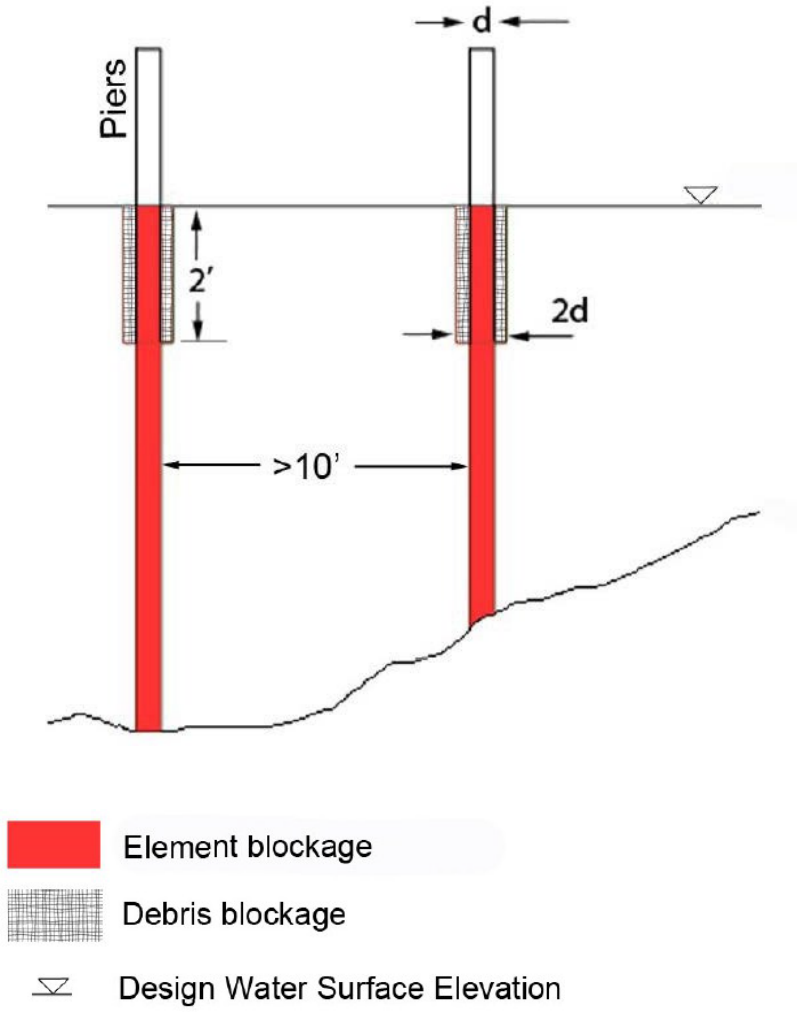

Figure 2. Piers - Assumed blockage area when piers are spaced 10-feet, or greater than 10-feet apart. Shown in solid red are the physical piers for the dock. Additional blockage area (twice the diameter and 2-feet below the DWSE) shown as a cross hatch should be used for blockage calculations as an assumption about the amount of blocked area that will occur as a result of debris.

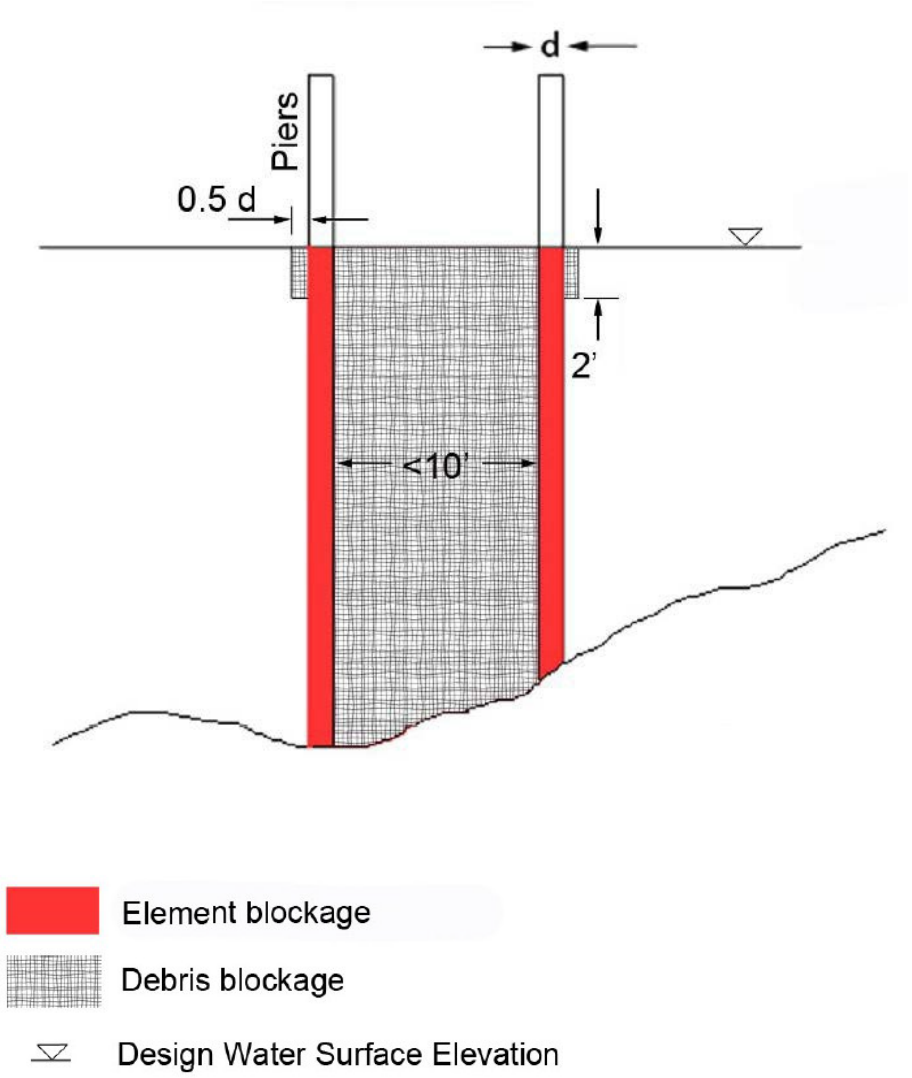

Figure 3. Piers - Assumed blockage area when piers are spaced less than 10-feet apart. Shown in red are the physical piers for the dock. Additional blockage area (including the entire area between the piers below the DWSE) shown as a cross hatch should be used for blockage calculations.

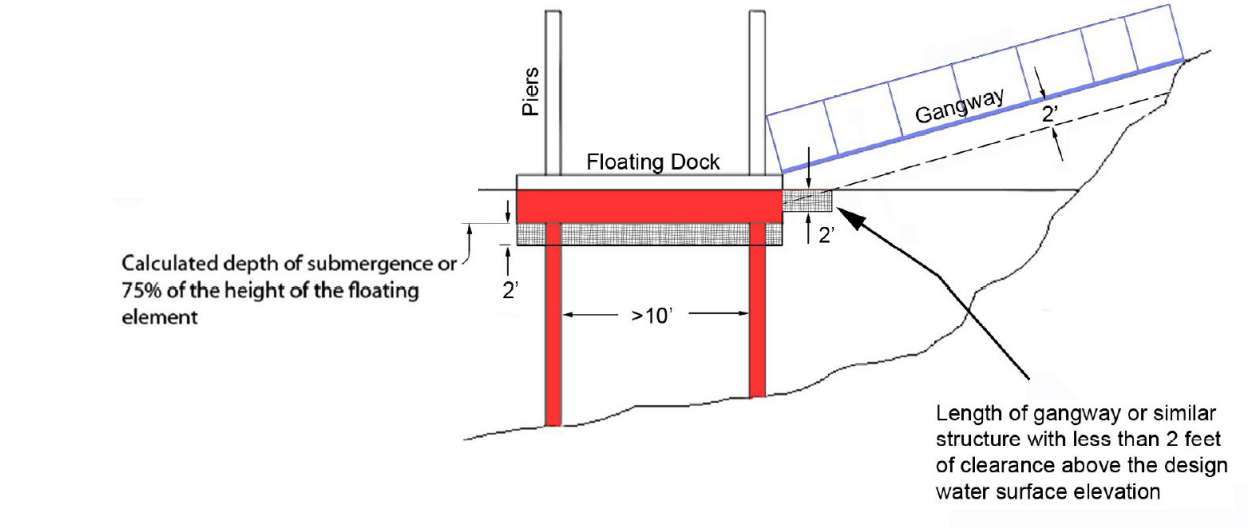

Figure 4. Floating portion of boat dock - Assumed blockage area for floating boat docks. There are two ways to calculate the amount of blockage caused by the floating portion of the boat dock. Both methodologies require you to identify the DWSE. The first method is to determine the cross sectional area of the boat dock (perpendicular to the flow of the waterway) that is submerged by the DWSE, and assume that is the blocked area. The other method is to measure the entire cross sectional area of the boat dock and assume that 75% of that cross sectional area will be blocked. Two feet below the boat dock is assumed to be blocked due to debris. For any portions of the gangway, or any similar structure, that maybe within 2-feet of the DWSE, assume that a rectangle 2-feet below the DWSE is blocked by debris.

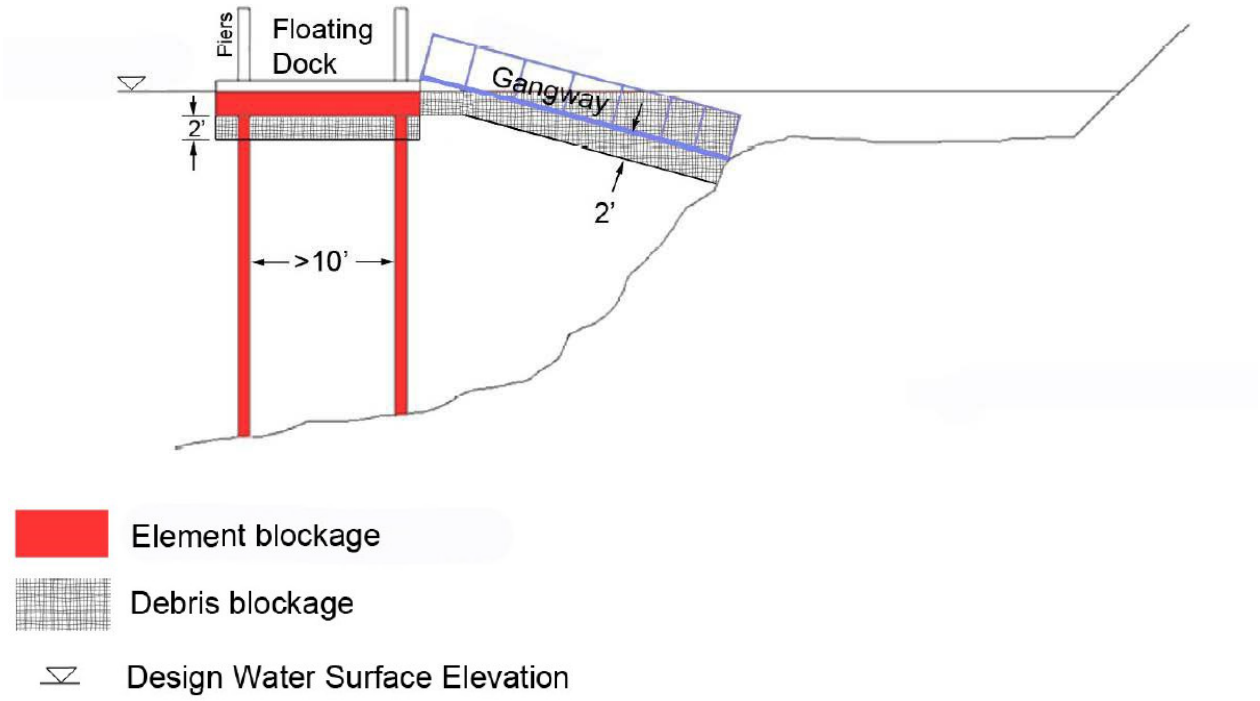

Figure 5. Gangways below the DWSE. For any gangways that are located, in part or entirely, below the DWSE, assume: a) that the submerged portion of the gangway is blocked by debris, as well as b) 2-feet below the floating dock, c) 2-feet below the DWSE for any portions of the dock less than 2-feet above the DWSE, and d) 2-feet below portions of the gangway that would be below the DWSE.