

2017 STORM DAMAGE DWR REHABILITATION – PHASE 4 AND 5 REPAIR SITES

Initial Study/Mitigated Negative Declaration

Prepared for
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April 2019



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CHAPTER 1

Introduction

High flow conditions occurring during the winter of 2016/2017 resulted in erosion and other damage at numerous levees managed by the California Department of Water Resources (DWR) or other local maintaining agencies (LMAs), such as Reclamation Districts, Levee Districts, etc. Therefore, a rehabilitation program was required to make much needed repairs prior to the 2017/2018 winter season. In response, DWR implemented the 2017 Storm Damage DWR Rehabilitation Program at several emergency repair sites. DWR repaired emergency sites during fall of 2017 (Phases 1 and 2) and summer of 2018 (Phase 3). In addition, non-emergency repair sites (Phase 4 and 5) have been identified for repair during summer-fall of 2019 or 2020, and are presented herein as the proposed project. The State Plan of Flood Control (SPFC) levees at multiple sites are damaged to such an extent that the flood control performance has been compromised, presenting a potential to public safety risk, which could result in flooding, property damage, and loss of life within the protected area during the next high water event. The proposed project for this CEQA document is Phases 4 and 5.

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CHAPTER 2

Project Description

2.1 Introduction

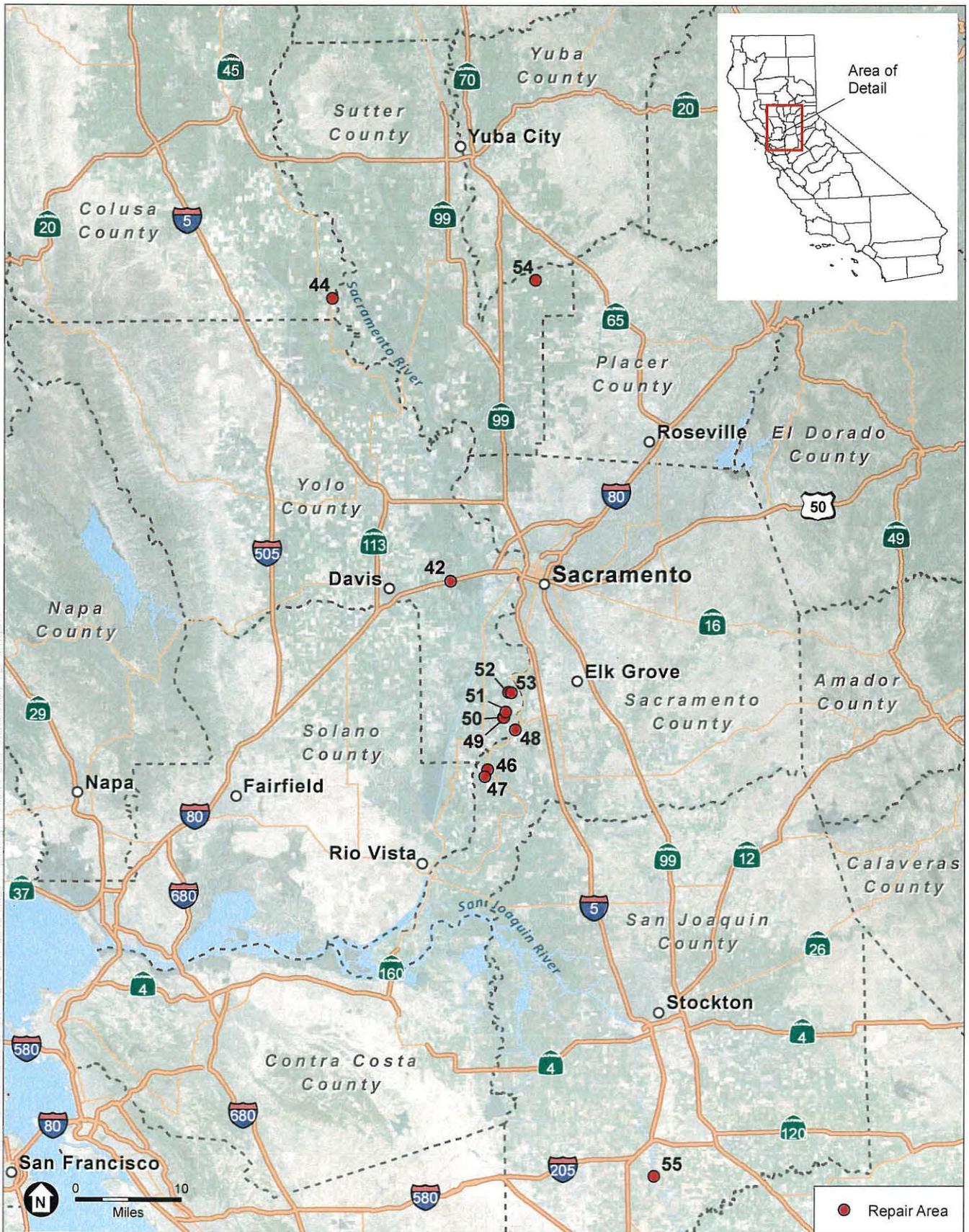
DWR implemented the 2017 Storm Damage DWR Emergency Rehabilitation Program for emergency repair sites in Phases 1 through 3 in 2017 and 2018. The purpose of the proposed project is to address additional non-emergency sites (Phases 4 and 5) identified for repair in 2019/2020. The previous emergency repairs under Phases 1 through 3 did not require CEQA because those sites met the Statutory Exemption under Section 15269 criteria for emergency projects that are necessary to maintain levee structures essential to public health, safety and welfare due to the high potential for levee failures without the repairs during the 2017/2018 phases. DWR's Division of Flood Management, Flood Maintenance Office is the CEQA Lead Agency for the proposed project. The description of the proposed project, including a description of the general construction approach for all proposed repair sites, is presented below. For the purposes of this Initial Study (IS), the term 'repair site' shall include access roads, laydown areas for construction equipment and materials, and the levee site itself.

2.2 Project Location

The proposed project includes a total of 29 sites located in Yolo, Sutter, Tehama, Butte, Colusa, Glenn, San Joaquin, and Sacramento counties as listed by phase in **Table 2-1** and as shown on **Figures 1a and 1b**.

**TABLE 2-1
PHASE 4 AND PHASE 5 REPAIR SITE DETAILS**

Phase	Site No	LMA Full Name	Start Latitude	Start Longitude	Start Levee Mile
4	42	West Levee Yolo Bypass	38.56328942	-121.6383671	0.77
	44	Sacramento River West Side Levee District	38.95405988	-121.8405597	18.76
	46	RD3 - Grand Island	38.302981	-121.577336	0.18
	47	RD3 - Grand Island	38.293381	-121.58245	0.91
	48	RD150 - Merrit Island	38.357183	-121.528547	3.42
	49	RD150 - Merrit Island	38.37427778	-121.5491667	4.39
	50	RD150 - Merrit Island	38.37431389	-121.5477528	4.47
	51	RD150 - Merrit Island	38.38216944	-121.5445972	5.4
	52	RD150 - Merrit Island	38.40922778	-121.5393889	8.05
	53	RD150 - Merrit Island	38.40798333	-121.5343222	8.35
	54	RD1001 - Nicolaus	38.975019	-121.481066	0.74
55	RD2095 - Paradise Cut	37.740196	-121.297662	1.75	
5	58	RD755 - Randall	38.33775833	-121.5638556	1.73
	59	RD551 - Pearson	38.27459167	-121.5389583	5.2
	60	RD551 - Pearson	38.26443611	-121.5254722	6.22
	61	RD999 - Netherlands	38.41531944	-121.5237167	0.1
	62	RD524 - Middle Robert's Island	37.8922	-121.328	4.53
	63	RD307 - Lisbon	38.43165	-121.533367	6.47
	65	RD307 - Lisbon	38.430958	-121.533364	6.48
	67	RD307 - Lisbon	38.430447	-121.533336	6.51
	69	RD524 - Middle Robert's Island	37.9319	-121.3284	1.3
	70	RD524 - Middle Robert's Island	37.9353	-121.3332	0.91
	71	RD544 - Upper Robert's Island	37.8203	-121.3457	2.18
	72	RD544 - Upper Robert's Island	37.8135	-121.3194	5.36
	73	RD544 - Upper Robert's Island	37.8184	-121.319	4.99
	74	RD544 - Upper Robert's Island	37.8294	-121.312	3.82
77	RD563 - Tyler Island	38.15082034	-121.5936503	9.73	
76	Tehama County Flood Control and Water Conservation District	40.05159551	-122.1641788	1.43	
79	Maintenance Area 5	39.676298	-121.778272	1.6	



SOURCE: Esri, 2016; ESA, 2019

2017 Storm Damage DWR Rehabilitation

Figure 1a
Phase 4 Repair Areas Regional Location

2.3 General Construction Approach

The proposed project would repair and rehabilitate levees at various locations (see Table 2-1 and Figures 1a and 1b) using a variety of construction equipment, requiring different design considerations based on levee conditions. The repair and rehabilitation would be scheduled to occur within a permitted time period to avoid impacts on special-status species and wet weather conditions. The following information provides details regarding proposed repair and rehabilitation activities, environmental commitments, construction considerations, and proposed schedule for repairs. The environmental commitments described below in Section 2.4 include conservation measures and/or best management practices (BMPs), that were developed in coordination with resources agencies to avoid, minimize and/or provide compensation for effects to biological resources and water quality.

Typical construction activities at rehabilitation sites are subdivided into the following stages:

1. Mobilization—site access and staging areas
2. Site preparation
3. Construction sequencing
4. Demobilization—restoration and cleanup

These stages are described in more detail in the following sections.

2.3.1 Mobilization – Site Access and Staging Area

Mobilization would take place at each levee rehabilitation site and includes: creation of temporary access roads and staging areas, if needed; securing the site; and, transporting equipment and materials to the site for later repair phases (e.g., clearing and grubbing, and construction of the repair). Access to repair sites would occur primarily along existing paved public roads, levee crown roads, or unpaved private farm roads. Where existing roads are not adequate for site access, temporary access roads may be constructed for hauling equipment and materials to and from the repair sites. At several sites, a barge crane may be used to transport and stock pile rock and soil to the repair site. Staging areas will be located close to the repair site and avoid sensitive habitats. For some repair sites, located close to one another, DWR has identified common staging area to serve those sites. The staging areas would be selected so removal of native trees or shrubs would be avoided and previously disturbed areas would be preferred.

For waterside repairs, staging areas would be preferentially located along the levee crown, waterside berm, or on waterside toe roads where areas are of sufficient size and free of woody vegetation. However, landside staging areas could also be used for stockpiling of materials and equipment. For landside and certain waterside repairs, staging areas may require construction easements from adjacent landowners. Activities that would occur within staging areas include: storage of necessary imported materials (e.g., rock, soil); parking, refueling, and servicing of construction equipment; establishing a temporary restroom; and, parking of construction worker vehicles. The repair sites' truck routes and temporary access road, and staging, laydown, and construction areas are shown in **Figures 2 to 31** at the end of this chapter. Further, detailed information for each of the repair sites, including current pictures of levee site conditions, acreage, length, construction design, and construction considerations are provided in **Appendix A**.

2.3.2 Site Preparation

Clearing and grubbing would be the first step in preparing each site for construction. Vegetation clearing could include the removal of submerged instream woody debris and fallen trees on the levee slope within the repair footprint. A turbidity curtain would be installed prior to conducting any in-water work, including the clearing of in-water vegetation. The repair work limits and staging areas would be fenced (orange construction fencing) to prevent vehicles and equipment from approaching the waterside edge of the existing bank (where applicable), to protect sensitive habitat, and to identify disturbance area limits.

Where necessary for construction, existing vegetation within the repair area would be removed during project construction except for trees or shrubs identified and marked for protection prior to construction. Box protection or other appropriate methods would be installed to protect any remaining trees from damage. Trees within the repair area identified for protection and outside the work limit may require trimming or removal for equipment clearance, excavation, or due to severely undermined tree health. The construction site would be cleared of grasses, ground cover, trash, or any other undesirable materials, using mechanized equipment.

2.3.3 Construction Process, Staging, Sequencing, and Equipment

Once each site is cleared and grubbed, each site would be excavated of existing rock and levee soils disturbed by the structural failure and transition zones, then the site would be excavated then graded to a 1.5 height (H): 1 vertical (V) slope unless otherwise specified by design specifications (see Appendix A for each of the repair sites design specifications and construction considerations). The back slope of the levee would be shaped for stability of clean rock placement. All excavated material will be hauled off site.

Geotextile fabric may be used as a filter separator between natural ground and rock slope protection (i.e. rockfill), launch rock, and soil filled rockfill¹ above and below standing or flowing water surfaces. Geotextile fabric would also be used to separate soil filled rockfill from launch rock. Geotextile fabric would be placed loosely upon the surface to prevent damage to the fabric when placing rock slope protection. All geotextile fabric placed above the water surface would be covered with rock slope protection within 72 hours of placement.

Geotextile fabric is incorporated into the erosion repair design because:

- It minimizes excavation into levee since bedding layer cannot be placed on steep slopes greater than 1 H:1 V;

¹ Rockfill and launch rock are defined as rock material that shall be clean, sound, hard, angular fragments of rock with no appreciable fines, and shall be free of cracks, seams, or other defects. Launch Rock is defined as material that shall be clean, sound, hard, angular fragments of rock with no appreciable fines, and shall be free of cracks, seams, or other defects. These rock materials differ slightly in the gradation in design specifications used by DWR on levees. Soil filled rockfill is defined as agricultural soil that shall be free of stones, lumps, roots and other debris larger than one inch and shall not contain herbicides, insecticides or other pesticides, salts, or other chemical compounds toxic to plant growth, aquatic flora and fauna or humans.

- It reduces the total number truck hauls that would be required to bring in sand or gravel to repair site if bedding layer was utilized;
- Placing bedding layer underwater is difficult or infeasible;
- A sand or gravel bedding layer would introduce a pervious layer that is thicker than geotextile which could create a seepage path due to the thickness required; and
- An additional layer of coarse bedding would be required as a transition to prevent migration of earthfill or soil-filled rockfill into launch rock/rockfill if geotextile was not used.

Using a long-arm bucket excavator or barge crane, the clean rock would be placed in the water at the toe of the bank up to the water elevation during construction. For soil-filled rockfill, rock would be placed in 2-foot lifts, and the voids would be filled with clean soil. Willow poles (if applicable) may be placed after construction to ensure underlying soil contact. In locations with earthfill, 0.5 feet of clean topsoil would be placed above the fill covered with erosion fabric to stabilize the bank. Once bank construction is completed, all disturbed soil remaining on the repair site would be seeded with a native erosion control seed mix according to the planting specifications.

2.3.4 Demobilization, Restoration, and Clean-up

Following levee rehabilitation construction, all equipment and materials would be removed from the repair site and excess materials would be disposed at appropriate facilities. Staging areas and temporary access roads, if constructed, would be ripped to loosen the soil surface and then seeded with a native grass mix to promote revegetation and minimize soil erosion. These areas would be restored to pre-project conditions to the extent feasible. Any damage as a result of the construction, including haul route roads and fencing, would be repaired. All areas would be cleaned and cleared of rubbish and left in a safe condition, suitable for use as intended.

2.3.5 Construction Timing and Equipment

Construction activities would take place at each site throughout the summer/fall of 2019 or 2020 (from July 2 through November 1). Each levee site would require approximately 2 to 4 weeks of active construction. All work would take place during daylight hours, and no nighttime lighting would be required. The maximum length of the work day would be 5 a.m. to 8 p.m. depending on allowable daylight. Noise ordinances will be followed for sites located in residential areas. At least three sites would be repaired concurrently, with up to nine sites being repaired at the same time, based on limitations of hauling, air quality permitting, and other potential permit restrictions by responsible agencies.

Heavy equipment and vehicles to be used during construction at a particular site may include the following:

- bobcat,
- compactors,
- water truck,
- loader,
- dozer,
- dump trucks,

15. DWR will install erosion control materials that minimize soil or sediment from entering waterways and wetlands. DWR will monitor the erosion control materials for effectiveness and maintain them throughout the repairs and monitoring. DWR will immediately repair or replace any erosion control barrier that is not functioning effectively.
16. The amount of revetment and similar materials used for bank protection and other repair activities will be limited to the amount necessary to ensure proper flood protection system integrity and function.
17. Remove temporary fill, construction debris, and refuse, and properly dispose of these materials following completion of any repair activities.
18. Habitats, including sensitive natural communities, will be restored to pre-project conditions wherever feasible. Restoration could include recontouring by grading and diking, revegetating with native seeds and plants reflective of the target plant community, decompacting soil, and installing appropriate erosion control measures to return the disturbed on-site habitat to pre-activity conditions.
19. For invasive plant species removal, DWR will implement measures to minimize the potential for invasive plants to be introduced or spread during activities. Measures to avoid contamination and spread of invasive species will be created for each site as deemed necessary by a qualified biologist and will be approved by a qualified biologist prior to implementation.
20. DWR will provide USFWS, NMFS, the Regional Water Quality Control Board (RWQCB), and/or CDFW (natural resource agencies) staff with reasonable access to all sites and shall otherwise fully cooperate with the natural resource agencies' efforts to verify compliance with, or effectiveness of, conservation measures.
21. The qualified biologist will be authorized to stop repair activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife. If repair activities are stopped, the qualified biologist will consult with CDFW, USFWS and/or NMFS as appropriate to determine appropriate measures that DWR will implement to avoid adverse effects. Buffers will be maintained until there is no longer a threat of disturbance to the sensitive biological resource, as determined by a qualified biologist.
22. DWR will immediately notify the qualified biologist if a species is taken or injured by a project-related activity, or if a species is otherwise found dead or injured within the vicinity of the Project. The qualified biologist shall provide initial notification to USFWS, NMFS and/or CDFW by contacting the appropriate agencies. The initial notification shall include information regarding the location, species, and number of animals taken or injured, and site number. Following initial notification, DWR will send a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take or injury, and any other pertinent information.

2.4.2 Giant Garter Snake

If conducting repair activities that could adversely affect GGS, DWR would implement the following conservation measures:

1. If potentially suitable aquatic habitat for GGS has been identified in or within 200 feet of work area by a qualified biologist, DWR will establish a 200-foot buffer around the aquatic habitat. Buffers will be marked in the field with guidance from a qualified biologist using temporary fencing, high-visibility flagging, or other means that is equally effective in clearly delineating the buffers. Project activities will not occur within the buffer, and workers will avoid entering the buffer at all times. If avoidance buffers are observed, no other measures for impacts to GGS will be required, unless otherwise stated in applicable permits by natural resource agencies. If work must occur within 200 feet of potentially suitable aquatic habitat, DWR will implement the following measures as determined to be necessary by a qualified biologist.
 - a. If GGS are observed in a repair area, DWR will stop work in the immediate area until the snake is out of the repair area and will notify a qualified biologist immediately. If possible, the snake will be allowed to leave on its own, and the qualified biologist will remain in the area until the biologist deems his or her presence no longer necessary to ensure that the snake is not harmed. If the snake does not leave the work area on its own volition, CDFW and USFWS will be consulted to identify next steps. This may include the capture and relocation of the snake unharmed to suitable habitat at least 200 feet from the repair area by a qualified biologist with a USFWS GGS recovery permit. DWR will notify CDFW and USFWS by telephone or email within 24 hours of a GGS observation during work activities.
 - b. DWR will ensure that a qualified biologist surveys areas of planned ground disturbance and/or materials placement for burrows, soil cracks, and crevices that may be suitable for use by GGS when within suitable terrestrial habitat. Surveys will be completed no more than 3 days before conducting any ground-disturbing activities in terrestrial habitat potentially supporting GGS. Any identified burrows, soil cracks, crevices, or other habitat features will be flagged or marked by the qualified biologist or otherwise identified as biologically sensitive areas (BSAs). DWR will avoid these BSAs within proposed staging and interim laydown areas to the maximum extent feasible. If activities temporarily stop for more than 14 days, surveys for soil cracks and similar features will be repeated by a qualified biologist, as described above.
 - c. When ground disturbance will occur in areas of suitable GGS habitat, a qualified biologist will monitor the work and walk the site prior to the beginning of construction.
 - d. A qualified biologist shall be on site during all grading activities, vegetation removal activities, and trenching activities. A qualified biologist shall be onsite and monitor all locations where repairs will alter GGS hibernacula/refugia (rip rap, burrows, vegetation, etc.).
 - e. When possible, DWR will complete work activities in terrestrial habitats that are potentially supporting GGS between May 1 and October 1. If it is not possible to complete the work by October 1, work in GGS upland habitat may also occur between October 2 and November 1 provided ambient air temperatures exceed

approximately 75°F during work and maximum daily air temperatures have exceeded approximately 75°F for at least 3 consecutive days immediately preceding work. During these periods, GGS are more likely to be active in aquatic habitats and less likely to be found in upland habitats. DWR will notify USFWS and CDFW of work in these locations. DWR will include a justification for the request and any additional information USFWS or CDFW deem necessary. USFWS and CDFW may require DWR to apply additional appropriate measures.

- f. Temporarily affected GGS aquatic habitat will be restored in accordance with criteria listed in the *USFWS Mitigation Criteria for Restoration and/or Replacement of Giant gartersnake Habitat (Appendix A to Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant gartersnake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California [USFWS 1997])*, or the most current criteria provided by USFWS and/or CDFW.
- g. When feasible, spoils will be placed in areas that do not provide suitable GGS upland habitat (for example: compacted or gravel roadbeds, orchards, and recently disked agricultural fields).
- h. If BSAs exist in the repair area, excavated spoils will be placed to avoid these BSAs, as feasible.
- i. DWR will obtain incidental take authorization under FESA, and an incidental take permit(s) or Consistency Determination from CDFW to cover those areas and activities where there is the potential incidental take of GGS. Incidental take authorization from CDFW require DWR to fully mitigate for impacts. DWR would implement measures and mitigation associated with the authorization and permit(s).

2.4.3 Nesting Birds

If conducting repair activities that could adversely affect nesting bird species and their habitat, DWR would implement the following measures:

1. If the project occurs during the nesting period for birds (February 1 to September 15), DWR will complete pre-activity surveys for nesting birds (including, but not limited to, bank swallow, raptor and passerine nest surveys and heron and egret rookeries). Surveys will be conducted by a qualified biologist not more than 5 days prior to the start of activities. Surveys will be conducted within suitable nesting habitat that could be affected by repair activities (e.g., staging areas, spoils areas, access routes) and will include a 500-foot buffer area (or larger area if required by established survey protocol) surrounding these areas. Where appropriate, pre-activity surveys will follow established survey protocols or guidelines.
2. If active nests are found, DWR will establish an avoidance buffer as indicated in **Table 2-2** for activities that would potentially affect the nesting birds. The temporary disturbance buffer will be established until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the activities. Alternatively, a qualified biologist, in coordination with CDFW, may determine that a buffer is not required to avoid adverse effects on nesting birds, based on the specific activities to be conducted and species present.

**TABLE 2-2
REQUIRED BUFFER DISTANCES FOR NESTING BIRDS**

Resource	Buffer Distance
American peregrine falcon	500 feet
Bald eagle	0.25 mile
Burrowing owl	1500 feet
California black rail	300 feet
Common nesting birds	100 feet (passerines); 300 feet (raptors); 200 feet (herons/egrets)
Least Bell's vireo	500 feet
Loggerhead shrike	100 feet
Modesto song sparrow	100 feet
Northern harrier	300 feet
Swainson's hawk	0.25 mile (urban); 0.5 mile (rural or during use of heavy equipment)
Tricolored blackbird	250 feet
Western yellow-billed cuckoo	500 feet
White-tailed kite	500 feet
Yellow-breasted chat	100 feet
Bank swallow	100 feet

3. If project construction work is scheduled during the Swainson's Hawk nesting season (typically March 1 to September 30), a qualified biologist shall conduct a focused survey for active Swainson's Hawk nests prior to beginning construction. The biologist shall follow *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000) or with the most recent scientifically based survey methods and protocols, where appropriate.

4. If it is determined that any repair activity would potentially result in the incidental take of any bird protected under the FESA, CESA (e.g., western yellow-billed cuckoo, bank swallow, least Bell's vireo, Swainson's hawk, tricolored blackbird), despite implementation of the measures above, DWR will obtain take authorization from USFWS and/or CDFW (as appropriate). All measures developed through consultation with USFWS and/or CDFW will be implemented by DWR to mitigate for authorized take. As part of the take authorization, if onsite compensatory mitigation is proposed, an appropriate and feasible mitigation plan will be developed by a qualified biologist and provided to USFWS and/or CDFW for approval. The mitigation plan will include methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails. Alternatively, if required by permits, purchasing credits at a USFWS and/or CDFW-approved conservation bank may be identified as appropriate mitigation (see Section 2.5 below). Take of a California Fully Protected species (e.g., white-tailed kite, and California black rail) is not authorized.

2.4.4 Special-Status Fish

If conducting repair activities that could impact special-status fish or habitat, DWR would implement the following measures:

1. Areas of suitable habitat should be surveyed, avoided (whenever possible), or mitigated (through onsite restoration or credit purchase; see Section 2.5 below) when avoidance is not possible.
2. Whenever possible, in-water work would occur during standard in-water work windows:
 - a. Delta and longfin smelt: August through November
 - b. Salmon and steelhead: July through October
2. In areas where rock is placed to provide slope protection, place clean soil to fill voids, which could potentially provide favorable habitat for nonnative predatory fish species, as feasible.
3. Install willow pole cuttings beyond vegetation free zone to provide aquatic cover and shade, and habitat complexity favorable for native fish species at feasible locations.

2.4.5 Special-Status Plants

For repair activities that have the potential to impact special-status plants, DWR would implement the following measures:

1. Areas of suitable habitat should be surveyed, quantified, avoided (whenever possible), or mitigated when avoidance is not possible.
2. Before commencing the repair activity, the qualified biologist would survey suitable habitat (if present) within the disturbance footprint of the activity for the targeted special-status plant species.
3. If special-status plants are identified within the repair sites, the individuals or populations would be mapped, quantified, and reported to the CNDDDB, and the DWR project manager would be notified so that potential impacts to these known occurrences would be avoided, when feasible. Coordination with CDFW and/or USFWS staff may also be necessary for developing appropriate avoidance and minimization measures if the species is federally or State listed. Avoidance and minimization measures may include:
 - a. No-disturbance buffers.
 - b. Silt fencing or construction fencing to prevent vehicles, equipment, and personnel from accessing the occupied habitat.
 - c. Erosion control BMPs such as straw wattles made of rice straw, erosion control blankets, or hydroseeding with a native plant seed mix to prevent sedimentation from upslope repair activities.
 - d. Before the repair activity commences, special-status plant occurrences would be marked with pin flags or stakes in the field, and all personnel would be instructed as to the location and extent of the special-status plants or populations and the importance of avoiding impacts to the species and its habitat.

- e. If needed a biological monitor would be present or on-call during repair activities to provide guidance on avoiding special-status plants, ensure that other avoidance measures (buffers, fencing, etc.) are observed, and to document the total impact of the repair activity, particularly if it is greater or less than anticipated.
- f. In consultation with CDFW or USFWS, the qualified biologist may collect and spread seeds or relocate plants to appropriate locations.

If work is required in areas where special-status plant populations are present and cannot be avoided, DWR would coordinate with CDFW or USFWS staff to develop appropriate minimization measures.

2.4.6 Valley Elderberry Longhorn Beetle

If conducting repair activities could adversely affect Valley Elderberry Longhorn Beetle (VELB), DWR would implement the following measures:

1. All suitable elderberry shrubs (i.e., shrubs with stem diameters of at least 1 inch when measured at ground level) would be avoided if not designated for removal or trimming. A 5-foot avoidance buffer would be established from the dripline of any elderberry shrubs. These avoidance buffers would be avoided by all personnel and repair activities. Shrubs would be flagged or temporarily fenced, as needed, with guidance from the qualified biologist and designated as BSAs where feasible. When feasible, fencing would be placed at the buffer.
2. Every attempt would be made to place box protection or tree wrap around the shrubs that can be left on the slope. Some trimming would occur.
3. If trimming is required within the drip line, no more than 1/3 of canopy cover or stems would be removed prior to implementing avoidance measures to ensure shrub survival.
4. If elderberry shrubs, which provide suitable habitat for VELB, cannot be feasibly avoided the work would result in potential take of VELB, then project impacts will be compensated for in accordance with criteria listed in the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)* [USFWS 2017]) (see Section 2.5).

2.4.7 Foothill Yellow-legged Frog

If conducting repair activities could adversely affect foothill yellow-legged frog, DWR would implement the following measures:

1. Within 3 days prior to entering or working near stream/riparian habitat within the foothill yellow-legged frog range, a qualified biologist shall conduct a survey in aquatic habitat and adjacent riparian habitat within the project site and a 500-foot buffer upstream and downstream of the repair area.
2. If foothill yellow-legged frogs are observed in the repair area, DWR would stop work in the immediate area until the frog is out of the area and will notify a qualified biologist immediately. If possible, the frog would be allowed to leave on its own, and the qualified biologist would remain in the area until the biologist deems his or her presence no longer

necessary to ensure that the frog is not harmed. If the frog does not leave the work area on its own volition, CDFW and USFWS will be consulted to identify next steps.

3. A qualified biologist shall be onsite and monitor all locations where repairs would occur within aquatic habitat where the frog has the potential to occur or was observed during the preconstruction survey.

2.4.8 Sensitive Habitats

1. Prior to initiation of repair activities, the qualified biologist would identify potential riparian habitat, wetlands, shallow water habitat, shaded riverine aquatic (SRA) cover, and native oaks. Where feasible, DWR would mark the boundaries of these areas using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the boundaries. When feasible, repair activities would be excluded from these areas. In many situations, equipment can be operated to avoid disturbing isolated riparian trees or low-height riparian scrub habitat.
2. Trees that are designated to be protected in place would be protected using box or tree-wrap protection or other techniques as designated by the qualified biologist.

2.4.9 Water Quality

DWR will install appropriate BMPs to reduce the potential release of water quality pollutants to receiving waters through the implementation of BMPs and compliance with applicable permits. BMPs may include the following measures:

1. Conduct environmental awareness training to train the contractor on the proper use of BMPs and applicable permit requirements to protect receiving water quality.
2. DWR will install erosion control measures, such as use of straw bales, silt fences, fiber rolls, or equally effective measures, at project locations adjacent to stream channels, drainage canals and wetlands, as needed. During active construction activities, erosion control measures shall be monitored during and after each storm event for effectiveness. Modifications, repairs, and improvements to erosion control measures shall be made as needed to protect water quality.
3. DWR will install turbidity curtains or similar methods during in channel work to control silts and sediments, if needed.
4. DWR will minimize ground and vegetation disturbance by establishing designated equipment staging areas, access routes, spoils and soil stockpile areas, and equipment exclusion zones prior to the commencement of activity.
5. DWR will prepare and implement hazardous materials management and spill response plan. DWR will ensure any hazardous materials are stored at the staging areas and with an impermeable membrane between the ground and hazardous material and that it is bermed to prevent the discharge of pollutants to groundwater and runoff water. DWR will immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so, according to the prepared spill response plan. DWR will notify USFWS, CDFW, and NMFS within 24 hours of any leaks or spills. DWR

will properly contain and dispose of any unused or leftover hazardous products off-site. DWR will use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands according to local, State, and federal regulations, as applicable.

6. Construction vehicles and equipment will be checked daily for leaks and will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease.

2.5 Compensation for Adverse Effects

1. If impacts to wetlands or waters of the U.S. cannot be feasibly avoided, then DWR would implement one of the following:
 - a. DWR may opt to pay in-lieu fees for wetlands or waters of the U.S. permanent impacts authorized by the USACE through the in-lieu fee program of the Sacramento District of the USACE and administered by the National Fish and Wildlife Foundation, at a ratio determined in consultation with USACE.
 - b. DWR may opt to secure wetlands or waters of the U.S. credits at a USACE-approved mitigation bank for permanent impacts at the repair sites, at a ratio determined in consultation with USACE.
2. Where impacts to GGS cannot be feasibly avoided, DWR will implement the following measure:
 - a. All impacts to GGS aquatic and adjacent upland habitat will be restored in accordance with criteria listed in the USFWS Mitigation Criteria for Restoration and/or Replacement of Giant Garter Snake Habitat (Appendix A to Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California [USFWS, 1997]), or the most current criteria provided by USFWS and/or CDFW. Any areas that cannot be restored, would be compensated for through the purchase of compensatory mitigation credits from a USFWS- and CDFW-approved bank at a ratio determined in consultation with USFWS and CDFW.
 - b. DWR will obtain incidental take authorization under FESA, and an incidental take permit(s) or Consistency Determination from CDFW to cover those areas and activities where there is the potential incidental take of GGS. Incidental take permits from CDFW require DWR to fully mitigate for impacts. DWR would implement measures associated with the authorization and permit(s).
3. If elderberry shrubs, which provide suitable habitat for VELB, cannot be feasibly avoided, then DWR would implement the following measure:
 - a. If any shrubs are proposed for removal, impacts will be compensated for in accordance with criteria listed in the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) [USFWS 2017]).

4. If impacts to riparian habitat (and/or SRA habitat) cannot be feasibly avoided, then DWR will implement one of the following measures:
 - a. Restore riparian habitat (and/or SRA habitat) at an adjacent offsite or onsite location by planting native tree and shrub species of according to a plan developed in coordination with the appropriate agencies, CDFW, NMFWS, and/or USFWS.
 - b. Secure native riparian (and SRA) habitat credits or acres at a mitigation bank approved by CDFW (NMFS for SRA) for impacts to native riparian habitat on streams within the project area that support special status species at a ratio determined in consultation with CDFW and/or NMFS.

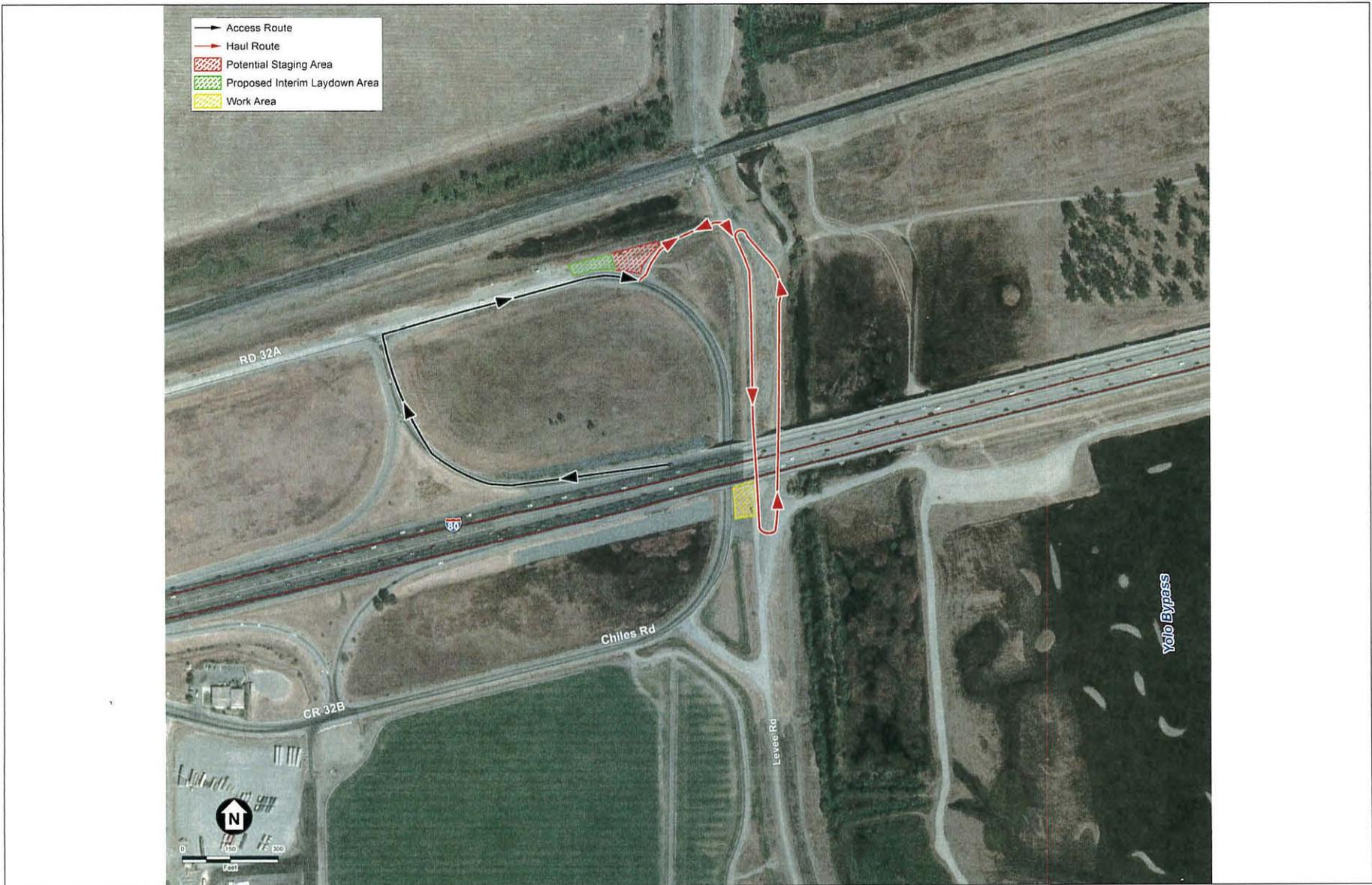
5. If shallow water habitat cannot be feasibly avoided and is filled or otherwise impacted, then DWR will implement the following measure:
 - a. To offset the permanent loss of tidally-influence riverine habitat (shallow water habitat) due to site repairs, DWR shall compensate for the loss at a ration determined in consultation with USFWS and CDFW. Credits shall be purchased at a mitigation bank approved by the resource agencies (e.g., USFWS and CDFW) for selling shallow water habitat credits.

2.6 Anticipated Regulatory Permits and Approvals

Table 2-3 lists the federal, State, and local permits and regulatory approvals that are expected to be necessary to conduct the proposed activities. The agencies responsible for issuing these approvals would consider the information presented in IS/MND during their deliberations.

**TABLE 2-3
PERMITS AND APPROVALS POTENTIALLY NEEDED TO CONDUCT PERMITTED ACTIVITIES**

Permit	Permitting Authority	Affected Elements
Federal Permits/Approvals		
Clean Water Act Section 404/ Rivers and Harbor Act Section 10 Dredge and Fill Permit	U.S. Army Corps of Engineers	Permitted activities on facilities that would be constructed in Waters of the United States
Federal Endangered Species Act compliance	U.S. Fish and Wildlife Service	Permitted activities on facilities affecting federally listed special-status species
Federal Endangered Species Act compliance	National Marine Fisheries Service	Permitted activities on facilities affecting federally listed special-status fish species
State Permits/Approvals		
Clean Water Act Section 401 Water Quality Certification	Central Valley Regional Water Quality Control Board	Activities within jurisdictional Waters of the U.S. needing a Section 404 permit
Porter-Cologne Water Quality Control Act Waste Discharge Requirements (WDR)	Central Valley Regional Water Quality Control Board	Permitted activities on facilities that would be constructed in Waters of the United States
National Pollutant Discharge Elimination System General Construction Activity Permit	Central Valley Regional Water Quality Control Board	Permitted activities on facilities where runoff would discharge into surface water
California Endangered Species Act compliance	California Department of Fish and Wildlife	Permitted activities on facilities affecting state listed special-status species
Section 1601 et seq. Streambed Alteration Agreement	California Department of Fish and Wildlife	Permitted activities on facilities that would impact the bed or bank of a stream channel
Encroachment Permit	California Department of Transportation	Permitted activities on facilities within Caltrans rights-of-way or easements
National Historic Preservation Act Section 106 Compliance	Historic Preservation Office	Permitted activities on facilities that would affect cultural and historic resources listed or eligible for inclusion in the National Register of Historic Places
Local Permit/Approvals		
Encroachment Permit	Local jurisdictions (including counties, cities, and Reclamation Districts)	Permitted activities on facilities located within rights-of-way or easements managed by Counties, cities or other local jurisdictions

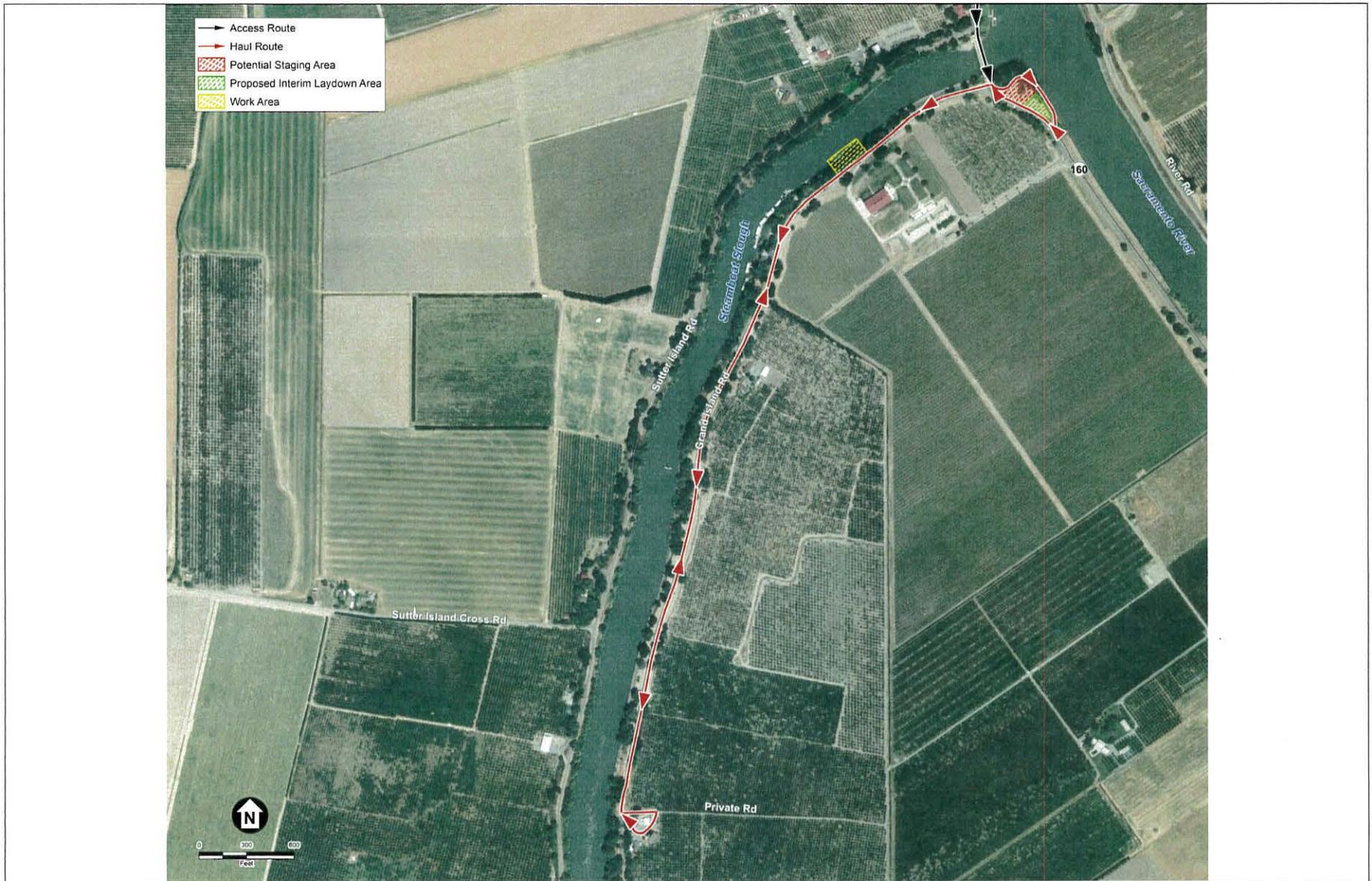


SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 2
Site 42







SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 6
Site 48





SOURCE: DWR, 2018

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 8
Site 50



SOURCE: DWR, 2018

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 9
Site 51



SOURCE: DWR, 2018

2017 Storm Damage DWR Rehabilitation . 130028.39

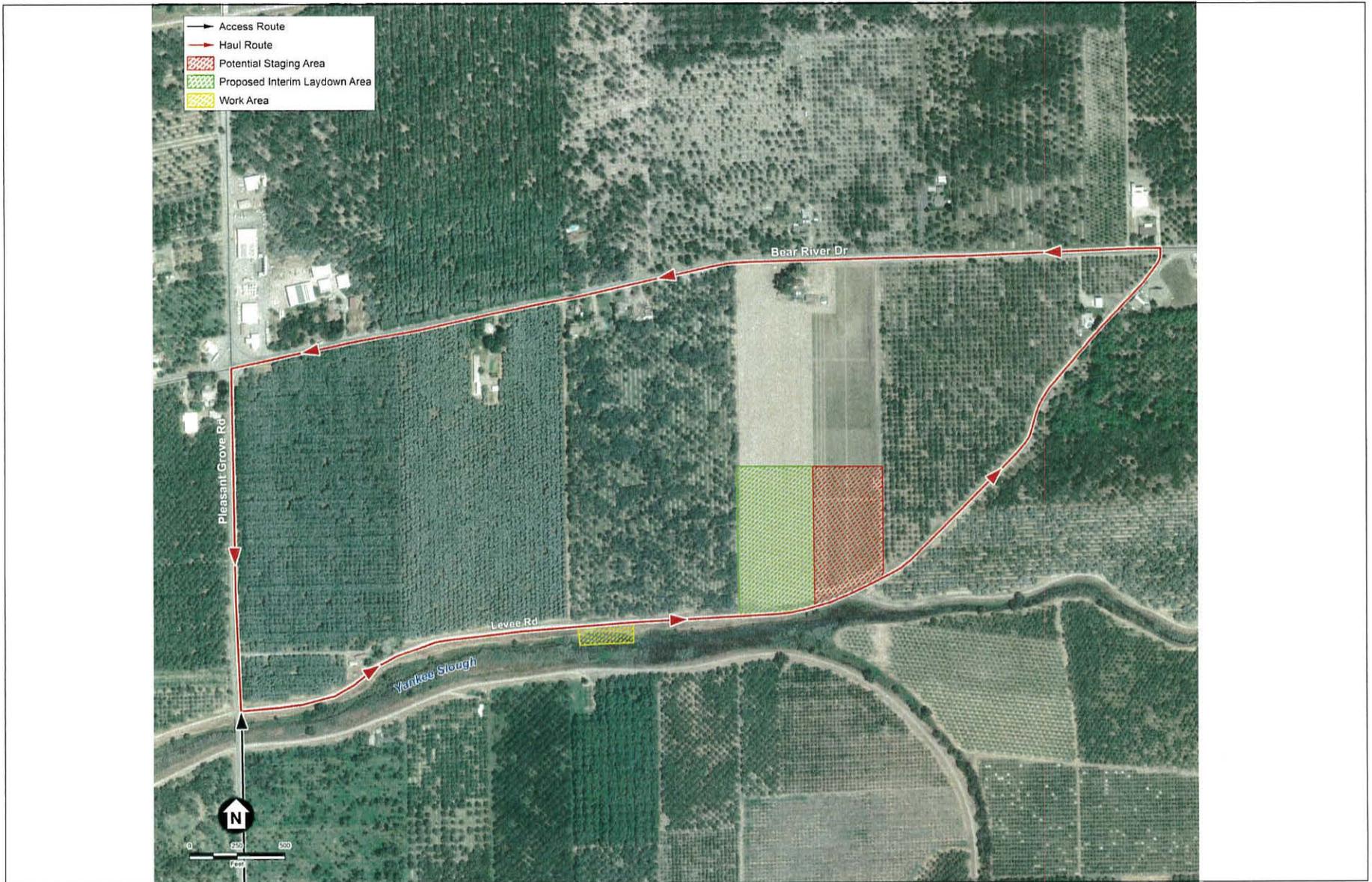
Figure 10
Site 52



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 11
Site 53





SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 13
Site 55



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 14
Site 58



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 15
Site 59



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 16
Site 60



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 17
Site 61



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 18
Site 62



SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 19
Site 63



SOURCE: DWR, 2018

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 20
Site 65



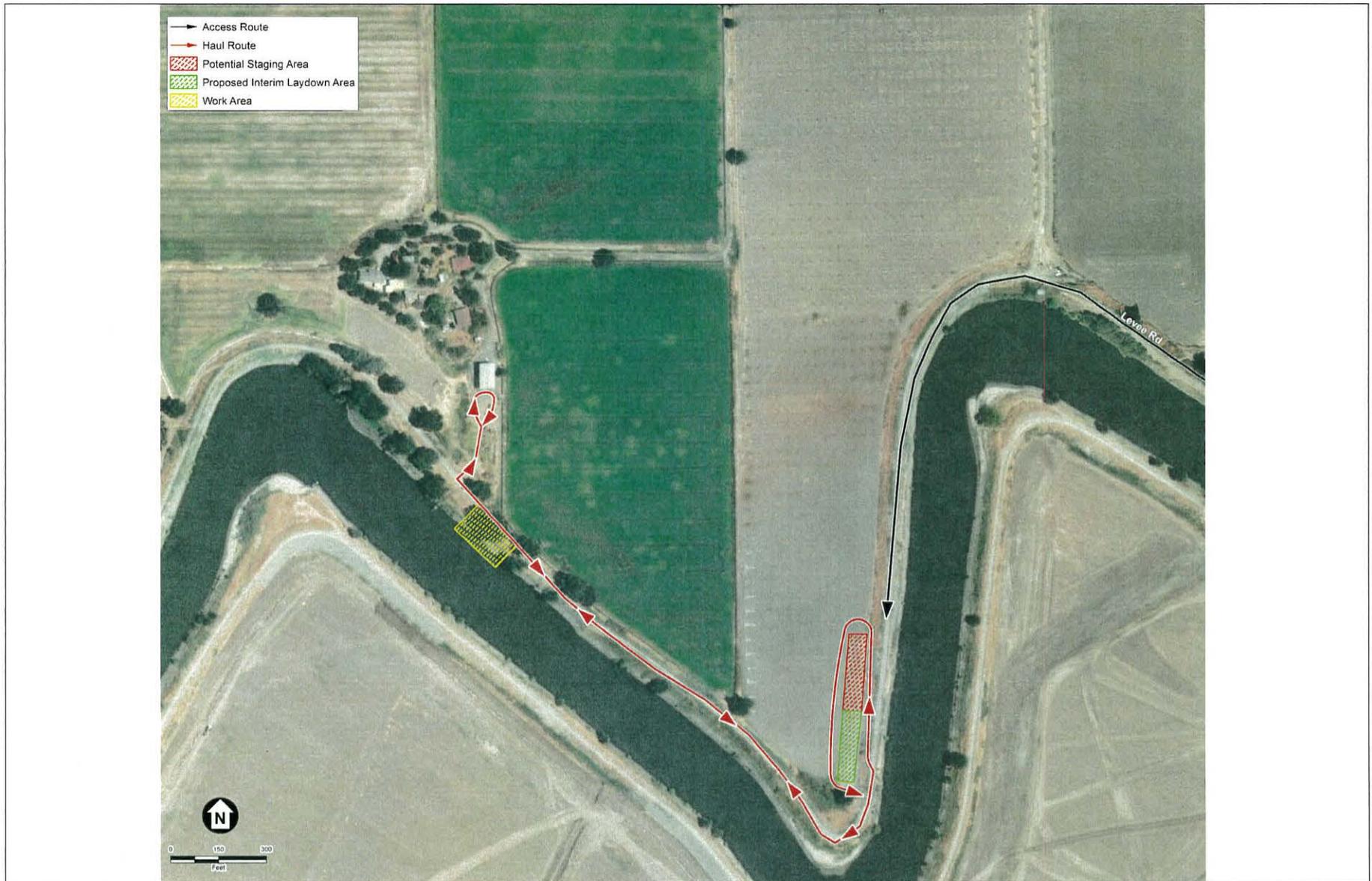


SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 22
Site 69





SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 24
Site 71





SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 26
Site 73





SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 28
Site 76





SOURCE: DWR, 2019

2017 Storm Damage DWR Rehabilitation . 130028.39

Figure 30
Site 79