Grassland Bypass Project
Long–Term Storm Water Management Plan
2020–2045

Addendum to

Final Environmental Impact Statement and
Environmental Impact Report for the
Grassland Bypass Project, 2010-2019

SCH No. 2007121110

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ACRONYMS & ABBREVIATIONS

Authority	San Luis & Delta-Mendota Water Authority
CEQA	California Environmental Quality Act of 1970
Drain	San Luis Drain
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
GAF	Grassland Area Farmers
GBC	Grassland Bypass Channel
GBP	Grassland Bypass Project
GDA	Grassland Drainage Area
GWD	Grassland Water District
LTSWMP	Long-Term Storm Water Management Plan
NEPA	National Environmental Policy Act of 1969, as amended
ppb	parts per billion
Reclamation	U.S. Bureau of Reclamation, Mid-Pacific Region
Regional Board	Central Valley Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SJRIP	San Joaquin River Improvement Project (formerly the San Joaquin River Water Quality Improvement Project)
USFWS	U.S. Fish and Wildlife Service
WDR	Waste Discharge Requirement
Westside Plan	Westside Regional Drainage Plan

PART 1

Background and Purpose

1.1 BACKGROUND

The Grassland Bypass Project (GBP) covered in the 2010 Use Agreement and 2009 Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) (Reclamation 2009a and 2009b) did not include a long-term storm water management plan. The 2010 Use Agreement requires "developing a long-term storm water management plan, which may include evaluation of utilizing the San Luis Drain (Drain) to bypass storm water flows around some wetland areas." This Long-Term Storm Water Management Plan is a culmination of that process. It has been developed by, the Grassland Area Farmers (GAF), who are organized under the umbrella of the San Luis & Delta-Mendota Water Authority (Authority,) to provide a long-term plan for management of storm water after expiration of the current use agreement on December 31, 2019. Such water had previously been handled under the terms of the 2010 Use Agreement by conveyance through the Drain along with the GBP's subsurface drainage from agricultural operations except in unusually high storm water conditions, when it had to be discharged back into its historic pathways through wetland supply channels. This section presents background information including existing storm water flow conditions and issues relating to storm water, previous compliance with the California Environmental Quality Act (CEQA), and the current need to manage storm water originating within the Grassland Drainage Area (GDA).

The location of the upcoming Long-Term Storm Water Management Plan (LTSWMP or Proposed Project) is the Grasslands Watershed in Fresno and Merced Counties as shown on Figure 1, Watershed Location Map, which ultimately discharges into the Lower San Joaquin River. The inclusion of the San Joaquin River to Crows Landing for compliance monitoring adds Stanislaus County to the Project Area. The GDA and project features including the channels containing drainage flows along with downstream wetland areas and wildlife refuges are shown on Figure 2, Grassland Bypass Project Location Map.

1.1.1 History of Storm Water Management

In the period prior to 1990, the historic discharge of storm runoff was into the wetlands area at Agatha and Camp 13 (see Figure 2). The natural slope of the land in the GDA is to the north and east, and the storm water followed this path. With the implementation of the GBP, there was a major shift in the routing of the storm water. Starting with the first discharges under the first Use Agreement in 1997 compliance with selenium and salinity objectives had to be met for all water discharged from the Drain, including subsurface drainage water and storm water commingled in the system. Along with this change came an assumption that the GAF were somehow responsible for and could manage the storm water. The GBP has been very successful in reducing the discharge of subsurface drainage water and, after 2019, all agricultural subsurface drain water will be managed within the GDA boundaries. The tools implemented to manage subsurface drainage from irrigation also help to manage storm-induced drain flows; however, they are insufficient to completely eliminate storm-related discharges. Once sufficient rainfall has occurred, storm water and accreted shallow groundwater from irrigated lands will accumulate in the regional drains and will flow north. Without the Proposed Project, this water will pond against canal levees or discharge into sensitive wetland channels, and to avoid these undesirable outcomes, this water will need to be discharged through the Drain.

Figure 1

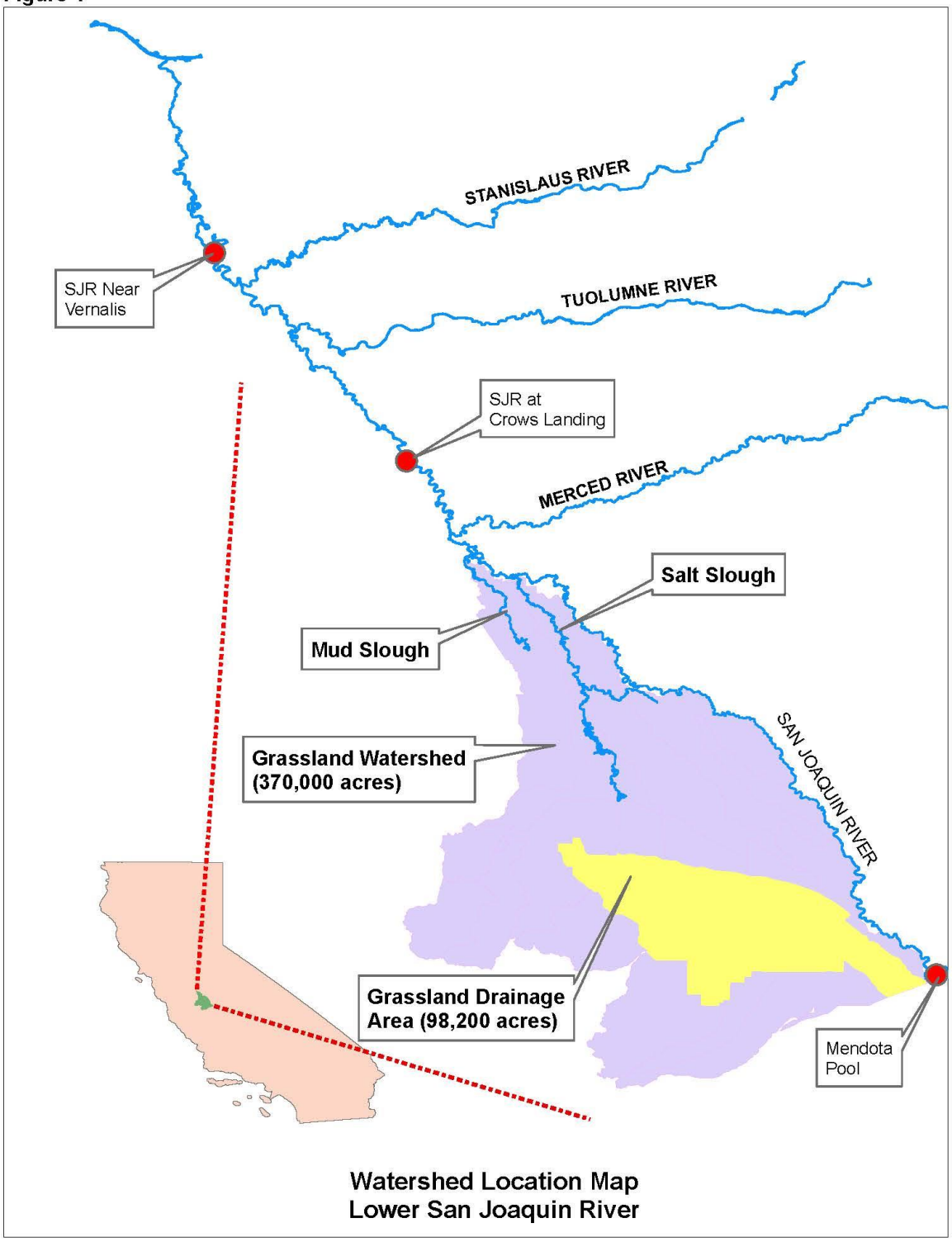
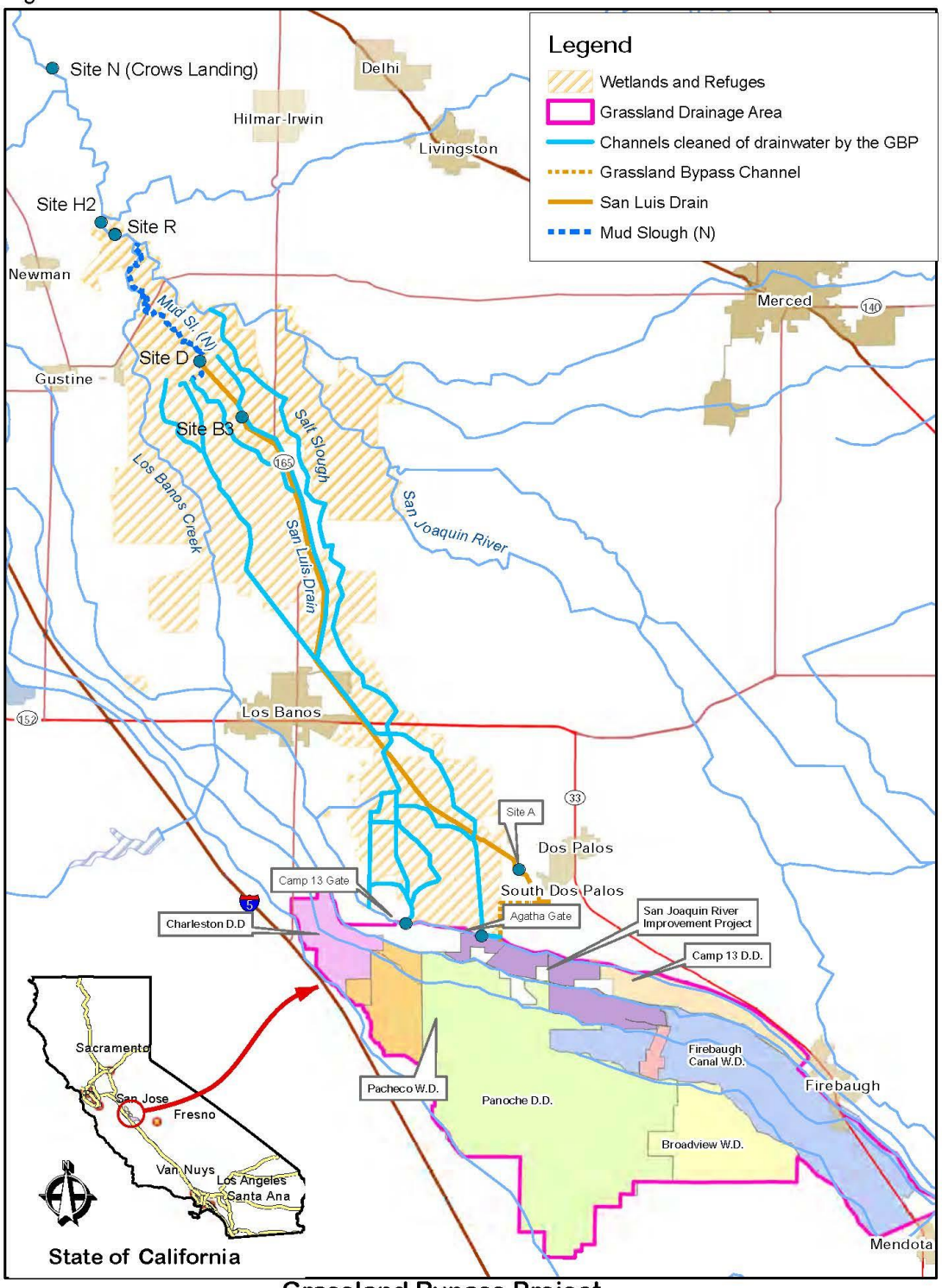

STANISLAUS RIVER
TUOLUMNE RIVER
MERCED RIVER
SAN JOAQUIN RIVER
SJR Near Vernalis
SJR at Crows Landing
Salt Slough
Mud Slough
Grassland Watershed (370,000 acres)
Grassland Drainage Area (98,200 acres)
Mendota Pool
Watershed Location Map
Lower San Joaquin River

Figure 2



Grassland Bypass Project
Location Map

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The storm event problems described herein define the continuation of past problems/existing conditions (e.g., as in 2005 when storm flows could not be handled fully in the Drain) into the future if there is no project to resolve these problems. The GBP has faced high rainfall events since its inception. The first two years of the project, 1997 and 1998, were extremely wet years in which there was significant above normal rainfall within the GDA. During those years, flows through the GBP were projected to exceed the 150 cfs maximum permissible flow into the Drain as defined in the Use Agreement and discharges were made into the wetland channels. A subsequent wet year in 2005 also required discharge into the wetland channels. These discharges, although of short duration, brought selenium (Se) into the wetland channels at levels exceeding the 2 parts per billion (ppb) water quality objective for those channels, creating management issues for wetland managers and requiring prescribed post-event monitoring. These periodic discharge events would continue if the LTSWMP does not proceed. Table 1-1 (Maximum Storm Events of Record) shows storm event discharges from the GDA both through the GBP and into Grassland Water District (GWD) during storm event periods for 1997, 1998 and 2005. Recent storm periods are also shown for 2014/15 and 2015/16 even though no storm water was discharged into the wetland areas.

Table 1-1 Maximum Storm Events of Record

Maximum Flows (cfs)						
Date	Flows from GDA	To GWD	Drain Inlet (Site A)	Drain Outlet (Site B)	Site A + GWD	Site B + GWD
Jan-Feb 1997	185	Not Available	95	90	Not available	Not available
Feb 1998	230	90	140	150	230	240
Feb 2005	Not available	75	159	138	234	213
Dec 2014	Not available	0	98	102	98	102
March 2016	Not available	0	109	90	109	90

Source: Project records

The GAF have developed measures to manage irrigation-related drainage flows under the GBP. These practices have been a four-step process including: 1) source control and recirculation, 2) shallow groundwater pumping, 3) drainage water reuse, and 4) treatment and disposal. The final step remains in development; however, the combination of the first three items has led to the successful management of the region's subsurface drainage. The GAF have been very successful in reducing the selenium load to the San Joaquin River, having reduced the flow by more than 90% in 2015 from what it was before the GBP started. Furthermore, in 2015, there was no flow in the Drain from March through October, and similar no-flow conditions held true in 2016 and 2017, despite the wet year and increased available irrigation supplies. Table 1-1 shows the storm flows that nonetheless were discharged. The normal drainage reduction measures are not applicable to storm water events because a substantial amount of water comes outside of the growing season, and the ability to apply drainwater to the Reuse Area for irrigation of salt-tolerant crops during that time of year is limited. Regulations to protect shorebirds preclude ponding of flood water in the reuse area, further limiting the reuse capacity during winter months.

1.1.2 Previous CEQA Compliance

The original GBP was designed to improve water quality in the channels used to deliver water to wetland habitat areas. It was for a maximum 5-year interim use of a portion of the Drain for conveyance of drainwater through the GWD and adjacent area. The original project was implemented in November 1995 through an "Agreement for Use of the San Luis Drain" (Agreement No. 6-07-20-w1319) between U.S. Bureau of Reclamation, Mid-Pacific Region (Reclamation) and the Authority (1995 Use Agreement). The 1995 Use Agreement and its renewal in 1999 allowed for use of the Drain for a 5-year period that concluded September 30, 2001. Continued use of the Drain after the term of

the existing 1995 Use Agreement required a revised Use Agreement and additional environmental compliance with the National Environmental Policy Act (NEPA) and CEQA.

On March 7, 1996, the Authority and certain of its members entered into the Grassland Basin Drainage Management Activity Agreement. The activity agreement members, along with certain outside participants, known as the GAF formed a regional drainage entity under the umbrella of the Authority to implement the GBP and manage subsurface drainage within the GDA. Participants included Broadview Water District, Charleston Drainage District, Firebaugh Canal Water District, Pacheco Water District, Panoche Drainage District, Widren Water District, and Camp 13 Drainers (an association of landowners located in the Central California Irrigation District). GAF's drainage area currently consists of approximately 97,400 gross acres of irrigated farmland on the west side of San Joaquin Valley and is known as the GDA. Discharges of subsurface drainage from this area contain salt, selenium, and boron.

Following completion of a Final EIS/EIR (SCH No. 1999091025; URS Corporation 2001), a new Use Agreement (Agreement No. 01-WC-20-2075) was completed on September 28, 2001, for the period through December 31, 2009 (Reclamation 2001), between Reclamation and the Authority acting on behalf of the GAF. In September 1998, the GAF and the Authority developed a long-term drainage management strategy and plan of implementation. The *Long-Term Drainage Management Plan for the Grassland Drainage Area* (Drainage Management Plan) was submitted to the Central Valley Regional Water Quality Control Board (Regional Board), as required by Waste Discharge Requirements (WDR) Order 98-171, for public review on September 30, 1998 (GAF and Authority 1998), and updated July 1, 1999. The Drainage Management Plan outlined several steps and measures to achieve water quality objectives in the 1998 Basin Plan and included continuation of the GBP. The 1998 Drainage Management Plan was incorporated into the Westside Regional Drainage Plan (Westside Plan) (San Joaquin River Exchange Contractors Water Authority et al. 2003). The Westside Plan seeks to manage subsurface drainage and achieve a salt balance on productive lands through several mechanisms, including the use of subsurface drainage water to irrigated salt-tolerant crops grown on approximately 6,000 acres of land known as the San Joaquin River Improvement Project (SJRIP) to reduce the volume of water discharged into Mud Slough (North) and improve the water quality of that discharge.

The current Use Agreement for the continuation of the GBP, 2010–2019, (2010 Use Agreement) was signed December 31, 2009, following compliance with NEPA and CEQA (SCH# 2007121110; Reclamation 2009). Reclamation was the lead agency under NEPA, and the Authority was the lead agency under CEQA.

Features of the original GBP that continued under the 2010-2019 project included the following:

- The removal of agricultural drainwater from 93 miles of conveyance channels in the Grassland wetlands and wildlife refuges, except during high rainfall conditions. Any discharges to these conveyance channels would be in accordance with the existing Storm Water Plan as modified consistent with the Use Agreement.
- The use of the Grassland Bypass Channel (GBC), a 4-mile-long constructed earthen ditch and an existing drain that was modified to convey drainwater from the Panoche and Main drains to the Drain at Russell Avenue.
- The use of 28 miles in the Drain to its northern terminus (Site B – the Drain near Gustine, California). From that point, the drainwater would enter Mud Slough (North) for 6 miles before reaching the San Joaquin River at a location 3 miles upstream of its confluence with the Merced River.

- Continuing current land retirement policies listed in the 1998 *Long-Term Drainage Management Plan for the GDA* (GAF and Authority 1998) and subsequent Westside Plan. Key among these is that land retirement should be voluntary.
- Continuing the operation of a regional drainage management entity to perform management, monitoring, and funding of necessary control functions.

Features that were added to the 2010-2019 project included the following:

- An updated compliance monitoring plan, revised selenium and salinity load limits, an enhanced incentive performance fee, a new WDR from the Regional Board, and mitigation for continued discharge to Mud Slough (North).
- In-Valley drainage reuse at the San Joaquin River Water Quality Improvement Project (SJRIP) facility.
- Other drainage management actions to meet water quality objectives/load limits.
- Utilizing and installing drainage recycling systems to mix subsurface drainwater with irrigation supplies under strict limits.
- Implementing a compliance monitoring program with biological, water quality, and sediment components. Results of the monitoring program would be reviewed by an Oversight Committee (established in the three use agreements), with a potential for expansion.
- A single WDR for the GDA.
- An active land management program to utilize subsurface drainage on salt-tolerant crops.
- Low-interest loans for irrigation system improvements, such as gated pipe, sprinkler, and drip irrigation systems.
- An economic incentive program including tiered water pricing and tradable loads.
- A no-tailwater policy that would minimize silt from being discharged into the Drain and promote the secondary benefits of irrigation water management.
- Implementing drainwater displacement projects such as using subsurface drainage for dust control on roadways.
- Meeting with landowners as necessary to implement projects and policies cited above.

The GAF have developed a long-term plan for managing storm water that, since the beginning of the GBP in 1996, has been conveyed through the Drain along with the GBP's subsurface drainage from irrigation. The discharge of agricultural subsurface drainage will cease by the end of 2019 (unless water quality objectives are met), and agricultural subsurface drainage will be managed by the GAF participating districts and at the SJRIP. Going forward, the Proposed Project to be modified is referred to as a Long-Term Storm Water Management Plan (LTSWMP) for the period January 1, 2020 through December 31, 2045.

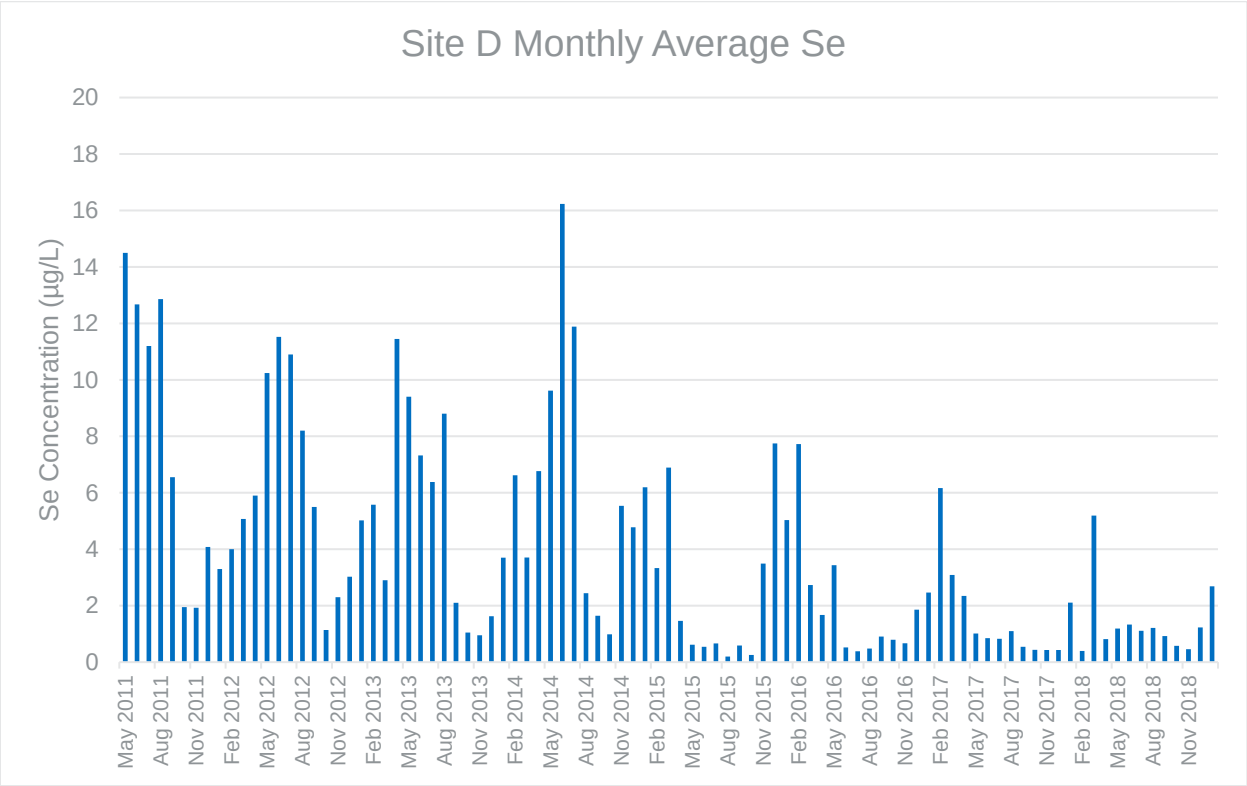
1.1.3 Current Need to Manage Storm Water

Early rain events tend to be absorbed in the soil profile. However, as the soil profile becomes saturated, there is excess storm water that cannot be controlled which equates to increased storm water flows as well as accretion flows of shallow groundwater from irrigated lands into drainage conveyance channels. During the February 1998 rainfall period, localized flooding occurred, which illustrates what happens if there is no outlet for the storm waters. Flooding that occurred along the Main Canal included lands on the downstream (left) side within GWD. Storm water may pond against the canal banks and

ultimately break through the banks. This would be a significant event and could jeopardize water deliveries to agricultural areas outside of the GDA and to private, state and federal wetland areas.

Discharges from the GDA enter the San Joaquin River at the mouth of Mud Slough (North). Recent historical conditions reflect the result of the past projects on water quality. Specifically, selenium levels in Mud Slough (North) have reduced gradually each year since the implementation of the GBP and Westside Plan. The transition to the Long-Term Storm Water Plan Management Plan would continue this trend, resulting in significantly reduced discharges into Mud Slough (North). Figure 3 below shows the average monthly selenium concentrations at Mud Slough (North) (Site D) from 2011 to the end of 2018, illustrating a reducing trend in selenium concentrations, with recent spikes in concentrations occurring in months with significant rainfall.

Figure 3. Average Monthly Selenium Concentrations in Mud Slough (North), 2011 to 2018



1.2 PURPOSE OF THE ADDENDUM TO 2009 FINAL EIS/EIR (SCH # 2007121110)

1.2.1 CEQA Guidelines

Under section 15164(a) of the CEQA Guidelines, the lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 requiring preparation of a subsequent EIR have occurred. (See also Pub. Resources Code, § 21166.) Section 15162(a) of the Guidelines lists the conditions that would require the preparation of a subsequent EIR rather than an addendum.

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for the project unless the agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

- The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
- Significant effects previously examined will be substantially more severe than shown in the previous EIR;
- Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
- Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Accordingly, to comply with CEQA, the Authority prepared an Initial Study and accompanying technical reports to evaluate the proposed modifications to the GBP and evaluate whether the conditions described in CEQA Guidelines section 15162 and Public Resources Code section 21166 calling for further environmental review have occurred. Because substantial evidence demonstrates that the prior CEQA analyses retain their relevance; that the 2009 Final EIS/EIR fully analyzed and mitigated, where feasible, all potentially significant environmental impacts, if any, that would result from the modified Project; and that none of the conditions described in CEQA Guidelines section 15162 or Public Resources Code section 21166 have occurred as a result of the Proposed Project modifications, this Addendum has been prepared pursuant to section 15164 of the CEQA Guidelines.

1.2.2 Findings for this Addendum

This Addendum to the Grassland Bypass Project Final EIS/EIR (Reclamation 2009) is based on preparation of an Initial Study and accompanying technical reports under the CEQA Guidelines that covers all of the required environmental topics for an Initial Study (Authority 2019). The description of all of the project changes (Proposed Project) is provided in Section 2 of this Addendum, Description of Project Changes. The discussion of potential environmental impacts, mitigation measures, and determination that an addendum is appropriate are provided in Section 3. References cited are contained in Section 4.

The analysis in this Addendum supplements the Initial Study findings and confirms that the Proposed Project, including proposed improvements at the SJRIP, would not result in any new significant impacts (adverse effects) nor in an increase in the severity of significant impacts previously identified in the Final EIS/EIR (Reclamation 2009b). Furthermore, the Proposed Project would not require the adoption of any new or substantially different mitigation measures (or project alternatives). While the

current Proposed Project does propose changes to the SJRIP reuse facility not previously considered in 2009, including new short-term storage basins for 1,000 AF of temporary storm water containment and the SCADA system for tile sump control, these changes are considered to be minor technical changes given their size and the effectiveness of biological mitigation measures used since 2006. Additional surveys for cultural resources and construction monitoring are standard requirements for new construction.

This Addendum documents that the Proposed Project changes, since the GBP was evaluated in the 2009 Final EIS/EIR, do not trigger any of the conditions set forth in Public Resources Code section 21166 or CEQA Guidelines section 15162. Therefore, the preparation of an addendum for the LTSWMP as described in the CEQA Guidelines Section 15164 is appropriate.

PART 2

Description of Project Changes

2.1 PROJECT OVERVIEW

The GBP is proposed to continue after December 31, 2019 with local management of agricultural drainage and downstream coordination of rain-induced flows to the San Joaquin River utilizing the Drain as conveyance to avoid impacting wetland water delivery channels. The discharge of agricultural drainage to the Drain will cease by the end of 2019, and agricultural subsurface drainage will be managed by the GAF participating districts and by continued irrigation of salt-tolerant crops at the San Joaquin River Improvement Project (SJRIP). Going forward, the Project as proposed to be modified is referred to as a Long-Term Storm Water Management Plan (LTSWMP), for the period January 1, 2020 through December 31, 2045.

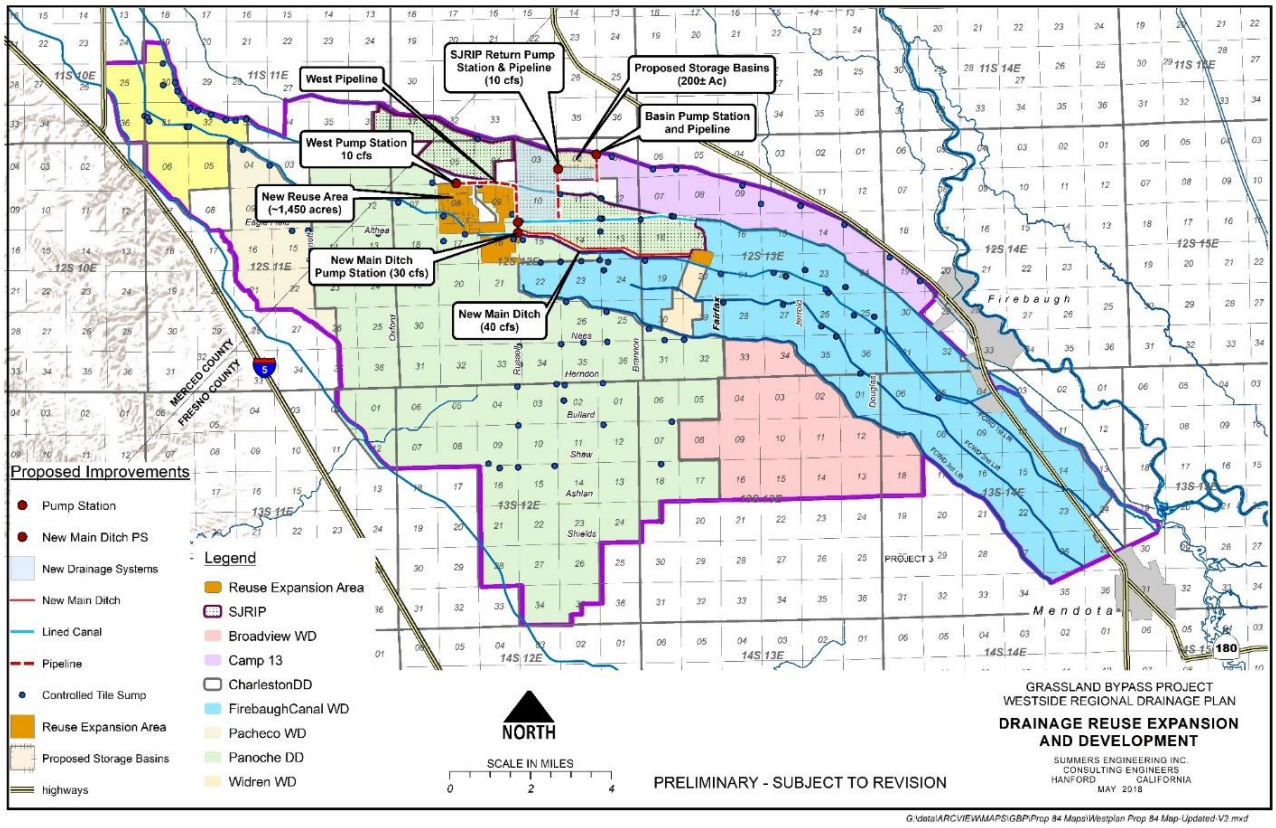
Therefore, the Proposed Project is continued use of the Drain at its current capacity (150 cfs) combined with the use of existing and new short-term storage basins to reduce storm-induced discharges to Mud Slough (North) in the San Luis National Wildlife Refuge and the California Fish and Wildlife Service China Island Refuge. The Proposed Project considers modifications to the previously analyzed project and includes measures to address the capacity limitations of the GBC and the Drain, storm event frequency and magnitude, and available storm water management tools to minimize discharges. It also considers some enhancements to existing facilities including securing ownership of land for purposes of the SJRIP, new pump/conveyance systems, additional storage basins, and a remote shut-off system for operation of tile sumps throughout the GDA.

The Project Area is primarily located in the northwestern portion of Fresno County and a portion of the south-central section of Merced County. This area consists of the GDA as well as adjacent land to the north through which subsurface drainage has historically flowed. The SJRIP is located in the north central section of the GDA on property containing approximately 6,000 acres with planned expansion of up to 1,500 additional acres of reuse area (including some acres already developed for salt-tolerant crops). See Figure 2, Grassland Bypass Project Location Map, contained in Section 1.

2.2 REVISED PROJECT DESCRIPTION

The 2010 Use Agreement has limited the permitted flow in the Drain to 150 cfs, because the connection facilities between the GDA and the Drain are limited to 150 cfs and to avoid the disturbance of sediments in the Drain. These facilities include a culvert underneath the Main Drain, Main Canal, and Helm Canal, the four-mile earth-lined GBC which connects the GDA drainage system to the Drain, the inlet to the Drain from the GBC and the outlet from the Drain to Mud Slough (North). The Proposed Project as modified would continue to use the existing GBC and related culvert, drain and canals to handle storm flows up to 150 cfs. Modifications to existing infrastructure would include a new automated system to turn off tile sumps within the GDA during storm events; improvements to the SJRIP delivery system to allow storm flows to be conveyed to more areas in order to make limited use of the SJRIP reuse area in the winter and of existing regulating ponds (with 500 acre feet [AF] capacity) that discharge to the reuse area; and new storage basins (approximately 200 acres) to handle up to 1,000 AF of storm water when storm flows are greater than 150 cfs (without ponding against canals or in the reuse area). The key project features are described in the following sections and shown on Figure 4, Drainage Reuse Expansion and Development.

Figure 4 – Drainage Reuse Expansion and Development



In addition, a Sediment Management Plan was evaluated in the 2009 Final EIS/EIR (SCH No. 2007121110; Reclamation 2009b) to return the Drain to its original capacity of 300 cfs. This plan allowed for placement of removed sediments on agricultural, industrial and/or residential lands. Removal commenced under the plan in 2015, 2016, 2017 and 2018 using excavators to remove the sediment and trucks to haul it to the SJRIP. As of August 2018, approximately 180,000 cubic yards of sediment has been removed for the Drain between the inlet to the Drain (Site A) and Henry Miller Avenue (approximately 14 miles). All removed sediment was hauled to the SJRIP and used to fill in unneeded drains. Future sediment removal will be accomplished similar to the 2017-2018 removal, but the location of the placement area likely will change due to the logistics of hauling material that is further away from the SJRIP. Measured selenium levels in the Drain sediment are below the threshold for application on industrial and residential sites. A planned industrial site has been located adjacent to the Drain at Highway 152, and an estimated 100,000 cubic yards could be placed at this location. This would be sufficient to store all of the remaining sediment in the Drain. Due to the narrow time-window available each year for sediment removal and the logistics related to hauling distances, the removal is expected to take an additional two years to accomplish, or by December 31, 2021. Approximately 95,000 cubic yards of sediment remain in the Drain and need to be removed, resulting in approximately 35 trips per day for approximately 2.5 months (70 working days total) over this time period. The nature and intensity of sedimentation and hauling activities associated with the Proposed Project modifications are consistent with, and well within the scope of, the activities previously analyzed in detail in the Grassland Bypass Project Final EIS/EIR for the 2010-2019 Project timeframe.

2.2.1 Available Storm Water Management Tools/Other Project Features

A small number of management tools are currently available to the GAF to minimize storm-related discharges and potential impacts to the wetland areas and the San Joaquin River. These include source

control projects, shallow groundwater pumping, and stormwater use for irrigation on the SJRIP. The Proposed Project would add specific enhancements and new facilities specified herein. Features associated with these management tools are shown on Figure 4.

2.2.1.1 Turn Off Tile Sumps

Subsurface drainage from irrigation in the GDA is collected in tile drain systems under farmers' fields that collect at a sump. Most tile discharges are controlled through a pump on each such tile sump that discharges into deep collector drains through which it flows to the GBP. As part of a Storm Event Plan, tile sumps would be turned off. Turning off tile sumps will utilize a portion of the shallow soil profile for storage and slow the rate at which shallow groundwater is discharged into the regional drains. This action alone is insufficient to completely eliminate the discharge of shallow groundwater from irrigated lands since, as the soil profile saturates, this water will overtop sumps and flow into the drain or seep through the soil and accrete into the drains, and would be discharged with the storm water. However, controlling sump discharge is a significant tool in reducing peak storm-related flows and improving water quality in storm-related discharges.

Remote tile sump control is a modification to existing sump control that will be provided through the implementation of a Supervisory Control and Data Acquisition (SCADA) system that will allow all of the tile pumps to be shut off from the appropriate district office. This improvement involves installation of radio and shutoff relays at each discharging tile pump throughout the GDA. Communications and repeater towers will be erected as required (two to four towers expected) to send the control signal from the SCADA computer at the district office to each of the pumps. These towers will range in height from 20 to 80 feet and are consistent with power line and other communication towers within the GDA, i.e., shorter than existing cellular communication and high-wire towers but taller than regular power poles. This will allow all discharging tile sumps to be remotely disabled prior to storm events and then reactivated after the storm event has passed. This enhancement improves the control and efficiency available for the measure of shutting off tile sumps.

2.2.2 Short-Term Storage Basin Usage

2.2.2.1 Existing Storage Basins

A storage basin or pond is defined most often as a small storage reservoir constructed to regulate an irrigation water supply by collecting and storing water for a relatively short period. There are currently some minimal storage basins within the GDA, including those in Panoche Drainage District and Pacheco Water District. These existing facilities provide approximately 500 AF capacity; storm water stored in these basins can be either diverted and reused for irrigation on the SJRIP reuse area, used at other areas within the GDA, or discharged into the Drain.

A concern with the use of storage basins in the GDA is the potential for possible exposure of waterfowl to water with elevated selenium if basins cannot promptly be drained. The plan is to accumulate storm water in the basins as needed to reduce peak flows during high rainfall events, typically beginning in December, for subsequent release of the storm water through the Drain or to the reuse area to the extent they can be used, given capacity constraints, to irrigate salt tolerant crops without ponding. To avoid impacts to wildlife, appropriate mitigation measures will be implemented for as long as the basins contain water (see Section 3.2.2). The basins would collect drainage during storm events as a tool to reduce peak flows and the associated discharge to the Drain, and then distribute the storm water to the reuse area during the early irrigation season and to the GBC outside of the irrigation season. The storage basins would be managed to prevent the evapo-concentration of selenium and other constituents and aggressively hazed to discourage water bird nesting. Water in the basins would be distributed to the SJRIP to meet irrigation demand as soon as practical. In rare cases, captured water may be discharged to the GBC to the Drain to prevent evapo-concentration if there is not sufficient

reuse capacity to drain the basins. Depending on water quality, some of the water may be blended into regional irrigation systems as well. By late May, the basins would be emptied.

2.2.2.2 Proposed Short Term Storage Basins and Pump Stations

The Proposed Project also includes new, short-term storage basins that total approximately 200 acres in size with the ability to hold an additional 1,000± AF of storm-induced drainage from the GDA. They would be operated in a similar manner as the existing basins explained above, i.e., filling begins with the first significant storms (typically December), and basins are emptied by May. The increased capacity reduces the quantity that must flow during the storm event to the GBC, the Drain, and ultimately to Mud Slough (North). This guards against both flow in the GBC exceeding the channel capacity as well as selenium concentrations in Mud Slough (North) exceeding the water quality objective established in 2016 by the Regional Board (Regional Board 2016).

The storage basins will consist of approximately four miles of levees (interior and exterior) amounting to approximately 300,000 cubic yards of compacted embankment and rip-rap for levee protection. Levees will have a top width of 12 to 16 feet and a depth of approximately 6 feet. The storage basins will be designed with clean and steep slopes, and water will be kept deep or the basins will be empty, in order to minimize attractiveness of the basins for waterbirds. A new pump station will be constructed to divert water from a major regional drain into the basins and a second pump station and conveyance pipeline (estimated 24" diameter) will be constructed to divert water out of the basins for reuse within the SJRIP.

Current land use at the proposed basin site is salt tolerant cropland (Jose Tall Wheatgrass) within the existing SJRIP. The conversion of 200 acres of this land to storage basins would provide a tool to reduce the amount of water discharged to the GBC and Drain during large storm events in the non-irrigation season. This loss or irrigable crops will be offset by planned SJRIP expansion.

The estimated construction time for the basins is approximately 4 months. The estimated construction time for the 2 pump stations and associated pipeline is approximately 3 months, and may or may not be concurrent with the basin construction. Construction periods would typically be limited to May through November (7 months) when storm events and flooding are unlikely, and adjusted according to the protective requirements for special status species as necessary.

Operations: A variety of factors will determine when storm induced drainage flows would be diverted into the basins. Local staff will consider soil saturation levels, forecasted rainfall amounts, water levels in regional drains, available capacity in the GBC and the flow rate in Mud Slough (North) (Site D) as factors for determining when to divert flows into the temporary storage basins. The goals of any diversion into the short-term storage basins would be to avoid exceeding capacity to discharge through the GBC into the Drain (so as to avoid any release into the historic path of the wetland conveyance channels), to prevent selenium water quality exceedances at Site D, and to minimize the overall discharge from the GDA. Water would be drained out of the basins as soon as the water could be utilized within the SJRIP.

2.2.2.3 Reuse Area Expansion

The Grassland Bypass Project Final EIS/EIR stated that the SJRIP facility would be implemented on up to 6,900 acres of land within the GDA (Reclamation 2009b, p. 2-14). It included the following description:

> "To continue to apply the salty water to the lands developed in Phase I, it will be necessary to install subsurface drainage systems. Installation of tile drainage systems will be required to maintain salt balance in the root zones and to maintain the

> productivity of the reuse area on a long-term basis. Such installation would not be a prerequisite for commencement of reuse, would be prioritized based upon available funding and the needs of particular crops, and would be expected to proceed throughout Phase II. Currently (and for the foreseeable future) any tile water captured within the reuse areas is blended back with the reuse area irrigation supply and used on whatever crop is located downslope. Salt, Se, and other drainage constituents would be collected in the water coming out of the subsurface drainage systems, continue to be recirculated and utilized on site or, during any continuation of the Grassland Bypass Project, be discharged subject to load reduction obligations." (p. 2-18)

The proposed expansion of 1,450 acres will take the existing reuse facility from 6,100 acres analyzed in the 2009 Final EIS/EIR to 7,550 acres of usable reuse area. This is an additional 650 acres over the maximum size anticipated in the 2009 Final EIS/EIR. This additional acreage would be managed in the same manner as the existing acreage with the same biological monitoring requirements established by the U.S. Fish and Wildlife Service (USFWS) in their Biological Opinion (see USFWS 2009). Therefore, this Addendum addresses the additional acreage. Much of this additional acreage is already planted to salt tolerant Jose Tall Wheatgrass, and only a change in ownership (private to district) would be needed for implementation.

Because the salt tolerant crops within the SJRIP have very little water demand in the winter, reuse capacity for storm-related flow is very limited in the period between November and February with greater reuse in the March to May period, depending on hydrologic conditions. Small existing storage basins in Pacheco and Panoche Water District provide limited water storage capacity within the GDA (up to 500 AF). In combination with storage basin usage, the maximum managed flow with facilities within the GDA is approximately 50 cfs for 15 days[1]. Once this maximum is reached, discharge of some sort is required.

The primary environmental concern is an increased potential for ponding of seleniferous water within the fields of the SJRIP, which could be an attractive nuisance to wildlife, particularly birds. The amount of water that could be discharged to the SJRIP is less than what would be needed (i.e., only a partial solution), and other impacts would be created if the area is not enlarged to handle agricultural drainage. Therefore, an additional reuse area of approximately 1,450 acres is proposed on farmed land generally on the southwest side of the existing SJRIP facility. Mitigation contained in the Grassland Bypass Project Final EIS/EIR for the existing reuse facility would apply to this area also. This mitigation includes a contingency plan[2] in the event of inadvertent flooding in the reuse area due to breakage of a water supply canal or delivery facility.

2.2.3 Conveyance Activities

Additional conveyance activities are proposed for agricultural drainage and storm water conveyance within the GDA for the existing reuse area and its expansion and for storm water conveyance to the GBC during the winter months. These improvements, when combined with the proposed short-term storage basins and other conveyance activities, will increase the GBP's capacity to manage storm-induced flows. These activities are listed below.

- **RP-1 Ditch Extension and Lining**The existing 3 miles of RP-1 Ditch will be replaced with a concrete lined channel and the ditch will be extended 1.8± miles to the eastern side of the SJRIP. The channel's capacity will also be increased from approximately 25 cfs to 45 cfs.

[1] The maximum diversion rate could be as high as 70 cfs but this assumes that some pumps will be inaccessible due to wet conditions. 15 days comes from 3" over 6000 acres.

[2] This plan is presented in the *San Joaquin River Water Quality Improvement Project, Phase I Wildlife Monitoring Report*, 2005 (H.T. Harvey & Associates 2006).

Construction work will involve the placement of approximately 34,000 cubic yards of compacted embankment to build the canal pad, excavation of approximately 38,000 cubic yards of material to cut the design cross section, and placement of approximately 470,000 square feet of unreinforced concrete lining, along with miscellaneous appurtenances such as turnouts and road crossings. As a delivery channel, most of the ditch would be above grade with the invert extending approximately 24" below the existing top of ground. The alignment of the existing and proposed ditch is within an area historically farmed. Estimated construction time is 4 months.

The RP-1 Ditch extension and lining activities would significantly improve operational flexibility of the SJRIP by extending conveyance capacity to the far east section of the SJRIP (near Fairfax Avenue). Currently, there is only limited conveyance capacity to that portion of the reuse area, which underutilizes the overall reuse capacity of the SJRIP.

- **RP-1 Pump Station Enlargement and Pipeline**. A new electric pump station with a capacity of approximately 25 cfs will be installed in the Russell Avenue Drain near the existing RP-1 Pump Station. The pump station will consist of a pre-cast concrete sump, two low lift pumps, a manifold to connect to the new pipeline, electrical controls, and necessary appurtenances. A new pipeline will transmit the pumped water from the new pump station to the RP-1 Ditch, a distance of approximately 750 feet. The trench for the new pipeline would be approximately 6 feet deep and would run parallel to an existing pipeline installed for a similar purpose. The construction area for this activity has been extensively disturbed during previous construction activities. The pipe is expected to be 30" or 36" in diameter and likely to be reinforced concrete or PVC. Estimated on-site construction time is expected to be three weeks.

  The proposed increase in the RP-1 pump-rate capacity would significantly improve operational flexibility of the SJRIP by increasing the conveyance capacity to the far east section of the SJRIP (near Fairfax Avenue). Currently, there is only limited conveyance capacity to that portion of the Reuse Area, which underutilizes the overall reuse capacity of the SJRIP.

- **West Pump Station and Pipeline.** A new pump station and pipeline will be installed on the westside of the SJRIP that will allow water to be pumped to the easterly SJRIP, where there is more crop water demand. The pump station will consist of a pre-cast concrete sump, 2 pumps (5± cfs each), a manifold, electrical controls and miscellaneous appurtenances. The pipeline is expected to be 21" diameter PVC pipe. Approximately 2.5 miles of pipe will be installed along existing field roads at a depth of 5 feet, discharging ultimately at the Russell Drain near the RP-1 pump station. An encroachment permit from Fresno County will be required to cross Russell Avenue. Estimated total on-site construction time is expected to be 3 months. The proposed pump station and pipeline would connect the westerly portion of the SJRIP (~1,800 acres) with the 4,000 acres of the SJRIP east of Russell Avenue and increase the rate of drawdown for the storage basins. The construction area for this activity has been extensively disturbed during previous construction activities that have been analyzed under CEQA.

- **SJRIP Return System.** A new electric pump station and pipeline will be installed on a major return drain within the SJRIP that will convey that water to the RP-1 Ditch. The pump station will have a capacity of 10 cfs and will consist of a pre-cast concrete pump sump, 2 pumps, manifold, electrical controls and other appurtenances. The pipeline is expected to be 21" diameter PVC, approximately ¾ of a mile in length, in a trench 5 feet deep, and will discharge into the RP-1 Ditch. Estimated on-site construction time for both the pipeline and the pump station is approximately 3 months. The construction area for this activity has been extensively disturbed during previous construction activities that have been analyzed under CEQA.

The proposed pump station and pipeline would improve the operation efficiency of the SJRIP by capturing internal return flows and returning them to the RP-1 ditch, which will allow for recirculation of this water over the largest possible area.

- **New Subsurface Drainage.** New subsurface drainage systems are proposed for up to 1,100 acres within the existing reuse area. Drains are to be placed approximately 8 feet below the ground surface with a spacing of approximately 400 feet. This area historically has been farmed and is currently planted to Jose Tall Wheatgrass. Construction would occur over a 3-month period, and the fields would be re-planted.

  The proposed subsurface drainage systems would be located on a series of fields with a shallow water table that inhibits cultivation and operations. Subsurface drain water collected by these systems would be discharged into the SJRIP conveyance system for reuse.

PART 3

Environmental Impact Discussion

3.1 INTRODUCTION

This section discusses whether the proposed modifications to the Grassland Bypass Project (GBP) analyzed in the 2009 Final EIS/EIR (SCH No. 2007121110) would result in any new or substantially more severe environmental effects than were previously identified. This section also includes a discussion of the original mitigation measures from 2009 and the need for implementation of those measures to continue (with or without refinements) to allow for the continuation of storm water management practices including use of the Drain. The discharge of subsurface agricultural drainage to the Drain will cease by the end of 2019, and agricultural subsurface drainage will be managed by the GAF participating districts and at the SJRIP. Going forward, the Project as proposed to be modified is called the Long-Term Storm Water Management Plan (LTSWMP) for the period January 1, 2020 through December 31, 2045. It would be implemented through a new use agreement with the U.S. Department of the Interior, Bureau of Reclamation for use of the Drain and with new WDRs from the Regional Board for discharge to Mud Slough (North). The proposed West Pipeline affects Russell Avenue; a permit will need to be obtained from Fresno County to cross the road. Other related improvements and practices at the SJRIP to implement the LTSWMP are included as well, such that the entirety of the Project is evaluated under CEQA.

The proposed changes to the 2009 project are called the Proposed Project. As the lead agency under CEQA, the Authority prepared an Initial Study using the CEQA Environmental Checklist supported by four technical reports on plan formulation, biological resources, sediment removal and surface water resources. An analysis of cultural resources was also made.

Sections discussing significant impacts to environmental resources identified in the 2009 Final EIS/EIR are titled Final EIS/EIR (2009) and sections describing the resulting impacts from the proposed changes to the 2009 project are titled Initial Study (2019).

3.2 IMPACTS RELATED TO PROJECT CHANGES

The environmental topics considered to have the greatest potential for new or more severe significant environmental impacts were surface water resources and biological resources. Differences in the potential impacts associated with the Proposed Project relative to those for the GBP described in the 2009 Final EIS/EIR (Proposed Action) are discussed below. For this CEQA discussion, the Proposed Project is compared to existing conditions for the 2015-2019 period, and the 2009 project was compared to existing conditions at the time of the issuance of the Notice of Preparation (December 20, 2007) for that project. The focus in this section is on impacts (adverse effects) identified as potentially significant in 2009 and mitigation to reduce those impacts to less than significant for surface water and biological resources. It also discusses the significant and unavoidable impacts to soils and groundwater resources identified in the 2009 Final EIS/EIR and how the Proposed Project does not increase the severity of those adverse effects.

3.2.1 Surface Water Resources

3.2.1.1 Final EIS/EIR (2009)

The 2009 Final EIS/EIR (Section 4, Surface Water Resources) identified significant and less-than-significant "beneficial" effects, although beneficial effects are not required to be identified under CEQA (only under NEPA). The beneficial effects were attributed to water quality for the following

parameters based on water quality objectives and modelling for reductions in drainage discharges over the 2010-2019 period:

- Selenium (Se), salinity, boron, and molybdenum in sloughs and San Joaquin River (SJR) upstream of the Merced River

- Se, salinity, boron, and molybdenum in the SJR downstream of the Merced River, salinity in sloughs/SJR

There was a determination of no impact for Se in wetlands during storm events and during dry weather, because Se concentrations were essentially unchanged from existing conditions.

The potentially significant impact (adverse effect) was for sediment accumulation in the Drain. Additional sediment may accumulate, but this impact could be mitigated by removal of all accumulated sediment (e.g., all sediments since completion of the 85-mile Drain in 1975) based on a Sediment Management Plan included in the 2009 Final EIS/EIR as Appendix B. The sediment would be removed in accordance with the proposed Use Agreement and applicable laws and regulations as well. This mitigation reduced the sediment accumulation impact to less than significant.

3.2.1.2 Initial Study (2019)

The projected storm water discharges for the Proposed Project were evaluated in Section 2.10 of the Initial Study. Discharges from the Project Area enter the San Joaquin River at the mouth of Mud Slough. Recent historical conditions reflect the result of the past projects on water quality. Specifically, selenium levels in Mud Slough (North) have reduced each year since the implementation of the GBP and Westside Plan. The transition to the Long-Term Storm Water Plan Management Plan would continue this trend, resulting in significantly reduced discharges into Mud Slough.

There is a general trend of decreasing flows between 2006 and 2014 and the elimination of summer flows to the Drain starting in 2015. Prior to 2015, the Drain flow appears to consist of a combination of year-round drainage and winter storm-induced drainage flows. From 2015, the flow appears to be mainly storm flows with a small component of post-storm drainage.

Hydrological conditions varied during Water Years 2015 to 2017, the period representing existing conditions. Water Year 2015 was critically dry, Water Year 2016 was below normal/dry, and Water Year 2017 was wet. Regardless of year type, flow in the Drain was maintained below 150 cfs.

One of the management tools for storm water runoff would be pumped diversions to the existing and proposed short-term storage basins. It is possible that these basins could completely contain the flows generated by such events. Once the rainfall subsides, the captured water would be drained for reuse as SJRIP irrigation water whenever practical. Depending on time of year, some water could be stored in the storage basins for a month or more.

Operationally, a variety of factors will determine when storm-induced drainage flows would be diverted into the basins. Local staff will consider soil saturation levels, forecasted rainfall amounts, water levels in regional drains, including the GBC, and the flow rate in Mud Slough North (Site D) as factors for determining when to divert flows into the temporary storage basins. The primary goal of any diversion into the short-term storage basins would be to avoid exceeding the 150 cfs capacity of the GBC and hence, required diversion into historic outlets through the wetlands; prevent selenium water quality exceedances at Mud Slough North (Site D); and minimize the overall discharge from the GDA. Water would be drained out of the basins as soon as there was reuse capacity for irrigation within the SJRIP.

The impacts to surface water resources are focused on water quality and are primarily based on changes in the Se, salt, and boron concentrations in the San Joaquin River and Mud Slough (North). The degree of water quality impact is based on the concentration in the receiving water relative to the water quality objectives (WQOs) contained in the Basin Plan for the San Joaquin River Basin (Regional Board 2016). An impact would be considered an adverse effect and significant if it resulted in an increase in the frequency of exceedances in the WQOs over what was measured under existing conditions (Water Years 2015 to 2017). An effect would be considered beneficial if it resulted in a decrease in the frequency of exceedances in the WQOs. Current Basin Plan WQOs and performance goals for Se, boron, and molybdenum for the lower San Joaquin watershed are summarized in the Initial Study. Total flow from the GDA to the Drain would not exceed 150 cfs due to capacity limitations in the siphon under the Main Canal and related facilities.

Under the Proposed Project, water quality in Mud Slough (North) downstream of the Drain is expected to improve relative to existing conditions due to the GAF modifying operation of the drainage system, including the integration of storage basins to reduce storm event discharge and turning off sumps prior to and during wet weather flows using the new SCADA system. The Se, boron, salt, and molybdenum concentrations are expected to decrease due to this discharge management of storm flows.

Under existing 2015-2019 conditions, Se concentrations in Mud Slough (North) downstream of the Drain were not above the current Se performance goal of 15 µg/L monthly mean. Based on 21 years of simulation, water quality in Mud Slough (North) downstream of the Drain is expected to improve under the Proposed Project relative to existing conditions due to the GAF modifying operation of the drainage system, including turning off sumps prior to and during wet weather flows using the new SCADA system and the integration of storage basins to reduce storm event discharge. However, on rare occasions Se concentrations are predicted to be above WQOs (5 µg/L 4-day average) in dry and critically dry years when dilution flows in Mud Slough upstream of the Drain are reduced (see Initial Study, Appendix D, Attachment A). When evaluated on an event basis (which could include one or more consecutive days), exceedances are expected to occur on average once every 3.5 years. These exceedances would occur less frequently than EPA guidelines which allow for a violation of water quality standards once every 3 years.

The Se concentrations are expected to be reduced under the Proposed Project, a beneficial effect. However, because the WQO would change from the monthly mean performance goal of 15 µg/L to a 4-day average of 5 µg/L WQO, the frequency of exceedances of the applicable water quality criteria would be increased (as noted above) as compared to existing conditions due to the reduced WQO (since the Final EIS/EIR was released in 2009). However, it is expected that the water quality in Mud Slough (North) as it relates to Se conditions would continue to be improved; the frequency of exceedances of the 2016 WQO is considered a less-than-significant impact.

Monthly average boron concentrations in Mud Slough downstream of the Drain are expected to be greater than 2 mg/L in some months during both the wet and dry season. When there is no flow from the Drain, concentrations would be the same as found in Mud Slough (North) upstream of the Drain (occasionally above a 2 mg/L monthly average), but storm water discharges from the Drain could occasionally contribute to exceedances of the 2 mg/L monthly average WQO downstream of the Drain in April. Because boron concentrations are expected to decrease during winter months due to turning off drainage sumps prior to and during wet weather flows, the frequency of exceedances above the WQO are expected to decrease as compared to existing conditions. Therefore, changes to boron concentrations would have a less-than-significant impact in comparison to existing conditions.

The Sediment Management Plan (2009) allowed for placement of removed sediments on agricultural, industrial and/or residential lands. Removal of the 40 years of accumulated sediment commenced in 2015, 2016, 2017 and 2018 using excavators to remove the sediment and trucks to haul it to the SJRIP.

As of August 2018, approximately 180,000 cubic yards of sediment has been removed from the Drain between the Drain Inlet (Site A) and Henry Miller Avenue (approximately 14 miles). All removed sediment was hauled to the SJRIP and used to fill in unneeded drains. Future sediment removal will be accomplished similar to the 2017-2018 removal, but the location of the placement area likely will change due to the logistics of hauling material that is further away from the SJRIP. Measured selenium levels in the Drain sediment are below the threshold for application on industrial and residential sites. A planned industrial site has been located adjacent to the Drain at Highway 152, and an estimated 100,000 cubic yards could be placed at this location. This would be sufficient to store all of the remaining sediment in the Drain. Due to the narrow time-window available each year for sediment removal and the logistics related to hauling distances, the removal is expected to take an additional year to accomplish, to December 31, 2020. Approximately 95,000 cy of sediment remain in the Drain and need to be removed. The nature and intensity of sedimentation and hauling activities associated with the Proposed Project modification are consistent with, and well within the scope of, the activities previously analyzed in in detail in the Grassland Bypass Project Final EIS/EIR for the 2010-2019 timeframe. The capacity of the Drain would be restored to 300 cfs, while only 150 cfs capacity will be used for the Proposed Project. The amount of additional sediment accumulation for the period 2021-2045 would not interfere with use of the Drain for storm water conveyance, and the impact is less than significant.

The Se WQO would be met during most of the year, with only occasional exceedances of the 5 ppb 4-day average that would be short in duration, a less-than-significant impact as explained above. Refinements to the existing mitigation measures to further reduce the less-than-significant impacts from the expected periodic exceedances will be implemented for the Proposed Project, as follows:

- Establish a Mud Slough (North) water quality goal of 3 ppb Se, 4-day average. For every 3 months that meet this 3 ppb performance goal, 1 exceedance of 5 ppb 4-day average is allowed.

- If the 5-ppb 4-day average not met with proposed management practices (shut off electric sumps), analyze operational data and develop adaptive management approach to implement additional corrective actions.

- Organize the Mitigation Sub-Committee comprised of local wildlife agencies as required in the 2010 Use Agreement to utilize funds deposited in the Supplemental Mitigation Project Fund to develop mitigation projects such as:

    - Refuge water supply augmentation (such as USFWS Blue Goose unit)

    - Increased water flows in Mud Slough after Drain flows cease

    - Habitat restoration projects

    - Species specific habitat establishment

In summary, the Proposed Project would not result in new significant impacts not already considered and mitigated in the 2009 Final EIS/EIR and would not substantially increase the severity of the previously identified impact. Less-than-significant impacts to water quality would not be increased to significant, and the sediment accumulation impact would not be worsened. Sediment removal initiated during the 2009 project would be completed and subsequent accumulation would not interfere with operation of the Drain over the 2020-2045 timeframe.

3.2.2 Biological Resources

3.2.2.1 Final EIS/EIR (2009)

The three sections of the Project Area used in the 2009 analysis (in Section 6.1.1) are:

- **Area 1 (the GDA):** the 97,400-acre source zone known as the GDA, located in the Central Valley of California, specifically in Merced and Fresno Counties.
- **Area 2 (Area 2):** 93 miles of wetlands channels, Salt Slough, and the San Joaquin River from the confluence of Salt Slough downstream to Mud Slough. This area is located within the GWD and state/federal wildlife management areas, and under current conditions does not receive water directly from the source zone (Area 1).
- **Area 3 (Area 3):** the Drain from Russell Avenue on the south to its northern terminus at Mud Slough, 6 miles of Mud Slough upstream of its confluence with the San Joaquin River, and the San Joaquin River downstream from Mud Slough to Crows Landing. This area comprises the drainage pathway from the source zone through the San Joaquin River, and, under current conditions, includes those habitats affected by selenium (Se)- and salt-rich drainage water.

Compared to existing conditions, the expanded reuse area may cause significant adverse impacts in Area 1 as crop changes lead to foraging habitat loss or degradation for species in the expansion area, as well as increased Se and higher potential for Se bioaccumulation in that area. By removing drainage water from Area 1, ponding is less likely to occur and less habitat is expected to be degraded (than under the No Action Alternative in both Area 2 and Area 1 outside of the reuse area). Area 3 will experience beneficial effects, as discharges of Se and salinity to Mud Slough and the San Joaquin River habitats and species would be lower than under existing conditions.

The acreage acquired for the expanded reuse area would gradually be planted with salt-tolerant crops. The change in crop use could lead to decreases in habitat or habitat value. Changes in land use and crop patterns for the conversion of 2,900 acres to salt-tolerant crops could reduce the area of cultivated crops that provide foraging habitat for Swainson's hawk, northern harrier, burrowing owl, tricolored blackbird, pallid bat, and western red bat. Conversion of cultivated lands to salt-tolerant crops could reduce the abundance of prey utilized by these special-status species, a potentially significant adverse impact compared to existing conditions. However, the Proposed Action does not include a reduction in the area of land cultivated for rice. (Section 6.2.2.2.1)

The 2009 Final EIS/EIR (Section 6.2.2.1.4) reported that drainage reuse at the SJRIP In-Valley Treatment/Drainage Reuse Facility, which involves application of subsurface drain water on the surface of fields to irrigate salt-tolerant crops, has the potential to result in highly seleniferous subsurface drainwater ponding in fields at the reuse facility, which can create a hazard to birds. Furthermore, the installation of subsurface drainage and collection systems would result in ground disturbance that may affect breeding success of burrowing species such as burrowing owls. The 2009 Final EIS/EIR concluded that all of these potentially significant impacts could be mitigated to less than significant through implementation of the measures described below:

> "The following Measures 1 through 4 are required to mitigate for significant adverse impacts under CEQA associated with continued operation and expansion of the In-Valley Treatment/Drainage Reuse Facility. Mitigation 5 is required if Mitigations 1, 2, and 3 do not sufficiently reduce the exposure to Se" (Section 6.2.2.4):

- **MITIGATION 1: AVOIDING BURROWING OWLS**

  In conformance with federal and state regulations regarding the protection of raptors, a pre-construction survey for burrowing owls will be completed in conformance with CDFG recommendations, no more than 30 days prior to the start of construction. If no burrowing owls are located during these surveys, no additional action would be warranted. However, if breeding or resident owls are located on, or within 250 feet of, the proposed construction site, the following mitigation measures will be implemented:

  - A 250-foot buffer, within which no new activity would be permissible, will be maintained between project activities and nesting burrowing owls. This protected area will remain in effect until August 31, or may be terminated earlier at the CDFG's discretion based upon monitoring evidence that indicate that young owls are foraging independently.

  Owls may be evicted from the construction area to avoid take of individual owls via construction activities. However, CDFG does not permit the eviction of burrowing owls from burrows during the nesting season (February 1 through August 31). Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction. If accidental take (disturbance, injury, or death of owls) occurs, the CDFG will be notified immediately.

- **MITIGATION 2: REDUCE EXPOSURE POTENTIAL BY REDUCING ATTRACTIVENESS OF IRRIGATION DITCHES FOR NESTING**

  The majority of shorebird nesting on the existing reuse site consists of killdeer and recurvirostrids nesting within, or adjacent to, the irrigation ditches that deliver drainwater to the site. Adults nesting near irrigation ditches feed primarily in these ditches, though this is more typical of recurvirostrids than killdeer. Reducing the attractiveness of the ditches and their immediate surroundings as nesting and foraging habitat is necessary to minimize the level of shorebird exposure to Se.

  Unused ditches have been filled in to prevent shallow ponded water from becoming an attractive nuisance. Sediment that has collected on the bottom of operational ditches will be removed to remove potential nest substrate when water levels are low. Smooth sides and borders will be maintained along irrigation ditches to inhibit the common killdeer and recurvirostrid practice of using rough surfaces such as disked areas to conceal nests.

- **MITIGATION 3: REDUCE EXPOSURE POTENTIAL BY HAZING BIRDS FROM NESTING NEAR, AND FORAGING IN, IRRIGATION DITCHES**

  Shorebird use of the existing project site is not homogenous (H.T. Harvey & Associates 2004, 2005). As noted above, shorebird nests at the existing project site are concentrated in the vicinity of irrigation ditches. Additionally, stilts and avocets are semicolonial, often nesting in close vicinity to each other. Hazing will be performed to reduce exposure by reducing the number of nesting birds. Methods of hazing may include firing noise making devices such as cracker shells, 15-mm bird bombs, and bird whistlers from a vehicle to discourage breeding birds from establishing nest sites. In addition, propane-operated cannons will be left operating on a 24-hour basis, if required. Cannon locations will be changed periodically to lessen acclimation.

- **MITIGATION 4: FLOODED FIELD CONTINGENCY PLAN**

  In the spring of 2003, a pasture at the existing reuse area site attracted waterfowl when it was inadvertently flooded. This flooded area created ideal ecological conditions for

shorebird foraging and nesting and thus, a number of pairs responded opportunistically and bred in the field. Recurvirostrid eggs collected near the pasture had highly elevated Se concentrations compared to other recurvirostrid eggs collected elsewhere on the site. The Panoche Drainage District has since developed a contingency plan for accidental flooding. This plan is presented in the *San Joaquin River Water Quality Improvement Project, Phase I Wildlife Monitoring Report*, 2005 (H.T. Harvey & Associates 2006). The plan includes provisions for immediate removal of unintended drain water as well as for increased monitoring near flooded sites. The provisions of this plan will be implemented in the event of ponding at the reuse area.

- **MITIGATION 5: PROVIDE COMPENSATION BREEDING HABITAT**

  If after employing Mitigation Measures 1, 2, and 3, monitoring (described in Section 15) determines nesting shorebirds are exposed to elevated Se levels as a result of the Proposed Action, compensation habitat for residual impacts will be provided. (See compensation habitat protocols contained in the 2009 Final EIS/EIR, pages 6-49 through 6-52 which are incorporated by reference.)

3.2.2.2 Initial Study (2019)

The Proposed Project is making changes to existing infrastructure and farmed areas on existing agricultural land to accommodate storm water flows. No natural habitat is being modified for the new pump station, pipeline, reuse area, subsurface drains at the existing reuse area, communication towers, canal, and sediment removal activities. Sediments have been placed previously in the adjacent Drain right-of-way to dry and are then placed as fill material for unneeded drains at the reuse area or potentially on an area planned for commercial development. The proposed short-term storage basins (200 acres) would be located within the existing SJRIP on lands currently planted to Jose Tall Wheatgrass. The proposed expansion of 1,450 acres will take the existing reuse facility from 6,100 acres analyzed in the 2009 Final EIS/EIR to 7,550 acres of useable reuse area. This is an additional 650 acres over the maximum size anticipated in the 2009 Final EIS/EIR. This additional acreage would be managed in the same manner as the existing acreage with the same biological monitoring requirements established by the USFWS in their Biological Opinion (see USFWS 2009[3]). Therefore, the analysis in the Initial Study sufficiently addresses the additional acreage. Much of this acreage is already planted to salt tolerant Jose Tall Wheatgrass, and only a change in ownership (private to district) would be needed for implementation.

Because the Project site comprises fallowed and regularly disced land vegetated primarily by nonnative species, it does not provide high-quality habitat for migratory birds or bats. The habitat provides only limited food resources (primarily insects) for some migrant songbirds and migratory bats; therefore, it does not represent a unique or important resource for these animals. (Initial Study, Appendix B, Section 4.4.)

Waterbird use of the existing and proposed short term storage basins could negatively impact waterbirds through dietary selenium exposure. Increased water being stored in the existing basins and storm water temporarily stored in the proposed storage basins would potentially provide an attractive foraging habitat for waterbirds. The water is expected to contain high enough selenium concentrations that long-term exposure could result in reproductive impairment to sensitive waterbird species. If the duration of the exposure is long enough, reproductive impairment is possible even if the waterbirds forage on the Project site and nest elsewhere in the vicinity of the Project. Because of the conditions on the Project site and the avian species that may use the site for nesting, these impacts would not

[3] U.S. Fish and Wildlife Service. 2009. Final Biological Opinion, 2010-2019 Use Agreement for the Grassland Bypass Project, Merced and Fresno Counties, California. File No. 81420-2009-F-1036. Sacramento, CA. December 18.

interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeded the use of native wildlife nursery sites. However, if waterbirds nest on the Project site, impacts on nesting birds from selenium exposure would be significant. Incorporation of Mitigation Measures BIO-2a through BIO-2f into the conditions of approval would ensure that adverse effects of selenium exposure on nesting waterbirds are avoided or substantially lessened to a less-than-significant level. Note that Mitigation Measures BIO-2a, BIO-2c, BIO2e, and BIO2f have been implemented previously at the SJRIP reuse site (since 2006), where they have significantly reduced the number of nesting shorebirds exposed to selenium. (These mitigation measures are provided in their entirety below from the Initial Study, Appendix B.)

For the new short-term storage basins (up to 200 acres for 1,000 AF of storm water storage), the proposed site is an area previously planted with salt tolerant crops that does not affect nearby wetlands but could be characterized as an attractive nuisance to wildlife who would be discouraged from using the basins by their design, maintenance protocols, and during its operation from December to May, by hazing in order to minimize their exposure to Se, similar to hazing being conducted for irrigation ditches.

Refinements to the 2009 biological mitigation measures for the expanded reuse area, new storage basins, and related ground disturbance during construction and operation are proposed. The measures are similar to the 5 types of measures listed above (Section 3.2.2.1) with minor changes based on monitoring of the area since 2001 and expanding use of the measures to apply to construction and operation of new features such as the short-term storage basins. The revised biological mitigation measures are:

- **Mitigation Measure BIO-1: Conduct a Preconstruction Survey for Burrowing Owl and Implement Avoidance Measures.** No more than 15 days before the start of initial ground-disturbing activities for the Project, a qualified biologist(s) knowledgeable of the species will conduct a take avoidance survey for the presence of burrowing owls within 500 ft of the area scheduled for disturbance.
- **Mitigation Measure BIO-2a: Reduce Se Exposure Potential by Reducing Attractiveness of Irrigation Ditches for Nesting.** Sediment that has collected on the bottom of the ditches will be periodically removed and irrigation ditches within the proposed expansion areas will be maintained with smooth sides and borders to reduce nesting attractiveness in and near irrigation ditches.
- **Mitigation Measure BIO-2b: Reduce Se Exposure Potential by Reducing Attractiveness of Storage Basins for Nesting.** The attractiveness of the existing and proposed short term storage basins to nesting shorebirds will be reduced through active management practices, including removing sediment and vegetation that has collected on the bottom of the ponds and maintaining smooth bottoms, sides and borders of the basins.
- **Mitigation Measure BIO-2c: Reduce Se Exposure Potential by Hazing Waterbirds from the Project Site During Nesting Season.** Waterbirds shall be hazed from the Project site during the waterbird nesting season (March 15 to July 15) to reduce exposure of waterbirds to selenium by discouraging waterbirds from feeding where they could be exposed to selenium.
- **Mitigation Measure BIO-2d: Reduce Se Exposure Potential by Hazing Waterbirds from the Storage Basins When Water is Present.** Waterbirds shall be hazed from the existing and proposed short term storage basins to reduce exposure of waterbirds to selenium by discouraging waterbirds from feeding or nesting where they could be exposed to selenium.

- **Mitigation Measure BIO-2e: Implement a Flooded-Field Contingency Plan.** A contingency plan for accidental or inadvertent flooding has been developed for the SJRIP. The plan includes provisions for immediate removal of unintentionally released drainwater as well as for increased monitoring and hazing near flooded sites.
- **Mitigation Measure BIO-2f: Monitor Mitigation Success and Provide Compensation Breeding Habitat.** The above mitigation measures will be implemented to reduce the exposure of birds to selenium. To evaluate the success of these measures, monitoring will be implemented to determine whether nesting waterbirds are still exposed to elevated selenium levels as a result of the Project. If they are, compensation habitat for residual impacts will be provided, following the protocol outlined below that has been adapted from a protocol developed by USFWS (1995) for determining and mitigating impacts on nesting waterbirds at evaporation basins.
- **Mitigation Measure BIO-2g: Conduct Preconstruction Nest Surveys for Infrastructure Installation Occurring During the Nesting Season.** Preconstruction nest surveys will be completed for all Project-related infrastructure installation activities that occur between February 1 and August 31 to comply with California Fish and Game Code Section 3503.5. A qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitats (including for raptors) within 500 feet of construction activities for presence of breeding or nesting birds. Surveys shall be conducted no more than 5 days prior to construction activities with a second survey conducted no more than 24 hours prior to the onset of construction. If active nests are found, no-disturbance buffers shall be implemented around each nest. If a nest is found in an area where ground disturbance is scheduled to occur, the area will be avoided either by delaying ground disturbance in the area until a qualified wildlife biologist has determined that the young have fledged or by re-siting the proposed Project component(s) to avoid the area.

In summary, the potentially significant impacts and mitigation measures to be implemented are not substantially different from those identified in the 2009 Final EIS/EIR. There are no new significant impacts to biological resources. While these impacts would occur over a larger area due to the modifications, they are not substantially more severe than in the 2009 Final EIS/EIR given the proven effectiveness of the mitigation measures.

3.2.3 Groundwater and Soil Resources

3.2.3.1 Final EIS/EIR (2009)

For the Grassland Bypass Project, 2010–2019, the salinity modeling identified the following potential impacts to soils and groundwater, compared to existing conditions in 2008 (Section 5.2.3.2):

- At the end of 2019, projected drainflow under the Proposed Action is similar to existing conditions. It is considered, therefore, to have no impact relative to existing conditions on drainwater production.

- Minimal projected net increases in the area affected by a shallow water table (1 square mile) indicate that the Proposed Action has a less-than-significant adverse impact relative to existing conditions.

- A small increase in the bare-soil evaporation rate compared to existing conditions is considered to be a less-than-significant impact relative to current evaporation rates.

- Flow model results for the Proposed Action indicate an almost 75 percent decrease in seepage to unlined canals compared to existing conditions (2008), a significant beneficial effect relative to existing conditions.

- Simulated unsaturated-zone soil salinity for the GDA increases from 1.0 dS/m in 2008 (existing conditions) to 1.9 dS/m in 2019. The increase in unsaturated-zone soil salinity relative to existing conditions is considered to be a less-than-significant impact because the soil remains productive.

- In the GDA, estimated soil selenium increases from 11 µg/L in 2008 to 21 µg/L in 2019, and boron increases from 0.9 to 1.3 mg/L. In the SJRIP during the same time period, soil selenium concentrations increase from 73 to 124 µg/L, and boron concentrations increase from 3.4 to 5.5 mg/L. The increase in selenium and boron concentrations relative to existing conditions is considered to be a significant unavoidable impact of irrigating western San Joaquin Valley soils. The concentrations will not affect agricultural productivity, but may with time influence selenium concentrations in underlying shallow groundwater and agricultural drainwater.

- Groundwater salinity in the GDA decreases from 6 dS/m in 2008 to 4 dS/m in 2019, a significant beneficial effect relative to existing conditions because the groundwater salinity decreases over time.

- In the GDA, simulated groundwater selenium concentrations decrease from 47 to 22 µg/L, and boron concentrations decrease from 6.0 to 3.7 mg/L. The continuation of the GBP is, therefore, considered to have a significant beneficial effect on selenium and boron concentrations relative to existing conditions.

- In the SJRIP, the unsaturated-zone soil salinity increases from 6.6 dS/m in 2008 to 11.2 dS/m in 2019. Although the soil salinity increases under Proposed Action conditions represent significant changes, they are spatially limited to at most 6,900 acres (6 percent of the GDA). The soil salinity changes are also considered reversible; impacted soils could be reclaimed and saline shallow groundwater removed when an alternative means of salt disposal becomes available under Phase III. Therefore, the continuation of the GBP is considered to have a less-than-significant adverse impact on unsaturated zone soil salinity in the GDA relative to existing conditions.
- Under the Proposed Action, simulated groundwater salinity concentrations beneath the SJRIP decrease from 23 dS/m in 2008 to almost 17 dS/m by 2019. Simulated groundwater selenium concentrations also decrease from 816 to 419 µg/L, and boron concentrations decrease from 38.9 to 25.2 mg/L. Compared to existing conditions, the continuation of the GBP is considered to have a significant beneficial effect on groundwater quality beneath the SJRIP. Fields would be planted with salt-tolerant crops and managed to limit soil salinity impacts so that the land remains productive. Therefore, the area-limited application of undiluted drainwater is a less-than-significant impact to the GDA. Soil and drainwater quality monitoring are being conducted to track salinity changes within the SJRIP. Therefore, the primary concern is the increase in selenium and boron concentrations in soils in the GDA relative to existing conditions that is considered to be a significant unavoidable impact of irrigating western San Joaquin Valley soils. The concentrations of these two elements will not affect agricultural productivity, but may with time influence selenium concentrations in underlying shallow groundwater and agricultural drainwater.

Section 5.2.4 Cumulative Effects noted that the area underlain by a water table within 10 feet of land surface increased by about 20,000 acres per year during the period 1991-1997 and that salt has been imported and deposited into western San Joaquin Valley soils and water. The water table rise and salinization of soil and groundwater is a significant regional problem.

3.2.3.2 Initial Study (2019)

The ongoing reuse of agricultural drainwater on-farm within the GDA is not proposed to change. Key assumptions in drainwater management include recirculation of drainwater collected in sumps and reuse of drainwater from sumps. The SJRIP reuse area would be used to manage excess drainwater from GDA sumps by reusing it to irrigate salt-tolerant crops. Sumps for tile drains would be turned off prior to storm events, and storm runoff up to an equivalent volume of 3 inches of rain on the SJRIP could be reused within the 7,550 acres of the SJRIP reuse area prior to discharge to the GBC and Drain (to Mud Slough).

The issue is the expansion of the reuse area by 650 acres (from 6,900 analyzed in the 2009 EIS/EIR and the proposed 7,550 acres) and the use of storm water collected in the short-term storage basins for irrigation of salt tolerant crops at the SJRIP. The modelling performed in 2008 was not repeated in 2019. However, the drainage that would be captured in the storage basins is storm water, not agricultural subsurface drainwater (because the tile sumps would be shut off). Agricultural subsurface drainwater is of lower quality than storm water runoff. This capture and reuse of storm water would not substantially worsen the Se, salt, and boron concentrations in the soil (described above) and in shallow groundwater at the SJRIP and within the GDA. Therefore, compared to existing conditions in 2019, there are no new significant impacts (adverse effects) to groundwater and soil resources. The one significant unavoidable impact to soils in the 2009 Final EIS/EIR would not be substantially more severe due to the Proposed Project. The regional cumulative impact of water table rise and salinization of soil and groundwater from long-term irrigation of agriculture (and water deliveries to the federal wildlife refuges) continues, and it is not substantially more severe due to the Proposed Project, especially with water conservation practices employed throughout the GDA.

3.3 OTHER RESOURCE AREAS

Other resource areas evaluated in the Final EIS/EIR (2009) and addressed as necessary in this Addendum and the Initial Study (2019) in order to evaluate potential impacts of the Proposed Project include Land Uses (including agriculture, wildlife habitat, and recreation), Cultural Resources, Indian Trust Assets, Energy Resources, and Greenhouse Gases. The 2009 EIS/EIR also covered socioeconomic and environmental justice issues to comply with NEPA, and these topics are not revisited for this CEQA document. The Initial Study covered the additional environmental topics (to the surface water, biology, and groundwater and soils resources discussed above) of aesthetics, agricultural and forest resources, air quality, geology, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, tribal cultural resources, utilities and service systems, and wildfire. These resources are substantially unaffected by the Proposed Project for the reasons described in the Initial Study and summarized below. There are no new significant or substantially more severe impacts to these resources as a result of the Proposed Project.

3.3.1 Land Uses

3.3.1.1 Final EIS/EIR (2009)

The focus of the analysis in Section 7 was on three uses of land within the Project Area and vicinity: agriculture, wetland habitat, and recreation associated with the federal and state wildlife refuges.

Based on up to 6,900 acres of land in the SJRIP, GDA acreage in production is projected at 74,675 throughout the analysis period. The SJRIP lands would largely remain in agricultural production but would be planted with more salt-tolerant crops. Therefore, the Proposed Project would not be expected to result in any substantial land use changes, nor produce inconsistencies with Fresno or Merced County General Plan land use designations for the GDA. (p. 7-12)

Land uses within the Project Area would not be expected to change substantially over existing conditions, resulting in no adverse effect on wildlife habitat land uses within the Project Area. The Proposed Action would be consistent with General Plan policies pertaining to the preservation and protection of wildlife habitat and open space as well as water resources/habitat within the Project Area. No adverse impacts would be anticipated, and no mitigation required. (p. 7-18.)

The primary recreation activities in the Project Area include water-dependent activities. Fishing occurs directly in the rivers or sloughs, and recreation activities at the wildlife refuges or management areas are based on enjoying wildlife that use the wetland habitat. Under the Proposed Action, drainwater would continue to flow around the wetland habitats and into the Drain. After 28 miles, the water would enter Mud Slough where it would travel another 6 miles before reaching the San Joaquin River 3 miles upstream of its confluence with the Merced River. Recreational opportunities would not be expected to either increase or decrease compared to existing conditions. The Proposed Project would either be consistent with or have no bearing on the General Plan objectives and policies summarized in Section 7.1.1 and outlined in Appendix F relating to recreation and open space. (p. 7-20.)

3.3.1.2 Initial Study (2019)

The proposed SJRIP expansion of 1,450 acres will enlarge the existing reuse facility from 6,100 acres analyzed in the 2009 Final EIS/EIR to 7,550 acres of useable reuse area. This is an additional 650 acres over the maximum size (6,900 acres) anticipated in the 2009 Final EIS/EIR. Concerning agricultural land use, the proposed short-term storage basins would be constructed on land that has been used for drainage reuse as part of the SJRIP since 2001. Up to 200 acres of land would be converted from salt-tolerant crops to short-term storage basins, an insignificant amount of agricultural land taken out of production. However, no farmland would be permanently converted to other land uses. The majority of the new reuse area would remain planted to Jose Tall Wheatgrass and just have a change in ownership, with approximately 450 acres of conventional farmland converting to Jose Tall Wheatgrass. The facilitation of storm water management helps to maintain the viability of agriculture in the overall Project Area and protects water supply channels to the wetland management areas that drain to the San Joaquin River. (Sections 1.1.3.3 and 2.2.)

The Proposed Project does not modify land uses at any of the wildlife management areas/refuges. Furthermore, the reuse area and storage basins would be monitored and maintained to avoid use of the areas by waterfowl that would normally use the refuges for foraging and nesting. (Section 1.1.4.2.)

Hydrologic modeling indicates that the Proposed Project components, once fully implemented, will cause the Se water quality criteria to be met under most conditions, and water quality in Mud Slough (North) will be of better quality regarding Se than in the past. Under these future conditions, Mud Slough (North) could be opened to recreational fishing at the discretion of USFWS. (Section 2.16.)

3.3.2 Cultural Resources

3.3.2.1 Final EIS/EIR (2009)

Potential historic resources in the region of the GBP are largely related to agriculture, including farmsteads, labor camps, yards for distributing agricultural produce, feedlots, canneries, pumping stations, siphons, canals, drains, unpaved roads, bridges, and ferry crossings. Labor camps generally consist of at least one wooden bunkhouse or boarding house, a dining hall, a cookhouse, a washroom, and associated buildings. Due to the long history of agricultural use, it is unlikely that intact surface or shallow subsurface artifacts exist. Subsurface deposits may exist below the plow zone or capped beneath pavement or structures. Surface deposits may exist in areas relatively unaffected by development or agriculture. (Section 9.1.)

No impacts to historic properties are anticipated by the Proposed Action because it does not propose actions that may cause effects to historical properties. All actions are proposed to occur within the GDA and, in essence, continue similar operations to those conducted under the existing Use Agreement on lands previously disturbed by agricultural production. Future expansion of drainage water treatment facilities or management facilities at the San Joaquin River Water Quality Improvement Project (SJRIP) reuse facility that result from the implementation of this alternative would have no potential to affect historical properties. (Section 9.2.2.2.)

3.3.2.2 Initial Study (2019)

A confidential Cultural Resources Technical Report (AECOM 2019) was prepared to support the Initial Study, and report findings are provided primarily in Section 2.5. Direct and indirect CEQA Area of Potential Effects (C-APE) were developed in order to study the potential impacts of the Proposed Project. The Direct C-APE includes the footprints of all the areas that would be subject to ground disturbance by the project. The Indirect C-APE would account for indirect impacts to resources (i.e., visual effects to the setting of built environment resources) that would not be physically impacted by the project.

The records searches did not identify any archaeological resources in the 1.0-mile radius of the project footprint, only built environment resources. The previously recorded historic-age built environment resources in the Project Area include the Main Canal (P-27-000082 Merced County) and the Outside Canal (P-10-005796 Fresno County; P-24-000434 Merced County). The Delta-Mendota Canal (P-10-005166) is adjacent to the "Proposed Reuse Expansion" area.

The Proposed Project does not involve large-scale excavation, and most of the area has been disturbed by previous farming (primarily the top 12 inches of soil), conveyance construction, and road construction activities. The depth of disturbance involved in placing new facilities in an area that has been farmed or subject to earlier road and canal construction determines in part whether there is the potential to affect unknown surface and buried resources. Another issue is the potential for above ground facilities such as the SCADA communications towers and equipment boxes to affect historic resources, but there is some flexibility in siting the towers to consider proximity to historic canals. The storage basins would be on top of the ground surface and contained by raised levees that require limited excavation.

The Initial Study determined that impacts to historical and archaeological resources are less than significant for the following reasons, including commitments by the Project proponents to perform additional surveys and construction monitoring which is a common practice.

- **Historical Resources:** None of the Proposed Project activities, including constructing temporary storm water storage in storage basins, planting salt-tolerant crops in existing agricultural lands, improving existing water conveyances, installing subsurface drainage within existing reuse area, or installing adjacent new conveyances, would result in a substantial adverse change to known or potential historical resources in the Project Area (the four canals including the DMC and the Drain). The Proposed Project activities, including the installation of below grade (approximately 5 to 6 foot depth) pipelines, alteration of the non-historic age dirt-lined RP-1 Canal adjacent to the Outside Canal with a concrete lining, and installation of pump stations, would not result in demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.

  The Proposed Project's expansion of the reuse area will be adjacent to portions of the Eagle Field Airport; however, there will be no physical changes to the airport itself or any associated features. A potential reuse expansion area in the vicinity of the Eagle Field Airport is currently

planted to Jose Tall Wheatgrass, and no changes to the cropping pattern or irrigation methods are proposed.

The location of the proposed SCADA tower is dependent upon a radio survey that allows for some flexibility in siting to avoid resources if present. Once the tower location has been identified, an additional records search and survey would be required and conducted to determine if archaeological or built-environment resources are present. If resources are present and avoidance is not feasible for the required tower location, the resources would be recorded and evaluated prior to certification of the CEQA document in order to assess their historical significance as historical resources or unique archaeological resources, per Section 15064.5 of the CEQA Guidelines or Section 21083.2 of the PRC.

- **Archaeological Resources:** No archaeological resources were identified in the records searches performed for this project. However, conditions were not suitable for an archaeological survey of the Project Area and much of the C-APE has not been previously surveyed. Based on the soils types and alluvial deposition there is a low to moderate potential for resources to be present. Therefore, AECOM recommends that an archaeological survey be conducted in order to determine if there are archaeological sites (prehistoric or historic period) within the Project Area. If resources are present in the Project Area and avoidance is not feasible, the resources should be recorded and evaluated to assess their historical significance as historical resources or unique archaeological resources, per Section 15064.5 of the Guidelines or Section 21083.2 of the PRC.

  Although no previously identified prehistoric resources have been identified in the C-APE, several isolated artifacts were discovered during a previous study just over 1.0-mile north of the proposed lined channel within the C-APE (Bureau of Reclamation 1983, cited in AECOM 2019). The presence of these artifacts warranted archaeological monitoring during ground disturbing activities. If the results of the archaeological survey of the current C-APE are positive, AECOM recommends mitigation in the form of preparation of an archaeological testing plan (including geoarchaeology) and/or an archaeological monitoring plan. All ground disturbing activities should be monitored by a qualified archaeologist. Due to the previously identified isolated artifacts, AECOM recommends mitigation in the form of construction worker training. Prior to construction, the construction contractor and subcontractors shall be informed of the legal and regulatory consequences of knowingly destroying cultural resources or removing artifacts, human remains, bottles, and other significant cultural materials from the site. Significant cultural materials include but are not limited to aboriginal human remains; chipped stone; groundstone; shell and bone artifacts (both human and animal); concentrations of fire-cracked rock; bottle glass; ceramics; ash and charcoal; and historic features such as privies or building foundations/remains.

  If cultural resources are uncovered during ground disturbing activities associated with the Proposed Project, work will stop within 50 feet of the initial find and a qualified professional archaeologist shall be notified regarding the discovery. The archaeologist shall determine whether the resource is potentially significant as per the CRHR and develop appropriate mitigation. The Authority shall comply with the mitigation requirements identified by the archaeologist.

- **Human Remains:** In the unlikely event that human remains are discovered during Project implementation, work in the immediate vicinity of the discovery will be suspended and the Authority will notify the Fresno or Merced County Coroner, depending on location of discovery. If the remains are deemed Native American in origin, the Coroner will contact the NAHC and identify a Most Likely Descendant pursuant to Public Resources Code Section

5097.98 and California Code of Regulations Section 15064.5. Work may be resumed at the landowner's discretion, but will only commence after consultation and treatment have been concluded. Work may continue on other parts of the Project while consultation and treatment are conducted.

3.3.3 Indian Trust Assets

3.3.3.1 Final EIS/EIR (2009)

As described in Chapter 11, Indian Trust Assets (ITAs) are legal interests in property held in trust by the U.S. for federally recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITAs can include land, minerals, federally reserved hunting and fishing rights, federally reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally recognized Indian tribes with trust land; the U.S. is the trustee. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions (Rivera, pers. comm., 2008a, cited in Reclamation 2009).

An examination of records held by the Bureau of Indian Affairs and Reclamation was conducted by the Regional ITA Coordinator. No reservations or rancherias are located within the Project Area. No known ITAs are found within the Project Area. The nearest ITA is a Public Domain Allotment, which is approximately 58 miles northeast of the Project location (Rivera, pers. comm., 2008b, cited in Reclamation 2009b). Therefore, no impacts would occur to ITAs caused by the Proposed Action.

3.3.3.2 Initial Study (2019)

As of July 1, 2015, California Assembly Bill 52 of 2014 (AB 52) was enacted and expands CEQA by defining a new resource category, "tribal cultural resources." Assembly Bill 52 establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3). PRC Section 20184.3 (b)(2) provides examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources. PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and meets either of the following criteria: a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California Native American tribes regarding those resources. The formal consultation process must be completed before a CEQA document can be released if a California Native American tribe traditionally and culturally affiliated with the geographic area of the proposed project requests consultation from the lead agency (PRC Section 21080.3.1). California Native American tribes to be included in the process are those that have requested notice of any proposed projects within the jurisdiction of the lead agency.

On August 23, 2017, the Dumna Wo Wah Tribal Government requested formal notice and information on proposed projects implemented in the Grassland Watershed under Public Resources Code section

21080.3.1. A description of this project was mailed to the tribal government on March 22, 2019, in advance of completion of Section 2.17 (Tribal Cultural Resources) of the Initial Study. Section 2.17 reports that the Authority has contacted the Amah Mutsun Tribal Band, the Dumna Wo Wah Tribal Government, the North Valley Yokuts Tribe, and the Southern Sierra Miwuk Nation and provided each tribal entity with a project description and a request for consultation. No responses were received, and no further consultation is required. Therefore, the Proposed Project is assumed to have no impact on tribal resources.

3.3.4 Energy Resources

3.3.4.1 Final EIS/EIR (2009)

The Proposed Action would increase energy consumption within the Project Area due to construction and operation of the San Joaquin River Water Quality Improvement Project (SJRIP). The power requirements associated with this facility would incrementally add to electricity consumption within the Project Area. Section 2.10.2.2 indicates that beginning in 2006, average annual power consumption within the GDA would be increased to approximately 21,735,630 kWh, resulting in a total power consumption for the entire GDA of approximately 23,415,880 kWh per year. The increase in power consumption is associated primarily with the implementation of the Phase III treatment facility which was estimated to consume 21,400,000 kWh, or 98 percent of the energy consumption at the SJRIP.

Some additional power would be consumed during the construction period for the treatment facility, although this amount would be small when compared to the power needs associated with facility operation. Additional power consumption would incrementally add to requirements for electricity usage within the Project Area, but would not be expected to exert a significant strain on electrical power supplies in the region. No significant adverse impacts are anticipated, and no mitigation is required.

3.3.4.2 Initial Study (2019)

The Proposed Project allows for deferral of the 2009 project's Phase III treatment facility which was the major power consumption component of the 2009 project. Section 2.6 reports that modifications to the previously analyzed project in 2009 are proposed to include a number of components that would utilize electrical energy for operation. These components include:

- Up to four new pump stations to convey drain water throughout the SJRIP. These pump stations will improve operational flexibility throughout the SJRIP and increase the reuse capacity of the Project.

- Up to two new pump stations to divert storm-induced flows into the proposed short-term storage basins and an additional two new pump stations to convey water from those basins onto the SJRIP for reuse.

- SCADA transmitters and receivers for remote operation of existing tile sumps.

- Up to four new tile pumps for proposed subsurface drainage systems on the SJRIP.

All of the new pump stations will be driven with premium-efficiency, inverter-duty electrical motors. Most of the pump stations will also include variable frequency drives so that pump flow rate can be adjusted to match flow demand. The estimated total annual power consumption for the Proposed Project electrical components is 280,000 kwh/year, which is approximately equivalent to the power consumption of 40 California households. The use of high efficiency motors is consistent with California's energy conservation goals.

There is no local plan for renewable energy or energy efficiency. The incremental change in energy use would not be expected to exert a significant strain on electrical power supplies in the region. The Proposed Project modifications would not result in a new significant impact to energy resources or in significant impacts to utilities and infrastructure substantially more severe than the activities identified and analyzed in the previous environmental document.

3.3.5 Greenhouse Gases

3.3.5.1 Final EIS/EIR (2009)

Naturally occurring greenhouse gas emissions (GHGs) include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_2), and ozone (O_3). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but they are, for the most part, solely a product of industrial activities. Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are halocarbons that contain chlorine, while halocarbons that contain bromine are referred to as bromofluorocarbons (i.e., halons). In the amended CEQA Guidelines Section 15364.5, GHGs include, but are not limited to, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. In California, due to stringent air pollution control rules and regulations, natural gas is the only fossil fuel used to fire steam turbine, gas turbine, or combined cycle power plants. The primary concern here is for emissions that would be generated from equipment use (carbon dioxide and nitrous oxide through the burning of fossil fuels) rather than the emissions associated with ongoing agricultural practices (methane and nitrous oxide) and industrial activities (nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). As stated in Section 12.2.1 (p. 12-11) of the 2009 Final EIS/EIR, the GHG of most concern is CO_2, since it is generated in extremely large quantities by the burning of fossil fuels and can last in the atmosphere for two centuries. In California, CO_2 is the major component of power plant GHG emissions, about 99.995 percent.

3.3.5.2 Initial Study (2019)

The Proposed Project would involve limited use of construction equipment (excavator, backhoe, graders, scrapers, trencher, sheep's foot compactor, and water trucks) for the pipeline installations, crossing Russell Avenue, installation of subsurface drains in a portion of the reuse area, 3 new electric pump stations and 1 expanded pump station with electric controls, communications towers, levees to create short term storage basins; and to extend a ditch and line a canal (approximately 8 hours per day for up to 22 days/month, up to 7 months, May through November), and the completed removal of sediments from the Drain. All construction vehicles will be Tier 4 compliant and these activities are short-term and temporary in an agricultural area for the conveyance and reuse area improvements including the new storage basins and in wetland habitat area for the sediment removal. The tile sump control in the GDA would use electric power but not substantially (i.e., on or off events during the rainy season, not continuous operation). (Section 2.8.)

This equipment use involves the combustion of fossil fuels, a direct impact on the production of CO_2 and CH_4 with an indirect effect on CO_2 from the manufacturing of cement and from power production (generation of electricity from fossil fuels rather than hydropower) during project construction. This agricultural/storm water management type of use would not substantially introduce new sources or worsen existing sources of GHG emissions over project operation, and a full quantification of emissions and evaluation of GHG impacts was not deemed necessary for this non-development type of project. Operation of the new tile sump control system using electric power would result in minimal increased indirect GHG emissions from power generation by PG&E that are neither substantial nor significant (compared to existing conditions) and are more than offset by reductions in direct emissions from truck use for manual operation of the tile sumps. The SJRIP uses 8 workers and 4 trucks at present, and the proposed expansion would not increase this number of workers and trucks.

A CalTrans emissions model was used to estimate the impacts to air quality and emissions of GHGs for all of the construction and operational components of the Proposed Project. This modeling used a conservative approach, assuming that all of the construction work for the canal lining, pump stations, pipelines, subsurface drainage systems and ½ of the Drain sediment removal would occur in the same year. This construction schedule is unlikely, however, it would estimate a worst-case air quality and GHG emissions impact. Table 3-1 below shows the results of the construction emissions modeling.

Table 3-1 GHG Emissions from Project Construction

	NO x	ROG	PM10	PM2.5
*Threshold (lb per day)**	*54*	*54*	*82*	*54*
Storage Basins	6.05	3.04	30	6.5
Sediment Removal (per year)	4.88	.94	0.2	4.3
Pump Station (4 total)	1.85	.68	5	1.1
Pipelines (all)	4.51	1.51	20	4.3
Lined Canal	5.29	1.4	6	1.5
Subsurface Drainage system	2.63	1.32	9.8	2.1
Total Emissions (lb per day)	25.21	8.89	71	19.9

*Thresholds per Bay Area Air Quality Management District

In the absence of Valley Air District thresholds, the Bay Area Air Quality Management District (BAAQMD) thresholds were used. Even with this conservative modeling approach, the estimated construction emissions (short term, peak emissions) are well below the thresholds of significance.

Operation of the Proposed Project will not contribute to GHG emissions compared to existing conditions. All of the proposed pump stations will include electrically powered motors, and all of the proposed land for the reuse area expansion is already farmed. Operational emissions are substantially less than construction emissions. Operations at the expanded reuse area would be the same as for existing conditions, since generally the change is in ownership rather than type of crop.

According to the Valley Air District (SJVAPCD), GHG emission from development projects, primarily occur through energy consumption and vehicle miles traveled (VMT). For development projects, BPS includes project design elements, land use decisions, and technologies that reduce GHG emissions. Project proponents can reduce GHG emissions from energy consumption through building designs that increase energy efficiency, water conservation, and the use of energy efficient appliances. For development projects, BPS also includes project design elements, land use decisions, and technologies that reduce GHG emissions during project operation over time. Project proponents can reduce GHG emissions from energy consumption through building designs that increase energy efficiency, water conservation, and the use of energy efficient appliances.

The Valley Air District's CEQA guidelines are for land use agencies and apply to stationary sources and development projects (SJVAPCD 2009). The Proposed Project herein is not a stationary source of emissions associated with land development. Rather, it is a project comprised of Improvements to primarily agricultural land for management of storm water. Emissions are associated primarily with

the use of equipment during construction, and some of this equipment is used for ongoing agricultural operations in the GDA. Ongoing activity involves the planting of an expanded reuse area with Jose Tall Wheatgrass and the use of pump stations operated with electric power instead of diesel and with manual operation that would require a person to drive to each pump station in a truck or other vehicle (1 new worker and 1 round trip per day to the SJRIP). The existing reuse area requires 8 workers and 4 trucks who can also handle the expansion, i.e., no increase. Because the GHG emissions are lower than the thresholds established by the BAAQMD, it would not result in sufficient emissions to be more than a less-than-significant impact. It would not result in a more severe environmental impact, i.e., would not trigger a significant impact, than what was identified in 2009 for the Proposed Action.

To the extent that the Proposed Project can increase energy efficiency, water conservation, and the use of energy efficient appliances (i.e., equipment) by reducing equipment use that relies on fossil fuels and improving operational efficiencies (primarily through better remote tile sump control using electronic controls rather than persons driving trucks into the area for manual operation), it would contribute to meeting future GHG emission reduction targets.

3.4 MITIGATION MEASURES

The proposed mitigation measures to reduce potentially significant impacts from the Proposed Project are not substantially different from the measures employed for the 2009 Grassland Bypass Project. They are discussed in the preceding resource sections:

- Section 3.2.1.2 Surface Water Resources
- Section 3.2.2.2 Biological Resources

No other mitigation measures are required, because all other impacts are either less than significant or no impact. However, to the extent that the Proposed Project can increase energy efficiency, water conservation, and the use of energy efficient equipment by reducing equipment use that relies on fossil fuels and improving operational efficiencies (primarily through better remote tile sump control using electronic controls rather than persons driving trucks into the area for manual operation) and by deferring the need for a treatment plant at the SJRIP, it would contribute to meeting future GHG emission reduction targets in the region and the state.

3.5 ENVIRONMENTAL DETERMINATION

The analysis in this Addendum supplements the Initial Study findings and confirms that the Proposed Projectwould not result in any new significant impacts (adverse effects) nor in an increase in the severity of significant impacts previously identified in the Final EIS/EIR (Reclamation 2009b). Furthermore, the Proposed Project would not require the adoption of any new or substantially different mitigation measures (or project alternatives). While the current Proposed Project does propose changes to the SJRIP reuse area not previously considered in 2009, e.g. the new storage basins for 1,000 AF of temporary storm water containment and the SCADA system for tile sump control, these changes are considered to be minor technical changes given their size and the effectiveness of biological mitigation measures used since 2006. Additional surveys for cultural resources and construction monitoring are standard requirements for new construction.

PART 4

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4.2 PERSONAL COMMUNICATION

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