ADDENDUM

TO THE

PURE WATER MONTEREY GROUNDWATER REPLENISHMENT PROJECT ENVIRONMENTAL IMPACT REPORT

FOR THE

LAKE EL ESTERO WATER DIVERSION PROJECT

June 2025

Prepared for:

City of Monterey

Responsible Agency

Prepared by:

Denise Duffy and Associates

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INTRODUCTION AND BACKGROUND

Pursuant to the California Environmental Quality Act, California Public Resources Code Sections 21000 et seq. ("CEQA") and the California Environmental Quality Act Guidelines, Title 14, Chapter 3 of the California Code of Regulations ("CEQA Guidelines"), and in cooperation with other affected agencies and entities, the City of Monterey ("City") has prepared this Addendum to the Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project Final Environmental Impact Report ("PWM/GWR EIR"), certified by the Monterey One Water ("M1W") Board of Directors on October 8, 2015 (SCH No. 2013051094).

M1W, in partnership with the Monterey Peninsula Water Management District ("MPWMD"), sponsored the PWM/GWR Project, which involves developing purified recycled water to replace existing urban supplies and an enhanced agricultural irrigation system in northern Monterey County. Water supplies to be recycled and reused as part of the PWM/GWR Project include municipal and industrial wastewater, urban stormwater runoff, and surface water diversions, including diversions from Lake El Estero in the City of Monterey.

The PWM/GWR EIR described the Lake El Estero Diversion as follows:

> Monterey Peninsula urban stormwater and dry weather runoff that flows into Lake El Estero is currently stored in the lake and then pumped by the City of Monterey, or allowed to flow by gravity, through storm drain pipelines to Del Monte Beach. To use water from this source for the Proposed Project, the portion of the Lake El Estero water that currently is pumped or flows onto Del Monte Beach into Monterey Bay would, instead, be diverted via a short new pipeline, using a new pump or by gravity flow, into the municipal wastewater system at a sanitary sewer manhole immediately adjacent to the existing Lake El Estero pump station. After the lake water enters the manhole, it would flow through an existing 21-inch City sanitary sewer main into the existing Pacific Grove interceptor and then to the existing MRWPCA Monterey Pump Station[1]. From there, the water would flow through the existing MRWPCA conveyance system to the Regional Treatment Plant. This new diversion system would capture stormwater which would otherwise be discharged to the Monterey Bay; the average lake level would remain unchanged. This source would yield an average raw water supply of 87 AFY, based upon estimated daily runoff into the Lake and available conveyance capacity in the municipal wastewater system[2].
>
> The Lake El Estero Source Water Diversion System would consist of one (1) of the following options: (1) installation of a new pumping system, consisting of a new column pump installed in the wet well of the existing lake management pump station, upgrades to the existing electric panel, and a new 30-foot long, 12-inch diameter discharge pipe to the sanitary sewer; or (2) installation of a new gravity system, consisting of a new headwall and screened intake pipe on the lake bank, a new 40-foot long, 12-inch diameter discharge pipe to the sanitary sewer, and a new controlled and motorized isolation valve. Both systems would be entirely underground or

[1]Note: M1W formerly changed their name from the Monterey Peninsula Regional Water Pollutions Control Agency or MRWPCA to M1W.

[2]This flow estimate was based on monitoring data collected between November 2013 and March 2014 at the existing 21-inch City of Monterey sanitary sewer gravity main between the Lake El Estero diversion site and the M1W collection system (Schaaf & Wheeler, 2014a). Schaaf & Wheeler updated this information for the current Proposed Project and yields were increased, (See **Appendix B**, Schaaf & Wheeler 2024).

within existing pump dry and wet well structures and the connecting pipeline would include a flow meter and a check valve to prevent backflow of sewage into the lake. The City and MRWPCA would select the preferred option based upon technical and economic considerations at the time that design plans are prepared.

Construction

At the Lake El Estero Diversion site, less than 0.1 acres of disturbance would occur. The disturbance would be entirely within the paved area of the existing pump station at that site. Pavement demolition, trenching and installation of new pumps/pump motors, electrical facilities, and flow meters would all be installed below grade using only equipment delivery trucks, loaders, and backhoes.

Operations and Maintenance

The Lake El Estero diversion pump station would operate autonomously, based upon lake levels and water levels in the receiving sanitary sewer. System operators from the City would visit the site with the same frequency as operators visit the existing pump station, approximately once per week when not operating and multiple times per day while in operation. If a lakeside intake is used, approximately once per month an operator may need to physically clear vegetation or debris from the intake screen. The pumps would require annual inspection and servicing, using a lift truck to remove the pumps from the wet well. This maintenance may be scheduled to coincide with the adjacent pump station. The flow meter would require inspection and calibration less than once per year.

Following certification of the PWM/GWR EIR, M1W and MPWMD prepared three (3) addenda and a Supplemental EIR to address changes to the PWM/GWR project. Each of these documents are summarized as follows:

Addendum Number 1. On June 20, 2016, the Monterey Peninsula Water Management District ("MPWMD") adopted Addendum No. 1 to the certified PWM/GWR Environmental Impact Report/Environmental Assessment ("EIR/EA"). Addendum No. 1 addressed the potential impacts of construction and operation of the Hilby Avenue Pump Station as part of the PWM/GWR and Aquifer Storage and Recovery ("ASR") projects. Addendum No. 1 did not include a discussion of the Lake El Estero Water Diversion.

Addendum Number 2. On February 22, 2017, the MPWMD adopted Addendum No. 2 to the certified PWM/GWR EIR for proposed realignment of the Monterey Pipeline component of the PWM/GWR and ASR projects. Addendum No. 2 describes the proposed Monterey Pipeline realignment as a necessary modification to avoid a hydraulic barrier posed by elevated terrain along a segment of the previously analyzed pipeline route. Addendum No. 2 assessed potential additional impacts from the proposed realignment and concluded the realignment would not result in new or substantially more severe environmental effects beyond what was previously identified in the PWM/GWR EIR. Addendum No. 2 did not include a discussion of the Lake El Estero Water Diversion.

Addendum Number 3. On October 31, 2017, the M1W Board of Directors adopted Addendum No. 3 to the PWM/GWR EIR. Addendum No. 3 addressed expansion of the Advanced Water Purification

Facility ("AWPF") from a capacity four (4) million gallons per day ("mgd") to (5) mgd. Addendum No. 3 determined that the proposed AWTF expansion would implement mitigation measures previously identified in the certified PWM/GWR EIR. Addendum No. 3 found no new significant impacts and no increase in the severity of previously identified significant impacts, and did not identify new mitigation measures or alternatives that could lessen significant impacts beyond what the M1W Board previously adopted. Addendum No. 3 did not include a discussion of the Lake El Estero Water Diversion.

Supplemental EIR for the Proposed Modifications to the PWM/GWR Project. On April 29, 2021, the M1W Board of Directors certified a Supplemental Environmental Impact Report ("SEIR") and approved modifications to expand the PWM/GWR Project to increase the AWPF peak capacity to up to 7.6 million gallons per day ("mgd") and to increase recharge of the Seaside Groundwater Basin by up to 2,250 AFY for the purpose of providing additional water for extraction by California American Water (CalAm). The Expanded PWM/GWR Project includes additional product water conveyance pipelines, injection well facilities, potable supply extraction and distribution system facilities, and associated infrastructure.[3] The SEIR acknowledged the Lake El Estero Water Diversion project as source water and did not change the project from how the PWM/GWR Project Final EIR described or evaluated the project previously. Furthermore, as discussed in the SEIR, the modifications proposed as part of the SEIR were not anticipated to result in any new or substantially more severe environmental effects pertaining to the acquisition and use of source water components beyond those previously identified in the PWM/GWR Project Final EIR.

Addendum No. 4. On November 29, 2021, M1W adopted Addendum No. 4 and approved modifications to the Expanded Injection Well Area to include an additional replacement well and relocating a well and backflush basin. Addendum No. 2 assessed potential impacts due to the minor changes to the relocation and development of the deep injection well(s), extension of pipeline and other minor modifications to the PWM/GWR Project and found these modifications would not result in new or substantially more severe environmental effects beyond what was previously identified in the PWM/GWR EIR and SEIR. Neither the SEIR nor the Addendum to the SEIR included any revisions to or discussions of the Lake El Estero Water Diversion.

The previous addenda reviewed the potential impacts in the topical subjects listed above related to changes to the PWM/GWR Project and Expanded PWM/GWR Project.[4] In all cases, the evaluations concluded that there were: (1) no substantial changes to the PWM/GWR Project or Expanded PWM/GWR Project requiring major revisions to the PWM/GWR EIR or SEIR because of new or substantially increased significant environmental effects; (2) no substantial changes in circumstances requiring major revisions to the PWM/GWR EIR or SEIR because of new or substantially increased significant environmental effects; and (3) no new,

[3] The SEIR for the Proposed Modifications to the PWM/GWR Project (SCH No. 2013051094), as well as supporting material from the M1W Board hearing for the Final SEIR and Expanded PWM/GWR Project approval (April 26, 2021) can be found on the PWM/GWR website: https://purewatermonterey.org/reports-docs/cfeir/.

[4] In addition to the previous CEQA compliance, National Environmental Policy Act ("NEPA") compliance has also been conducted for the PWM/GWR Project related to separate actions by federal agencies. The Bureau of Reclamation prepared an Environmental Assessment ("EA") and issued a Finding of No Significant Impact ("FONSI") to comply with NEPA for Title XVI funds to be awarded to the PWM/GWR Project (April 2017). The National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, also prepared an EA and issued a FONSI for their November 2021 action to authorize re-issuance of a National Pollutant Discharge Elimination System Permit that included discharges from the PWM/GWR Project operating at its peak capacity of 5 mgd.

previously unknown or unknowable, information of substantial importance showing: (a) new or substantially more severe significant efforts than were discussed or shown in the PWM/GWR EIR or SEIR; (b) that previously infeasible mitigation measures/alternatives are now feasible and would substantially reduce significant efforts; or (c) that considerably different mitigation measures than analyzed in the PWM/GWR EIR and SEIR would substantially reduce significant effects.

Since certification of the PWM/GWR EIR, construction and implementation of the PWM/GWR Project has been mostly completed with almost all of the project components constructed. However, the engineering, planning and construction of the Lake El Estero urban source water component was not undertaken by M1W as part of the overall PWM/GWR Project. The City of Monterey pursued and received a grant for the purpose of planning, designing, permitting, and constructing the Lake El Estero Water Diversion Project.[5] The City of Monterey is now proposing implementation of the previously considered Lake El Estero Water Diversion Project. ("Project" or "Proposed Project"), with minor modifications.

The Project was included in the PWM/GWR EIR as an additional source water to support the PWM/GWR project, and evaluated in the PWM/GWR EIR. However, since certification of the EIR and addenda, additional engineering detail has been developed and minor modifications to the Lake Estero water diversion project are proposed. Therefore, this Addendum describes these minor changes and evaluates whether implementation of the Lake El Estero Water Diversion Project modifications would result in a new significant impact or an impact that is substantially more severe than the impacts disclosed in the PWM/GWR EIR, as amended, or whether any other conditions triggering the need for a supplemental EIR have occurred.

This Addendum is supported by **Attachment 1, Environmental Checklist**, which concludes the following in accordance with CEQA Guidelines Section 15464:

- No new or previously unidentified adverse significant impacts would result from implementation of the proposed Lake El Estero Diversion Project.
- The proposed diversion of surface water from Lake El Estero would not result in a substantial increase in the severity of the impacts identified in the PWM/GWR EIR, SEIR, and addenda.

As explained below in **Section VI**, substantial evidence supports the conclusion that the proposed Lake El Estero Water Diversion Project would not result in new significant environmental effects or a substantial increase in the severity of a significant effect previously identified in the PWM/GWR EIR or SEIR. Additionally, there is no new information that shows new significant environmental effects or an increase in the severity of previously identified significant effects. Nor is there new evidence showing that mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one (1) or more significant effects of the project, or that mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one (1) or more significant effects on the environment. For these reasons, preparation of an addendum is appropriate under these circumstances.

The City of Monterey will consider this Addendum, along with the certified PWM/GWR EIR, SEIR, and addenda, prior to making a decision on any approvals pertaining to the Proposed Project.

[5] Grant agreement No. D2218008, State Water Resources Control Board, City of Monterey.

PROJECT LOCATION

The Proposed Project is located approximately 450 feet south of Del Monte Beach, and adjacent to Del Monte Avenue in Monterey, California (Assessor's Parcel Number ["APN"] 001-994-001) (see **Figure 1, Regional Map** and **Figure 2. Project Location**). The Proposed El Estero Water Diversion Project modifications would occur within the approved project area of the PWM/GWR Project as shown in **Figure 2. Project Location**.

SURROUNDING LAND USES

Lake El Estero ("Lake El Estero" or "the lake") is within the El Estero Park Complex, which is designated as Parks and Open Space in the City of Monterey Land Use Plan ("City LUP") and consists of playgrounds, sports facilities, a fishing pier, and a paddleboat wharf. The lake is bordered to the north, east, west, and south by Del Monte Boulevard, Camino Aguajito, Camino El Estero, and Fremont Street, respectively. Other surrounding land uses include Commercial land containing commercial businesses, and Medium- and Low-Density Residential housing consisting of multi-family and single-family residences (see **Figure 3, Land Use Map**).

PROJECT DESCRIPTION - PROPOSED PROJECT MODIFICATIONS

The Proposed Project would involve a new water diversion system to divert surface water from Lake El Estero to the City's existing sanitary sewer system in lieu of discharging into the Monterey Bay. The Project would support the PWM/GWR Project by diverting the portion of untreated stormwater that currently flows from Lake El Estero into the Monterey Bay to the City's sewer system to be treated at the M1W Regional Treatment Plant ("RTP") and recycled for indirect potable reuse.

As discussed in **Section I. Introduction and Background** above, the PWM/GWR EIR anticipated more refined design plans would be developed for the El Estero Water Diversion Project. The following describes the minor modifications to the Proposed Project based on current engineering plans.

Proposed Project Modifications

The Proposed Project would continue to utilize the existing storage capacity of Lake El Estero to detain both wet- and dry-weather runoff for diversion. However, the Proposed Project anticipates an increased annual yield; an average of 209 acre-feet per year ("AFY") of stormwater runoff would be diverted from the lake to the City's sanitary sewer system compared to 87 AFY noted above. The remaining stored water would stay in the lake or continue to be discharged into the Monterey Bay. Lake El Estero water levels would not be altered as part of the Proposed Project.



Regional Map

Date
5/7/2025

Scale
1 in = 2 mi

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Figure
1

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Project Location

Date	Scale	Figure
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As with the PWM/GWR described project, the Proposed Project modifications would be constructed within existing paved and previously disturbed areas at the Lake El Estero Pump Station, with the exception of the diversion.[6] The water diversion system would consist of constructing a new gravity intake system on the bank of the lake connecting to the Lake El Estero Pump Station. The intake system would include a new headwall and screened intake pipe and a new discharge pipeline connecting to the sanitary sewer. The size of the discharge pipeline connecting to the sanitary sewer is slightly increased from the PWM/GWR EIR description, from a 40-foot long, 12-inch diameter pipeline, to a new 60-foot-long, 16-inch diameter discharge pipeline connecting to the sanitary sewer; and a new controlled and motorized isolation valve.

All components of the intake system would be entirely underground or within existing dry and wet well structures, consistent with the PWM/GWR EIR. The connecting pipeline would include a flow meter and a check valve to prevent any backflow of sewage into the lake. After water enters the connecting pipeline, the water would flow through an existing 21-inch City sewer main to an existing interceptor pipeline in Pacific Grove and to the M1W Monterey Pump Station to be conveyed to the RTP for treatment, as proposed in the PWM/GWR EIR. Although there is a slight increase in the pipeline length, all project components are within the previously described project impact area from the PWM/GWR EIR.

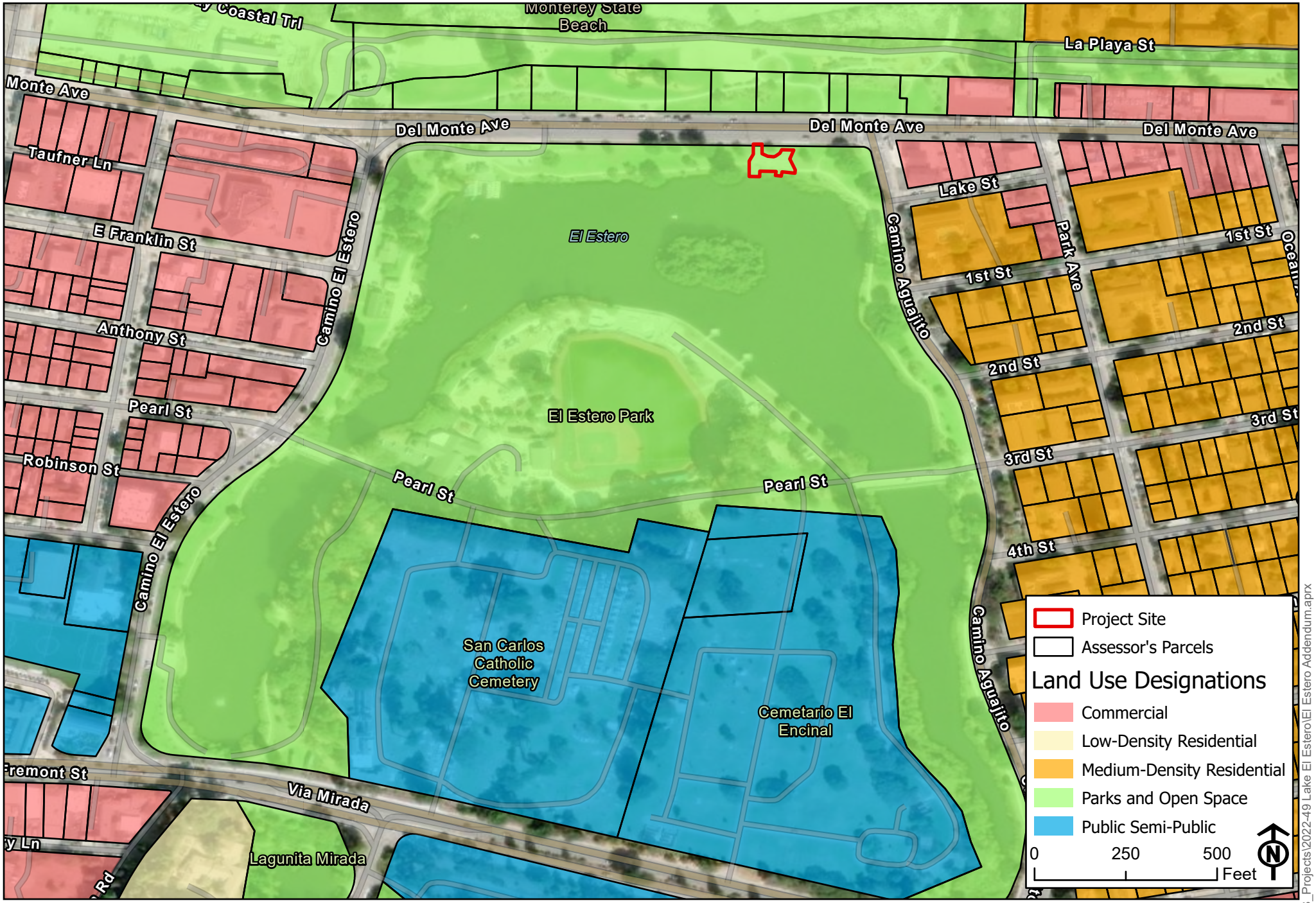
Construction

Consistent with the PWM/GWR EIR, Project construction is anticipated to occur over a duration of three (3) months; however, construction timing depends on seasonal factors, contractor scheduling, and the Project approval date. Construction activities would include removing the existing paved surfaces, trenching, installing pipeline, pouring concrete, compacting fill material, and repaving where pavement has been disturbed. The disturbance would be entirely within the paved area of the existing pump station with the exception of the temporary cofferdam which would be installed in the lake to support the construction of the diversion. Trenching for installation of the pipeline is anticipated to be completed in two (2) days.

Construction of the diversion would entail dewatering a small work area, removing a portion of the existing retaining wall on the bank of the lake, installing the intake frame, channel, and bar screen.[7] The temporary cofferdam would be an inflatable bladder, stacked sandbags, or driven sheet piles. Water from the dewatering pump would be discharged to a settling tank and returned to the lake once construction of the intake is complete.

[6] The PWM/GWR EIR identified two (2) options for the El Estero Water Diversion Project, described as follows: (1) installation of a new pumping system, consisting of a new column pump installed in the wet well of the existing lake management pump station or (2) installation of a new gravity system, consisting of a new headwall and screened intake pipe on the lake bank. Both systems included upgrades to the existing electric panel, and a new discharge pipe to the sanitary sewer and a new controlled and motorized isolation valve. Both systems were to be entirely underground or within existing pump dry and wet well structures. The City selected the second option as described in this Addendum.

[7] The diversion intake consists of a four (4)-foot wide gravity inlet on the bank of the lake. Dewatering would be within a 10-foot by five (5)-foot work area. 2.5-feet by 4.5-feet of the existing retaining wall would be removed.



Land Use Map

Date
5/7/2025

Scale
1 in = 337 ft

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Figure
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Construction equipment would generally include flatbed trucks, haul trucks, loaders, backhoes, compactors, pipe cutting and welding equipment, pavers, and generators.[8] Three (3) to seven (7) construction workers would be on-site at any given time and an estimated two (2) to five (5) truck trips per day would be required to complete the infrastructure improvements. Construction would occur between 7:00 AM to 8:00 PM, Monday through Saturday. No construction would occur on Sundays or holidays.

Site Preparation and grading

Site preparation would involve staging construction equipment and materials, demolition of pavement within the footprint of the Lake El Estero Pump Station, and initial grading. The Lake El Estero Pump Station would provide temporary equipment staging and materials storage. Additionally, appropriate signage would be placed, as needed, to inform the public of construction activities occurring adjacent to Del Monte Boulevard. No vegetation would be removed as part of the Proposed Project. The Proposed Project would disturb a total of approximately 1,040 square feet (0.02 acres), a minor modification, and reduction in the area of disturbance as compared to the larger area of disturbance identified in the PWM/GWR EIR.[9] All ground disturbance during construction would be within existing paved and previously disturbed areas except for the diversion which would be constructed in the lake or on the bank of the lake, as noted above.

Operation and Maintenance

A system operator from the City would visit the site approximately once per month to physically clear vegetation or debris from the intake screen. The flow meter would require inspection and calibration less than once per year.

[8] Page 2-59 of the PWM/GWR EIR cites construction and equipment for the Project as follows: Pavement demolition, trenching and installation of new pumps/pump motors, electrical facilities, and flow meters would all be installed below grade using only equipment delivery trucks, loaders, and backhoes. Table 2.21 of the PWM/GWR EIR, Proposed Project Construction Assumptions, Lake El Estero Diversion, on page 2-87 adds detail and lists additional construction equipment for the site, as follows: flatbed trucks, backhoes, excavators, pipe cutting and welding equipment, haul trucks for spoils transport, trucks for materials delivery, compaction equipment, baker tank(s), pickup trucks, arc welding machine, generators, air compressors, 80-ton crane, skip loader, pavers and rollers. This Addendum updates the construction equipment anticipated based upon updated engineering plans available as well as communication with the consulting project engineer.

[9] The PWM/GWR EIR determined that less than 0.1 acres of disturbance would occur.

COMPARISON TO THE CONDITIONS LISTED IN CEQA GUIDELINES §15162

This Addendum to the PWM/GWR EIR has been prepared pursuant to CEQA Guidelines Section 15164, which states: "A lead agency or 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 §15162 calling for preparation of a subsequent EIR have occurred." CEQA Guidelines Section 15162 establishes the following criteria for the preparation of a subsequent EIR.

- Substantial changes are proposed in the project which would 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;
- Substantial changes occur with respect to the circumstances under which the project is undertaken which would 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
- New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
    - The project would have one (1) or more significant effects not discussed in the previous EIR or negative declaration;
    - Significant effects previously examined would 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 (1) 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 considerable different from those analyzed in the previous EIR would substantially reduce one (1) or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The following discussion summarizes the reasons why a subsequent or supplemental EIR, pursuant to CEQA Guidelines Section 15162, is not required in connection with approvals for implementation of the proposed Lake El Estero Diversion as part of the approved PWM/GWR project. The following discussion further summarizes the reasons why an addendum is appropriate.

CHANGES TO THE PROJECT

Project Background

The Proposed Project consists of implementation of the Lake El Estero Water Diversion Project, which was previously evaluated in the PWM/GWR EIR. Since certification of the PWM/GWR EIR, detailed engineering designs have been prepared for the Proposed Project which were not previously available. The Proposed Project modifications to the El Estero Water Diversion Project resulting from more detailed planning and engineering are referenced as "El Estero Water Diversion Project" or "Proposed Project" modifications. These are evaluated in this Addendum and include the following:

1. *Revised Pipeline Sizing:* The new discharge pipeline connecting to the sanitary sewer has been slightly increased from 40-foot long, 12-inch diameter, noted above, to a 60-foot-long, 16-inch-diameter discharge pipeline.
2. *Increased Yield:* The updated yield study identified up to 209 AFY compared to 87 AFY in the PWM/GWR EIR.
3. *Additional Construction Details:* Modified (reduced) area of overall disturbance and updated details on temporary dewatering requirements during construction.
4. *Additional Construction Timing*: Additional construction timing details on pipeline installation indicating less than two (2) days for trenching and laying of pipeline.

This Addendum to the certified PWM/GWR EIR has been prepared to address these minor changes as a prerequisite for construction and operation of the Proposed Project.

Environmental Effects

As detailed in **Attachment 1**, the Proposed Project would not result in any new significant environmental effects that cannot be mitigated with existing mitigation measures previously identified in the PWM/GWR EIR, SEIR, and addenda. In addition, the Proposed Project would not substantially increase the severity of environmental effects identified in the PWM/GWR EIR, SEIR, and addenda. The potential environmental effects associated with construction and operation of the Project were previously evaluated under CEQA. The Proposed Project would not result in any new environmental effects that were not previously disclosed in connection with the PWM/GWR Project. Implementation of the Project would result in localized impacts within existing paved, developed; or previously disturbed areas. These impacts would be consistent with the type, extent, and scope of impacts already analyzed in the PWM/GWR EIR, SEIR, and addenda. Project modifications are proposed in the same area of impact as evaluated in the PWM/GWR EIR with disturbance area reduced compared to the previous extent of disturbance. The extension of the 20 feet of pipeline is within the area of impact as described in the PWM/GWR EIR. The project construction approach is substantially the same, with typical construction methods for pipeline construction as described in the PWM/GWR for the diversion structure (Option 2 method from the PWM/GWR was selected). The Proposed Project uses similar construction equipment with some modifications on the type of vehicles and equipment than as described in the PWM/GWR EIR.

No new adverse environmental effects would occur in connection with the Proposed Project or its modifications. This Addendum demonstrates that no substantial changes are proposed in the Project which would require major revisions of the previous environmental analysis, impacts, or mitigation requirements identified in the PWM/GWR EIR, despite minor project refinements described herein.

New Information

No new information of substantial importance has been identified or presented demonstrating that the Project would result in 1) significant environmental effects not identified in the PWM/GWR EIR, SEIR, and addenda, or 2) an increase in the severity of significant impacts identified in the PWM/GWR EIR, SEIR, and addenda, or 3) require mitigation measures which were previously determined not to be feasible or mitigation measures that are considerably different from those recommended in the PWM/GWR EIR, SEIR, and addenda.

Conclusion

Section 15164 of the CEQA Guidelines states that a lead agency or 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 calling for preparation of a subsequent EIR have occurred. Based on the information in this Addendum, the City has determined that:

- No new significant environmental effects or a substantial increase in the severity of previously identified significant effects would occur as a result of construction and operation of the Lake El Estero Diversion Project.
- No substantial changes have occurred or would occur with respect to the circumstances under which the Lake El Estero Diversion Project was originally undertaken, which would require major revisions to the previously certified PWM/GWR EIR, SEIR, and addenda due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; and
- No new information of substantial importance has been received or discovered, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous PWM/GWR EIR or SEIR were certified as complete, and addenda adopted.

ATTACHMENT 1

Environmental Checklist for the Proposed Lake El Estero Water Diversion Project to Support an Addendum to the PWM/GWR EIR

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Project Data

Project Title: PWM/GWR EIR Addendum for the Lake El Estero Diversion Project

Responsible Agency Name and Address: City of Monterey, Public Works 580 Pacific Street Unit 7, Monterey CA 93940

Contact Person and Phone Number: Kevin Anderson, (831) 646 - 3746

Project Proponents: City of Monterey Public Works Department

Project Location: The Lake El Estero Water Diversion Project ("Project" or "Proposed Project") is located approximately 450 feet south of Del Monte Beach, and adjacent to Del Monte Avenue in Monterey, California (Assessor's Parcel Number ["APN"] 001-994-001) (see **Figure 1, Regional Map** and **Figure 2, Project Location Map**).

Project Description: The Proposed Project would construct a new water diversion system to divert surface water from Lake El Estero to the City's existing sanitary sewer system. The Project would involve installation of a gravity intake system, including a 60-foot-long, 16-inch-diameter discharge pipeline connecting to the sanitary sewer pipeline to divert the portion of untreated stormwater that currently flows from Lake El Estero into the Monterey Bay to the City's sewer system to be treated at the M1W Regional Treatment Plant ("RTP") and recycled for reuse. The Proposed Project would be constructed within existing paved and previously disturbed areas at the existing Lake El Estero Pump Station.

Previous Environmental Documentation: The evaluation in this Checklist is used to support the use of an Addendum for the proposed Lake El Estero Water Diversion Project ("Proposed Project"). The Proposed Project was evaluated in the certified PWM/GWR EIR. Since the certification of the PWM/GWR EIR, engineering plans have been prepared for the Proposed Project which included minor modifications to the construction and operation of the Proposed Project. These engineering plans are evaluated in this Addendum; however, the physical boundaries have not changed, nor have the minor modifications increased the severity of impacts compared to the project evaluated in the PWM/GWR EIR.

Environmental Factors Potentially Affected

All of the following environmental factors identified below are discussed within **Section III. Evaluation of Environmental Impacts.** Those that are checked were found to be areas where the full implementation of the Proposed Project may result in a significant impact and would require implementation of mitigation measures previously identified in the PWM/GWR EIR. Sources used for the analysis of environmental effects are listed in **Section IV. References.**

☐ Aesthetics	☐ Agriculture/Forestry Resources	■ Air Quality
■ Biological Resources	■ Cultural Resources	■ Energy
☐Geology/Soils	☐ Greenhouse Gas Emissions	■ Hazards & Hazardous Materials
☐Hydrology/Water Quality	■ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services

☐ Recreation	☐ Transportation	■Tribal Cultural Resources
■ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

Evaluation of Environmental Impacts

The following section uses the CEQA Checklist to address potential environmental effects associated with implementation of the Proposed Project. Specifically, the following sections consider the Proposed Project, address any changes since the PWM/GWR EIR was prepared (in reference to the Lake El Estero Water Diversion Project Component). Overall, construction impacts would be substantially the same as those disclosed in prior environmental documentation. The Proposed Project would not change the physical boundaries or increase the size of the PWM/GWR facilities. As described below, no new significant environmental effects would occur in connection with construction and operation of the Proposed Project and associated infrastructure; and the severity of all previously identified impacts would remain unchanged. Existing mitigation that is applicable to the Lake El Estero Water Diversion Project component of the PWM/GWR project would also be applicable to Proposed Project. No new impacts would occur, and no new mitigation would be required.

1. Aesthetics

EXISTING SETTING

Lake El Estero is located in the City of Monterey within an urban and developed landscape, and is surrounded by a mix of recreational, residential, and commercial developments. The site is bounded on the north by Del Monte Boulevard, Camino Aguajito to the east, Camino El Estero to the west, and Pearl street to the south. The lake, which is a prominent visual feature, lies within the El Estero Park Complex which includes a playground, youth center, ballpark, dance studio, boating concession, snack bar, and skate park, the San Carlos, Saint John's and El Encinal cemeteries, a city dog park, as well as various walking trails. The Proposed Project site located on the northeast corner of the Lake and is immediately adjacent to Del Monte Boulevard (see **Figure 2**). Del Monte Boulevard is identified as a "proposed scenic road" in the City of Monterey General Plan ("City General Plan") (City of Monterey, 2005). The City's General Plan also indicates that Lake El Estero is a significant visual resource. The Proposed Project site is developed and previously disturbed in connection with the existing pump station. The site contains a concrete slab at the site, which protrudes slightly into the lake; beneath the slab are various pieces of equipment that regulate and control the water levels of the lake.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact	
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	■	☐	
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	■	

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR previously analyzed potential Project-related impacts to aesthetics. The PWM/GWR EIR determined that Lake El Estero is considered a significant visual resource located adjacent to Del Monte Boulevard, which is identified as a proposed scenic road in the City General Plan. However, the PWM/GWR EIR concluded that the Project would have no operational impacts to aesthetics and impacts from Project construction would be less than significant. Project construction would be temporarily visible from Del Monte Boulevard and other local roadways and intermittently from the Monterey Peninsula

Recreational Trail and pathways in Lake El Estero Park. However, construction activities would not block views of the lake and would be limited to three (3) months. Additionally, Project construction would have the appearance of a typical public works improvement project. Furthermore, because no nighttime construction would occur and because the Project would be located in an urbanized area containing several existing sources of light and glare (e.g., businesses, residences, and park lighting), construction lighting would not result in significant impacts. Therefore, the PWM/GWR EIR concluded construction impacts would be less than significant. The PWM/GWR EIR also determined that because Project components would be underground and would be located at the existing paved and developed Lake El Estero Pump Station, no permanent impacts from Project operation would occur.

DISCUSSION

a) – c) Less than Significant Impact. The Proposed Project would not result in significant adverse impacts to a scenic vista, would not substantially damage scenic resources within a scenic highway, and would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Consistent with the Project analyzed in the PWM/GWR EIR, the Proposed Project would consist of constructing and operating a gravity intake system and pipeline to connect Lake El Estero to the City's sanitary sewer system. The Project site would be within the area of impact and location as analyzed in the PWM/GWR EIR, and disturbance would be entirely within the paved area of the existing pump station at that site. Pavement demolition, trenching, and installation of new pumps/pump motors, electrical facilities and flow meters would all be installed below grade. The Proposed project modification extends a pipeline by 20 feet to connect to the existing sanitary sewer system within a paved area at the location as addressed in the PWM/GWR EIR; this extension does not increase the area of disturbance and would be underground. The Proposed Project would use similar construction equipment as presented in the PWM/GWR EIR; construction would be temporary and within a disturbed areas near a major arterial roadway and if equipment vehicles are present, would not increase the severity of the impacts cited in the PWM/GWR EIR.[10]

As a result, the Project would not result in any new significant impacts to a scenic vista or the scenic quality of the site or surrounding area beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. Additionally, the Proposed Project is not within view of a state scenic highway. The nearest scenic highway is State Route 1 ("SR 1"), located approximately 0.5 miles southeast of the Project site (Caltrans, 2024). The Project is in the same area as what was previously analyzed in the PWM/GWR EIR and views of the Proposed Project site from SR 1 are inhibited by topography and existing development. Therefore, the Project would not damage scenic resources within a state scenic highway and would not result in additional or more severe impacts beyond those identified in previous environmental documentation.

d) No Impact. The Proposed Project would not create a new source of substantial light or glare. No nighttime construction would occur, and the Project would be located in an urbanized area containing several existing sources of light and glare (e.g., businesses, residences, and park lighting). As a result, construction lighting would not result any impacts. Consistent with the PWM/GWR EIR, since Project components would be underground and would be located at the existing paved and developed Lake El Estero Pump Station, no permanent impacts from Project operation would occur. Therefore, the Project

[10] The PWM/GWR EIR evaluated construction equipment and lists the anticipated equipment for the Lake El Estero Diversion component on pages 2-59 and 2-87.

would not result in additional or more severe impacts beyond those identified in the previous environmental documentation.

Conclusion: The Lake El Estero Water Diversion Project would not result in any new significant aesthetics impacts or worsen the severity of any significant impacts previously identified in the certified PWM/GWR EIR, SEIR, and addenda and none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.

2. Agricultural Resources

EXISTING SETTING

The Proposed Project site does not contain agricultural or forest lands and is not located within the vicinity of agricultural or forest lands (CDC, 2022 and 2023). The Project is located in the City of Monterey in the urban and developed landscape, and is surrounded by a mix of recreational, residential, and commercial developments.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	■
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR determined no construction impacts would occur to agricultural or forestry resources as a result of the Proposed Project and that potential indirect effects resulting from Project operation would be less than significant. The PWM/GWR EIR determined that because the Project would be

constructed entirely within paved and previously disturbed areas in the City of Monterey, which is Urban and Built Up, construction of the Project would not result in any temporary conversion of farmland. Project operation would introduce new source water influent to the RTP to be recycled and used for agricultural irrigation, which could change the quality of irrigation water used for crop production. However, Lake El Estero Water Diversion Project water is a minor contribution to influent and further, the PWM/GWR EIR determined these indirect water quality effects would not result in farmland conversion and would be less than significant.

DISCUSSION

a) – e) No Impact. The Project site and surrounding area do not contain agricultural or forest lands. The PWM/GWR EIR previously determined the Project would not convert prime, unique, or farmland of statewide importance to non-agricultural use or involve other changes that would result in the conversion of farmland to non-agricultural use or impact a Williamson Act contract, nor would the Project impact forest resources. The Project would be constructed in the same area as previously analyzed in the PWM/GWR EIR. As such, the Proposed Project would not result in conversion of farmland or impacts to forest resources. Consistent with the PWM/GWR EIR, Project operation would introduce new source water for agricultural irrigation which could result in indirect impacts to crop yield due to water quality changes. However, the PWM/GWR EIR concluded these impacts would be less than significant.

Conclusion: The Project would involve the same operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

3. Air Quality

EXISTING SETTING

The Proposed Project is in the North Central Coast Air Basin ("NCCAB"), which encompasses Santa Cruz, San Benito, and Monterey counties. The NCCAB is under the jurisdiction of the Monterey Bay Air Resources District ("MBARD"). The MBARD is responsible for producing an Air Quality Management Plan ("AQMP") that reports air quality and regulates stationary air pollution sources throughout the NCCAB. The MBARD is responsible for measuring the concentration of pollutants and comparing those concentrations against the Ambient Air Quality Standards ("AAQS"). AAQS establish levels of air quality required to be maintained to protect the public from the adverse effects of air pollution and are established for "criteria air pollutants" which include ozone, carbon monoxide, particulate matter less than 10 microns in diameter, particulates less than 2.5 microns in diameter, nitrogen dioxide, sulfur dioxide, and lead. MBARD is responsible for monitoring criteria pollutants to determine whether they are in attainment or not in attainment with the AQMP.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	■	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	■	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR determined the Proposed Project would result in less than significant air quality impacts from Project construction and operation. Project construction would result in temporary, localized carbon monoxide ("CO") emissions; however, the NCCAB is in attainment for this pollutant and emissions from the Project would be well below the ambient air quality standard. The NCCAB is a non-attainment area for O_3 and PM_{10}. Construction and operation of the Proposed Project would result in total emissions of PM_{10} and O_3 precursor pollutants (i.e., ROG, NO_x, and $PM_{2.5}$) of less than one (1) lb./day, far below established thresholds. However, because PM_{10} emissions for construction and operation of all PWM/GWR project components would exceed established thresholds, the PWM/GWR EIR concluded cumulative PM_{10} emissions would be significant and included ***Mitigation Measure AQ-1: Construction Fugitive Dust Control Plan*** for all PWM/GWR project components where ground disturbance would occur. The PWM/GWR EIR found that impacts to sensitive receptors during Project construction would be less than significant due to intervening distances and the temporary and limited nature of construction. The PWM/GWR EIR also concluded that impacts to sensitive receptors from Project operation would be less than significant given the minimal increase in vehicle trips for operation and maintenance activities for all PWM/GWR project components, including the Proposed Project.

DISCUSSION

a) Less than Significant Impact. CEQA Guidelines §15125(b) requires that a project be evaluated for consistency with applicable regional plans, including the AQMP. The most recent AQMP update (MBARD, 2017) was approved in March of 2017. This plan addresses attainment of the State ozone standard and federal air quality standard. The AQMP accommodates growth by projecting growth in emissions based on population forecasts prepared by the AMBAG and other indicators. Consistency determinations are issued for commercial, industrial, residential, and infrastructure-related projects that have the potential to induce population growth. A project is considered inconsistent with the AQMP if it has not been accommodated in the forecast projections considered in the AQMP.

The Proposed Project would consist of constructing and operating a gravity intake system and pipeline to connect Lake El Estero to the City's sanitary sewer system. Operation of the Project would provide a new source water to support the previously approved PWM/GWR project. The PWM/GWR EIR previously analyzed consistency of the entire PWM/GWR project, including the Proposed Project, with the applicable regional air quality plan and determined the Proposed Project would not substantially conflict with or obstruct implementation of the AQMP. The Project would be within the same area of disturbance, would use substantially the same or similar construction approach and equipment, and would consist of the same components as previously analyzed in the PWM/GWR EIR.[11] Additionally, the construction area is confined to an area of approximately 0.10 acres and nearest sensitive receptors are 350 feet away from the construction area. The length of time and hours of the day are unchanged from the PWM/GWR EIR, and the typical construction activities cited would remain consistent with those presented in the PWM/GWR EIR. Pavement demolition, trenching and installation of new pumps/pump motors, electrical facilities, and flow meters would all be installed below grade. In addition to equipment deliveries using haulers, trucks, loaders, and other similar equipment, backhoes and excavators would be employed for trenching and demolition as well as hauling. The equipment substitution would not result in a substantial increase in exposure at sensitive receptors since the use of this equipment was evaluated in the PWM/GWR EIR, and therefore, would not result in a new or more severe significant impact under CEQA. Further, there would be less construction disturbance compared to the PWM/GWR EIR due to the reduced Project footprint. Therefore, the Proposed Project would not result in any new significant impacts or cause an increase in the severity of any significant impacts previously identified in the certified PWM/GWR EIR, SEIR, and addenda. As a result, the Project would not conflict with and/or otherwise obstruct the implementation of MBARD's AQMP and impacts. This represents a less than significant impact.

b) Less than Significant with Mitigation Incorporated. MBARD has two (2) guidelines for CEQA evaluation, one (1) meant to assist other lead agencies in evaluating potential air quality impacts and one (1) for when MBARD is the lead agency. The MBARD 2008 CEQA Air Quality Guidelines are meant to assist other lead agencies in their evaluation of potential air quality impacts. The MBARD 2008 CEQA Air Quality Guidelines contains standards of significance for evaluating potential air quality effects of projects subject to the requirements of CEQA. According to MBARD, a project would not have a significant air quality effect on the environment if the following criteria are met:

Construction of the project would:

- Emit (from all sources, including exhaust and fugitive dust) less than;
  - 137 pounds per day of oxides of nitrogen (NO_x)
  - 137 pounds per day of reactive organic gases (ROG)
  - 82 pounds per day of respirable particulate matter (PM_{10})
  - 55 pounds per day of fine particulate matter ($PM_{2.5}$)
  - 550 pounds per day carbon monoxide (CO)

Operation of the project would:

- Emit (from all project sources, mobile, area, and stationary) less than;
  - 137 pounds per day of oxides of nitrogen (NO_x)

[11] Equipment listed in the PWM/GWR EIR, Project Description and Table 2.21 on page 2.87, for the Lake El Estero Diversion component is similar to those evaluated this Addendum.

    - 137 pounds per day of reactive organic gases (ROG)
    - 82 pounds per day of PM_{10}
    - 55 pounds per day of $PM_{2.5}$
    - 550 pounds per day carbon monoxide (CO)
- Not cause or contribute to a violation of any California or National Ambient Air Quality Standard;
- Not result in a cumulatively considerable net increase of any criteria pollutant for with the project region is non-attainment;
- Not exceed the health risk public notification thresholds adopted by the Air District;
- Not create objectionable odors affecting a substantial number of people; and
- Be consistent with the adopted federal and state Air Quality Plans (MBARD, 2008).

The Guidelines also state that a project would result in less than significant impacts if daily ground-disturbing activities entail less than 8.1 acres of minimal earthmoving or less than 2.2 acres of grading and excavation. Construction projects below these acreage thresholds would be below the applicable MBARD 82lb/day threshold of significance and would constitute a less-than-significant effect for the purposes of CEQA (MBARD, 2008).

The Proposed Project would require a total of approximately 0.02 acres of earthmoving, less than the 0.10 area of disturbance evaluated in the PWM/GWR EIR, and far less than the 2.2-acre per day and 8.1-acre per day thresholds set by MBARD. The Proposed Project would be in the same area, would use substantially the same construction methods and equipment, and would not increase the amount of grading required for Project construction beyond what was analyzed in the PWM/GWR EIR. The pipeline connecting to the sanitary sewer is slightly longer, 60 feet compared to the 40-feet identified in the PWM/GWR EIR, and is larger in size (16 inches from 12 inches). Minor increases in pipe sizing and length would not change the timing or methods of construction or result in a perceptible increase in dust or particulates. Construction of the 60-foot, 16-inch pipeline will use open trench construction, consistent with the methods and process presented in the PWM/GWR EIR. The PWM/GWR EIR identified use of an open-trench pipeline construction process and typical trench excavations (6 feet to 12 feet wide).

The key air quality impacts during construction are primarily related to emissions of particulate matter (PM10 and PM2.5), nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs). Per the PWM/GWR EIR, typical pipeline installation progresses at a rate of 150 to 250 feet per day, with steel plates used to maintain access across trenches, if needed. The pipeline installation including trenching would be completed in approximately two (2) days. The modified pipeline length and size would not increase the time or method of construction. The construction time frame for the site assumed a 3-month construction period in the PWM/GWR EIR and typical construction equipment, including hauling (trucks), backhoes, and equipment necessary for site preparation and grading. More defined engineered plans have been provided; under the refined plans, this time frame would be slightly reduced. Since the construction area would be smaller, the project would use substantially the same methods and equipment, and the length of time from site preparation to completion reduced, emissions would be similar or less than those previously assessed. Therefore, the Proposed Project would not result in additional impacts or cause an increase in the severity of significant impacts beyond those assessed in the PWM/GWR EIR, SEIR, and addenda. Consistent with the PWM/GWR EIR, implementation of ***Mitigation Measure AQ-1: Construction Fugitive Dust Control Plan*** is required. This mitigation applies to all PWM/GWR Project component sites where ground disturbance would occur and states that "standard dust control measures shall be implemented during construction to help prevent potential nuisances to nearby receptors due to fugitive dust and to reduce contributions to exceedances of the state ambient air quality standards for PM_{10}, in

accordance with MBAD's CEQA Guidelines". This mitigation would reduce cumulative impacts to a less than significant level and no additional mitigation is required. Please refer to **Appendix A** for detailed mitigation measures applicable to the Proposed Project.

c) – d) Less than Significant Impact. The Proposed Project would not expose sensitive receptors to substantial pollutant concentrations, nor would the Project result in significant exposure of receptors to other emissions such as odors. The PWM/GWR EIR previously analyzed impacts on sensitive receptors and exposure to odors, and concluded all impacts would be less than significant and no mitigation would be required. The Proposed Project's area of disturbance is reduced, the Project would be in the same area, and would use substantially the same construction methods and equipment previously identified in the PWM/GWR EIR.

Conclusion: The proposed Lake El Estero Water Diversion Project would result in the same or lesser impacts compared with those previously analyzed in the certified PWM/GWR EIR. No additional construction disturbance, increase in construction or operational emissions or increase to operational air quality effects would occur as a result of Project activities. The Proposed Project would involve construction activities using substantially the same types of equipment and methods as those analyzed in the PWM/GWR EIR, and would disturb a smaller area than what was previously considered. As a result, the air quality impacts from construction activities would be expected to be similar to, or less than, those identified in the original EIR.

Operation of the Proposed Project would not expose any new sensitive receptors or generate additional emissions, either directly or indirectly. As such, the Proposed Project would not result in additional or more severe impacts beyond those analyzed in the PWM/GWR EIR, SEIR, and addenda. Previously identified mitigation would still apply to the Proposed Project and no additional mitigation is required.

4. Biological Resources

EXISTING SETTING

The Project site is on the northeast corner of Lake El Estero, within the Urban and Developed landscape. The Project is surrounded by a mix of recreational, residential, and commercial developments. The site is bounded on the north by Del Monte Boulevard and the Monterey Peninsula Recreational Trail, on the south by Lake El Estero, on the east by Camino Aguajito and on the west by Camino El Estero. The Proposed Project is primarily within paved, developed or previously disturbed areas in the footprint of the existing Lake El Estero Pump Station. Immediately adjacent to the Project site is ruderal habitat, developed land, and sensitive habitats associated with the lake (i.e., emergent wetland). Suitable habitat for nesting raptors, migratory birds, and other avian species afforded protection under the California Department of Fish and Game Code is present in the vegetation surrounding the project site. No other special-status wildlife or plant species are known to be present at the Project site, and none are expected to occur within the site due to the lack of suitable habitat and the anthropogenic influence of the surrounding development. Wetlands and water of the U.S., associated with Lake El Estero, are present within the project site. DD&A prepared a biological resources report for the City of Monterey's Detention Basin Management Project, dated June 5, 2017. The report included a wetland delineation for Lake El Estero. The wetland delineation was reviewed for purposes of understanding the presence and location of sensitive habitat (i.e., emergent wetland) – which was found south of the existing Pump Station, see **Figure 4a** and **Figure 4b.** The wetland delineation prepared for the City's detention basin management project is

included as **Appendix C**. Fishery resources of the Lake El Estero watershed are limited to a modified estuary system. Due to insufficient flows and both natural and human caused barriers, no anadromous salmonids, tidewater gobies, or other special status aquatic species are known to occur in Lake El Estero.



Lake El Estero
Wetland Delineation Map

Date
5/7/2025

Scale
N/A

DENISE DUFFY & ASSOCIATES, INC.
Planning and Environmental Consulting

Figure
4a

Path: C:\GIS\GIS_Projects\2022-49 Lake El Estero\El Estero Addendum.aprx



Lake El Estero Habitat Map

Date
5/7/2025

Scale
N/A

DENISE DUFFY & ASSOCIATES, INC.
Planning and Environmental Consulting

Figure
4b

Path: C:\GIS\GIS_Projects\2022-49 Lake El Estero\El Estero Addendum.aprx

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	■	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	■	☐	☐
d) 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 impede the use of native wildlife nursery sites?	☐	☐	■	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	■	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR previously analyzed the construction and operational impacts of the Proposed Project and determined that all operational impacts would be less than significant. The PWM/GWR EIR determined construction of the Project could result in potentially significant impacts and included appropriate mitigation to reduce impacts to less than significant. Specifically, the PWM/GWR EIR determined there was suitable habitat (e.g., mature trees, riparian habitat) for nesting raptors, migratory birds, and other protected avian species adjacent to the Project site and that construction activities (e.g., tree trimming, vegetation removal, and equipment noise, vibration, and lighting) could result in harm, injury, or death of protected birds, or abandonment of an active nest. Therefore, the PWM/GWR EIR included ***Mitigation Measure BT-1a: Implement Construction Best Management Practices*** and ***Mitigation Measure BT-1k: Conduct Pre-Construction Surveys for Protected Avian Species, including, but not limited to, white-tailed kite and California horned lark*** to reduce potentially significant impacts to less than significant. The PWM/GWR EIR previously analyzed the construction and operational impacts of the Proposed Project on fisheries resources and determined that there would be no construction or operational impacts associated with the El Estero Project Component. The PWM/GWR EIR further determined all other potential impacts would be less than significant.

DISCUSSION

a) – c) Less than Significant Impact with Mitigation Incorporated. The PWM/GWR EIR assessed potential construction and operational impacts to sensitive species and habitat from the Proposed Project and determined construction impacts could result in potentially significant impacts.

Construction

No special-status plant or wildlife species were observed within the Project site during biological surveys conducted for the PWM/GWR EIR. No special-status species are expected to occur within the Project site; with the exception of nesting raptors, migratory birds, and other protected avian species that may nest in suitable habitat surrounding the Project site. The Project would be constructed in the same localized area as what was previously analyzed in the PWM/GWR EIR, and primarily within a paved and previously disturbed area associated with the existing pump station. Construction would require temporary work within the modified bank[12] of Lake El Estero. Construction activities would consist of installing a temporary cofferdam, dewatering the work area, and removing a portion of the existing retaining wall, installing the intake frame, channel, and bar screen.[13] The temporary cofferdam would be an inflatable bladder, stacked sandbags, or driven sheet piles. Water from the dewatering pump would be discharged to a settling tank and returned to the lake once construction of the intake is complete.

No nighttime construction is proposed that would produce disruptive lighting or glare. Additionally, Project construction would not involve tree trimming or removal; however, consistent with the PWM/GWR EIR's analysis, indirect impacts to protected birds (e.g., abandonment of active nests) could result from equipment noise and vibration during construction. This is considered a potentially significant impact that would be reduced to less than significant with implementation of ***Mitigation Measures BT-1a: Implement Construction Best Management Practices*** and ***BT-1k: Conduct Pre-Construction Surveys for Protected Avian Species, Including, but not Limited to, White-Tailed Kite and California Horned Lark***, as previously identified in the PWM/GWR EIR. These measures respectively require implementing best management practices during all phases of construction (i.e., pre-, during, and post-) to reduce impacts to special status plant and wildlife species and conducting pre-construction surveys at each PWM/GWR Project component site for suitable nesting habitat within and surrounding the component study area (see **Appendix A** for detailed mitigation measures). Because the Proposed Project would use substantially the same construction equipment and methods that were analyzed in the PWM/GWR EIR, these mitigation measures would remain sufficient for reducing potential impacts and no additional mitigation would be required to reduce impacts to nesting raptors, migratory birds, and other protected avian species.

As discussed above, construction of the Proposed Project would require temporary installation and use of a cofferdam and dewatering in and along the bank of Lake El Estero immediately adjacent to the existing pump station. Based on the 2017 wetland delineation, Lake El Estero does contain emergent wetland habitat, however, no emergent wetland habitat is present within the area proposed for disturbance, **see Figure 4a** and **Figure 4b**, above. The Proposed Project will only result in modification of the retaining wall associated with the existing pump station, therefore no permanent impacts to sensitive habitats are

[12] The bank of El Estero Lake at this location consists of retaining wall.

[13] The diversion intake consists of a four (4)-foot wide gravity inlet on the bank of the lake. Dewatering would be within a 10-foot by five (5)-foot work area. 2.5-feet by 4.5-feet of the existing retaining wall would be removed.

expected to occur. Moreover, ongoing maintenance activities associated with the City's existing pump station also contribute to routine disturbance of the Proposed Project site, therefore construction of the diversion is not anticipated to generate new impacts, or increase the severity of impacts previously identified in the PWM.GWR EIR. Consistent with the PWM/GWR EIR's analysis, mitigation measures will be applied to ensure construction will not adversely affect identified sensitive habitats. In addition to protection of sensitive species, ***Mitigation Measures BT-1a*** would also apply to protection of sensitive habitats adjacent to the Project site.

Because the Proposed Project would be in the same area as what was previously analyzed in the PWM/GWR EIR and would involve substantially the same construction equipment and methods as those previously analyzed in the PWM/GWR EIR, no additional construction impacts beyond what was analyzed in the PWM/GWR EIR would occur from the Project, nor would the Project cause an increase in the severity of any significant impacts previously identified in the certified PWM/GWR EIR, SEIR, and addenda. Mitigation measures previously identified in the PWM/GWR EIR would remain applicable to the Proposed Project and no additional mitigation would be required to reduce construction-related impacts.

Operation

The PWM/GWR EIR determined potential operational impacts to sensitive species and habitats would be less than significant and would therefore not require mitigation to reduce impacts. Project operation and maintenance activities would be the same as those previously assessed in the PWM/GWR EIR (i.e., diverting water from the lake to the City's sewer system and clearing vegetation and debris from the gravity intake system approximately once per month). Additionally, the PWM/GWR EIR anticipated a yield of 87 AFY based on runoff capture monitoring data collected between November 2013 and March 2014. More recent monitoring data from 2024 suggests that the Proposed Project would have a higher yield of 209 AFY without reducing the existing water level of the lake (please see **Appendix B**). Therefore, the higher yield anticipated for the Proposed Project would have substantially the same impact on sensitive species and habitats as evaluated in the PWM/GWR EIR. As such, operation of the Proposed Project would not result in any additional or increase the severity of impacts beyond what was previously identified in the PWM/GWR EIR, SEIR, and addenda. Operational impacts would remain less than significant. Please also refer to **Section 10, Hydrology and Water Quality** for additional detail.

d) – e) Less than Significant Impact. The PWM/GWR EIR previously analyzed Project impacts related to the movement of native wildlife, nursery sites, and conflict with local policies, ordinances, and provisions of adopted local, regional, and state habitat conservation plans. All potential impacts were found to be less than significant. The Project would be located in the same area that was analyzed in the PWM/GWR EIR, entirely within existing developed areas (i.e., Lake El Estero Pump Station). Consistent with the impact analysis in the PWM/GWR EIR, the Project site is not located in an area identified as a wildlife corridor or native wildlife nursery site. Lake El Estero contains open aquatic habitat inhabited by various introduced freshwater fish species; no native fish species inhabit the lake. Construction of the Proposed Project would require temporary activities along the bank of the lake. However, this area has been previously disturbed in connection with the retaining wall associated with the existing pump station; and ongoing maintenance activities associated with the City's pump station also contribute to routine disturbance of the Proposed Project site. Therefore, no significant impacts would occur from interference with fish migration or fish populations as a result of the Project.

Similarly, because the Proposed Project would occur within primarily paved, developed, and previously

disturbed areas, no trees would be removed as part of the Project. Any vegetation removal required along the bank of Lake El Estero for Project construction or ongoing Project maintenance would be required to comply with the applicable policies in the City of Monterey Stormwater Ordinance. Moreover, the Project would be within the same area of disturbance and location as what was previously analyzed in the PWM/GWR EIR and would require substantially the same construction methods and operational activities as those previously analyzed in the PWM/GWR EIR, Project construction and operation would not result in new or more severe impacts beyond those identified in the certified PWM/GWR EIR, SEIR, and addenda. This represents a less than significant impact.

f) No Impact. The Proposed Project is not within an area covered in an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no conflicts would result from the Proposed Project and the Project would not result in additional significant impacts or an increase in the severity of significant impacts beyond what was previously analyzed in the PWM/GWR EIR, SEIR, and addenda. No impact would occur.

Conclusion: The Proposed Project would result in the same or lesser impacts previously analyzed in the certified PWM/GWR EIR, SEIR, and addenda. ***Mitigation Measures BT-1a*** and ***BT-1k***, as previously identified in the PWM/GWR EIR, would be applicable to the Proposed Project. No additional mitigation is required.

5. Cultural Resources

EXISTING SETTING

The Project site is located in the City of Monterey at the existing Lake El Estero Pump Station, in the northeast corner of Lake El Estero and within the Lake El Estero Park Complex. Lake El Estero Park is zoned as Open Space with a Historic (H1) overlay (City of Monterey, 2005). The Project site is within existing paved and previously disturbed areas (i.e., the Lake El Estero Pump Station). Several archaeological sites have been identified in the vicinity of Lake El Estero; however, none of these recorded sites are within or near the Proposed Project site, which is located at the northeastern corner of Lake El Estero(PWM/GWR EIR, 2015).

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	☐	☐	☐	■
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	■	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	■	☐	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR previously analyzed tribal cultural resources at the Project site and in the vicinity of the Project site. The PWM/GWR EIR identified two (2) prehistoric sites located within 0.5 miles of the Proposed Project; however no cultural sites were identified to be in or close to the Project site. Therefore, no impacts to known historical or paleontological resources would result . However, the Project could result in a significant impact to cultural/archaeological resources or unknown human remains during construction. The PWM/GWR EIR therefore included ***Mitigation Measures CR-2a: Archaeological Monitoring Plan, CR-2b: Discovery of Archaeological Resources or Human Remains,*** and ***CR-2c: Native American Notification*** to reduce potential impacts to less than significant.

DISCUSSION

a) No Impact. The Proposed Project is located within 0.5 miles of the Royal Presidio Chapel historic site; however, this site is located near the southwestern corner of Lake El Estero and is not within or near the Project footprint, which is located in the northeastern corner of the lake. The PWM/GWR EIR previously analyzed potential impacts to historic resources from construction and operation of the Proposed Project and determined no impacts would occur. The Proposed Project would be in the same area as what was previously analyzed in the PWM/GWR EIR and would use substantially the same construction equipment and methods as what was included in the PWM/GWR EIR. Additionally, the Proposed Project would not increase the amount of ground disturbance beyond what was previously analyzed in the PWM/GWR EIR. Therefore, the Proposed Project would not result in additional or more severe impacts beyond what was previously identified in the PWM/GWR EIR, SEIR, and addenda. The Proposed Project would result in no impact to historic resources.

b) – c) Less than Significant Impact with Mitigation Incorporated. The PWM/GWR EIR determined construction of any of the PWM/GWR Project components could result in potentially significant impacts to unknown resources or human remains during construction. Per the PWM/GWR EIR,

> "Such resources are of particular concern, however, at the Lake El Estero Diversion site. Based on the geoarchaeological assessment developed by ESA (ESA, 2014), there is potential for deeply buried well-developed soil horizons to be located in the Area of Potential Effects near Lake El Estero in the City of Monterey, with the potential for archaeological resources associated with those buried soils to be encountered during project work. Project construction activities could result in damage or disturbance to such resources if they exist and are determined to be a historical resource or unique archaeological resource, a potentially significant impact."

The PWM/GWR EIR included ***Mitigation Measures CR-2a, and CR-2b,*** and ***CR-2C*** to ensure any impacts to previously unknown cultural resources or human remains would be less than significant. Implementation of ***Mitigation Measure CR-2a*** requires archaeological monitoring during construction in the event that unknown archaeological resources are encountered; ***Mitigation Measure CR-2b*** requires that if archaeological resources or human remains are discovered during construction, work shall be halted within 50 meters (160 feet) of the find until a qualified professional can evaluate the find; and ***Mitigation Measure CR-2c*** requires notifying all listed Native American Contacts of any and all discoveries of archaeological resources in the project area. The Proposed Project would be in the same area as what was analyzed in the PWM/GWR EIR and would utilize substantially the same construction equipment and methods analyzed in the PWM/GWR EIR. Construction of the Proposed Project could result in impact to

unknown resources or human remains, consistent with the findings of the PWM/GWR EIR. The Proposed Project would be required to comply with the mitigation measures previously identified in the PWM/GWR EIR. Therefore, this impact would be reduced to less than significant through implementation of previously identified mitigation and no additional mitigation would be required.

Conclusion: The Proposed Project would not result in additional impacts and would not result in an increase in the severity of significant impacts previously identified in the PWM/GWR EIR, SEIR, and addenda. **Mitigation Measures CR-2a, CR-2b,** and **CR-2c** would remain applicable to the Proposed Project and no additional mitigation is required.

6. Energy

EXISTING SETTING

Pacific Gas and Electric ("PG&E") provides electricity and natural gas throughout Monterey County, and thus would be the energy utility provider for the Proposed Project. Beginning in 2018, all PG&E customers within Monterey, San Benito, and Santa Cruz Counties were automatically enrolled in Central Coast Community Energy ("3CE"). 3CE is a locally controlled public agency providing carbon-free electricity to residents and businesses. 3CE is a joint powers authority and based on a local energy model called community choice energy. 3CE partners with PG&E, which continues to provide billing, power transmission and distribution, customer service, grid maintenance services, and natural gas services to Monterey County.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	■	☐	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	■	☐	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR determined that Project construction could result in potentially significant impacts from temporary energy use if construction equipment is not properly maintained or haul trips are not planned efficiently. The PWM/GWR EIR included ***Mitigation Measure EN-1 Construction Equipment Efficiency Plan*** to ensure construction-related energy impacts were less than significant. The PWM/GWR EIR determined energy impacts related to Project operation would be less than significant and no mitigation was required to reduce these impacts.

DISCUSSION

a) – b) Less the Significant with Mitigation Incorporated. The Proposed Project would not result in a

potentially significant impact due to wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The Project was previously evaluated in the PWM/GWR EIR, which determined significant energy impacts could occur from Project construction if equipment is not properly maintained or is left idling. However, inefficient energy use from leaving equipment idling for more than five (5) minutes when equipment is not in use would violate state idling limitations for diesel-fueled vehicles. Therefore, the PWM/GWR EIR identified ***Mitigation Measure EN-1: Construction Equipment Efficiency Plan*** to ensure impacts were minimized to less than significant. The Proposed Project would utilize substantially the same construction equipment and methods as previously analyzed in the PWM/GWR EIR. The Project would employ typical construction methods for pipeline and diversion construction as described in the PWM/GWR. The Proposed Project uses similar construction equipment with some modifications and greater specificity related to the type of vehicles and equipment than as described in the PWM/GWR EIR.

However, the Project is not expected to require additional truck or vehicle trips beyond what was identified in the PWM/GWR EIR and would not result in additional significant impacts or result in an increase in the severity of significant impacts previously identified in the PWM/GWR EIR. Consistent with the impact analysis in the PWM/GWR EIR, the Proposed Project would implement ***Mitigation Measure EN-1,*** and additional mitigation is not required.

Conclusion: The Project would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR and implement required mitigation to reduce impacts related to energy. Therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

7. Geology and Soils

EXISTING SETTING

The Proposed Project is located in the Coast Ranges geomorphic province of California, an area considered seismically active, as are most areas of California. The Coast Ranges comprise a series of parallel, northwest-trending mountain ranges and valleys generally controlled by faults. Faults juxtapose blocks of geologic units of different origins called belts. The Monterey area is located within the Salinian block which is a northwest-trending belt bounded to the east by the San Andreas Fault, and to the west by the San Gregorio (Sur) fault.

The Project site is situated approximately 500 feet south of the Pacific Ocean, in the City of Monterey. Local potentially active faults in the vicinity of the Project site include the Navy Fault and Sylvan thrust faults, located approximately 0.6 miles east and 1.3 miles south of the Project site, respectively (Monterey County, 2023a).

The Proposed Project site is mapped as being underlain by Holocene basin and alluvial deposits, artificial fill materials, and Monterey formation (PWM/GWR EIR, 2015). Soil at the Project site consists of Baywood sand, which is derived from stabilized eolian sands near the coast and is poorly aggregated, sandy material. As such, this soil is somewhat excessively drained, with low shrink-swell potential (NRCS, 2023). The Project site is mapped as an area with moderate erosion potential, high to variable liquefaction

susceptibility, and low landslide potential (County of Monterey, 2023a) and is not located on or near any known sites of containing paleontological resources (Rosenberg and Clark, 2001).

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	■	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	■
ii) Strong seismic ground shaking?	☐	☐	■	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
iv) Landslides?	☐	☐	■	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	■	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	■	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	■	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■
f) Directly or indirectly destroy a unique paleontological resources or site or unique geologic feature?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR analyzed Project impacts related to erosion or loss of topsoil; soil instability and potential collapse; Project exposure to fault rupture, seismic ground shaking, liquefaction, and expansive soils; and exposure to coastal erosion and sea level rise. The PWM/GWR EIR determined no significant impacts related to geology and soil would result from the Proposed Project and no mitigation would be required to reduce impacts to a less than significant level. Specifically, the PWM/GWR EIR determined no impacts would occur from rupture of an Alquist-Priolo fault because the Project site was not located along or near a delineated Alquist-Priolo Earthquake Fault Zone and the Proposed Project would not expose people or structures to substantial risk due to fault rupture or seismic ground shaking, including liquefaction. The PWM/GWR EIR also concluded the Project would result in less than significant impacts related to soil erosion and loss of topsoil because the Proposed Project would require minimal ground disturbance and would be on a flat, paved and previously disturbed area. The PWM/GWR EIR further determined that no geotechnical

issues related to unstable soils have been identified at the Project site, which is developed and previously disturbed; therefore, exposure to or creation of soil instability or collapse, or exposure to expansive soils would not be expected from Project implementation. While the PWM/GWR EIR determined the Proposed Project site was in a tsunami inundation zone, the PWM/GWR EIR also concluded the Proposed Project would be outside of the coastal erosion hazard area; therefore, the site would not be subject to coastal erosion or retreat or damage from a major storm event during its lifetime and no impact related to sea level rise.

DISCUSSION

ai) No Impact. The PWM/GWR EIR previously analyzed impacts associated with rupture of a known Alquist-Priolo Earthquake Fault. The PWM/GWR EIR determined no impacts would occur because the Project site was not located along or near a fault delineated in the most recent Alquist-Priolo Earthquake Fault Zone for the area (County of Monterey, 2023a). The Proposed Project would be in the same area as what was previously analyzed in the PWM/GWR EIR. Therefore, the Project would not be on or near an Alquist-Priolo Earthquake Fault Zone and would result in additional or more severe impacts beyond what was previously identified in the PWM/GWR EIR. No impact would occur.

aii) – d) Less than Significant Impact. Consistent with the analysis in the PWM/GWR EIR, the Proposed Project would result in less than significant impacts related to seismic activity, erosion, and soil instability. The Project site would be in the same area as what was analyzed in the PWM/GWR EIR, which consists of a flat, paved area at the Lake El Estero Pump Station. Consistent with the PWM/GWR EIR, no geotechnical issues related to unstable soils have been identified at the Project site, which is developed and previously disturbed; therefore, exposure to or creation of soil instability or collapse, or exposure to expansive soils would not be expected from Project implementation. Furthermore, the Project would not result in additional ground disturbance beyond what analyzed in the PWM/GWR EIR; therefore, no additional impacts related to erosion or loss of topsoil would occur as a result of the Proposed Project. For these reasons, Project activities would not result in additional or more severe impacts beyond what was previously identified in the PWM/GWR EIR. The Project would result in less than significant impacts and no mitigation is required.

e) and f) No Impact. Consistent with the PWM/GWR EIR's analysis, the Proposed Project does not involve septic or alternative wastewater disposal systems, and no unique paleontological resources are located at the Project site. Paleontologists conducted a review of nearly 700 known fossil localities within the County in 2001; 12 fossil sites were identified as having outstanding scientific value. The Project site is not located on or near any of those sites (Rosenberg and Clark, 2001). The Project would be in the same area as what was analyzed in the PWM/GWR EIR. Therefore, the Project would not result in additional significant impacts or more severe significant impacts beyond what was identified in previous environmental documentation. No impact would occur as a result of the Proposed Project.

Conclusion: The Project would be in the same area as previously analyzed in the PWM/GWR EIR and would result in reduced ground disturbance beyond what was identified in the PWM/GWR EIR. Additionally, the Project would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. All impacts would remain less than significant, and no mitigation is required.

8. Greenhouse Gas Emissions

EXISTING SETTING

Global temperatures are affected by naturally occurring and anthropogenic generated (generated by humankind) atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide (Intergovernmental Panel on Climate Change, 2007). Gases that trap heat in the atmosphere are called greenhouse gases ("GHGs"). Emissions of GHGs from human activities, such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or global climate change.

MBARD has not yet adopted a threshold for construction-related GHG emissions but recommends utilizing thresholds set by neighboring districts (e.g., Sacramento Metropolitan Air Quality Management District ["SMAQMD"]). SMAQMD adopted an updated threshold based on the 2030 target year in April 2020. According to SMAQMD, a Project would result in a significant GHG-related impact if the Project would emit more than 1,100 metric tons of Carbon Dioxide equivalent-CO_2e ("MTOCO2e") per year. Operation of a stationary source project would not have a significant GHG impact if the project emits less than 10,000 $MTOCO_2e$ per year).

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	■	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	■	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR determined that construction and operation of all PWM/GWR project components would result in a less than significant GHG impact. Because the MBUAPCD did not have GHG thresholds or recommendations for assessing construction impacts at the time the PWM/GWR EIR was written, to provide a complete analysis of impacts, the construction impacts were modeled with operational impacts. Construction period emissions from the entire PWM/GWR project were amortized over a 30-year life and the resulting average annual emissions were added to the annual operational emissions and compared to the GHG significance threshold. The annual amortized GHG emissions associated with construction of the PWM/GWR project were estimated to be 201 MT/year and total operational impacts were estimated to have a maximum of 1,900 MT/year, below the adopted project-specific threshold of 2,000 MT/year threshold.

DISCUSSION

a) – b) Less than Significant. The Proposed Project would not result in significant GHG-related impacts. The PWM/GWR EIR previously analyzed GHG impacts for the entire PWM/GWR project, including the Proposed Project, and determined impacts for the entire Project would be below the established significance thresholds. Because the Proposed Project would comprise one (1) small-scale component of the greater PWM/GWR project (i.e., approximately 0.02 acres), the Proposed Project would contribute only a fraction of the total GHG emissions that were estimated in the PWM/GWR EIR for the entire project; therefore, GHG emissions would be well below any established thresholds. The Proposed Project would be in the same area as what was previously analyzed in the PWM/GWR EIR and would use substantially the same construction methods and equipment as previously identified in the PWM/GWR EIR. Therefore, GHG emissions from construction equipment and vehicle trips are not expected to change from what was identified in the PWM/GWR EIR (see **Section 17, Transportation and Traffic** for additional detail related to traffic impacts). Project is not expected to generate GHG emissions that would exceed applicable thresholds. Therefore, the Proposed Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, the Proposed Project would not result in new or more severe impacts beyond those identified in the PWM/GWR EIR, SEIR, and addenda and no mitigation is required.

Conclusion: The Project would be in the same area as what was previously analyzed in the PWM/GWR EIR and would not result in additional ground disturbance beyond what was identified in the PWM/GWR EIR. Additionally, the Project would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the environmental documentation. All impacts would remain less than significant, and no mitigation is required.

9. Hazards and Hazardous Materials

EXISTING SETTING

The Proposed Project is located within the City of Monterey. A search of the California Department of Toxic Substances Control, EnviroStor database shows there are no contaminated cleanup sites within the Project site. The nearest cleanup site in the vicinity of the Project is a voluntary PG&E cleanup site at the corner of Figueroa Street and Del Monte Avenue, located approximately 190 feet west of the Proposed Project. Other sites located within 400 feet of the Project site include a Military Evaluation site at the Naval Postgraduate School, a Military Evaluation site in the Pacific Ocean, and a State Response site (i.e., a former laundromat) approximately 330 feet southwest of the Project site (CDTSC, 2024). The Project site is located within two (2) miles of the Monterey Regional Airport and within the Monterey Airport Influence Area.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	■
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	■	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR analyzed potential impacts associated with hazards and hazardous materials, and determined the only potentially significant impact that would require mitigation to reduce to less than significant would be from accidental release of hazardous materials during Project construction. This impact was found to be significant due to proximity of the Project site to hazardous materials release sites (i.e., within 0.25 miles of release sites). The PWM/GWR EIR identified ***Mitigation Measures HH-2a: Environmental Site Assessment***, ***HH-2b: Health and Safety Plan***, and ***HH-2c: Materials Disposal Plan*** because the Project site would be within 0.25 miles of hazardous materials release sites that were actively undergoing mitigation at the time the PWM/GWR EIR was prepared. The PWM/GWR EIR found all other construction and operational impacts to be less than significant.

DISCUSSION

a) Less than Significant Impact. Construction of the Proposed Project may require temporary storage, handling, and use of hazardous materials that are routinely used for construction activities (e.g., fuels,

lubricants). Consistent with the impact analysis in the PWM/GWR EIR, the Project would be required to comply with state and local regulations and manufacturer labels regarding the handling, use, and transport of hazardous materials. To reduce risk of exposure, spill, or other environmental impacts as a result of handling, use and transport, standard construction Best Management Practices ("BMPs") would also be implemented during construction. Because the Proposed Project would consist of less than one (1) acre of earthmoving activity, the Project would not be required to prepare and implement a Stormwater Pollution Prevention Plan ("SWPPP"). Additionally, the Proposed Project would utilize substantially the same construction methods and equipment previously analyzed in the PWM/GWR EIR, would be in the same area as what was previously analyzed, and would not result in additional ground disturbance beyond what was previously analyzed. For these reasons, the Project would not result in additional significant impacts or result in an increase in the severity of significant impacts beyond those identified in the PWM/GWR EIR. The Project would result in a less than significant impact related to transport, storage, and handling of hazardous materials.

b) Less than Significant Impact with Mitigation Incorporated. The PWM/GWR EIR identified potential impacts from hazardous materials release that could occur during construction of the Proposed Project. Due to the Project's location to several hazardous materials sites undergoing remediation activities, the PWM/GWR EIR included mitigation to reduce potentially significant impacts to a less than significant level. The hazardous materials release sites that were undergoing remediation in proximity to the Proposed Project at the time the PWM/GWR EIR was prepared (see Table 4.9-1 of the PWM/GWR EIR, pp. 4.9-11) are no longer active; however, three (3) new hazardous materials cleanup sites are located within 0.25 miles of the Project site. These include a voluntary PG&E cleanup site at the corner of Figueroa Street and Del Monte Avenue, located approximately 190 feet west of the Proposed Project; a State Response site (i.e., a former laundromat) approximately 330 feet southwest of the Project site; and a Military Evaluation site at the Naval Postgraduate School, a Military Evaluation site in the Pacific Ocean, within 400 feet of the Project site (CDTSC, 2024). No contaminated cleanup sites are within the Project site; however, consistent with the impact analysis in the PWM/GWR EIR, due to the proximity and number of known sites that are undergoing remediation, encountering unanticipated soil or groundwater contamination could result in a substantial risk to the public or the environment due to hazardous materials release. This potential impact would be considered significant. The Proposed Project would implement previously identified ***Mitigation Measures HH-2a: Environmental Site Assessment***, ***HH-2b: Health and Safety Plan***, and ***HH-2c: Materials Disposal Plan*** to reduce this potential impact to a less than significant level. No additional mitigation beyond the measures identified in the PWM/GWR EIR would be required to reduce impacts to a less than significant level.

c) – e) No Impact. The Project site is not within 0.25 miles of an existing or proposed school. The nearest school is San Carlos School, located approximately 0.47 miles southwest of the Project site. Therefore, no impact would occur from hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of a school. The Proposed Project is also not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. The Project site is located within two (2) miles of the Monterey Regional Airport and is included in the Monterey Airport Influence Area ("AIA"). The PWM/GWR EIR previously concluded that because the Proposed Project would consist entirely of underground infrastructure, no impacts related to the AIA would occur from Project construction or operation.

The Proposed Project would be in the same area that was previously evaluated in the PWM/GWR EIR and

would not involve additional infrastructure beyond what was included in the PWM/GWR EIR. Therefore, the Project would not result in additional significant impacts or increase the severity of significant impacts previously identified in the PWM/GWR EIR, SEIR, and addenda. No impact would occur as a result of the Project.

f) Less than Significant Impact. Consistent with the impact analysis in the PWM/GWR EIR, the Proposed Project would consist entirely of underground components, including a new pipeline connection and gravity intake system. As such, Project operation would not increase hazards related to emergency access. Construction equipment and vehicles would be staged and parked outside of roadways to limit impacts related to emergency access to the extent feasible and would not result in significant impacts. Please also refer to **Section 17, Transportation and Traffic** and **Section 20, Wildfire** for additional detail. The Project would be in the same area as what was previously analyzed in the PWM/GWR EIR; therefore, the Proposed Project would not result in additional significant impacts or result in an increase in the severity of significant impacts identified in the PWM/GWR EIR. For these reasons, the Project would result in a less than significant impact.

g) Less than Significant Impact. As previously discussed in the PWM/GWR EIR, all potential impacts related to wildland fire hazards would be less than significant. The Proposed Project would consist of underground water diversion and conveyance infrastructure (i.e., gravity intake system and pipeline). As such, no potential wildfire hazards would result from Project operation. However, Project construction would involve the use of equipment that could produce a spark or flame (e.g., combustion engine, gasoline-powered tools). Project construction could therefore temporarily increase fire risks from production of sparks and the use of flammable materials (e.g., gasoline); however, these impacts would be temporary and limited. Additionally, Project components would be constructed in compliance with existing fire regulations (see also **Section 20, Wildfire**). The Proposed Project would use substantially the same construction methods and equipment identified in the PWM/GWR EIR; therefore, Project construction is not anticipated to result in additional wildfire risks due to sparks or flames. For these reasons, the Proposed Project would not result in additional significant impacts or increase the severity of previously identified significant impacts and would have a less than significant impact related to increased risks involving wildfire.

Conclusion: The Project would be located in the same area as what was previously analyzed in the PWM/GWR EIR and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. Previously identified mitigation (***Mitigation Measures HH-2a***, ***HH-2b***, and ***HH-2c***) would remain applicable to the Project and no additional mitigation is required.

10. Hydrology and Water Quality

EXISTING SETTING

The Proposed Project site is located at the Lake El Estero Pump Station, in the northeastern corner of Lake El Estero. Lake El Estero collects stormwater runoff from approximately 3.78 mi^2 of urban, suburban, and wooded area and is fed by four (4) ephemeral streams and percolation of shallow groundwater. The City maintains the lake's water levels for aesthetics and recreational use by pumping water from the lake to Del Monte Beach through existing pipeline infrastructure located at the Lake El Estero Pump Station. The

Project site is entirely paved and previously disturbed and is relatively flat. Stormwater runoff at the site flows into the maintained lawn immediately surrounding the site or directly into Lake El Estero. The Project site is in a Federal Emergency Management Agency ("FEMA") 100-year flood zone (FEMA, 2023) and is approximately 0.10 miles south of the Pacific Ocean, within a tsunami hazard area (City of Monterey, 2024).

Schaaf & Wheeler Consulting Civil Engineers ("Schaaf & Wheeler") prepared an Urban Runoff Yield Study for the Proposed Project ("Yield Study") in October 2024. The Yield Study estimated the water yield that would be obtained from diversion of water from Lake El Estero to the City's sewer system, analyzed potential water quality impacts associated with the Proposed Project, and provided recommendations for ensuring the Project would not result in adverse impacts. The following discussion is in part based on the findings of the Yield Study. The Yield Study is also provided in **Appendix B** of this document.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	■	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	■	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	■	☐
i) Result in substantial erosion or siltation on- or off-site?	☐	☐	■	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on - or off-site?	☐	☐	■	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	■	☐
iv) Impede or redirect flood flows?	☐	☐	■	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	■	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR analyzed potential impacts to hydrology and water quality from Project construction

and operation, and determined the Project would not result in any significant impacts. More specifically, the PWM/GWR EIR found that impacts to surface water quality during construction would be less than significant because the Project would result in minimal disturbance, would include implementation of standard construction BMPs. The PWM/GWR EIR also determined operational impacts to water quality from the Proposed Project would be less than significant or beneficial; the Project would divert untreated stormwater from Lake El Estero to the City's sanitary sewer system to be treated for reuse in lieu of diverting untreated stormwater onto Del Monte Beach and into the Monterey Bay National Marine Sanctuary. Therefore, the Project would prevent untreated water from entering the Monterey Bay and could benefit marine water quality. The PWM/GWR EIR also determined that although the Proposed Project would be in a tsunami hazard zone, within a 100-year flood zone, and in a coastal hazard zone, any impacts related to tsunami, flooding, or coastal inundation from sea level rise would be less than significant.

DISCUSSION

a) Less than Significant Impact. The PWM/GWR EIR previously assessed potential impacts to surface and groundwater quality from implementation of the Proposed Project and determined impacts would be less than significant. Construction of the Project would occur within the existing paved and previously disturbed areas at the Lake El Estero Pump Station, which were previously analyzed in the PWM/GWR EIR. Consistent with the PWM/GWR EIR's analysis, Project construction would require grading and trenching, which could result in erosion of on-site soils and sedimentation during heavy wind or rain events. However, as discussed in the PWM/GWR EIR, the Project would be required to comply with the conditions of general waste discharge requirements and the Project would implement standard construction BMPs related to runoff and erosion (e.g., installing sediment barriers such as silt fencing) to minimize impacts to surface and groundwater quality. Because the Project would disturb less than one (1) acre of land, the Project would not be required to implement a SWPPP.

Construction would require activities on the bank of the lake (e.g., installation of a cofferdam and dewatering); activities such as dewatering, sediment removal, or vegetation removal would potentially have temporary impact on water quality as a result of increased turbidity due to the disturbance of sediment. However, these impacts would be temporary and consistent with ongoing maintenance activities occurring at the existing pump station. Therefore, these temporary impacts are not anticipated to result in a new or significantly more severe impact than what was previously evaluated, nor would they be different than what is occurring under baseline conditions. There would be no new significant impacts or increase in severity of impacts to water quality as a result of construction of the Proposed Project. Additionally, the Proposed Project would be required comply with existing stormwater permits issues by the Central Coast Regional Water Quality Control Board (Clean Water Act Section 401).

Project operation would divert untreated stormwater to the City's sanitary sewer system in lieu of discharging directly to the beach and into the Monterey Bay. It is therefore anticipated that operation of the Project would not result in impacts to water quality from discharges into the Monterey Bay. Rather, the Proposed Project would result in net beneficial impacts as it would reduce discharge of untreated water into the Monterey Bay (Schaaf & Wheeler, 2024). However, the addition of stormwater into the sewer system could increase the risk of sanitary sewer overflows if the system is not maintained properly and best management practices (or safeguards) are not put in place; therefore, Schaaf & Wheeler (2024) recommended that the following best management practices be included as part of the Proposed Project to avoid sewer overflows during peak diversions:

- Inspection of sewer pipeline and manholes for cracks and leaking joints and repair of cracks or leaks, if found.
- Installation of pressure sensors in one (1) or more manholes to identify backwater effects in the system.
- Shutoff of the stormwater system if the combined stormwater and sewer flows exceed the gravity capacity of the sewer main.

The Proposed Project would implement the best management practices identified above and referenced in the report prepared by Schaaf & Wheeler (2024). Additionally, the Proposed Project would be in the same area and would use substantially the same construction methods identified in the PWM/GWR EIR. Therefore, the Proposed Project would not require additional ground disturbance beyond what was analyzed in the PWM/GWR EIR. Consistent with the PWM/GWR EIR's impact analysis, the Proposed Project would adhere to permitting requirements and would implement BMPs to ensure impacts are less than significant. For these reasons, the Project would not result in additional impacts beyond what was assessed in the PWM/GWR EIR, SEIR, and addenda and would not increase the severity of previously identified significant impacts.

b) Less than Significant Impact. Construction of the Proposed Project would temporarily increase water demand for typical construction-related water use (i.e., surface watering for compaction and dust control). Construction-related water demand would be temporary and limited. The PWM/GWR EIR previously determined construction water demand for PWM/GWR project components would be negligible (approximately 1.1 acre-foot per acre of ground disturbance; see pp. 4.10-52 and 4.18-29 of the PWM/GWR EIR for additional detail). The Proposed Project would disturb a total of approximately 1,040 square feet (approximately 0.02 acres), which would require less than one (1) acre-foot of water. Therefore, construction-related groundwater demand would not exceed what was previously evaluated. Similarly, Project operation would not require additional water supplies to serve the Project for the foreseeable future. The Proposed Project consists of connecting Lake El Estero to the City's sanitary sewer system, to provide supplemental wastewater flows for recycling and reuse. The Project would divert Stormwater from Lake El Estero to the sanitary sewer system in lieu of allowing the untreated stormwater to flow into the Pacific Ocean. The recycled water would then be used for groundwater recharge and irrigation as part of the PWM/GWR project. As such, Project operation would be beneficial for groundwater recharge. For these reasons, the Project would not result in additional impacts or result in an increase in the severity of impacts beyond what was previously identified in the PWM/GWR EIR, SEIR, and addenda and would result in less than significant impacts related to groundwater recharge.

c) Less than Significant Impact. The Proposed Project would not result in significant impacts related to altered drainage patterns. The Project would consist of installing and operating water conveyance infrastructure (i.e., a new connecting pipeline and gravity intake system) at the existing Lake El Estero Pump Station. All Project components would be below ground and within existing paved and previously disturbed areas, as previously analyzed in the PWM/GWR EIR. The Project would not result in new impervious cover and all areas would be repaved immediately following construction. Therefore, the Project would not result in permanent impacts to onsite drainage patterns. The PWM/GWR EIR assessed potential construction-related impacts to drainage and determined the Project would result in less than significant impacts. The Project would involve substantially the same construction methods that were identified in the PWM/GWR EIR and would not involve additional ground disturbance or grading beyond what was assessed in the PWM/GWR EIR. Additionally, the Proposed Project would implement standard construction BMPs to minimize potential impacts. Because the Project would implement standard BMPs

and would be in the same area and use substantially the same construction methods as what was previously analyzed in the PWM/GWR EIR, the Project would not result in additional impacts or more severe impacts beyond those identified in the PWM/GWR EIR, SEIR, and addenda. For these reasons, the Project would result in a less than significant impact.

d) Less than Significant Impact. The Proposed Project is in a FEMA 100-year flood zone (i.e., the site has a one [1] percent chance of flooding in a given year) and is approximately 0.10 miles south of the Pacific Ocean, in a tsunami inundation area and a coastal hazard zone (FEMA, 2023; City of Monterey, 2024; EMC, 2016). However, the PWM/GWR EIR previously analyzed potential tsunami, flood, and sea level rise impacts associated with the Proposed Project and determined all impacts would be less than significant. The Project would involve the same components as those previously analyzed in the PWM/GWR EIR (i.e., gravity intake system and pipeline) and would be in the same area as what was identified in the PWM/GWR EIR (i.e., the Lake El Estero Pump Station). Additionally, the Project would involve substantially the same construction and operational activities that were identified in the PWM/GWR EIR. Schaaf & Wheeler's Yield Study included an attached memorandum from the City which assessed the potential impacts of sea level rise on the Proposed Project under low, medium-high, and extreme risk aversion scenarios and included recommendations for preventing potential impacts associated with sea level rise. Electrical equipment would be designed with protection to account for potential inundation and ensure any impacts from flooding, tsunami, or sea level rise are less than significant (see Appendix F of the Yield Study). Because the Proposed Project would be in the same area and would involve substantially the same components and construction and operational activities as those previously analyzed in the PWM/GWR EIR, and the Project would incorporate safety design features consistent with the City's recommendations, the Project would not result in additional impacts or result in an increase in the severity of previously identified significant impacts. The Project would result in a less than significant impact.

e) No Impact. The Proposed Project would involve connecting Lake El Estero to the City's sewer system to be treated for recycling and reuse in lieu of discharging untreated water into the Pacific Ocean. As such, the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. The Proposed Project proposes an increase in the amount of stormwater runoff that would be diverted from the lake to the City's sanitary sewer system. All remaining water stored would stay in the lake or continue to be discharged into the Monterey Bay. Lake El Estero water levels would not be altered as part of the Proposed Project and the changes to the project would reduce discharges of storm water into Monterey Bay. Therefore, no impact would occur as a result of the Proposed Project and the Project would not result in additional significant impacts or increase the severity of previously identified significant impacts.

Conclusion: The Project would be located in the area that was previously analyzed in the PWM/GWR EIR and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

11. Land Use and Planning

EXISTING SETTING

The Project site is in the City of Monterey at the existing Lake El Estero Pump Station in the northeast corner of Lake El Estero and within the Lake El Estero Park Complex. Lake El Estero Park is zoned as Open

Space with a Historic (H1) overlay (City of Monterey, 2005). Project components would be within paved and previously disturbed areas at the existing Lake El Estero Pump Station. Additionally, the site contains numerous above-ground pipelines, valves and other infrastructure used for lake and stormwater management. Surrounding the Pump Station are a landscaped lawn, a decomposed granite trail, planted trees, and the sidewalk on the south side of Del Monte Boulevard. The lake shore adjacent to the Proposed Project Site is man-made rock riprap and includes a concrete box culvert within which the lake pumps are located.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	■
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	■	☐	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR determined the Proposed Project would potentially conflict with applicable land use policies pertaining to solid waste production during construction. The PWM/GWR EIR therefore concluded potential conflicts with applicable plans and policies would be a potentially significant impact that would be reduced with the implementation of appropriate mitigation measures. The PWM/GWR EIR included the following mitigation measures to ensure compliance with land use plans and policies applicable to the Lake El Estero Diversion Project:

- ***AQ-1: Construction Fugitive Dust Control Plan***
- ***BT-1a: Implement Construction Best Management Practices***
- ***BT-1c: Implement Non-Native, Invasive Species Controls***
- ***BT-1k: Conduct Pre-Construction Surveys for Protected Avian Species, including but not limited to, white-tailed kite and California horned lark***
- ***CR-2b: Discovery of Archaeological Resources or Human Remains***
- ***CR-2c: Native American Notification***
- ***PS-3: Construction Waste Reduction and Recycling Plan***

No mitigation beyond what was included in the PWM/GWR EIR would be required to reduce impacts land use to less than significant. Please see **Appendix A** for detailed mitigation measures applicable to the Proposed Project.

DISCUSSION

a) No Impact. Construction and operation of the Proposed Project would not physically divide an established community. The Project would consist of connecting Lake El Estero to the City's sanitary sewer system; all infrastructure would be underground, and no additional infrastructure would be required that

would result in division of an established community. Additionally, the PWM/GWR EIR previously analyzed potential Project-related land use impacts and determined no impacts would occur from Project construction or operation. The Project would be in the same area as what was previously analyzed. The discharge pipeline is slightly modified from a 40-foot, 12-inch diameter pipeline to a 60-foot, 16-inch diameter pipeline. The Proposed Project would install the discharge pipeline underground and in a previously disturbed area. As with the 40-foot, 12-inch diameter pipeline evaluated in the PWM/GWR EIR, this modified pipeline would have no impact with regards to physically dividing an established community. Therefore, the Project would not result in additional significant impacts or more severe impacts beyond what was identified in the PWM/GWR EIR and would result in no impact.

b) Less than Significant with Mitigation Incorporated. The Proposed Project would involve construction and operation of a new gravity intake system and pipeline connection at the existing Lake El Estero Pump Station. The PWM/GWR EIR previously analyzed potential impacts due to Project conflicts with land use policies and regulations and concluded that implementation of all PWM/GWR project components, including the Proposed Project, could result in significant impacts due to a conflict with policies related to waste reduction and recycling. The PWM/GWR EIR included ***Mitigation Measure PS-3: Construction Waste Reduction and Recycling Plan*** to reduce any impacts from waste production during construction to less than significant. Impacts and mitigation associated with solid waste are addressed in **Section 19, Utilities and Service Systems** of this document. The Proposed Project would use substantially the same construction equipment and methods, and would require the same operational activities previously identified in the PWM/GWR EIR; therefore, the Project is not expected to result in solid waste production beyond what was assessed in the PWM/GWR EIR. For these reasons, the Project would not result in additional significant impacts and would not result in an increase in the severity of significant impacts identified in the PWM/GWR EIR addenda. The Project would not require any additional mitigation beyond what was included in the PWM/GWR EIR to reduce impacts to less than significant.

Conclusion: The Project would be located in the same area as what was previously analyzed in the PWM/GWR EIR and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

12. Mineral Resources

EXISTING SETTING

Mineral resources are determined in accordance with the Surface Mining and Reclamation Act ("SMARA") of 1975, and the California Geological Survey ("CGS") which maps regional significance of mineral resources. The Project site is mapped as Mineral Resource Zone ("MRZ")-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence (CGS, 2023).

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	☐	☐	☐	■
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR determined that the PWM/GWR project components located in areas identified as MRZ-1 would not result in impacts to mineral resources, as these areas do not contain significant mineral deposits or have little likelihood for containing such deposits. The Proposed Project is mapped as an MRZ-1 area and is not located in a locally important mineral resource recovery site or within the immediate vicinity of a mineral resource recovery site.

DISCUSSION

a) – b) No Impact. The Proposed Project is not located in an area with known mineral resources (CDC, 2021). Additionally, the PWM/GWR EIR previously analyzed potential Project-related impacts to mineral resources and determined no impacts would occur from Project construction or operation at the Proposed Project site. The Proposed Project would be in the same area as what was analyzed in the PWM/GWR EIR. Therefore, the Project would not result in additional significant impacts or an increase in the severity of significant impacts identified in the PWM/GWR EIR. No impact would occur from implementation of the Proposed Project.

Conclusion: The Project would be located in the same area as what was previously analyzed in the PWM/GWR EIR, which does not contain any known mineral resources of regional or local importance; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

13. Noise

EXISTING SETTING

Noise is commonly defined as unwanted sound. Sound levels are most commonly characterized in California by the A-weighted sound level ("dBA"). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events (i.e., the "L_{eq}"). The most common averaging period is hourly, but L_{eq} can describe any series of noise

events of specified duration.

The Project site is in the City of Monterey at the existing Lake El Estero Pump Station, in the northeast corner of Lake El Estero and located within the Lake El Estero Park Complex, which is designated as Open Space. Surrounding land uses include roadways, residences, the Monterey Bay Lodge, and commercial businesses. Recreational users of the Lake El Estero Park Complex, the Monterey Bay Lodge (located approximately 350 feet southeast of the Project), and residential land uses (approximately 500 feet southeast of the Project site) are considered sensitive receptors. Existing noise levels at the Project site were measured in 2013 as part of the PWM/GWR EIR preparation. Average daytime L_{eq} at the Project site was between 57 and 66 dBA and average nighttime L_{eq} was 53-61 dBA. Normally acceptable noise levels for land uses at and surrounding the Project site are generally between 50 and 70 decibels ("dB") (PWM/GWR EIR, 2015; City of Monterey, 2005).

CHECKLIST

Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	■	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR assessed potential noise and vibration impacts associated with construction and operation of the Project. The PWM/GWR EIR determined the Project would not result in impacts from noise exceeding local standards but would result in less than significant impacts from construction noise and vibration and noise associated with Project operation. Noise levels during construction of the Proposed Project were estimated to reach up to 90 L_{max} and 86 dBA L_{eq} at 50 feet from the noise source; attenuation of noise would result in levels up to 70 dBA L_{max} and 66 dBA L_{eq} at a distance of 500 feet and 73 dBA L_{max} and 69 dBA L_{eq} at 350 feet, which are the distances of the Project to the nearest stationary sensitive receptors. Construction noise would therefore be below the daytime significance threshold (70 dBA L_{eq}) and no nighttime construction would occur, which the PWM/GWR EIR concluded represents a less than significant impact. Similarly, the PWM/GWR EIR found that vibration impacts would be less than significant because buildings surrounding the PWM/GWR project components appeared to be structurally sound, and all construction equipment that would be used for various PWM/GWR project components would result in less than 0.3 in/sec PPV. Therefore, the PWM/GWR EIR concluded vibration from construction would not cause structural damage to nearby buildings. Similarly, because the Proposed Project components would consist of pipeline connections and a pump or motor located entirely

underground, the PWM/GWR EIR concluded the Project would not result in any substantial noise or vibration impacts from Project operation.

DISCUSSION

a) – b) Less than Significant Impact. Project construction would generate temporary increases in noise associated with the use of construction equipment; however, construction noise would be temporary and limited to daytime hours (between 7 AM and 8 PM). The PWM/GWR EIR previously determined construction noise would reach 69 DBA L_{eq} at a distance of 350 feet from the noise source, which is the distance to the nearest sensitive receptor. Therefore, construction noise levels would be below the City's daytime significance threshold for speech interference (70 dBA L_{eq}). The PWM/GWR EIR similarly determined vibration from Project construction would be less than 0.3 in/sec PPV, which would be below the 0.5 in/sec PPV recommended by Caltrans. Additionally, all Project components would be underground and Project operation is not expected to result in any increases in ambient noise or vibration levels. Furthermore, the Project would implement the following noise-reducing best management practices ("BMPs") to minimize noise generated by construction activities:

- Properly maintain equipment. Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment. Close equipment engine shrouds during equipment operations and require all contractors, as a condition of contract, to maintain and tune-condition all construction equipment to minimize noise emissions.
- Locate, to the extent feasible, all stationary noise-generating equipment (e.g., compressors) and equipment staging areas at the greatest possible distances from any noise-sensitive land uses receptors.
- Do not allow noise-generating equipment to be operating, running, or idling while not in immediate use.

The Proposed Project would utilize substantially the same construction equipment and methods as those analyzed in the PWM/GWR EIR, which included an evaluation of noise impacts associated with construction activities. Given that the Proposed Project would disturb a smaller area, the potential for noise impacts is expected to be the same or less than those previously identified.

Construction noise levels are primarily influenced by the length of time exposure to noise, type of equipment used, construction methods, and the proximity of sensitive receptors. The Proposed Project would be within the same area previously analyzed in the PWM/GWR EIR and would utilize substantially the same types of noise-producing construction equipment identified in the PWM/GWR EIR. Additionally, the Proposed Project would disturb approximately 0.02 acres, less than the construction area analyzed in the PWM/GWR EIR (0.10 acres), and the nearest sensitive receptors are 350 feet away from the construction noise. The length of time and hours of the day are unchanged from the PWM/GWR EIR, and the typical construction activities cited would remain consistent with those presented in the PWM/GWR EIR. Pavement demolition, trenching and installation of new pumps/pump motors, electrical facilities, and flow meters would all be installed below grade. In addition to equipment deliveries using haulers, trucks, loaders, and other similar equipment, backhoes and excavators would be employed for trenching and demolition as well as hauling. Although excavators generally produce slightly higher noise levels than backhoes (approximately 2–5 dBA higher at 50 feet), the overall construction noise levels would remain within the range analyzed in the PWM/GWR EIR. The equipment substitution would not result in a

substantial increase in noise exposure at sensitive receptors, and therefore, would not result in a new or more severe significant impact under CEQA. Therefore, no additional noise generation beyond what was identified in the PWM/GWR EIR is anticipated as part of the Proposed Project. For these reasons, the Proposed Project would not result in additional impacts, nor would the Project cause an increase in the severity of previously identified impacts. Impacts would be less than significant, and no additional mitigation would be required.

c) Less than Significant Impact. The Project is located in the Monterey Airport Land Use Plan and is approximately two (2) miles from the Monterey Regional Airport. This airport is not highly trafficked and because construction of the Project would be temporary, exposure to air traffic noise would be minimal. Additionally, the Project site is in an urbanized landscape, adjacent to a highly trafficked roadway. Noise from airport traffic would be intermittent and would not result in substantially greater noise levels beyond those of the surrounding land use. Because the Proposed Project would be in the same footprint that was analyzed in the PWM/GWR EIR, the Project would not result in any additional environmental effects beyond those previously identified in the PWM/GWR EIR and all impacts would remain less than significant. No mitigation would be required.

Conclusion: The Project would be in the same area as what was previously analyzed in the PWM/GWR EIR and would involve the substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR. Additionally, the Project would implement the BMPs identified above to minimize potential impacts. Therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. All impacts would remain less than significant, and no mitigation is required.

14. Population and Housing

EXISTING SETTING

The Proposed Project is located in the City of Monterey. The U.S. Census population of the was 29,116 persons in July of 2023, living in 13,988 households (U.S. Census Bureau, 2023a and 2023b). The estimated City population as of January 2024 was 27,106 (California Department of Finance, 2024). Based on the Association of Monterey Bay Governments ("AMBAG") projections, population in the City of Monterey is expected to increase from 26,845 to 29,583 persons between 2023 and 2030 (AMBAG, 2024).

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	■
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR analyzed potential population and housing impacts of all PWM/GWR project components, including the Proposed Project collectively and determined the entire PWM/GWR project would not directly or indirectly result in substantial population growth. Because the PWM/GWR project would not include construction of new homes or businesses, the project would not directly induce population growth. Operation of the PWM/GWR project would result in only nine (9) new employees, which would not result in substantial population growth from new job production. Additionally, the PWM/GWR project would be used to replace a portion of current water withdrawals from the Carmel River by CalAm; the PWM/GWR project was not designed to accommodate any future increases in CalAm customer demand. Therefore, the PWM/GWR project would not provide additional water supplies but would provide a new water supply source to replace existing sources that are required to be curtailed and would thus not result in substantial indirect population growth by providing additional water resources to support future growth. Furthermore, the PWM/GWR EIR determined no impacts would occur from displacement of existing people or housing because no housing units are located in the proposed construction areas and construction and operation of PWM/GWR project components would not require removal of housing or construction of additional housing.

DISCUSSION

a) – b) No Impact. The Proposed Project would consist of installing underground infrastructure to connect Lake El Estero to the City's sanitary sewer system. As such, the Project would not induce population growth or displace existing people or housing. Consistent with the PWM/GWR EIR, the Project is not designed to accommodate any future increases in water demand and would not provide additional water supply. The Project would provide source water to support the replacement of existing CalAm withdrawals from the Carmel River that need to be curtailed. The discharge pipeline is slightly modified from a 40-foot, 12-inch diameter pipeline to a 60-foot, 16-inch diameter pipeline. The Proposed Project would install the discharge pipeline underground and in a previously disturbed area. As with the 40-foot, 12-inch diameter pipeline evaluated in the PWM/GWR EIR, this modified pipeline would have no impact on population growth in the area. Thus, the Project would not result in additional impacts or more severe impacts beyond what was identified in the PWM/GWR EIR. The Proposed Project would not cause indirect population growth by providing additional water resources. No impact would occur.

Conclusion: Consistent with the PWM/GWR EIR, the Project would not involve activities that would displace existing people or housing and is not designed to provide additional water supply which could lead to unplanned population growth in the area; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

15. Public Services

EXISTING SETTING

The following sections describe the public services provided in the vicinity of the Proposed Project.

Fire Protection

The City of Monterey Fire Department provides fire protection to the City of Monterey and all areas within its jurisdictional boundaries, including the Army Defense Language Institute and Foreign Language Center, the Presidio of Monterey, and the Naval Postgraduate School and its military housing at La Mesa Village. The Monterey Fire Department also provides fire protection to the cities of Sand City and Pacific Grove. The Monterey Fire Department has 70 paid staff, two (2) part-time fire inspectors, and six (6) fire stations (City of Monterey Fire Department, 2024).

Police Protection

The City of Monterey Police Department ("MPD") provides police protection services for the City of Monterey. The MPD consists of 53 sworn officers and 24 civilian staff (MPD, 2024) and is located approximately 0.8 miles from the Proposed Project.

Schools

The Monterey Peninsula Unified School District serves the City of Monterey as well as the cities of Marina, Seaside, Sand City, and Del Rey Oaks and the former Fort Ord military base (PWM/GWR EIR, 2015). No schools are within a quarter mile of the Proposed Project. The nearest school to the Project site is San Carlos Elementary, located approximately 0.5 miles southwest of the Project.

Parks

The Proposed Project is adjacent to Lake El Estero, which contains the Lake El Estero Park Complex (including a playground, youth center, ballpark, dance studio, boating concession, snack bar, and skate park), the San Carlos, Saint John's and El Encinal cemeteries, a city dog park, as well as various walking trails. The City of Monterey maintains Lake El Estero for aesthetics and recreational fishing and paddle boating. Pearl Street bisects the Lake El Estero Park Complex, providing primary access to many of the Park facilities. The Park Complex is also accessible via Del Monte Boulevard, Camino Aguajito, Camino El Estero, and Fremont Street.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	■	☐
Police protection?	☐	☐	■	☐
Schools?	☐	☐	☐	■
Parks?	☐	☐	☐	■
Other public facilities?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR found that all impacts to public services resulting from Project construction and operation would be less than significant. During Project construction, incidents requiring fire protection, law enforcement, or other emergency response services could occur; however, incidents are expected to be minor and would not exceed the existing capacity of local service providers. Project operation would not result in any additional demand for school or park facilities, and any demand for fire or police protection services would be minor and would not exceed the capacity of local service providers to a degree requiring new or physically altered public facilities.

DISCUSSION

a) Less than Significant Impact. Implementation of the Proposed Project would not result in new significant impacts to public services. The Project is a water diversion project; therefore, Project operation would not increase the need for fire and police protection or increase the use of schools, parks, or other public facilities. All impacts would be associated with temporary construction impacts related to fire and police protection services. As previously analyzed in the PWM/GWR EIR, Project construction could require law enforcement, fire protection, or emergency services for incidents. Any temporary increase in incidents is anticipated to be minor and would not exceed the capacity of existing local service providers. No new or expanded facilities would be required as part of the Project. The Project would be located in the same area and would incorporate the same construction methods previously identified in the PWM/GWR EIR. As such, the number of personnel, hours of construction, and types of equipment and vehicles on-site are expected to remain the same as what was included in the PWM/GWR EIR. Therefore, the Project would not result in additional significant impacts or result in an increase in the severity of significant impacts previously identified in the PWM/GWR EIR, SEIR, and addenda. The Project would result in a less than significant impact related to public services.

Conclusion: The Project would be located in the same area as what was previously analyzed in the PWM/GWR EIR and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. All impacts would remain less than significant, and no mitigation is required.

16. Recreation

EXISTING SETTING

The Proposed Project is located at the existing Lake El Estero Pump Station, at the northeast corner of Lake El Estero, in the El Estero Park Complex. The El Estero Park Complex consists of a playground, youth center, ballpark, dance studio, boating concession, snack bar, and skate park, as well as various walking trails. The City of Monterey maintains Lake El Estero for aesthetics and recreational fishing and paddle boating. Pearl Street bisects the Lake El Estero Park Complex, providing primary access to many of the Park facilities. The Park Complex is also accessible via Del Monte Boulevard, Camino Aguajito, Camino El Estero, and Fremont Street.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR found that no recreational impacts would result from construction or operation of the Proposed Project. While the Project site would be in the El Estero Park Complex, the Project would be constructed at the existing Lake El Estero Pump Station, not in a recreational area. Additionally, the Proposed Project would not include construction of new recreational facilities. Furthermore, the Project would not increase the local population such that the demand for recreational facilities would be increased. Therefore, the PWM/GWR EIR concluded no impact would occur to recreational facilities.

DISCUSSION

a) – b) No Impact. The PWM/GWR EIR previously determined construction and operation of the Project would not result in recreational impacts. Consistent with the PWM/GWR EIR, the Proposed Project consists of installing a new gravity intake system and underground pipeline to connect Lake El Estero to the City's sanitary sewer system. As such, the Project would not increase the use of neighborhood and

regional parks or other recreational facilities, nor would the Project require the construction or expansion of recreational facilities. The Project would be in the same area as what was analyzed in the PWM/GWR EIR (i.e., at the Lake El Estero Pump Station in the Lake El Estero Park Complex); consistent with the PWM/GWR EIR, construction would occur in previously disturbed and paved areas at the Lake El Estero Pump Station, away from recreational areas associated with the Park Complex. Because the Proposed Project would be constructed in the same area that was previously analyzed in the PWM/GWR EIR and the Project would involve substantially the same components that were previously analyzed in the PWM/GWR EIR, the Project would not result in new impacts or more severe impacts beyond those identified in the PWM/GWR EIR, SEIR, and addenda. Therefore, consistent with the PWM/GWR EIR, the Project would not result in recreational impacts.

Conclusion: The Project would be in the same area as what was previously analyzed in the PWM/GWR EIR, in paved and previously disturbed areas at the Lake El Estero Pump Station, away from recreational areas; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda.

17. Transportation and Traffic

EXISTING SETTING

The Proposed Project would be constructed within paved and previously disturbed areas at the existing Lake El Estero Pump Station, located in the northeast corner of Lake El Estero. The Project site is on the corner of Del Monte Boulevard and Camino Aguajito, in the City of Monterey. Del Monte Boulevard and Camino Aguajito are highly trafficked roadways, with several transit stops along their lengths. One (1) transit stop is located approximately 350 feet east of the Proposed Project, at the corner of Del Monte Boulevard and Camino Aguajito. State Route 1 ("SR 1") and State Route 68 ("SR 68") are located approximately 0.5 miles and one (1) mile southeast of the Project site, respectively. Materials would be transported to and from the site via SR 1 to Camino Aquajito to Del Monte Boulevard.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	■	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	■	☐
c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	■	☐	☐
d) Result in inadequate emergency access?	☐	☐	■	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR analyzed potential traffic and transportation impacts associated with construction and operation of the Proposed Project. The Proposed Project was estimated to result in a maximum of 10 one-way truck trips and 16 one-way worker trips per day during construction and would occur over a three (3)-month period. The PWM/GWR EIR determined worker and truck trips would not result in significant construction-related traffic and emergency access impacts because trips during peak traffic hours would be minimal, limited, would be split between multiple routes, and construction would primarily be located within the Lake El Estero Pump Station, outside of roadways. The PWM/GWR EIR also determined all operational impacts would be less than significant; however, significant impacts could occur from construction-related road deterioration where the use of trucks could result in significant impacts from deterioration of local roadways not designed to support use by heavy construction vehicles and equipment. To reduce potential impacts to less than significant, the PWM/GWR EIR included ***Mitigation Measures TR-3: Roadway Rehabilitation Program***.

DISCUSSION

a), b), and d) Less than Significant Impact. The Project would result in a short-term increase in localized traffic during construction; however, construction impacts would be temporary and limited. CEQA Guidelines Section 15064.2 subdivision (b) requires the evaluation of transportation impacts of projects be based on Vehicle Miles Traveled ("VMT"). The PWM/GWR EIR determined construction of the Project would require 10 one (1)-way truck trips and 16 one (1)-way worker trips per day during construction, which would occur over a three (3)-month period. Project construction would occur in the same area and would require substantially the same equipment and methods previously analyzed in the PWM/GWR EIR. As a result, overall construction duration and number of construction workers on-site are not anticipated to change from what was previously analyzed in the PWM/GWR EIR. Additionally, because the Project would consist of the same components that were evaluated in the PWM/GWR EIR (i.e., gravity intake system and pipeline to divert water from Lake El Estero to the City's sewer system), operation and maintenance of the Project would not change from what was originally evaluated in the PWM/GWR EIR.

Additionally, the Project would not substantially impact transit, bicycle, or pedestrian access and would not result in inadequate emergency access. Consistent with the PWM/GWR EIR's analysis, construction of the Proposed Project would occur within existing paved and previously disturbed areas at the Lake El Estero Pump Station. Equipment staging and parking would occur at the Lake El Estero Pump Station, off of roadways. Consistent with the impact analysis in the PWM/GWR EIR, worker access to and from the Project site would generally occur outside of peak hour traffic and would be split across multiple routes. Project construction would occur within the Lake El Estero Park Complex; however, all construction would occur within the existing Pump Station, not in recreational areas. All impacts related to increased traffic and site access would be temporary and limited, and would result in less than significant impacts. The Project would be in the same area and would utilize the same construction methods and equipment as what was previously analyzed in the PWM/GWR EIR. Therefore, no additional personnel or equipment are expected to be required and no additional impacts beyond those previously identified in the PWM/GWR EIR would occur from implementation of the Project. No mitigation is required.

c) Less than Significant Impact with Mitigation Incorporated. Construction and operation of the Project would not increase hazards due to a design feature; however, the PWM/GWR EIR previously determined construction of the Project could result in temporary impacts to roadways not designed to support use by heavy construction vehicles and equipment. This would result in a potentially significant impact that

would be reduced to less than significant through implementation of ***Mitigation Measures TR-3: Roadway Rehabilitation Program***, as previously identified in the PWM/GWR EIR. ***Mitigation Measure TR-3*** requires that pre-construction conditions for all local construction access and haul routes proposed for substantial use by PWM/GWR Project-related construction vehicles and access routes be returned to pre-construction conditions following implementation of PWM/GWR Project components, as needed. The Proposed Project would use substantially the same construction methods, and would require substantially the same construction equipment and vehicles previously identified in the PWM/GWR EIR (e.g., haul trucks, compactors, backhoes, etc.).[14] Consistent with the PWM/GWR EIR, the Project would implement previously identified mitigation to ensure impacts are less than significant and no additional mitigation would be required. For these reasons, the Proposed Project would not result in additional significant impacts or result in an increase in the severity of significant impacts than those previously identified in the PWM/GWR EIR, SEIR, and addenda.

Conclusion: The Project would be in the same area, would include substantially the same components, and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. The Proposed Project would be required to implement ***Mitigation Measure TR-3***, as previously identified in the PWM/GWR EIR, which would ensure impacts remain less than significant. No additional mitigation is required.

18. Tribal Cultural Resources

EXISTING SETTING

The Project site is located in the City of Monterey at the existing Lake El Estero Pump Station, in the northeast corner of Lak El Estero and within the Lake El Estero Park Complex. Lake El Estero Park is zoned as Open Space with a Historic (H1) overlay (City of Monterey, 2005) and the Project site lies within the currently recognized ethnographic territory of the Costanoan (Ohlone) linguistic group (Jones & Stokes, 2006). The Project site is entirely within the existing paved and previously disturbed Lake El Estero Pump Station. Several archaeological sites have been identified in the vicinity of Lake El Estero; however, none of these recorded sites are within the Proposed Project site (PWM/GWR EIR, 2015).

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a	☐	■	☐	☐

[14] Table 2.21, PWM/GWR EIR, Proposed Project Construction Assumptions, Lake El Estero Diversion on page 2-87, identifies "Flatbed trucks, backhoes, excavators, pipe cutting and welding equipment, haul trucks for spoils transport, trucks for materials delivery, compaction equipment, baker tank(s), pickup trucks, arc welding machine, generators, air compressors, 80-ton crane, skip loader, pavers and rollers".

California Native American tribe, and that is:				
i) 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)?	☐	☐	☐	■
ii) 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 § 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	■	☐	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR previously analyzed tribal cultural resources at the Project site and in the vicinity of the Project site. The PWM/GWR EIR determined that four (4) cultural sites, two (2) of which are prehistoric sites, are located within 0.5 miles of the Proposed Project. However, the PWM/GWR EIR also determined no cultural sites were within or close to the Project's Area of Potential Effects, located at the northern end of Lake El Estero. Therefore, the Proposed Project would result in no impact to historical or paleontological resources; however, the Project could result in a significant impact to cultural/archaeological resources or unknown human remains during construction due to the Project's location in an area of "High Probability of Pre-Historic Artifacts. Native American tribal consultation was conducted for the PWM/GWR; however, tribes contacted did not identify resources in the vicinity of the Project beyond what was identified in a Sacred Lands File Search through the California Native American Heritage Commission ("NAHC"). The PWM/GWR EIR included Mitigation Measures ***CR-2a: Archaeological Monitoring Plan, CR-2b: Discovery of Archaeological Resources and Human Remains,*** and ***CR-2c: Native American Notification*** to reduce potential impacts to less than significant.

DISCUSSION

ai) No Impact. The PWM/GWR EIR previously analyzed potential impacts to historical resources from construction and operation of the Proposed Project and determined that due to the location of the Project site, no impacts would occur as a result of the Project. The Project would be constructed in the same area as what was previously identified in the PWM/GWR EIR. Therefore, the Proposed Project would not result in any new or more severe impacts to historic resources beyond what was evaluated in the PWM/GWR EIR. Please also see **Section 5, Cultural Resources** for additional detail.

aii) Less than Significant Impact with Mitigation Incorporated. The PWM/GWR EIR previously analyzed potential impacts to cultural and tribal cultural resources from implementation of the Proposed Project. The PWM/GWR EIR concluded that potentially significant impacts could occur from disturbance of previously unknown resources or human remains due to the Project's location in an area with "High Probability of Pre-Historic Artifacts." Native American tribal consultation was conducted for the PWM/GWR; however, tribes contacted did not identify resources in the vicinity of the Project beyond what was identified in a Sacred Lands File Search through the California Native American Heritage Commission ("NAHC"). The PWM/GWR EIR included ***Mitigation Measures CR-2a, CR-2b,*** **and** ***CR-2C*** to ensure any impacts to previously unknown cultural resources or human remains would be less than significant. The Project would be in the same area as what was assessed in the PWM/GWR EIR and would

not result in additional ground disturbance beyond what was identified in the PWM/GWR EIR; therefore, the Project would not result in additional impacts or more severe impacts beyond those identified in the PWM/GWR EIR. Mitigation measures identified in the PWM/GWR EIR would be applicable to the Proposed Project and no additional mitigation would be required to reduce impacts. Please refer to **Section 5, Cultural Resources** for detailed mitigation measures.

Conclusion: The Project would be in the same area and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. The Proposed Project would be required to implement ***Mitigation Measures CR-2a, CR-2b,*** and ***CR-2c***, as previously identified in the PWM/GWR EIR, which would ensure impacts remain less than significant. No additional mitigation is required.

19. Utilities and Service Systems

EXISTING SETTING

The Proposed Project is located in the City of Monterey. Utilities service systems include the following:

Water Supply and Wastewater

California American Water ("CalAm") operates the Monterey Peninsula's water supply system, which consists of over 680 miles of pipeline and over 100 storage tanks. CalAm serves approximately 100,000 people in the cities of Monterey, Pacific Grove, Seaside, Sand City, and Carmel-by-the-Sea, and Del Rey Oaks as well as the unincorporated communities of Carmel Highlands, Carmel Valley, Pebble Beach, and areas along the Highway 68 corridor (CalAm, 2024).

The City of Monterey provides sanitary sewer collection and conveyance services for the City. The City service area and sewer infrastructure consists of 99 miles of gravity sewer mains and 1.5 miles of force mains, seven (7) lift stations, and over 2,300 manholes and structures located in the City. This also includes sewer collection infrastructure on the federally owned U.S. Army Garrison Presidio of Monterey, and a few select sewer easements through the U.S. Naval Support Activity Monterey. City wastewater is collected and conveyed to M1W's regional wastewater collection system and RTF in Marina through several interceptor pipelines. With the exception of the lift stations, which are operated by M1W, City staff maintain and operate all other water system components.

Electricity

Pacific Gas and Electric ("PG&E") provides electricity and natural gas throughout Monterey County, and thus would be the energy utility provider for the Proposed Project. Beginning in 2018, all PG&E customers within Monterey, San Benito, and Santa Cruz Counties were automatically enrolled in Central Coast Community Energy ("3CE"). 3CE is a locally controlled public agency providing carbon-free electricity to residents and businesses. 3CE is a joint powers authority and based on a local energy model called community choice energy. 3CE partners with PG&E, which continues to provide billing, power transmission and distribution, customer service, grid maintenance services, and natural gas services to Monterey County.

Solid Waste

ReGen Monterey manages the Monterey Peninsula's solid waste collection, disposal, and recycling system. ReGen Monterey operates the Monterey Peninsula Landfill which comprises approximately 461 acres. The landfill currently receives approximately 600,000 tons of solid waste annually. At the current level of service, the landfill is expected to serve the present service area for over 100 years (ReGen Monterey, 2018). Any solid waste generated by the Project would be disposed of at the landfill or diverted for recycling or reuse at the materials recovery facility.

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	■	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	■	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	■	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	■	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	■	☐	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR previously analyzed potential impacts to utilities and service systems from construction and operation of the entire PWM/GWR project, including the Proposed Project. The PWM/GWR EIR determined the only impact that would require mitigation to reduce to less than significant would be from construction-generated solid waste. The PWM/GWR EIR found that solid waste generated during construction would potentially conflict with state and local statues, policies, and regulations related to solid waste because construction of all PWM/GWR project components would generate approximately 35,000 cubic yards of debris; if all excavated materials were disposed of at a landfill, the PWM/GWR project would potentially be out of compliance with State and local solid waste programs which would constitute a significant impact. To reduce this impact, the PWM/GWR EIR proposed ***Mitigation Measure PS-3: Construction Waste Reduction and Recycling Plan*** that encompasses all PWM/GWR project components.

DISCUSSION

a) Less than Significant Impact. The Proposed Project would not result in significant impacts from relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities. As previously analyzed in the PWM/GWR EIR, the Project would consist of a water utility project to connect Lake El Estero to the existing sanitary sewer system. The Project would involve the same components as those analyzed in the PWM/GWR EIR (i.e., new gravity intake system and pipeline) and would be located in the same area as what was previously analyzed in the PWM/GWR (i.e., the existing Lake El Estero Pump Station), which is paved and previously disturbed. As a result, the Project would not result in new significant impacts or result in more severe significant impacts beyond what was identified in the PWM/GWR EIR. This represents a less than significant impact.

b) Less than Significant Impact. Consistent with the PWM/GWR EIR's analysis, the Proposed Project would consist of connecting an existing stormwater basin (i.e., Lake El Estero) to the City's sanitary sewer system to be used as an additional source water for recycling and reuse. The PWM/GWR EIR previously concluded the Project would result in less than significant construction and operational impacts related to water supply and wastewater generation. The Project would involve the same Project components and would be in the same area as what was previously identified in the PWM/GWR EIR. Additionally, the Proposed Project would utilize substantially the same construction equipment and methods as those previously analyzed in the PWM/GWR EIR. As such, the Project would not require additional water supplies for construction beyond what was identified in the PWM/GWR EIR. Furthermore, consistent with the PWM/GWR EIR, operation of the Proposed Project would consist of diverting stormwater from Lake El Estero to the sanitary sewer system in lieu of allowing the untreated stormwater to flow into the Pacific Ocean; therefore, Project operation would not require additional water supplies but would use an existing water supply for reuse.

c) Less than Significant Impact. Consistent with the PWM/GWR EIR, Project construction would result in minimal wastewater generation from use of portable toilets by construction workers. Also consistent with the PWM/GWR EIR's analysis, wastewater from Project construction would be disposed of at the RTP, which the PWM/GWR EIR determined has more than sufficient capacity to treat construction-generated wastewater. The Proposed Project would not require changes to the construction methods or the number of personnel on-site at any given time. Therefore, Project construction is not anticipated to result in additional wastewater beyond what was previously analyzed in the PWM/GWR EIR.

Project operation would involve diverting wastewater from Lake El Estero to the City's sewer system, where it would be treated at the RTP and recycled for reuse, as was previously analyzed in the PWM/GWR EIR. As discussed in Section 4.18 of the PWM/GWR EIR, the existing RTP treats an average of 16 to 17 mgd of wastewater and therefore has capacity to treat additional flows from Project operation. Operational diversions of the Proposed Project would not result in substantially different rates of diversion than what was considered in the PWM/GWR EIR because diversions to the City's sanitary sewer system are limited by the capacity of the existing sewer infrastructure. Furthermore, Schaaf & Wheeler (2024) recommended safeguards to be included as part of the Proposed Project to avoid overwhelming the City's sewer system during peak diversions (see **Section 10, Hydrology and Water Quality** for additional detail). For these reasons, wastewater generated from operation of the Proposed Project would not exceed the capacity of the City's sanitary sewer system or the capacity of the RTP, and the Project would not result in additional or more severe impacts beyond what was previously identified in the PWM/GWR EIR. Therefore, the

Project would result in a less than significant impact.

d) Less than Significant Impact. Operation of the Proposed Project would not result in solid waste generation; therefore, all impacts would be related to solid waste generation during construction. The PWM/GWR EIR previously analyzed Project-related solid waste generation and concluded impacts would be less than significant. The Proposed Project would consist of construction within the same footprint that was previously analyzed in the PWM/GWR EIR and would not require changes to the construction methods or number of personnel onsite at any given time. Therefore, Project construction is not anticipated to result in additional solid waste beyond what was previously analyzed in the PWM/GWR EIR. Therefore, the Project would not result in additional or more severe impacts beyond what was previously identified in the PWM/GWR EIR. The Project would result in a less than significant impact related to solid waste generation.

e) Less than Significant with Mitigation Incorporated. The PWM/GWR EIR previously determined that solid waste generated by all PWM/GWR project components would potentially conflict with statutes, policies, and regulations related to solid waste. The PWM/GWR EIR included ***Mitigation Measure PS-3: Construction Waste Reduction and Recycling Plan***, applicable to all PWM/GWR project components, to reduce this potentially significant impact to less than significant. Consistent with the PWM/GWR EIR, the Proposed Project would implement ***Mitigation Measure PS-3*** to reduce impacts to a less than significant level. Because the Project would involve the same construction methods as those included in the PWM/GWR EIR, the Project would not result in additional significant impacts and would not result in an increase in the severity of significant impacts identified in the PWM/GWR EIR. No additional mitigation beyond what was identified in the PWM/GWR EIR would be required to reduce impacts.

Conclusion: The Project would be in the same area and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR. Additionally, the Project would be required to implement ***Mitigation Measure PS-3***, as identified in the PWM/GWR EIR to reduce potentially significant impacts to less than significant; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. No additional mitigation is required.

20. Wildfire

EXISTING SETTING

The Project site is located in the southeast corner of Lake El Estero, in the City of Monterey. The Project site is not located in a High Fire Hazard Severity Zone or in a State Responsibility Area (“SRA”); the Project site lies within in a Local Responsibility Area (“LRA”) and is mapped in the City General Plan as being in a low fire hazard severity zone (City of Monterey, 2005).

CHECKLIST

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	■	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	■
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR analyzed potential fire hazards associated with the Proposed Project in Section 4.9, Hazards, and Hazardous Waste. The PWM/GWR EIR determined operation of all PWM/GWR project components, including the Proposed Project, would not result in a fire-related impact. The PWM/GWR EIR also determined Project construction would result in a less than significant fire impact because the Project components would be constructed in compliance with existing fire regulations which restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fire prone areas.

DISCUSSION

a) – b) Less than Significant Impact. The Proposed Project is in an area of low fire hazard severity and is not located in a SRA. Additionally, as was previously analyzed in PWM/GWR EIR, the Project would consist of new pipeline connections located entirely underground and a new gravity intake system located below the lake's waterline. As such, Project operation would not increase hazards related to fire or emergency access. Project construction could temporarily increase fire risks from production of sparks and the use of flammable materials (e.g., gasoline); however, these impacts would be temporary and limited. Additionally, consistent with the PWM/GWR EIR, Project construction would be required to comply with existing fire regulations. Construction equipment and vehicles would be staged and parked outside of roadways to limit impacts related to emergency access (please also refer to **Section 17, Transportation and Traffic**). The Proposed Project would be in the same area previously analyzed by the PWM/GWR EIR and would not require changes to construction methods that were previously analyzed in the PWM/GWR EIR. For these reasons, the Project would not result in additional significant impacts or result in an increase

in the severity of significant impacts previously identified in the PWM/GWR EIR. This represents a less than significant impact.

c) – d) No Impact. The Project would not involve installation or maintenance of infrastructure that would exacerbate fire risk or result in temporary or ongoing environmental impacts. As was previously analyzed in the PWM/GWR EIR, the Project consists of connecting Lake El Estero to the City's sanitary sewer system and would involve underground pipeline connections and a gravity well in paved and previously disturbed areas at the Lake El Estero Pump Station. No new roads, fuel breaks, utilities, or other associated infrastructure would be constructed as part of the Project. The PWM/GWR EIR did not identify potentially significant impacts associated with exposure of people or structures to risks from flooding or landslides as a result of post-fire instability or drainage changes. The Project would consist of the same components and would be constructed in the same area as what was previously analyzed in the PWM/GWR EIR. Therefore, the Project would not cause additional significant impacts or increase the severity of significant impacts beyond what was analyzed in previous environmental documentation.

Conclusion: The Project would be in the same area, would connect to the identified City system, and would involve substantially the same construction and operational activities that were analyzed in the PWM/GWR EIR; therefore, the Project would not result in additional or more severe impacts beyond those previously identified in the certified PWM/GWR EIR, SEIR, and addenda. No mitigation is required.

21. Mandatory Findings of Significance

CHECKLIST

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	■	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	■	☐
c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

SUMMARY OF IMPACTS IN PREVIOUS DOCUMENTS

The PWM/GWR EIR identified construction-related impacts in the areas of air quality, biological resources,

cultural and tribal cultural resources, hazards and hazardous materials, and utilities and service systems. All of which would be temporary in nature and reduced to less than significant and would not be cumulatively considerable with implementation of the mitigation measures previously identified in the PWM/GWR EIR and described in this Addendum to the PWM/GWR EIR. Operational impacts would not be significant or cumulatively considerable, as they would comply with any and all agency/regulatory requirements and would be reduced to a less than significant level by implementing mitigation described within the PWM/GWR EIR.

Cumulative Impacts and mitigation measures previously identified in the PWM/GWR EIR and in the 2021 certified SEIR are summarized in Appendix B of the SEIR, available online at https://purewatermonterey.org/reports-docs/cfeir/. Table 2 in Appendix B of the SEIR provides a summary of the cumulative impacts and the Lake El Estero Water Diversion Project contribution to those impacts, as applicable. The PWM/GWR EIR found that the PWM/GWR Project would not make a cumulatively considerable contribution to significant cumulative construction or operational impacts in all issue areas. The SEIR determined the Proposed Modifications associated with the Expanded PWM/GWR Project would not cause the PWM/GWR Project to make a cumulatively considerable contribution to significant cumulative construction or operational impacts in all issue areas. Under Air Quality and GHG, the SEIR found that the total GHG emissions from the PWM/GWR Project, with the Proposed Modifications, would not make a cumulatively considerable contribution to significant cumulative impacts associated with GHG emissions and the effects of climate change. The SEIR concluded "The Proposed Modifications would potentially make a considerable contribution to significant cumulative regional emissions of PM_{10}; however, with implementation of Mitigation Measure AQ-1, the impact would be reduced to less than significant."

DISCUSSION

a-c) Less than Significant Impact. The Proposed Project would not substantially degrade or reduce wildlife species or habitat or impact historic resources, as identified in this analysis. The Project site is located within existing paved and previously disturbed areas at the Lake El Estero Pump station. Potential temporary construction impacts to wildlife and paleontological or other cultural and archaeological resources would be mitigated to a less than significant level through implementation of mitigation measures that were previously identified in the PWM/GWR EIR and identified in this Addendum. No additional mitigation would be required to reduce impacts to a less than significant level (see **Section 4, Biological Resources, Section 5, Cultural Resources,** and **Section 18, Tribal Cultural Resources** for detailed mitigation measures).

Potential cumulative impacts associated with the Proposed Project would primarily occur in connection with temporary construction-related effects; these effects have already been accounted for in previous environmental documentation. As described above, the PWM/GWR EIR included a cumulative analysis for the PWM/GWR project, including the Proposed Project, and mitigation was previously identified to reduce impacts to less than significant where applicable. These mitigation measures would still apply to the Project, as proposed, to reduce potentially significant impacts. No changes to the conclusions of the cumulative impact analysis would occur due to implementation of the Proposed Project. While there are some modifications to the Proposed Project (i.e., modified diversion pipeline, increased yield, and modified (reduced) construction area and activities), these changes result in substantially the same Project footprint, construction activities, and operational activities as assessed in the PWM/GWR EIR. Because the Proposed Project does not increase the extent or intensity of any construction or operational

activities, there would be no increase to the severity of any cumulative impacts, nor would there be any new cumulative impacts. The Project would not result in any new significant cumulative impacts or worsen the severity of any significant cumulative impacts previously identified in the PWM/GWR EIR or SEIR. These impact conclusions and previously identified mitigation measures remain the same as in the PWM/GWR EIR and SEIR. No additional mitigation beyond what was previously identified in the PWM/GWR EIR would be required.

Construction and operation of the Proposed Project would not result in adverse impacts on human beings, either directly or indirectly; potential impacts would be temporary in nature and mitigated through the implementation of mitigation measures (to the extent they are applicable) previously identified in the PWM/GWR EIR and described throughout this Addendum. The Proposed Project would not result in new significant impacts or substantially increase the severity of significant impacts previously identified in the PWM/GWR EIR, SEIR, and addenda. No additional mitigation beyond what was identified in previous environmental documentation would be required to reduce impacts. Therefore, the Proposed Project would result in a less than significant impact.

Report Preparation and References

LEAD AGENCY
City of Monterey Public Works Department

REPORT PREPARATION
Denise Duffy & Associates, Inc. Environmental Consultant
Denise Duffy, Principal
Oliviya Wyse, Deputy Project Manager
Mikaela Bogdan, Assistant Planner
Luke Hiserman, Assistant Planner

Schaaf & Wheeler Consulting Civil Engineers
Andrew Sterbenz, Principal Engineer

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APPENDIX A – MITIGATION MEASURES APPLICABLE TO THE LAKE EL ESTERO WATER DIVERSION PROJECT

Table of Mitigation Measures Applicable to the Lake El Estero Water Diversion Project[1]

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
Impact AQ-1: Construction Criteria Pollutant Emissions	**Mitigation Measure AQ-1: Construction Fugitive Dust Control Plan.** The following standard Dust Control Measures shall be implemented during construction to help prevent potential nuisances to nearby receptors due to fugitive dust and to reduce contributions to exceedances of the state ambient air quality standards for PM_{10}, in accordance with MBUAPCD's CEQA Guidelines. ▪ Water all active construction areas as required with non-potable sources to the extent feasible; frequency should be based on the type of operation, soil, and wind exposure and minimized to prevent wasteful use of water. ▪ Prohibit grading activities during periods of high wind (over 15 mph). ▪ Cover all trucks hauling soil, sand, and other loose materials and require trucks to maintain at least 2 feet of freeboard. ▪ Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites. ▪ Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets. ▪ Enclose, cover, or water daily exposed stockpiles (dirt, sand, etc.). ▪ Replant vegetation in disturbed areas as quickly as possible.	During project construction	During project construction
Impact BT-1: Construction Impacts to Special-Status Species and Habitat	**Mitigation Measure BT-1a: Implement Construction Best Management Practices.** The following best management practices shall be implemented during all identified phases of construction (i.e., pre-, during, and post-) to reduce impacts to special-status plant and wildlife species: ▪ A qualified biologist must conduct an Employee Education Program for the construction crew prior to any construction activities. A qualified biologist must meet with the construction crew at the onset of construction at the site to educate the construction crew on the following: 1) the appropriate access route(s) in and out of the construction area and review project boundaries; 2) how a biological monitor will examine the area and agree upon a method which would ensure the safety of the monitor during such activities, 3) the special-status species that may be present; 4) the specific mitigation measures that will be incorporated into the construction effort; 5) the general provisions and protections afforded by the USFWS and CDFW; and 6) the proper procedures if a special-status species is encountered within the site. ▪ Trees and vegetation not planned for removal or trimming shall be protected prior to and during construction to the maximum extent possible through the use of exclusionary fencing, such as hay bales for herbaceous and shrubby vegetation, and protective wood barriers for trees. Only certified weed-free straw shall be used, to avoid the introduction of non-native, invasive species. A biological monitor shall supervise the installation of protective fencing and monitor at least once per week until construction is complete to ensure that the protective fencing remains intact. ▪ Protective fencing shall be placed prior to and during construction to keep construction equipment and personnel from impacting vegetation outside of work limits. A biological monitor shall supervise the installation of protective fencing and monitor at least	Prior to, during and after project construction	Prior to and during project construction

[1] This table includes only mitigation measures applicable to the Lake El Estero Water Diversion component of the approved PWM/GWR Project. The full Mitigation, Monitoring, and Reporting Program for the PWM/GWR Project can be found on the PWM/GWR website: https://purewatermonterey.org/wp/wp-content/uploads/Volume-IV-EIR-Certification-and-Project-Approval-Jan-2016.pdf

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
	once per week until construction is complete to ensure that the protective fencing remains intact. ▪ Following construction, disturbed areas shall be restored to pre-construction contours to the maximum extent possible and revegetated using locally-occurring native species and native erosion control seed mix, per the recommendations of a qualified biologist. ▪ Grading, excavating, and other activities that involve substantial soil disturbance shall be planned and carried out in consultation with a qualified hydrologist, engineer, or erosion control specialist, and shall utilize standard erosion control techniques to minimize erosion and sedimentation to native vegetation (pre-, during, and post-construction). ▪ No firearms shall be allowed on the construction sites at any time. ▪ All food-related and other trash shall be disposed of in closed containers and removed from the project area at least once a week during the construction period, or more often if trash is attracting avian or mammalian predators. Construction personnel shall not feed or otherwise attract wildlife to the area. ▪ To protect against spills and fluids leaking from equipment, the project proponent shall require that the construction contractor maintains an on-site spill plan and on-site spill containment measures that can be easily accessed. ▪ Refueling or maintaining vehicles and equipment should only occur within a specified staging area that is at least 100 feet from a waterbody (including riparian and wetland habitat) and that has sufficient management measures that will prevent fluids or other construction materials including water from being transported into waters of the state. Measures shall include confined concrete washout areas, straw wattles placed around stockpiled materials and plastic sheets to cover materials from becoming airborne or otherwise transported due to wind or rain into surface waters. ▪ The project proponent and/or its contractors shall coordinate with the City of Seaside on the location of Injection Well Facilities and the removal of sensitive biotic material.		
	Mitigation Measure BT-1k: Conduct Pre-Construction Surveys for Protected Avian Species, including, but not limited to, white-tailed kite and California horned lark. Prior to the start of construction activities at each project component site, a qualified biologist shall conduct pre-construction surveys for suitable nesting habitat within the component Project Study Area and within a suitable buffer area from the component Project Study Area. The qualified biologist shall determine the suitable buffer area based on the avian species with the potential to nest at the site. In areas where nesting habitat is present within the component project area or within the determined suitable buffer area, construction activities that may directly (e.g., vegetation removal) or indirectly (e.g., noise/ground disturbance) affect protected nesting avian species shall be timed to avoid the breeding and nesting season. Specifically, vegetation and/or tree removal can be scheduled after September 16 and before January 31. Alternatively, a qualified biologist shall be retained by the project proponents to conduct pre-construction surveys for nesting raptors and other protected avian species where nesting habitat was identified and within the suitable buffer area if construction commences between February 1 and September 15. Pre-construction surveys shall be conducted no more than 14 days prior to the start of construction activities during the early part of the breeding	Prior to project construction and if found establish and comply with no-disturbance buffer	Prior to project construction

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
	season (February through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). Because some bird species nest early in spring and others nest later in summer, surveys for nesting birds may be required to continue during construction to address new arrivals, and because some species breed multiple times in a season. The necessity and timing of these continued surveys shall be determined by the qualified biologist based on review of the final construction plans. If active raptor or other protected avian species nests are identified during the preconstruction surveys, the qualified biologist shall notify the project proponents and an appropriate no-disturbance buffer shall be imposed within which no construction activities or disturbance shall take place until the young have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.		
Impact CR-2: Construction Impacts on Archaeological Resources or Human Remains	**Mitigation Measure CR-2a: Archaeological Monitoring Plan.** Each of the project proponents shall contract a qualified archaeologist meeting the Secretary of the Interior's Qualification Standard (Lead Archaeologist) to prepare and implement an Archaeological Monitoring Plan, and oversee and direct all archaeological monitoring activities during construction. Archaeological monitoring shall be conducted for all subsurface excavation work within 100 feet of Presidio #2 in the Presidio of Monterey, and within the areas of known archaeologically sensitive sites in Monterey3. At a minimum, the Archaeological Monitoring Plan shall: ▪ Detail the cultural resources training program that shall be completed by all construction and field workers involved in ground disturbance; ▪ Designate the person(s) responsible for conducting monitoring activities, including Native American monitor(s), if deemed necessary; ▪ Establish monitoring protocols to ensure monitoring is conducted in accordance with current professional standards provided by the California Office of Historic Preservation; ▪ Establish the template and content requirements for monitoring reports; ▪ Establish a schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports; ▪ Establish protocols for notifications in case of encountering cultural resources, as well as methods for evaluating significance, developing and implementing a plan to avoid or mitigate significant resource impacts, facilitating Native American participation and consultation, implementing a collection and curation plan, and ensuring consistency with applicable laws including Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code; ▪ Establish methods to ensure security of cultural resources sites; ▪ Describe the appropriate protocols for notifying the County, Native Americans, and local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction with reference to Public Resources Code 5097.99. During the course of the monitoring, the Lead Archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to encounter resources. If archaeological materials are encountered, all soil disturbing activities within 100 feet of the find shall	Prior to and during project construction	During project construction

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
	cease until the resource is evaluated. The Lead Archaeologist shall immediately notify the relevant Project proponent of the encountered archaeological resource. The Lead Archaeologist shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological resource, present the findings of this assessment to the lead agency, or CPUC, for the CalAm Distribution Pipeline. In the event archaeological resources qualifying as either historical resources pursuant to CEQA Section 15064.5 or as unique archaeological resources as defined by Public Resources Code 21083.2 are encountered, preservation in place shall be the preferred manner of mitigation. If preservation in place is not feasible, the applicable project proponent(s) shall implement an Archaeological Research Design and Treatment Plan (ARDTP). The Lead Archaeologist, Native American representatives, and the State Historic Preservation Office designee shall meet to determine the scope of the ARDTP. The ARDTP will identify a program for the treatment and recovery of important scientific data contained within the portions of the archaeological resources located within the project Area of Potential Effects; would preserve any significant historical information obtained; and will identify the scientific/historic research questions applicable to the resources, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The results of the investigation shall be documented in a technical report that provides a full artifact catalog, analysis of items collected, results of any special studies conducted, and interpretations of the resource within a regional and local context. All technical documents shall be placed on file at the Northwest Information Center of the California Historical Resources Information System.		
	Mitigation Measure CR-2b: Discovery of Archaeological Resources or Human Remains. If archaeological resources or human remains are unexpectedly discovered during any construction, work shall be halted within 50 meters (±160 feet) of the find until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented. The County Coroner shall be notified in accordance with provisions of Public Resources Code 5097.98-99 in the event human remains are found and the Native American Heritage Commission shall be notified in accordance with the provisions of Public Resources Code section 5097 if the remains are determined to be of Native American origin.	During project construction	During project construction
	Mitigation Measure CR-2c: Native American Notification. Because of their continuing interest in potential discoveries during construction, all listed Native American Contacts shall be notified of any and all discoveries of archaeological resources in the project area.	During project construction	During project construction
Impact EN-1: Construction Impacts due to Temporary Energy Use	**Mitigation Measure EN-1: Construction Equipment Efficiency Plan.** M1W[2] (for all components except the CalAm Distribution System) or CalAm (for the Cal Am Distribution System) shall contract a qualified professional (i.e., construction planner/energy efficiency expert) to prepare a Construction Equipment Efficiency Plan that identifies the specific measures that M1W or CalAm (and its construction contractors) will implement as part of project construction to increase the efficient use of construction equipment. Such measures shall include, but not	Prior to project construction	During project construction

[2] Formerly known as the Monterey Regional Water Pollution Control Agency.

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
	necessarily be limited to: procedures to ensure that all construction equipment is properly tuned and maintained at all times; a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators; consistent compliance with idling restrictions of the state; and identification of procedures (including the use of routing plans for haul trips) that will be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner.		
Impact HH-2: Accidental Release of Hazardous Materials During Construction	**Mitigation Measure HH-2a: Environmental Site Assessment.** If required by local jurisdictions and property owners with approval responsibility for construction of each component, M1W and CalAm shall conduct a Phase I Environmental Site Assessment in conformance with ASTM Standard 1527-05 to identify potential locations where hazardous material contamination may be encountered. If an Environmental Site Assessment indicates that a release of hazardous materials could have affected soil or groundwater quality at a project site, a Phase II environmental site assessment shall be conducted to determine the extent of contamination and to prescribe an appropriate course of remediation, including but not limited to removal of contaminated soils, in conformance with state and local guidelines and regulations. If the results of the subsurface investigation(s) indicate the presence of hazardous materials, additional site remediation may be required by the applicable state or local regulatory agencies, and the contractors shall be required to comply with all regulatory requirements for facility design or site remediation.	Prior to project construction (if presence of hazardous materials is identified, site remediation or design changes may be required)	Only needed until owner/contractor deems each construction site is deemed safe for required construction
	Mitigation Measure HH-2b: Health and Safety Plan. The construction contractor(s) shall prepare and implement a project-specific Health and Safety Plan (HSP) for each site on which construction may occur, in accordance with 29 CFR 1910 to protect construction workers and the public during all excavation, grading, and construction. The HSP shall include the following, at a minimum: ▪ A summary of all potential risks to construction workers and the maximum exposure limits for all known and reasonably foreseeable site chemicals (the HSP shall incorporate and consider the information in all available existing Environmental Site Assessments and remediation reports for properties within ¼-mile using the EnviroStor Database); ▪ Specified personal protective equipment and decontamination procedures, if needed; ▪ Emergency procedures, including route to the nearest hospital; ▪ Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered. These procedures shall be in accordance with hazardous waste operations regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of the unknown hazardous materials release, notifying Monterey County Department of Environmental Health, and retaining a qualified environmental firm to perform sampling and remediation; and ▪ The identification and responsibilities of a site health and safety supervisor.	Prior to project construction	During project construction
	Mitigation Measure HH-2c: Materials and Dewatering Disposal Plan. M1W and CalAm and/or their contractors shall develop a materials disposal plan specifying how the contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The plan must identify the disposal method for soil	Prior to and during project construction	During project construction

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
	and the approved disposal site, and include written documentation that the disposal site will accept the waste. For areas within the Seaside munitions response areas called Site 39 (coincident with the Injection Well Facilities component), the materials disposal plans shall be reviewed and approved by FORA and the City of Seaside. The contractor shall develop a groundwater dewatering control and disposal plan specifying how the contractor will remove, handle, and dispose of groundwater impacted by hazardous substances in a safe, appropriate, and lawful manner. The plan must identify the locations at which potential contaminated groundwater dewatering are likely to be encountered (if any), the method to analyze groundwater for hazardous materials, and the appropriate treatment and/or disposal methods. If the dewatering effluent contains contaminants that exceed the requirements of the General WDRs for Discharges with a Low Threat to Water Quality (Order No. R3-2011-0223, NPDES Permit No. CAG993001), the construction contractor shall contain the dewatering effluent in a portable holding tank for appropriate offsite disposal or discharge. The contractor can either dispose of the contaminated effluent at a permitted waste management facility or discharge the effluent, under permit, to the Regional Treatment Plant. Mitigation Measure HH-2c: Materials and Dewatering Disposal Plan. M1W and CalAm and/or their contractors shall develop a materials disposal plan specifying how the contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The plan must identify the disposal method for soil and the approved disposal site, and include written documentation that the disposal site will accept the waste. For areas within the Seaside munitions response areas called Site 39 (coincident with the Injection Well Facilities component), the materials disposal plans shall be reviewed and approved by FORA and the City of Seaside. The contractor shall develop a groundwater dewatering control and disposal plan specifying how the contractor will remove, handle, and dispose of groundwater impacted by hazardous substances in a safe, appropriate, and lawful manner. The plan must identify the locations at which potential contaminated groundwater dewatering are likely to be encountered (if any), the method to analyze groundwater for hazardous materials, and the appropriate treatment and/or disposal methods. If the dewatering effluent contains contaminants that exceed the requirements of the General WDRs for Discharges with a Low Threat to Water Quality (Order No. R3-2011-0223, NPDES Permit No. CAG993001), the construction contractor shall contain the dewatering effluent in a portable holding tank for appropriate offsite disposal or discharge. The contractor can either dispose of the contaminated effluent at a permitted waste management facility or discharge the effluent, under permit, to the Regional Treatment Plant.		
Impact LU-2: Operational Consistency with Plans, Policies, and Regulations	See the following mitigation measures included in this table: **AQ-1, BT-1a, BT-1c, BT-1k, CR-2b, CR-2c, PS-3**.	See other rows for specific timing of each mitigation measure	See other lines for responsibilities for each mitigation measure
Impact PS-3: Construction Solid Waste Policies and Regulations	**Mitigation Measure PS-3: Construction Waste Reduction and Recycling Plan.** The construction contractor(s) shall prepare and implement a construction waste reduction and recycling plan identifying the types of construction debris the Project will generate and the manner in which those waste streams will be handled. In accordance with the California	Prior to, during, and after project construction	Upon project completion

Impacts	Mitigation Measures	Timing of Implementation	Timing of Monitoring
	Integrated Waste Management Act of 1989, the plan shall emphasize source reduction measures, followed by recycling and composting methods, to ensure that construction and demolition waste generated by the project is managed consistent with applicable statutes and regulations. In accordance with the California Green Building Standards Code and local regulations, the plan shall specify that all trees, stumps, rocks, and associated vegetation and soils, and 50% of all other nonhazardous construction and demolition waste, be diverted from landfill disposal. The plan shall be prepared in coordination with the Monterey Regional Waste Management District and be consistent with Monterey County's Integrated Waste Management Plan. Upon project completion, M1W and CalAm shall collect the receipts from the contractor(s) to document that the waste reduction, recycling, and diversion goals have been met.		
Impact TR-3: Construction-Related Roadway Deterioration	**Mitigation Measure TR-3: Roadway Rehabilitation Program.** Prior to commencing project construction, M1W (for all components other than the CalAm Distribution System Improvements) and CalAm (for CalAm Distribution System Improvements) shall detail the preconstruction condition of all local construction access and haul routes proposed for substantial use by project-related construction vehicles. The construction routes surveyed must be consistent with those identified in the construction traffic control and safety assurance plan developed under Mitigation Measure TR-2. After construction is completed, the same roads shall be surveyed again to determine whether excessive wear and tear or construction damage has occurred. Roads damaged by project-related construction vehicles shall be repaired to a structural condition equal to, or greater than, that which existed prior to construction activities. In the City of Marina, the construction in the city rights-way must comply with the City's design standards, including restoration of the streets from curb to curb, as applicable. In the City of Monterey, asphalt pavement of full travel lanes will be resurfaced without seams along wheel or bike paths.	Prior to and after project construction	After project construction

Appendix B – Lake El Estero Diversion Project
Urban Runoff Yield Study

LAKE EL ESTERO DIVERSION PROJECT

URBAN RUNOFF YIELD STUDY

Prepared for

DENISE DUFFY & ASSOCIATES



Prepared by

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS
3 QUAIL RUN CIRCLE, SUITE 101
SALINAS, CA 93907

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10/2/2023	3	Andrew Sterbenz, PE	Revise Draft per additional lake level monitoring data
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Table i. Acronyms Used in this Report

Acronym	Description
AFY, ac-ft/yr	Acre-feet/year
cfs	Cubic foot per second
gpd	Gallons per day
mgd	Million gallons per day
mg/L	Milligrams per liter
µg/L	Micrograms per liter
MPN	Most Probable Number
ppb	Parts per billion
ppm	Parts per million
ASBS	Areas of Special Biological Significance
ASR	Aquifer Storage and Recovery
BMP	Best management practice
CAW, CalAm	California American Water Company
CCAMP	Central Coast Ambient Monitoring Program
CCR	California Code of Regulations
CCRWQCB	Central Coast Regional Water Quality Control Board
CEQA	California Environmental Quality Act
CSIP	Castroville Seawater Intrusion Project
CWC	California Water Code
DDW	SWRCB Division of Drinking Water (formerly CDPH)
DWR	California Department of Water Resources
GWR	Groundwater Replenishment
MCWRA	Monterey County Water Resources Agency
MPS	Monterey Pump Station
MPWMD	Monterey Peninsula Water Management District
MRSWMP	Monterey Regional Stormwater Management Program
M1W	Monterey One Water (formerly MRWPCA)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	USDA Natural Resources Conservation Service
PWM	Pure Water Monterey
RTP	Regional Treatment Plant
SB	California Senate Bill
SIWTF	Salinas Industrial Wastewater Treatment Facility
SVRP	Salinas Valley Reclamation Plant
SVWP	Salinas Valley Water Project
SVGB	Salinas Valley Groundwater Basin
SWRCB	California State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geologic Survey

Table ii. Units of Measure Used in this Report

Unit	Equals
1 acre-foot	= 43,560 cubic feet = 325,851 gallons
1 cubic foot	= 7.48 gallons
1 cfs	= 448.8 gallons per minute
1 mgd	= 1,000,000 gallons/day = 1,120 acre-feet / year
1 mg/L	= 1 ppm = $1 / 10^6$
1 µg/L	= 1 ppb = $1 / 10^9$

Summary of Lake El Estero Yield Study

The City of Monterey is considering diverting urban runoff from Lake El Estero into the municipal sanitary sewer system as a source of supply for the Pure Water Monterey Project. The Monterey Peninsula Water Management District (MPWMD) and Monterey One Water (M1W) jointly developed the Pure Water Monterey (PWM) project for the indirect potable reuse of wastewater, stormwater and surface water. The Lake El Estero Diversion was included as a potential source of supply in the PWM Environmental Impact Report. This report is an update of our 2014 analysis.

The City of Monterey maintains Lake El Estero as the central feature of the Lake El Estero Municipal Park. The Lake covers approximately 18-acres, and collects runoff from approximately 3.78 square-miles of urban, suburban and wooded area. Although the Lake is within one mile of the Monterey Bay, it does not directly connect to ocean. Lake levels are maintained for aesthetics and recreation use, and are managed to facilitate storm flows that are pumped to the ocean through a gated pipeline from the northeast corner of the lake. Additionally, a second pipe system exists the lake from the northwest corner to the beach; however, this gravity outlet is not actively operated and the infrastructure requires condition assessment.

Diverting stormwater flows into the sanitary sewer system as a source of supply for the PWM Project was analyzed. Annual runoff into the Lake was estimated to average 639 acre-feet per year. Of that, an average of 209 acre-feet per year may be diverted to the PWM Project using existing capacity in the City's wastewater collection system. Stormwater not captured for the PWM Project may remain in the Lake or continue to be discharged to the ocean.

The drainage basin immediately to the west of the Lake drained into Lake El Estero until 1941, when a new storm sewer was installed in Figueroa Street which redirected those flows to Del Monte Beach. This basin is approximately 1.85 square-miles and produces an estimated average runoff of 237 acre-feet per year. It was recently discovered that this basin is still partially connected to Lake El Estero via a storm drain in Pearl Street. Inflows from this basin are reflected in the totals listed above.

Limited water quality sampling indicates that the water in Lake El Estero is of a better quality than City stormwater discharging directly to the Bay. The Lake provides a basin for sediments and metals to settle out of the water column. As such, it is currently one of the more benign sources of freshwater inflow to the Bay. The Monterey Bay at Del Monte Beach is not classified as an estuary, so minimum targets for freshwater inflows have not been established. Reducing the annual discharge of stormwater is not anticipated to have a negative effect on the Bay water quality. If stormwater flows that currently discharge directly to the Bay are routed through the Lake, the average quality of stormwater discharges would be expected to improve. The only noted water quality risk of the Proposed Project is an increased chance of overflows in the sanitary sewer system due to adding stormwater to a portion of the collection system. Automated in-pipe flow

monitoring will be required to shut off the stormwater diversion system if the pipeline capacity is needed to convey peak wet weather sanitary sewer flows.

Section 1 - Introduction

1.1 Project Description

The City of Monterey is considering diverting urban runoff from Lake El Estero into the municipal sanitary sewer system as a source of supply for the Pure Water Monterey Project. The Monterey Peninsula Water Management District (MPWMD) and Monterey One Water (M1W) jointly developed the Pure Water Monterey (PWM) project for the indirect potable reuse of wastewater, stormwater and surface water. Water from various sources is conveyed to the M1W Regional Treatment Plant where it undergoes primary and secondary treatment and is then purified at the Advanced Water Purification Facility. The purified water is conveyed to the Seaside Groundwater Basin for injection and storage and is later recovered by California American Water at municipal water wells. The Lake El Estero Diversion was included as a potential source of supply in the PWM Environmental Impact Report. This report is an update of our 2014 analysis.

M1W provides wastewater treatment for municipalities along the Monterey Bay from Pacific Grove north to Moss Landing, and inland to the City of Salinas. Wastewater is collected in an interceptor pipeline system and conveyed to the Regional Treatment Plant (RTP), located north of the City of Marina. The RTP has an average dry weather design capacity of 29.6 million gallons per day (mgd) and a peak wet weather design capacity of 75.6 mgd. It currently receives and treats approximately 17 mgd of average dry weather flow and therefore has capacity to treat additional flows. The interceptor pipeline system also has currently unused or excess conveyance capacity. The Proposed Project will use the existing excess capacity in the wastewater interceptor system to convey source flows to the RTP, rather than constructing a parallel conveyance system.

The purpose of this study is to analyze water availability from urban stormwater runoff into Lake El Estero and provide an engineering analysis of the potential yields and the infrastructure required to capture and convey those flows to the RTP. Transfers of source water flowing in known and definite channels, such as the City of Monterey's Lake El Estero, to the PWM Project would be a consumptive use that may require an appropriative permit from the State Water Resources Control Board (SWRCB). If a permit is required, this hydrologic information and analysis may be used in the permit application to the SWRCB.

1.2 Water Source Description

Lake El Estero is an 18-acre lake located in the City of Monterey, less than one mile from the coast. It is fed by four tributary streams and a portion of the City's stormwater collection system. One tributary is a named stream, Don Dahvee (formerly Majors) Creek which runs through Dahvee Park, and the other three are unnamed streams. The Lake El Estero drainage basin is 2,418 acres, or approximately 3.78 square miles.

The Lake was originally a brackish lagoon, connected by a surface stream to the Monterey Bay. The connection to the bay was changed to pipe culverts in the 1870s when the Monterey and Salinas Valley Railroad was constructed. The Lake has been dredged several times during the last century to remove accumulated sediment. Until 1941, the drainage basin included an additional 1,186-acres to the west, extending to Huckleberry Hill, which entered the Lake through a box culvert under Pearl Street. This portion of the City stormwater system was reconfigured with the addition of a box culvert under Figueroa Street, which now carries the flow from Pearl Street to discharge into the Monterey Bay at the Municipal Wharf. In 1968, the current stormwater pump station and outfall pipeline were constructed at the northeast corner of the lake to better facilitate management of water levels in the Lake.

In 1999, Fugro West[1] prepared a study of potential non-potable water supplies for the City of Monterey and concluded that shallow groundwater percolates into Lake El Estero. Based upon their observations, groundwater inflows were estimated at 135 acre-feet/year. These inflows were found to replace evaporative losses and provide irrigation supply water to the City, which uses lake water for irrigation of the surrounding park (and cemetery). Dry season groundwater inflow was not considered for diversion to the PWM Project.

The Lake is surrounded by the City of Monterey's El Estero Park Complex, which includes sports facilities, playgrounds, a fishing pier and a paddle boat wharf. The lake provides a habitat for fish, amphibians, reptiles and native and migratory birds.

The Central Coast Regional Water Quality Control Board (CCRWQCB) has listed Don Dahvee Creek (labeled Majors Creek on older maps) on the impaired water body listing pursuant to Section 303(d) of the Clean Water Act for copper, lead, zinc and Escherichia coli concentrations, and has listed the Monterey Harbor as impaired for metals and sediment toxicity. The Pacific Ocean at Monterey State Beach is listed for enterococcus and total coliform. Lake El Estero is not a listed water body. A summary matrix of 303(d) listed streams is provided in Table B-1. Water quality is discussed in greater detail in Section 4 of this report.

[1] Engineering Analysis, Development of Non-Potable Irrigation Water Systems, pages 24-25

Section 2 - Yield Estimation

2.1 Methodology

Estimates of surface runoff into Lake El Estero from the City of Monterey were made based on daily rainfall gage data, National Resource Conservation Service[2] mapped hydrologic soil group information, and land use as shown on aerial photographs. Calculations were made for each day and aggregated by month and water year (October 1 through September 30) using the methods in SCS Manual TR-55, Urban Hydrology for Small Watersheds. Runoff curve numbers (CN) were determined based on soil group and cover. Curve numbers appropriate for scrub cover were used for areas of natural vegetation, and curve numbers appropriate for irrigated pasture were used for lawns and other irrigated ground cover. A curve number of 98 for antecedent moisture condition (AMC) II was used for all impervious areas. The runoff curve numbers used to calculate runoff varied between AMC I (with 1.4 inches or less during previous five days) and AMC III (with 2.1 inches or more during the previous five days) depending on the precipitation during the previous five days.

For each land use and soil group combination, runoff was determined for each day during the period of record. The following equations are used in the NRCS model:

$$R = \frac{(P - 0.2S)^2}{(P - 0.8S)}$$

Where P is the precipitation in inches, R is the runoff in inches, and S is the storage in inches:

$$S = \frac{1000}{CN} - 10$$

Rainfall Data for Monterey was obtained from NOAA using the gages: USC00045795 Monterey, CA, for the period 10/1/1951 to 9/30/1998, gage USC00045802 Monterey WFO, for the period 10/1/1998 to 12/31/2013, and gage USW00023259 Monterey Peninsula Airport, CA, for the period 01/01/2014 to 02/14/2024 (Table B-2). The average annual precipitation from the data is 18.4 inches/year. The Lake El Estero drainage basin is 2,418 acres, or approximately 3.78 square miles (Figure A-1). Using the method described above, the total estimated runoff into Lake El Estero averages 266 acre-feet per year (Table B-4).

In Summer 2022, the City of Monterey installed a level sensor in Lake El Estero. Data from that gage was provided for the period 9/14/2022 to 2/14/2024. The sensor recorded water levels at 10-minute intervals. For this analysis, the readings at 3-hour intervals were used. The lake level and daily rainfall are shown on Figure A-6. The change in lake level was calculated for each time step and aggregated by day, as presented in Figure A-7. Positive level changes were used to estimate

[2] Formerly the USDA Soil Conservation Service

inflows to the lake[3]. Negative level changes were pumped outflows from the lake to the ocean. Daily inflow and outflow volumes were estimated by multiplying the 3-hour change in lake level by the 18-acre surface area. The daily results are provided in Table B-5.

The observed inflows were significantly higher than those calculated using the TR-55 methodology. This appears to be caused by two factors. First, the TR-55 method attributes a significant portion of the precipitation to percolation. Due to the shallow bedrock in Monterey, some of the percolated flows migrate into Lake El Estero over time. This can be seen in Figures A-8 and A-9. The lake level rises several days after a rain event due to the subsurface inflow. The second source of inflow is an existing connection to the adjacent drainage basin. As shown on Figure A-1, the western third of the original Lake El Estero drainage basin now drains to the ocean via a box culvert in Figueroa Street. Our previous report assumed that this connection was completely severed. However, City Staff had a video inspection of that culvert performed in December 2020 and it was discovered that a 12-inch (+/-) opening exists in the wall closing off the older box culvert in Pearl Street. Based on the box culvert geometry and design slope, flows up to 5 cfs would be contained in the Figuero culvert and flow to the ocean. At higher flow rates, a portion of the flow can cross into the Pearl Street culvert and flow to Lake El Estero. There is no way to predictively estimate the flow split based on the available data.

The total recorded rainfall for the period 9/14/22 to 2/14/24 was 36 inches or a total of 7,255.4 acre-feet. The estimated inflow during the period using the TR-55 method was 501.6 ac-ft, or 6.9% of the total rainfall. The inflow calculated using lake level data was 1,288.6 ac-ft, or 17.8% of the rainfall. To account for the increased inflows in this analysis, the TR-55 results were scaled up by a factor[4] of 2.4 and presented in Table B-7.

Climate averages are updated every decade, using the most recent 30-year period. The average rainfall over the period 1991-2020 was 18.4 inches, matching the long-term average over the period of record. The average runoff to Lake El Estero during that period was 678 acre-feet/year. This is larger than the long-term average of 639 acre-feet/year because the wettest year on record (1998) occurred during the 30-year climate window.

Runoff capture from Lake El Estero was estimated for two diversion options, as discussed below.

Option 1 is to divert water from the lake into the municipal sanitary sewer system (Figure A-2). Sanitary Sewer Manhole (SSMH) D05-052 is located near the existing El Estero Stormwater Pump Station. This is a 21-inch vitrified clay pipe (VCP) sewer with a crown elevation lower than the water surface of the lake. Looking at the profile between this manhole and the M1W Monterey Pump Station, the limiting segment is a 21-inch VCP pipe at a slope of 0.0052 (Table 2-1). A flow

[3] The level sensor recorded changes as small as 0.01-ft, which were considered to be wind-driven ripples. We applied a threshold value of +/- 0.04-ft (about 1/2 inch) to capture only visible changes.

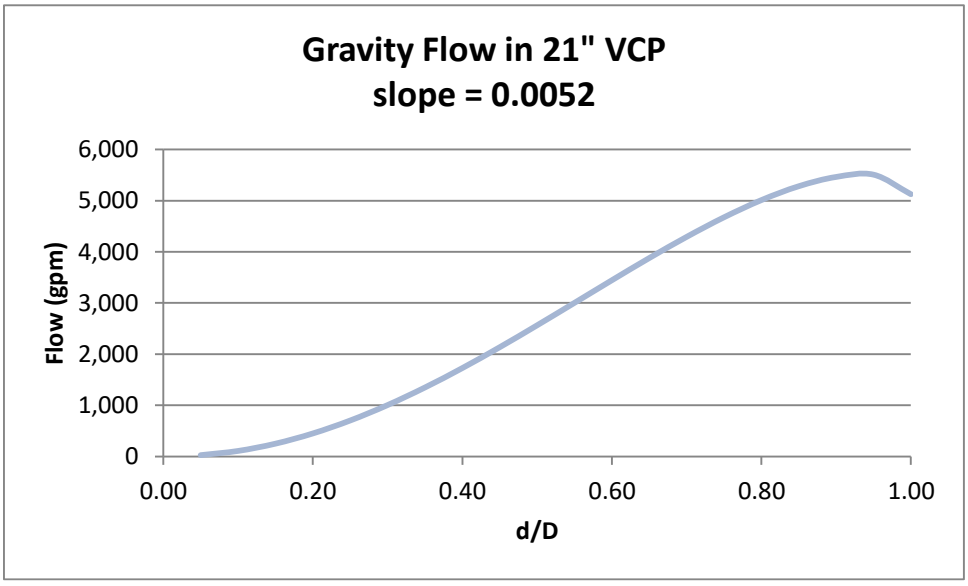
[4] The calculated factor is 2.57 but is based on only 18-months of data. A lower value of 2.4 is used for the multi-year yield alanysis.

monitor was installed in manhole D05-052 during the months of February and March 2020 (see Appendix D). The observed peak dry weather flow (PDWF) was approximately 0.9 mgd, or 630 gpm. The observed peak wet weather flow (PWWF) was 1.6 mgd, for a peaking factor of 1.8 x PDWF. We will assume a PWWF factor of 2.0 x PDWF, which would be 1.8 mgd or 1300 gpm. Based on the pipeline slope and material, the capacity at d/D = 0.8 is estimated at 5,000 gpm (Figure 2.1), leaving an excess capacity of about 3,700 gpm for stormwater conveyance, or approximately 16 acre-feet/day. This diversion may be made with a gravity pipeline controlled by a motorized control valve.

Table 2-1: Existing Sanitary Sewer Manholes and Pipelines

Upstream SSMH	Invert	Downstream SSMH	Invert	D (in)	L (ft)	Slope
D06-004	-8.6	D06-005	-9.1	21	90	0.0056
D06-005	-9.1	D05-052	-10.89	21	223	0.0080
D05-052	-11.4	D05-061	-12.0	21	88	0.0068
D05-061	-12.0	MRW-006	-13.73	21	343	0.0052

Figure 2.1: Capacity Curve for Limiting Sewer Segment



Runoff capture from Lake El Estero was calculated based on two diversion limits. A lower limit of 5 acre-feet/day was assumed to be too small to initiate the runoff capture system (about three inches of rise in the 18-acre lake surface). The next 16 acre-feet may be captured by the diversion system. Runoff in excess of 21 acre-feet/day was assumed to remain in the lake and be pumped to the bay. We note here that 1 inch of rainfall currently generates about 21 ac-ft of inflow to the lake (see Table B-5, entries for 9/18/22 and 12/3/22). Using these limits, the estimated annual runoff capture was 209 AFY (see Table B-7). This varied greatly based on the annual rainfall pattern, from a minimum of 8 AFY to a maximum of 527 AFY.

The City of Monterey and M1W Staff conducted a two-day shunt test during the period February 24-26, 2014, to assess the effects of adding water from Lake El Estero to the municipal wastewater collection and treatment systems. A temporary pump was installed at the stormwater pump station and piped to SSMH D05-052. The pump operated at approximately 1,500 gpm for a period of 50 hours, transferring 4.5 million gallons. The inflow was reported to have caused minor surcharging at the receiving manhole due to the configuration of the temporary piping. Spills or surcharging were not reported for the limiting pipeline segment downstream.

Option 2 is to install a pump station and force main to divert flow directly to the M1W Monterey Pump Station (MPS), which is approximately 0.75 miles from Lake El Estero. The MPS has a rated maximum day capacity of 20 mgd, but is currently using only 8 mgd on peak days, leaving an excess of 12 mgd, or 30 acre-feet/day (Figure A-3). Calculating the daily runoff capture using the same 5 ac-ft/day minimum limit and increasing the maximum capture to 30 ac-ft/day, the estimated annual capture volume is 305 AFY, with a range from 46 AFY (minimum) to 905 AFY (maximum) (see Table B-8). Although this yield is higher than that of the gravity diversion, the total yield is too small to justify the construction cost of a 6,800 gpm pump station and 18-inch diameter[5] force main.

The adjacent drainage basin to the west of the Lake El Estero basin previously drained to the lake but was diverted directly to the bay with the construction of a box culvert in Figueroa Street. As noted above, the dividing wall between the old and new box culverts has an opening which allows some flow to pass from Figueroa into Pearl Street. The connection to Pearl Street may be enlarged to increase the volume of stormwater captured. This basin has an area of 1,186 acres (1.85 sq-mi). Soil types were identified using the NRCS Web Soil Survey, and land cover was estimated using the USGS 7.5 Minute Topographic Quadrangle for Monterey, CA (Table B-9). Runoff from the basin was estimated using the TR-55 method (Table B-10). Although the basin is smaller, the calculated average annual runoff is nearly equal to Lake El Estero (237 AFY in this basin, compared to 282 AFY in the Lake El Estero basin)[6]. The Figueroa basin has approximately the same amount of impervious cover (pavement and rooftops) as the El Estero basin, and the soil is predominantly Group D, which has a high runoff potential.

Enlarging the connection to the adjacent basin would increase the inflows to Lake El Estero on the day of a rain event when the stormwater collection system is flowing. The improved connection would not affect the inflow of percolating groundwater on subsequent days since those flows are already reaching the lake and are reflected in the revised inflow estimation (Table B-6). Ideally, the improved connection would increase inflows for events under 1-inch of rain to maximize the daily diversion. The amount of flow passing through the existing connection has not been measured, so we cannot estimate the yield of an improved connection at this time. Routing all or

[5] Pipeline sized to limit peak velocity to 8 ft/s.

[6] Average values reflect using the 30-year climate period, 1991-2020.

most of the flow through the Lake would result in increased use of the existing stormwater pump station, which is an unnecessary cost.

2.2 In-Stream Flow Requirements

Lake El Estero is a land-locked water body whose water level is managed through pumped discharges to the ocean in relation to predicted storm events and flood control purposes. There is no normal connection to the ocean nor a regular or consistent means of fish passage. The City's primary means of discharging water to the ocean is through their stormwater pump station at the northeast corner of the lake. This station moves water from the lake into a 48-inch pipeline that outfalls on Del Monte State Beach above the normal high water line. The pump station intake is screened to prevent fish in the lake from entering the station. The outfall structure is gated to prevent sand from accumulating inside the structure when not in use. If the pump station cannot divert the full volume of stormwater runoff entering the lake and the lake level rises sufficiently, water flows through two 33-inch gravity pipelines to a second point of discharge on Del Monte State Beach, west of the pump station outfall (see Figure A-2). We note here that during the large winter storms of 2022-23, the pump station was capable of maintaining the lake level and these pipelines were not relied upon.

To the east of Lake El Estero is Del Monte Lake, which is a similarly land-locked water body. To the west, the City of Monterey stormwater collection system outfalls to the bay at several locations, the nearest being at the Municipal Wharf.

The City maintains the Lake El Estero water level for aesthetics and recreational use. The proposed project should not reduce the water levels below those currently maintained by the City. It should only reduce the volume of stormwater being discharged to the ocean.

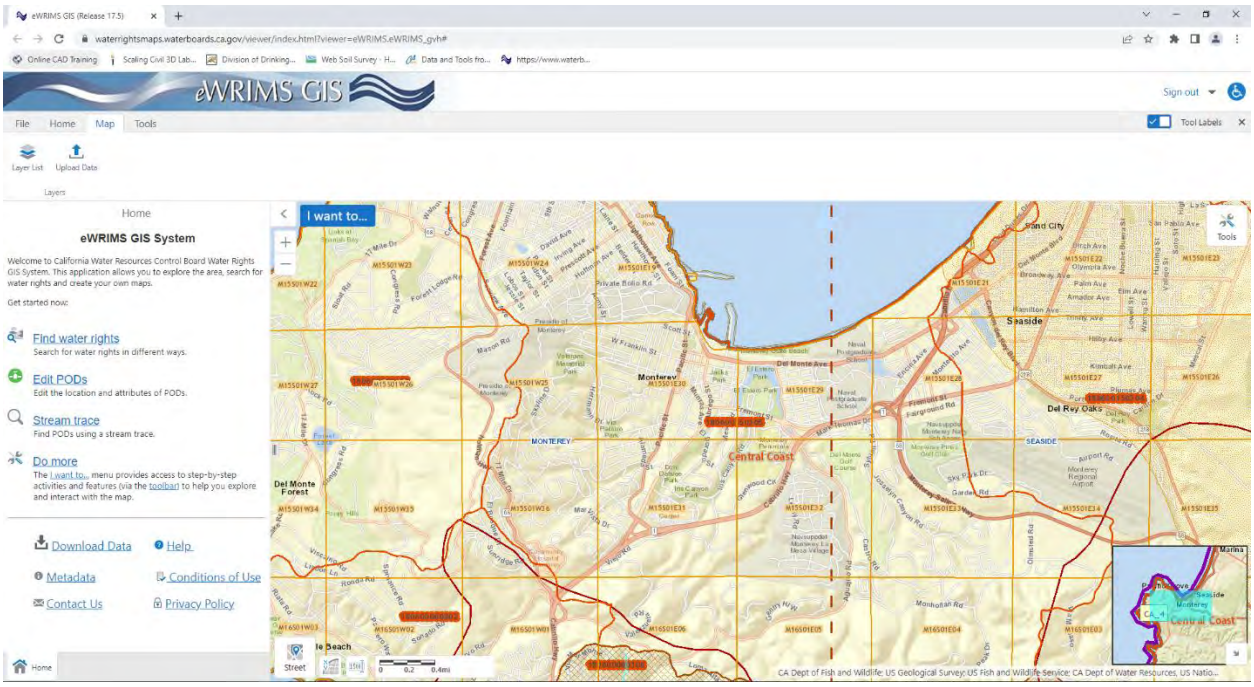
The Monterey Harbor and the Monterey Bay South Coastline are not classified as estuaries, so seasonal freshwater inflows are not required to maintain aquatic habitats. The Monterey Bay National Marine Sanctuary Final Management Plan was reviewed and no requirements for freshwater inflows to this portion of the Bay were listed. The reduction of urban stormwater inflows to the Sanctuary may be considered a marine water quality benefit because current lake discharges are untreated.

2.3 Water Rights

It is assumed that a state water right would be required for the diversion of urban stormwater flows from the lake to the PWM Project. The City of Monterey currently diverts water from the lake for irrigation within the surrounding park without a water right permit. That use may be considered a riparian claim, and therefore exempt from the formal permitting requirement.

Existing water rights were researched to determine if any potential conflicts may exist. The State Water Resources Control Board Electronic Water Rights Information Management System (eWRIMS) was queried to identify existing water rights in the Lake El Estero Watershed. The on-line GIS mapping tool was queried, and no Points of Diversion (PODs) within the Lake El Estero watershed were identified (Figure 2.). A listing of all current water rights for Monterey County was obtained using a database query, and it also returned negative results for this area.

Figure 2.3: SWRCB eWRIMS Interface



The SWRCB Water Rights Order 98-08, Declaration of Fully Appropriated Stream Systems in California, identifies those stream segments which cannot support additional authorizations for diversion. The Carmel River is listed in that decision, but Lake El Estero and its tributary streams are not. There is no regulatory prohibition on requesting a water right from this source.

Section 3 - Facility Requirements

3.1 Description and Sizing

Two conceptual designs were developed for stormwater diversion facilities from the Lake: a gravity connection to the sanitary sewer system controlled by a motorized valve and a pumped diversion with a short force main. The following design criteria and assumptions were used:

- The inlet may be located on the lake bank or within the existing pump station
- The inlet must be screened to prevent fish and trash capture
- The diversion pipeline will connect to the existing sanitary sewer manhole near the stormwater pump station (D05-052)
- The minimum velocity in the pipeline shall be 2 feet/second to prevent the settling of suspended sediments in the pipeline
- The maximum velocity in the pipeline shall be less than 8 feet/second to limit the friction losses
- If required, submersible pumps will be used

Two sets of conceptual design diagrams are provided in Appendix C.

The normal water level of the Lake is above the crown of the receiving sanitary sewer main, so the first option considered was a gravity connection (Figures 1 and 2 in Appendix C). This proposed facility would be configured with a new gravity inlet located on the lake bank, equipped with a fish screen, a 16-inch gravity pipeline connecting to SSMH D05-052, a flow meter, a motorized control valve, and a check valve. The discharge pipe would be above the crown of the existing pipe to provide an air-gap between the sanitary system and the lake. A control panel will be required to operate the motorized valve. It may be configured as autonomous, looking at a lake level sensor and the flow meter, or it may connect to the M1W SCADA system and be controlled remotely. Because the system will be discharging to the municipal sanitary sewer, a float switch must be installed in the receiving system to shut off this system if the receiving sewer is flowing full.

The second option considered was a pumped connection (Figures 3 and 4 in Appendix C). Pumping will have a higher operating cost than a gravity connection but offers positive flow control. This option is configured as adding a column-type pump in the existing pump station wet well, and a similar discharge pipeline with a check valve and flow meter as in the first option.

The screened inlet must be sized to allow full flow through the screen with a maximum velocity of 1 ft/s to allow fish to escape. Assume the screen has an open area of 50%, and that 50% of the screen is blinded by trash/vegetation. For a maximum flow of 8.2 cfs (= 3,700 gpm):

$$A_{screen} = 8.2 \text{ cfs} / [(1 \text{ ft/s}) \times (50\% \text{ screen openings}) \times (50\% \text{ blinded})] = 32.9 \text{ sq-ft}$$

Minimum dimensions: 4-ft wide x 8.2-ft long if rectangular

24-in diameter x 5.25-ft long if cylindrical

For a new inlet, the lake bank at the pipe penetration should be lined with rock or concrete to prevent erosion. If rock is used, a concrete cut-off collar should be cast around the pipeline to prevent water from migrating through the pipe bedding material. An alternative option would be to core-drill through the wall of the existing pump station wet well for the new inlet. The existing station uses diesel drives for the pumps, and the fuel tank and pipeline are located underground between the wet well and the receiving sanitary sewer, preventing the installation of a new pipeline at a uniform slope, so this inlet configuration was not used for the gravity option.

The pipeline would be a 16-inch PVC (AWWA C-900 pressure pipe). The size was selected based upon the calculated velocity and friction losses in the pipeline. It was assumed that the lake would provide a minimum of 5-feet of static head between the inlet and discharge. A 16-inch main flowing at 3700 gpm would have a velocity of 5.9 feet per second and estimated losses totaling 2.6 feet (Table C-1). A 12-inch main would have estimated losses totaling 8.5 feet, which exceeds the available system head.

For the pumped option, an axial flow or column-type pump is recommended. A column may be added to the existing wet well, suspended from the pump deck and braced to the wall. The discharge piping may pass through the wall of the wet well (as shown in the diagram), or it may extend over the pump deck and then go underground. The lake provides a substantial forebay for the pump station, so a variable speed drive will not be required to match the incoming flow rate. Using a 12-inch discharge pipeline, a 20 horsepower pump is required. However, pumps of this type are typically sized for larger flows. The closest match found using the Flygt pump catalog was a 27 hp pump, model PL 7020 with a trimmed impeller to meet the low design point.

The proposed facilities are in the mapped FEMA floodplain[7] and near Del Monte Beach, which is subject to storm-driven wave run-up. The proposed submersible pumps will not be affected by storm inundation, but the electrical power and control equipment must be at least 1-ft above the base flood elevation of 11-ft (approximately 2-ft above the existing pump station deck) or housed in a water-tight vault. The anticipated effect of sea level rise is discussed is Appendix F. The mean high-water level of Monterey Bay is projected to exceed the Lake El Estero surface elevation by the year 2070. For this analysis, we assume that the gravity outfall pipes are equipped with flap gates and that the City will add improvements as needed to protect Del Monte Blvd and the existing structures along it from rising sea levels. Project-specific protections for increasing flood levels are not included.

[7] FEMA Flood Insurance Rate Map, Panel 06053C0703G, April 2009 (see Appendix A)

3.2 Costs

Capital costs were estimated for the two transfer station configurations, gravity and pumped. Detailed estimates are provided in Tables C-3 and C-4 in Appendix C. Non-construction costs (design, permitting, legal, etc.) were estimated as 40% of the construction cost.

Modifications to the existing connection between Figueroa and Pearl Streets are not included in the conceptual design. Right-of-way acquisition costs were not included in the capital cost estimates. The proposed site is on City of Monterey property, so standard encroachment fees should apply.

Table 3-1: Estimated Capital Costs

	El Estero Gravity	El Estero Pump Station
Estimated Construction Cost	$249,000	$271,700
Inspection and Testing (15%)	$37,000	$41,000
Construction Contingency (20%)	$50,000	$54,000
Estimated Total Construction Cost	$336,000	$367,000
Design, Permitting, Legal (40%)	$134,400	$146,800

Costs are in March 2024 dollars

The City of Monterey has standard capacity charges and monthly fees for connecting to the sanitary sewer collection system, which should apply to this connection. Similarly, M1W has standard capacity charges for connection to the regional wastewater system that are based on the flow rate, the biological oxygen demand (BOD) and the suspended solids concentration, and monthly charges for wastewater treatment. These fees are not included in this estimate, because M1W is a sponsor of the Proposed Project. The primary, secondary and advanced treatment costs for this source of supply will be similar to the treatment cost for other PWM sources.

Annual operating and debt service costs for each configuration were estimated using the following planning factors:

- Debt service assumes a 30-year bond at 6.5% annual interest
- Annual operation and maintenance of pump stations is estimated at 2.5% of the capital cost
- Annual operation and maintenance of pipelines is estimated at 1% of the capital cost
- Electrical power cost is assumed at $0.20 per kWh
- Assume the station operates 19.3 days per year (average from runoff capture model)

The factors above provide an order-of-magnitude estimate of annual costs, which may be used in comparing project configurations. The estimated annual costs are provided below.

Table 3-2: Estimated Annual Costs, Gravity Option

Category	Basis	Annual $
Capital Repayment		
Assume 30-year bond at 6.5%	$336,000	$25,730
Annual Operation and Maintenance		
Assume 2.5% of Pump Station Capital Cost	$0	$0
Assume 1.0% of Pipeline Capital Cost	$157,000	$3,925
Electrical Power		
Number of operating days/year	19.3	
Actuator: 1 HP (0.7457 kW/hp)	0.7	
Estimated annual kWh	345	
Assumed cost per KWH	$0.20	$69
Total Estimated Annual Cost		**$29,700**
Average Yield (AFY)		106
Average Cost per AF		$280

Table 3-3: Estimated Annual Costs, Pump Station Option

Category	Basis	Annual $
Capital Repayment		
Assume 30-year bond at 6.5%	$367,000	$28,104
Annual Operation and Maintenance		
Assume 2.5% of Pump Station Capital Cost	$210,000	$5,250
Assume 1.0% of Pipeline Capital Cost	$157,000	$3,925
Electrical Power		
Number of operating days/year	19.3	
Pump: 20 HP (0.7457 kW/hp)	14.9	
Estimated annual kWh	6,908	
Assumed cost per KWH	$0.20	$1,382
Total Estimated Annual Cost		**$38,700**
Average Yield (AFY)		106
Average Cost per AF		$365

Section 4 - Water Quality

4.1 Summary of Current Condition

The Central Coast Regional Water Quality Control Board (CCRWQCB) Water Quality Control Plan for the Central Coast Basin (Basin Plan) designated beneficial uses of the Lake El Estero as including municipal and domestic supply, groundwater recharge, water contact recreation, non-contact water recreation, wildlife habitat, cold water fish habitat, warm water fish habitat, spawning/reproduction/early development habitat and commercial or sport fishing. Many of these are the minimum uses listed for all inland water bodies within the region, unless specific water quality information caused the RWQCB to remove a specific use (e.g., not listing water contact recreation for a stream segment listed for fecal coliform contamination). Monterey Harbor has designated beneficial uses of water contact recreation, non-contact water recreation, industrial service supply, navigation, marine habitat, shellfish harvesting, commercial or sport fishing and rare/threatened/endangered species habitat.

Lake El Estero is not listed as an impaired water body, but Don Dahvee Creek (at tributary stream to Lake El Estero) and Monterey Harbor are listed. Don Dahvee Creek is listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act for copper, lead, zinc and Escherichia coliform. Monterey Harbor is listed as an impaired water body for metals and sediment toxicity. The Pacific Ocean at Monterey State Beach is listed for enterococcus and total coliform. Water quality has been sampled and monitored for the past 15 years under various programs, including the Central Coast Long-term Environmental Assessment Network (CCLEAN), the Monterey Bay Sanctuary Citizen Watershed Monitoring Network and the City of Monterey Urban Watch. The results of these programs have been consolidated in Table B-12, for Lake El Estero, Don Dahvee (Majors) Creek, Monterey Harbor and Monterey Bay South Coastline. Sampling locations are shown on Figure A-5.

The Monterey Regional Storm Water Management Program identifies water quality objectives for stormwater discharging into Monterey Bay. These and other applicable water quality standards are consolidated in Table B-13, Water Quality Objectives.

4.2 Effect of Diversion on Monterey Bay Water Quality

Stormwater runoff can carry pollutants such as oils, sediments and metals into the Monterey Bay, which is a National Marine Sanctuary. Lake El Estero serves as a settling basin for stormwater, which is a treatment process. Water passing through the lake carries lower levels of suspended solids than stormwater discharging directly to the Bay. Samples of the water discharged through the Lake El Estero stormwater pump station have not been collected and tested, but looking at the available water quality data in Table B-12, it may be inferred that these discharges will be of better quality than direct discharges from other portions of the municipal system. Therefore, the proposed diversion should have a little to no effect on the Bay.

Reconnecting the adjacent drainage basin to Lake El Estero through the Pearl Street box culvert should have a positive effect on near-shore water quality. Passing these flows through the lake will provide settling of suspended solids. During peak rain events, the addition of these flows to the lake will cause increased use of the stormwater pump station. The increased inflow rates will decrease the detention time in the lake, leading to a decline in water quality during stormwater pumping periods. However, the quality of the pumped discharge will be better than the current quality of flows directly discharged to the Bay.

Adding stormwater to the sanitary sewer system increases the risk of sanitary sewer overflows, which can convey bacterial pollutants into the Bay. The sanitary sewer pipeline between Lake El Estero and the M1W interceptor will flow at maximum capacity during peak diversions, so certain safeguards should be included in the project. First, the sewer pipeline and manholes should be inspected for cracks and leaking joints. If found, they should be repaired to prevent the combined flows from leaking out into the surrounding soil. Second, pressure sensors should be installed in one or more manholes to identify backwater effects in the system. If the combined storm and sewer flow exceeds the gravity capacity of the sewer main, the stormwater system can shut off to prevent the sanitary flows from spilling. The stormwater can be held in the lake for later diversion or discharged through the stormwater pump station, depending upon the level of the lake at the time.

Appendix A: Figures

Figure A-1: Lake El Estero Drainage Basins
Figure A-2: City of Monterey Storm and Sanitary Sewer Pipelines
Figure A-3: M1W Interceptor System Schematic
Figure A-4: FEMA FIRMette, El Estero Pump Station
Figure A-5: Water Quality Sampling Locations
Figure A-6: Lake El Estero Gage Data
Figure A-7: Summary of Daily Level Changes
Figure A-8: Gage Data, 10/31/22 – 11/11/22
Figure A-9: Level Changes, 10/31/22 – 11/11/22



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Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

0 1,500 3,000 Feet

FIGURE A-1

Lake El Estero Drainage Basins
Figure A-1

Figure 10/2022



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Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

0 250 500 Feet

FIGURE A-2

Storm and Sanitary Pipelines
Lake El Estero Diversion

Figure 10/2022

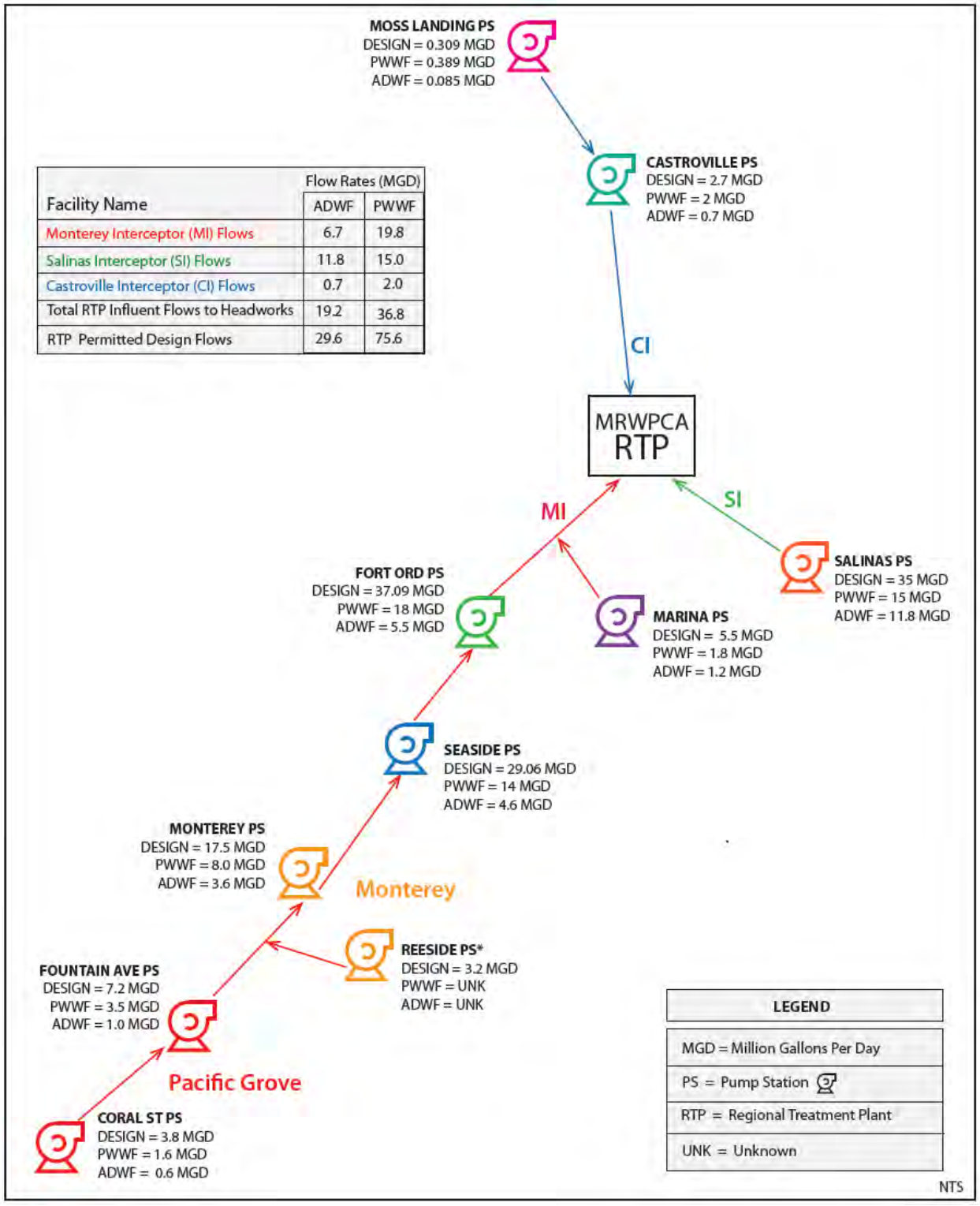

Figure A-3: M1W (formerly MRWPCA) Interceptor System Schematic

Source: Brezack and Associates Planners, September 2013

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/7/2022 at 2:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



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0 650 1,300 Feet

N

MRSWMP/MBNMS/ Monterey Urban Watch Water Sampling Sites

Figure A-5

Figure 10/2022

Figure A-6: Lake El Estero Gage Data

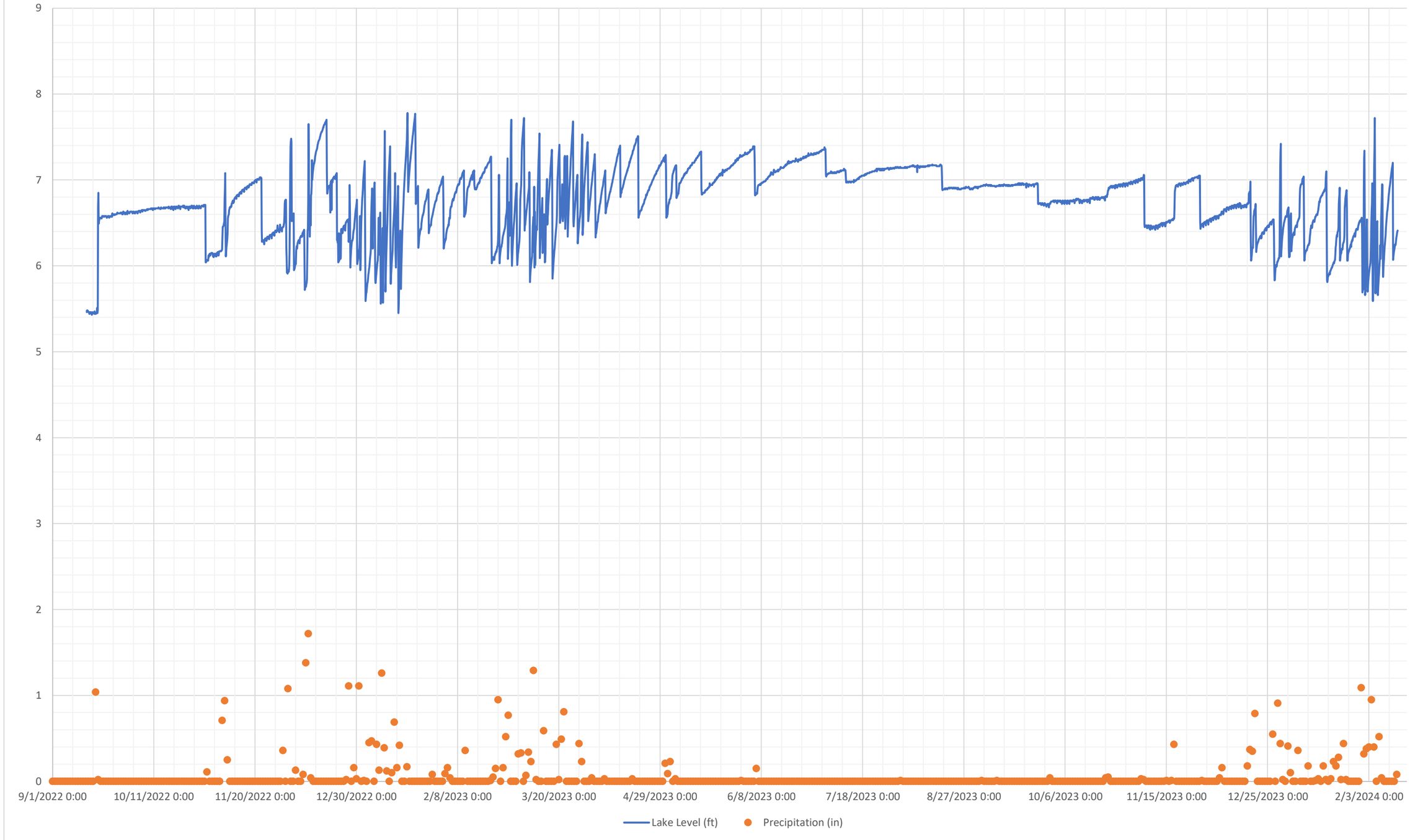


Figure A-7: Summary of Daily Level Changes

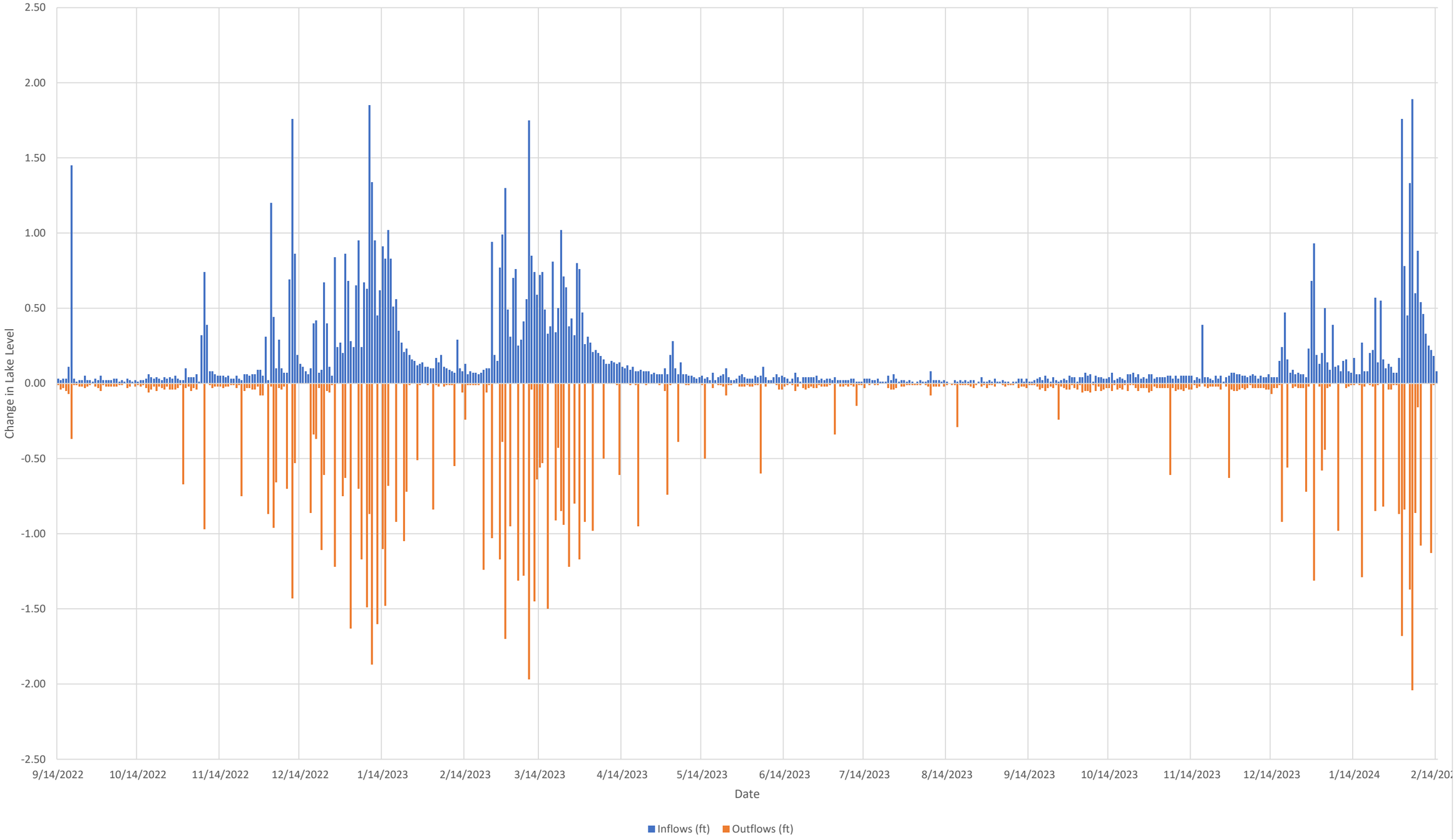
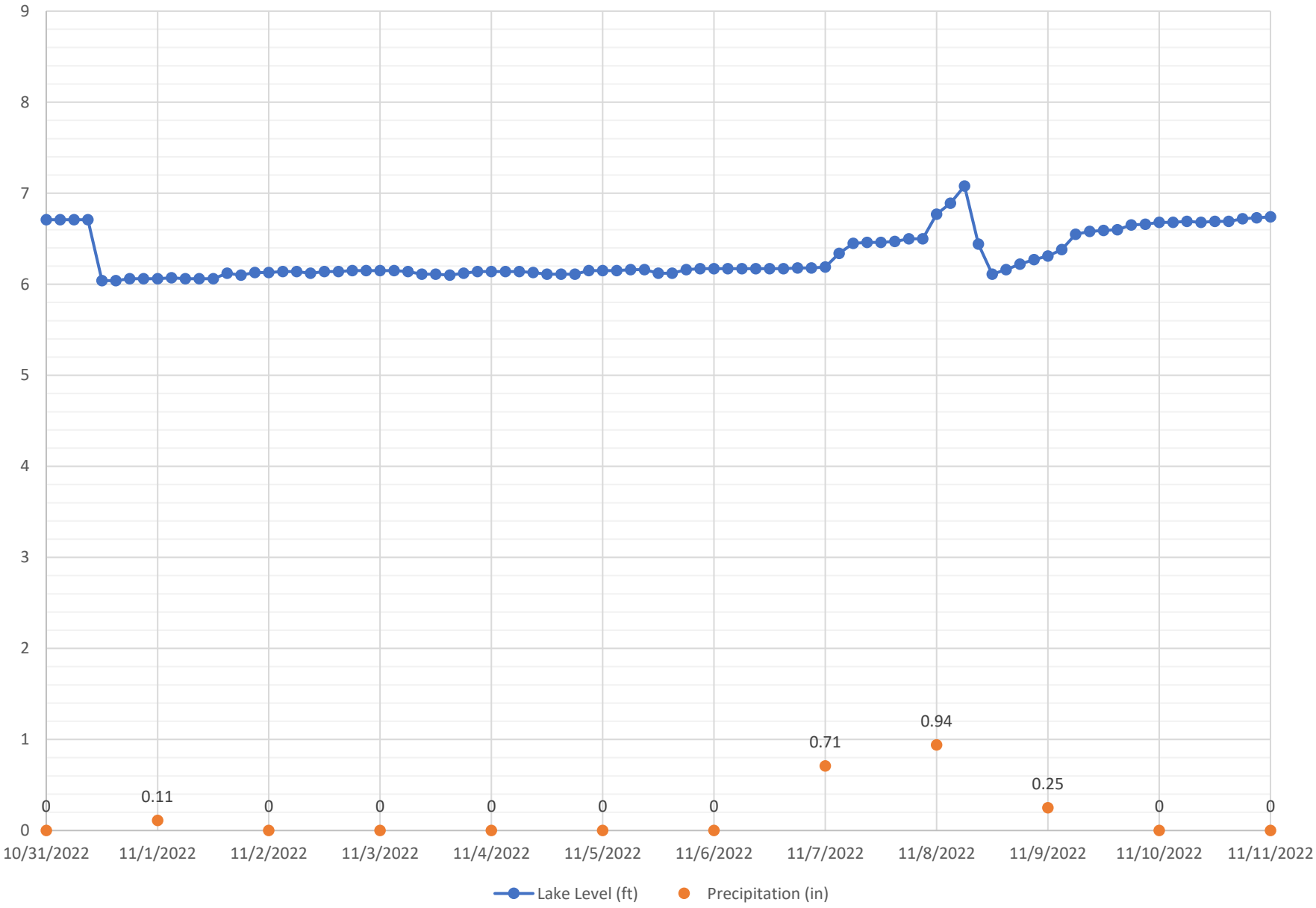


Figure A-8: Gage Data, 10/31/22 - 11/11/22



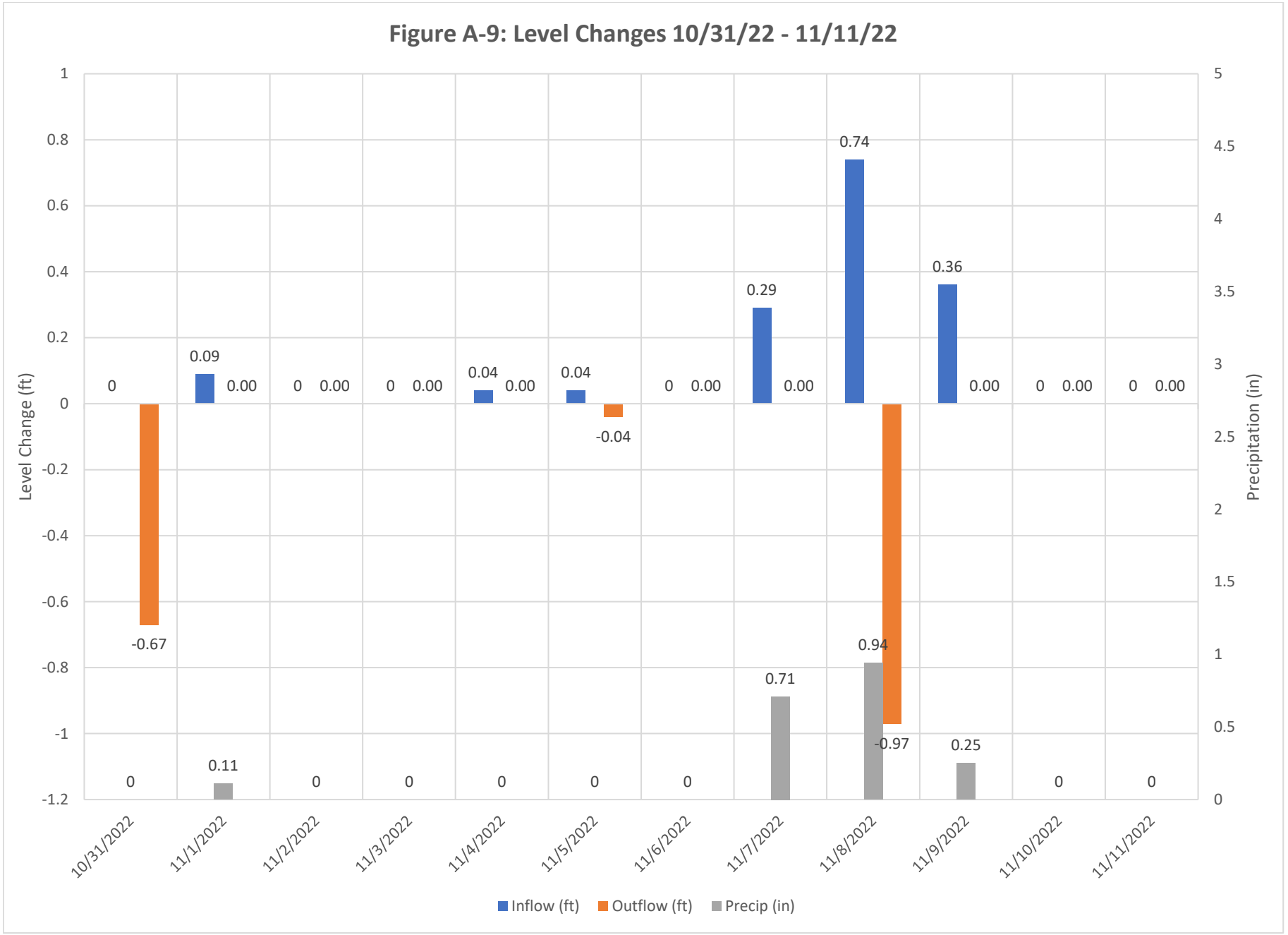


Figure A-9: Level Changes 10/31/22 - 11/11/22
Level Change (ft)
Precipitation (in)
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
0.09
0.04
0.04
0
0.29
0.74
0.36
0
0
0
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
-0.67
-0.04
0.11
0.71
0.94
-0.97
0.25
10/31/2022
11/1/2022
11/2/2022
11/3/2022
11/4/2022
11/5/2022
11/6/2022
11/7/2022
11/8/2022
11/9/2022
11/10/2022
11/11/2022
Inflow (ft)
Outflow (ft)
Precip (in)

Appendix B: Tables

Table B-1: 2020 California 303(d) Listing
Table B-2: Recorded Precipitation in Monterey, CA
Table B-3: El Estero Watershed Areas and Curve Numbers
Table B-4: Estimated Runoff to Lake El Estero (Modeled)
Table B-5: Summary of Measured Inflows and Outflows
Table B-6: Estimated Runoff to Lake El Estero (Updated)
Table B-7: Estimated Transferable Runoff at Lake El Estero
Table B-8: Estimated Transferable Runoff at Lake El Estero with new connection to MPS
Table B-9: Figueroa Watershed Areas and Curve Numbers
Table B-9: Combined El Estero and Figueroa Watershed Areas and Curve Numbers
Table B-10: Estimated Runoff from the Figueroa Drainage Basin
Table B-11: NOT USED
Table B-12: Water Quality, El Estero Basin and Monterey Bay
Table B-13: Water Quality Objectives

Table B-1: 2020 California 303(d) Listing

Water Body	Water Body ID	Listed for:	Arsenic	Copper	Enterococcus	Escherichia coli (E. coli)	Lead	Oxygen, Dissolved	PCBs (Polychlorinated biphenyls)	Total Coliform	Toxicity	Zinc
Don Dahvee Creek (Monterey County)	CAR309500422009022614063 9	River & Stream		X		X	X					X
Hartnell Gulch West Fork (Monterey County)	CAR309500402019121102985 9	River & Stream				X						
Monterey Harbor	CAB30912014199808271607 47	Bay & Harbor	X	X		X		X	X		X	
Pacific Ocean at Monterey State Beach (Del Monte Beach)	CAC30912014201004272219 33	Coastal & Bay Shoreline			X					X		

Note: Don Dahvee Creek was previously listed as Majors Creek

Lake El Estero Diversion

Table B-2: Recorded Precipitation in Monterey, CA (inches)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1952	0.9	2.8	6.9	10.0	3.0	4.4	1.1	0.2	0.2	0.1	0.1	0.1	29.7
1953	0.2	2.2	5.9	2.1	0.0	1.2	1.7	0.5	0.2	0.0	0.1	0.1	14.1
1954	0.4	2.2	0.6	4.3	2.3	4.9	0.9	0.4	0.4	0.0	0.2	0.1	16.4
1955	0.0	1.4	3.1	5.8	1.7	0.0	1.7	0.9	0.1	0.0	0.0	0.0	14.8
1956	0.1	2.0	9.8	5.8	2.3	0.2	1.7	0.6	0.0	0.1	0.0	0.4	22.8
1957	1.0	0.0	0.8	4.7	3.5	1.9	1.5	2.4	0.2	0.0	0.0	0.2	16.2
1958	1.6	0.9	3.7	3.7	5.7	7.2	4.7	0.6	0.4	0.0	0.0	0.5	28.9
1959	0.0	0.5	0.5	4.9	5.8	0.3	0.3	0.1	0.0	0.0	0.0	3.1	15.6
1960	0.0	0.0	0.6	4.3	4.5	0.8	0.9	0.3	0.0	0.0	0.0	0.1	11.6
1961	0.1	2.1	0.9	1.9	1.2	2.6	1.3	0.7	0.0	0.0	0.1	0.1	10.9
1962	0.0	1.7	1.2	2.6	5.2	2.6	0.3	0.2	0.2	0.0	0.3	0.2	14.4
1963	1.3	0.4	2.2	3.1	2.7	4.1	0.0	0.0	0.0	0.0	0.0	0.0	13.8
1964	1.5	3.8	0.5	3.5	0.4	2.2	0.2	0.9	0.2	0.1	0.4	0.0	13.7
1965	0.8	3.3	6.5	2.6	1.1	2.4	2.3	0.2	0.2	0.1	0.2	0.0	19.4
1966	0.2	6.5	5.6	2.3	1.9	0.4	0.3	0.1	0.1	0.3	0.1	0.3	18.1
1967	0.1	4.7	4.2	5.3	0.5	5.5	7.1	0.4	1.6	0.0	0.1	0.2	29.6
1968	0.4	1.6	2.3	3.1	1.4	3.1	0.8	0.3	0.0	0.1	0.2	0.1	13.3
1969	0.3	3.1	3.3	9.5	7.3	1.3	2.7	0.1	0.4	0.0	0.0	0.1	28.2
1970	0.5	0.7	3.1	5.9	2.0	3.0	0.4	0.1	0.3	0.0	0.1	0.0	16.0
1971	0.6	6.2	5.0	1.1	0.6	2.0	1.2	0.7	0.0	0.1	0.1	0.4	18.0
1972	0.1	2.0	4.8	1.2	1.1	0.0	0.9	0.1	0.2	0.1	0.0	0.1	10.5
1973	2.5	6.0	2.1	6.1	5.9	4.5	0.1	0.1	0.0	0.0	0.1	0.3	27.6
1974	2.2	3.9	4.7	3.7	0.9	4.5	3.4	0.0	0.4	0.3	0.0	0.0	24.0
1975	1.5	0.6	2.5	1.3	3.6	4.1	1.8	0.0	0.2	0.2	0.4	0.0	16.2
1976	1.7	0.5	0.4	0.2	3.0	1.5	1.7	0.1	0.2	0.0	1.0	0.4	10.7
1977	0.6	0.7	2.1	1.7	0.8	1.8	0.0	1.2	0.1	0.0	0.0	0.7	9.8
1978	0.1	0.5	5.9	6.8	4.8	5.2	5.4	0.0	0.1	0.0	0.0	0.3	29.2
1979	0.0	2.1	1.6	4.8	4.5	4.4	0.6	0.3	0.0	0.4	0.1	0.0	18.8
1980	1.8	2.9	3.2	4.8	4.8	2.4	1.8	0.6	0.0	0.7	0.1	0.1	23.1
1981	0.1	0.1	1.7	6.6	2.1	4.0	1.0	0.2	0.0	0.0	0.2	0.1	16.0
1982	2.1	5.7	1.7	4.7	2.4	8.0	3.1	0.1	0.5	0.1	0.1	1.5	29.9
1983	2.3	6.2	3.6	6.9	5.6	9.6	4.4	0.3	0.2	0.0	0.0	1.2	40.3
1984	0.5	5.3	3.7	0.1	2.4	1.2	0.8	0.2	0.2	0.0	0.0	0.0	14.5
1985	2.1	4.8	2.0	1.1	1.4	3.9	0.8	0.3	0.3	0.1	0.0	0.2	16.9
1986	1.6	4.4	1.5	2.1	4.5	5.1	0.4	0.4	0.1	0.0	0.1	0.9	21.2
1987	0.1	0.3	1.7	3.4	3.0	2.8	0.5	0.1	0.0	0.1	0.0	0.0	12.1
1988	1.1	1.8	3.2	2.2	0.7	0.1	1.9	0.6	0.3	0.0	0.0	0.0	12.1
1989	0.2	2.7	3.4	1.6	2.2	2.9	1.0	0.3	0.0	0.0	0.0	1.0	15.3
1990	1.7	1.4	0.2	3.5	2.9	1.6	0.9	1.8	0.0	0.0	0.1	0.1	14.1
1991	0.1	0.5	1.7	0.7	2.3	7.5	0.5	0.2	0.0	0.1	0.3	0.0	13.9
1992	1.3	0.1	3.5	2.2	6.3	4.0	0.0	0.0	0.2	0.0	0.1	0.1	17.8
1993	0.7	0.2	6.3	9.7	7.6	3.1	0.9	0.8	0.8	0.0	0.0	0.0	30.1
1994	0.2	1.8	2.2	3.0	4.0	0.5	1.4	0.8	0.0	0.0	0.1	0.1	14.0
1995	0.3	2.8	2.4	10.6	0.7	7.3	2.2	0.6	1.4	0.0	0.0	0.0	28.4
1996	0.0	0.2	2.3	5.0	8.1	2.9	0.9	1.3	0.0	0.1	0.0	0.0	21.0
1997	1.1	2.6	8.0	8.8	0.2	0.2	0.4	0.1	0.1	0.0	0.2	0.0	21.7
1998	0.6	7.5	3.6	10.4	14.3	4.2	3.4	2.7	0.3	0.3	0.0	0.2	47.4
1999	0.6	2.5	1.2	2.7	3.1	3.4	2.2	0.0	0.2	0.0	0.0	0.4	16.3
2000	0.1	1.0	0.2	5.3	5.8	2.4	0.7	0.4	0.0	0.0	0.0	0.2	16.2
2001	3.9	0.0	0.2	3.6	3.7	1.7	1.8	0.0	0.1	0.0	0.0	0.1	15.0
2002	0.2	2.3	4.8	1.1	1.0	1.0	0.4	0.7	0.0	0.0	0.0	0.0	11.4
2003	0.0	1.9	6.2	1.0	1.9	1.0	2.1	0.8	0.0	0.0	0.1	0.0	15.0
2004	0.4	1.7	5.3	1.3	4.1	0.5	0.0	0.0	0.1	0.0	0.0	0.1	13.5
2005	3.3	1.0	4.9	4.4	4.2	4.2	1.6	0.8	0.3	0.0	0.0	0.0	24.7
2006	0.1	1.1	3.6	3.2	0.9	7.1	2.8	0.6	0.0	0.0	0.0	0.0	19.5
2007	0.1	1.3	2.3	1.1	3.1	0.5	1.0	0.2	0.1	0.0	0.0	0.4	10.2
2008	1.1	0.5	1.1	6.3	2.6	0.5	0.2	0.0	0.0	0.0	0.0	0.0	12.4
2009	0.2	1.3	2.7	2.2	5.0	2.3	0.3	0.2	0.0	0.0	0.1	0.1	14.5
2010	2.4	0.3	2.2	5.9	2.9	3.2	3.0	0.6	0.0	0.0	0.2	0.1	20.6
2011	0.9	2.2	4.0	2.0	4.5	4.8	0.2	0.9	0.8	0.0	0.1	0.0	20.4
2012	1.9	1.4	0.2	1.3	0.7	3.5	2.2	0.1	0.3	0.0	0.0	0.0	11.8
2013	0.6	3.5	3.9	0.9	0.8	1.1	0.3	0.0	0.1	0.0	0.1	0.0	11.2
2014	0.5	0.4	0.3	0.1	3.7	2.3	1.1	0.1	0.0	0.0	0.0	0.3	8.8
2015	1.6	1.3	8.9	0.0	1.3	0.3	0.9	0.3	0.0	0.1	0.0	0.1	14.8
2016	0.1	3.9	3.6	6.5	1.4	5.4	0.6	0.3	0.0	0.0	0.0	0.0	21.7
2017	2.8	1.5	1.6	8.3	6.6	2.5	1.3	0.0	0.1	0.0	0.0	0.0	24.6
2018	0.2	1.8	0.0	4.6	0.4	5.1	2.5	0.1	0.0	0.0	0.0	0.0	14.6
2019	0.2	2.9	0.0	3.5	7.9	3.3	0.4	2.5	0.0	0.0	0.0	0.1	20.7
2020	0.0	2.3	6.4	1.2	0.0	6.1	2.3	0.4	0.0	0.0	0.0	0.0	18.7
2021	0.0	0.5	0.8	4.4	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	7.6
2022	2.3	0.5	6.2	0.0	0.2	0.9	0.6	0.0	0.0	0.0	0.1	1.1	11.8
2023	0.0	2.0	7.2	4.9	3.3	5.6	0.1	0.6	0.2	0.0	0.0	0.1	23.9
2024	0.1	0.5	3.8	3.6	3.1								11.1
Average	0.8	2.1	3.1	3.8	3.1	3.0	1.4	0.5	0.2	0.1	0.1	0.2	18.4
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6
Maximum	3.9	7.5	9.8	10.6	14.3	9.6	7.1	2.7	1.6	0.7	1.0	3.1	47.4

Statistics for period 1991-2020 (30-Year Climate)

Average	0.8	1.7	3.1	3.9	3.6	3.1	1.3	0.5	0.2	0.0	0.0	0.1	18.4
Minimum	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	8.8
Maximum	3.9	7.5	8.9	10.6	14.3	7.5	3.4	2.7	1.4	0.3	0.3	0.4	47.4

Data from 1951-10-01 to 1998-09-30 is from gage USC00045795 Monterey, CA

Data from 1998-10-01 to 2013-09-30 is from gage USC00045802 Monterey WFO

Data from 2013-10-01 to 2024-2-14 is from gage USW00023259 Monterey Peninsula Airport, CA

Table B-3: El Estero Watershed Areas and Curve Numbers

Determination of available surface water for non-potable water supply

	Land Use	Soil Group	Curve Number (AMC II)	Area (acres)	Percent Impervious	Impervious Area (acres)	Pervious Area (acres)
1	LD	A	34	22	15%	3.3	18.7
2	UHD	A	34	31	90%	28.1	3.1
3	DV	B	43	275	0%	0.0	274.6
4	MD	B	48	186	30%	55.9	130.5
5	HD	B	48	68	50%	34.0	34.0
6	LD	B	48	10	15%	1.5	8.6
7	UHD	B	48	60	90%	53.7	6.0
8	DV	C	60	1466	0%	0.0	1465.6
9	HD	C	65	31	50%	15.6	15.6
10	LD	C	65	2	15%	0.3	1.6
11	UHD	C	65	27	90%	24.0	2.7
12	DV	D	66	18	0%	0.0	18.4
13	HD	D	70	31	50%	15.6	15.6
14	LD	D	70	3	15%	0.4	2.3
15	UHD	D	70	169	90%	152.1	16.9
16	Lake	n\a	100	19	100%	19.3	0.0
				2418		**404**	**2014**

	Curve Number (AMC II)	Area (acres)	Curve Number (AMC I)	Curve Number (AMC III)
Pervious Area				
	34	21.9	18	54
	43	274.6	25	63
	48	179.0	29	68
	60	1465.6	40	78
	65	19.8	45	82
	66	18.4	46	82
	70	34.8	51	85
		2014		
Impervious Area				
	98	404	94	99

Scrub runoff curve numbers used for dense vegetation
Irrigated pasture runoff curve numbers used for pervious areas of all other land use

Curve numbers come from NRCS Pub TR-55
AMC values come from NRCS Pub NEH-4 (National Engineering Handbook, Part 630, Chapter 10)

Lake El Estero Diversion

Table B-4: Estimated Runoff into Lake El Estero (acre-feet)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1952	8	47	134	248	21	56	10	-	-	-	-	-	525
1953	-	30	86	15	-	10	14	-	-	-	-	-	155
1954	1	32	4	62	29	69	7	3	0	-	-	-	208
1955	-	14	41	92	17	-	7	3	-	-	-	-	174
1956	-	26	215	92	31	-	19	3	-	-	-	1	387
1957	3	-	6	58	36	7	12	31	-	-	-	0	153
1958	14	4	55	66	80	106	142	5	0	-	-	1	473
1959	-	1	2	111	110	0	1	-	-	-	-	72	298
1960	-	-	1	54	67	1	4	0	-	-	-	-	126
1961	-	21	5	14	8	26	14	1	-	-	-	-	88
1962	-	10	9	40	71	36	0	-	0	-	1	-	168
1963	21	1	33	57	49	68	-	-	-	-	-	-	228
1964	18	38	2	55	2	15	-	1	-	-	1	-	131
1965	4	40	154	24	7	25	18	-	-	-	-	-	272
1966	0	116	110	37	13	1	0	-	-	1	-	1	278
1967	-	52	127	112	1	118	114	1	16	-	-	-	541
1968	2	11	17	31	7	34	11	-	-	-	0	-	112
1969	0	34	20	269	128	10	34	-	0	-	-	-	496
1970	3	7	39	118	19	88	0	-	0	-	-	-	274
1971	1	199	67	4	1	23	6	1	-	-	-	3	305
1972	-	21	63	9	5	-	1	-	0	-	-	-	98
1973	30	136	8	75	89	43	-	-	-	-	-	0	381
1974	30	33	82	61	2	65	91	-	1	0	-	-	366
1975	16	2	24	9	31	36	6	-	-	-	3	-	127
1976	20	0	0	-	30	18	19	-	0	-	4	1	93
1977	7	4	44	39	4	19	-	4	-	-	-	4	125
1978	-	2	104	171	115	65	72	-	-	-	-	0	530
1979	-	26	13	58	39	53	1	0	-	2	-	-	193
1980	20	31	43	58	81	19	10	1	-	9	-	-	272
1981	-	-	19	153	12	36	8	-	-	-	-	-	228
1982	30	97	10	64	29	123	63	-	2	-	-	15	432
1983	35	125	68	190	60	246	69	0	-	-	-	19	814
1984	1	81	31	-	18	5	1	1	-	-	-	-	137
1985	30	57	15	4	22	35	5	0	1	-	-	0	168
1986	27	84	10	12	82	117	0	1	-	-	-	7	340
1987	-	0	9	30	46	25	3	-	-	-	-	-	114
1988	11	18	21	19	2	0	13	0	-	-	-	-	83
1989	-	29	40	13	31	21	5	0	-	-	-	7	145
1990	25	20	0	50	36	6	12	17	-	-	-	-	166
1991	0	5	11	4	23	128	0	-	-	-	-	-	172
1992	16	-	59	35	167	62	-	-	-	-	-	-	339
1993	3	0	115	273	172	37	6	1	3	-	-	-	611
1994	-	17	42	54	63	0	6	5	-	-	-	-	186
1995	1	13	17	220	2	118	13	2	17	-	-	-	403
1996	-	0	16	67	253	39	5	16	-	-	-	-	396
1997	5	49	165	202	-	-	1	-	-	-	0	-	423
1998	2	146	56	260	653	44	52	19	-	-	-	-	1,232
1999	7	23	4	20	37	16	24	-	-	-	-	2	133
2000	-	5	-	122	74	43	2	1	-	-	-	0	247
2001	53	-	-	38	43	11	12	-	-	-	-	-	158
2002	0	22	57	13	5	5	0	4	-	-	-	-	107
2003	-	30	116	6	16	7	5	1	-	-	-	-	181
2004	2	9	84	29	35	2	-	-	-	-	-	-	162
2005	52	4	112	80	55	52	6	2	0	-	-	-	363
2006	-	3	33	47	1	71	35	7	-	-	-	-	197
2007	-	5	20	4	26	2	5	-	-	-	-	1	63
2008	8	1	3	112	17	3	0	-	-	-	-	-	144
2009	0	6	22	28	57	22	0	0	-	-	-	0	135
2010	59	0	14	117	16	44	32	1	-	-	-	-	283
2011	2	16	33	27	88	99	-	2	4	-	-	-	271
2012	21	5	0	10	1	41	21	-	1	-	-	-	100
2013	1	48	58	2	5	3	-	-	-	-	-	-	117
2014	3	2	1	-	54	38	5	-	-	-	-	1	104
2015	27	10	311	-	4	0	5	0	-	-	-	-	357
2016	-	60	29	102	17	105	2	0	-	-	-	-	315
2017	40	7	9	169	114	19	4	-	-	-	-	-	361
2018	0	14	-	87	1	54	27	-	-	-	-	-	183
2019	0	42	-	32	169	17	0	22	-	-	-	-	281
2020	-	34	249	11	-	110	44	1	-	-	-	-	449
2021	-	0	2	89	1	6	-	-	-	-	-	-	98
2022	35	2	119	-	0	5	1	-	-	-	-	18	180
2023	-	27	134	73	42	63	-	1	0	-	-	-	339
2024	-	3	40	30	71	-	-	-	-	-	-	-	144
Average	9	28	50	68	51	40	15	2	1	0	0	2	266
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	63
Maximum	59	199	311	273	653	246	142	31	17	9	4	72	1,232

Statistics for period 1991-2020 (30-Year Climate)

Average	10	19	54	72	72	40	10	3	1	-	0	0	282
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	63
Maximum	59	146	311	273	653	128	52	22	17	-	0	2	1,232

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
9/14/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/15/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/16/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/17/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/18/2022	1.04	209.54	0.08	1.44	18.06	16.62		-0.06	-1.08
9/19/2022	0.02	4.03	1.37	24.66	0.00	-24.66		-0.36	-6.48
9/20/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/21/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/22/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/23/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/24/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
9/25/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/26/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/27/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/28/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
9/29/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/30/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/1/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/2/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/3/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/4/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/5/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/6/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/7/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/8/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/9/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/10/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/11/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/12/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/13/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/14/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/15/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/16/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/17/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/18/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/19/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/20/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/21/2022	0	0.00	0.03	0.54	0.00	-0.54		-0.03	-0.54
10/22/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/23/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/24/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/25/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/26/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/27/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/28/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/29/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/30/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/31/2022	0	0.00	0	0.00	0.00	0.00		-0.67	-12.06
11/1/2022	0.11	22.16	0.09	1.62	0.00	-1.62		0.00	0.00
11/2/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/3/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/4/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
11/5/2022	0	0.00	0.04	0.72	0.00	-0.72		-0.04	-0.72
11/6/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
11/7/2022	0.71	143.05	0.29	5.22	9.35	4.13		0.00	0.00
11/8/2022	0.94	189.39	0.74	13.32	15.31	1.99		-0.97	-17.46
11/9/2022	0.25	50.37	0.36	6.48	2.26	-4.22		0.00	0.00
11/10/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/11/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/12/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
11/13/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/14/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/15/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/16/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/17/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/18/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/19/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/20/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/21/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/22/2022	0	0.00	0	0.00	0.00	0.00		-0.74	-13.32
11/23/2022	0	0.00	0.05	0.90	0.00	-0.90		0.00	0.00
11/24/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/25/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
11/26/2022	0	0.00	0.05	0.90	0.00	-0.90		0.00	0.00
11/27/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
11/28/2022	0	0.00	0.05	0.90	0.00	-0.90		0.00	0.00
11/29/2022	0	0.00	0.09	1.62	0.00	-1.62		-0.05	-0.90
11/30/2022	0	0.00	0.04	0.72	0.00	-0.72		-0.04	-0.72
12/1/2022	0.36	72.53	0.26	4.68	2.09	-2.59		0.00	0.00
12/2/2022	0	0.00	0	0.00	0.00	0.00		-0.85	-15.30
12/3/2022	1.08	217.60	1.18	21.24	19.18	-2.06		0.00	0.00
12/4/2022	0	0.00	0.39	7.02	0.00	-7.02		-0.96	-17.28
12/5/2022	0	0.00	0	0.00	0.00	0.00		-0.66	-11.88
12/6/2022	0.13	26.19	0.24	4.32	0.01	-4.31		-0.03	-0.54
12/7/2022	0	0.00	0.06	1.08	0.00	-1.08		-0.03	-0.54
12/8/2022	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
12/9/2022	0.08	16.12	0	0.00	0.00	0.00		-0.70	-12.60
12/10/2022	1.38	278.05	0.67	12.06	27.91	15.85		0.00	0.00
12/11/2022	1.72	346.55	1.76	31.68	44.52	12.84		-1.43	-25.74
12/12/2022	0.04	8.06	0.84	15.12	0.11	-15.01		-0.53	-9.54
12/13/2022	0	0.00	0.13	2.34	0.00	-2.34		0.00	0.00
12/14/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/15/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/16/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/17/2022	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/18/2022	0	0.00	0.04	0.72	0.00	-0.72		-0.86	-15.48
12/19/2022	0	0.00	0.38	6.84	0.00	-6.84		-0.32	-5.76
12/20/2022	0	0.00	0.38	6.84	0.00	-6.84		-0.37	-6.66
12/21/2022	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/22/2022	0	0.00	0.06	1.08	0.00	-1.08		-1.11	-19.98
12/23/2022	0	0.00	0.64	11.52	0.00	-11.52		-0.60	-10.80
12/24/2022	0	0.00	0.38	6.84	0.00	-6.84		-0.04	-0.72
12/25/2022	0	0.00	0.07	1.26	0.00	-1.26		-0.03	-0.54
12/26/2022	0.02	4.03	0	0.00	0.00	0.00		0.00	0.00
12/27/2022	1.11	223.65	0.82	14.76	20.03	5.27		-1.22	-21.96
12/28/2022	0	0.00	0.21	3.78	0.00	-3.78		0.00	0.00
12/29/2022	0.16	32.24	0.22	3.96	0.05	-3.91		0.00	0.00
12/30/2022	0.03	6.04	0.14	2.52	0.00	-2.52		-0.75	-13.50

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
12/31/2022	1.11	223.65	0.82	14.76	20.03	5.27		-0.63	-11.34
1/1/2023	0	0.00	0.68	12.24	0.00	-12.24		0.00	0.00
1/2/2023	0.01	2.01	0.28	5.04	0.00	-5.04		-1.63	-29.34
1/3/2023	0	0.00	0.2	3.60	0.00	-3.60		0.00	0.00
1/4/2023	0.45	90.67	0.6	10.80	3.64	-7.16		0.00	0.00
1/5/2023	0.47	94.70	0.95	17.10	6.18	-10.92		-0.70	-12.60
1/6/2023	0	0.00	0.24	4.32	0.00	-4.32		-1.17	-21.06
1/7/2023	0.43	86.64	0.65	11.70	3.27	-8.43		0.00	0.00
1/8/2023	0.13	26.19	0.63	11.34	0.00	-11.34		-1.49	-26.82
1/9/2023	1.26	253.87	1.85	33.30	26.48	-6.82		-0.87	-15.66
1/10/2023	0.39	78.58	1.34	24.12	9.78	-14.34		-1.87	-33.66
1/11/2023	0.12	24.18	0.95	17.10	1.67	-15.43		0.00	0.00
1/12/2023	0	0.00	0.45	8.10	0.00	-8.10		-1.60	-28.80
1/13/2023	0.1	20.15	0.62	11.16	0.68	-10.48		0.00	0.00
1/14/2023	0.69	139.02	0.91	16.38	17.57	1.19		-1.10	-19.80
1/15/2023	0.16	32.24	0.83	14.94	0.05	-14.89		-1.48	-26.64
1/16/2023	0.42	84.62	1.02	18.36	3.09	-15.27		-0.68	-12.24
1/17/2023	0	0.00	0.83	14.94	0.00	-14.94		0.00	0.00
1/18/2023	0	0.00	0.51	9.18	0.00	-9.18		0.00	0.00
1/19/2023	0.17	34.25	0.56	10.08	0.09	-9.99		-0.92	-16.56
1/20/2023	0	0.00	0.32	5.76	0.00	-5.76		0.00	0.00
1/21/2023	0	0.00	0.19	3.42	0.00	-3.42		0.00	0.00
1/22/2023	0	0.00	0.21	3.78	0.00	-3.78		-1.05	-18.90
1/23/2023	0	0.00	0.17	3.06	0.00	-3.06		-0.72	-12.96
1/24/2023	0	0.00	0.09	1.62	0.00	-1.62		0.00	0.00
1/25/2023	0	0.00	0.06	1.08	0.00	-1.08		0.00	0.00
1/26/2023	0	0.00	0.12	2.16	0.00	-2.16		0.00	0.00
1/27/2023	0	0.00	0.06	1.08	0.00	-1.08		-0.51	-9.18
1/28/2023	0	0.00	0.08	1.44	0.00	-1.44		0.00	0.00
1/29/2023	0.08	16.12	0	0.00	0.00	0.00		0.00	0.00
1/30/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
1/31/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/1/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
2/2/2023	0	0.00	0.03	0.54	0.00	-0.54		-0.84	-15.12
2/3/2023	0.09	18.13	0.05	0.90	0.00	-0.90		0.00	0.00
2/4/2023	0.16	32.24	0.09	1.62	0.05	-1.57		0.00	0.00
2/5/2023	0.04	8.06	0.1	1.80	0.00	-1.80		0.00	0.00
2/6/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/8/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
2/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/10/2023	0	0.00	0	0.00	0.00	0.00		-0.54	-9.72
2/11/2023	0.36	72.53	0.25	4.50	2.09	-2.41		0.00	0.00
2/12/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/13/2023	0	0.00	0	0.00	0.00	0.00		-0.06	-1.08
2/14/2023	0	0.00	0.11	1.98	0.00	-1.98		-0.20	-3.60
2/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/18/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
2/21/2023	0.01	2.01	0	0.00	0.00	0.00		-1.24	-22.32
2/22/2023	0.05	10.07	0.04	0.72	0.00	-0.72		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
2/23/2023	0.15	30.22	0.06	1.08	0.03	-1.05		0.00	0.00
2/24/2023	0.95	191.41	0.94	16.92	15.58	-1.34		-1.03	-18.54
2/25/2023	0	0.00	0.16	2.88	0.00	-2.88		0.00	0.00
2/26/2023	0.16	32.24	0.03	0.54	0.05	-0.49		0.00	0.00
2/27/2023	0.52	104.77	0.73	13.14	5.03	-8.11		-1.17	-21.06
2/28/2023	0.77	155.14	0.99	17.82	19.41	1.59		-0.39	-7.02
3/1/2023	0	0.00	1.3	23.40	0.00	-23.40		-1.70	-30.60
3/2/2023	0	0.00	0.49	8.82	0.00	-8.82		0.00	0.00
3/3/2023	0	0.00	0.31	5.58	0.00	-5.58		-0.95	-17.10
3/4/2023	0.32	64.47	0.7	12.60	1.50	-11.10		0.00	0.00
3/5/2023	0.33	66.49	0.76	13.68	1.64	-12.04		0.00	0.00
3/6/2023	0	0.00	0.25	4.50	0.00	-4.50		-1.31	-23.58
3/7/2023	0.07	14.10	0.27	4.86	0.00	-4.86		0.00	0.00
3/8/2023	0.34	68.50	0.38	6.84	1.78	-5.06		-1.28	-23.04
3/9/2023	0.23	46.34	0.54	9.72	0.48	-9.24		0.00	0.00
3/10/2023	1.29	259.91	1.75	31.50	25.25	-6.25		-1.97	-35.46
3/11/2023	0.02	4.03	0.84	15.12	0.00	-15.12		-0.04	-0.72
3/12/2023	0	0.00	0.74	13.32	0.00	-13.32		-1.45	-26.10
3/13/2023	0	0.00	0.59	10.62	0.00	-10.62		-0.64	-11.52
3/14/2023	0.59	118.88	0.71	12.78	8.71	-4.07		-0.54	-9.72
3/15/2023	0	0.00	0.74	13.32	0.00	-13.32		-0.53	-9.54
3/16/2023	0	0.00	0.49	8.82	0.00	-8.82		0.00	0.00
3/17/2023	0	0.00	0.33	5.94	0.00	-5.94		-1.50	-27.00
3/18/2023	0	0.00	0.38	6.84	0.00	-6.84		0.00	0.00
3/19/2023	0.43	86.64	0.81	14.58	3.27	-11.31		0.00	0.00
3/20/2023	0.02	4.03	0.34	6.12	0.00	-6.12		-0.91	-16.38
3/21/2023	0.49	98.73	0.5	9.00	4.41	-4.59		-0.43	-7.74
3/22/2023	0.81	163.20	1	18.00	11.86	-6.14		-0.85	-15.30
3/23/2023	0	0.00	0.71	12.78	0.00	-12.78		-0.94	-16.92
3/24/2023	0	0.00	0.64	11.52	0.00	-11.52		0.00	0.00
3/25/2023	0	0.00	0.38	6.84	0.00	-6.84		-1.22	-21.96
3/26/2023	0	0.00	0.4	7.20	0.00	-7.20		0.00	0.00
3/27/2023	0	0.00	0.29	5.22	0.00	-5.22		-0.80	-14.40
3/28/2023	0.44	88.65	0.8	14.40	3.45	-10.95		0.00	0.00
3/29/2023	0.23	46.34	0.76	13.68	0.48	-13.20		-1.17	-21.06
3/30/2023	0	0.00	0.47	8.46	0.00	-8.46		0.00	0.00
3/31/2023	0	0.00	0.26	4.68	0.00	-4.68		-0.92	-16.56
4/1/2023	0	0.00	0.28	5.04	0.00	-5.04		0.00	0.00
4/2/2023	0.04	8.06	0.26	4.68	0.00	-4.68		0.00	0.00
4/3/2023	0	0.00	0.18	3.24	0.00	-3.24		-0.97	-17.46
4/4/2023	0	0.00	0.13	2.34	0.00	-2.34		0.00	0.00
4/5/2023	0	0.00	0.12	2.16	0.00	-2.16		0.00	0.00
4/6/2023	0	0.00	0.07	1.26	0.00	-1.26		0.00	0.00
4/7/2023	0.03	6.04	0.06	1.08	0.00	-1.08		-0.50	-9.00
4/8/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/10/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
4/11/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/12/2023	0	0.00	0.05	0.90	0.00	-0.90		0.00	0.00
4/13/2023	0	0.00	0.09	1.62	0.00	-1.62		-0.60	-10.80
4/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/16/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
4/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
4/18/2023	0.03	6.04	0.03	0.54	0.00	-0.54		0.00	0.00
4/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/20/2023	0	0.00	0	0.00	0.00	0.00		-0.95	-17.10
4/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/22/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/23/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
4/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/28/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/29/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
4/30/2023	0	0.00	0.06	1.08	0.00	-1.08		-0.04	-0.72
5/1/2023	0.21	42.31	0	0.00	0.32	0.32		-0.73	-13.14
5/2/2023	0.09	18.13	0.14	2.52	0.00	-2.52		0.00	0.00
5/3/2023	0.23	46.34	0.19	3.42	0.48	-2.94		0.00	0.00
5/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/5/2023	0.03	6.04	0.03	0.54	0.00	-0.54		-0.38	-6.84
5/6/2023	0	0.00	0.12	2.16	0.00	-2.16		0.00	0.00
5/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/8/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/10/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/11/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/12/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/13/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/15/2023	0	0.00	0	0.00	0.00	0.00		-0.50	-9.00
5/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/18/2023	0	0.00	0.04	0.72	0.00	-0.72		-0.03	-0.54
5/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/22/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/23/2023	0	0.00	0.07	1.26	0.00	-1.26		-0.07	-1.26
5/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/28/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
5/29/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/30/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
5/31/2023	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
6/1/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/2/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/3/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/5/2023	0	0.00	0	0.00	0.00	0.00		-0.57	-10.26
6/6/2023	0.15	30.22	0.08	1.44	0.03	-1.41		0.00	0.00
6/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/8/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/10/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
6/11/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
6/12/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
6/13/2023	0	0.00	0.03	0.54	0.00	-0.54		-0.03	-0.54
6/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/18/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/21/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
6/22/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
6/23/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/28/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/29/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
6/30/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/1/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/2/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/3/2023	0	0.00	0	0.00	0.00	0.00		-0.30	-5.40
7/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/5/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/6/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/8/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/10/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/11/2023	0	0.00	0	0.00	0.00	0.00		-0.14	-2.52
7/12/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/13/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/14/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
7/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/18/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/22/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/23/2023	0	0.00	0	0.00	0.00	0.00		-0.03	-0.54
7/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/28/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/29/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/30/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
7/31/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/1/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/2/2023	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
8/3/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
8/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/5/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/6/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/8/2023	0	0.00	0.08	1.44	0.00	-1.44		-0.06	-1.08
8/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/10/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/11/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/12/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/13/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/18/2023	0	0.00	0	0.00	0.00	0.00		-0.27	-4.86
8/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/22/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/23/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/28/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/29/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/30/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
8/31/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/1/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/2/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/3/2023	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
9/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/5/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/6/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/8/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/9/2023	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
9/10/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/11/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/12/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/13/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/18/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/20/2023	0	0.00	0.05	0.90	0.00	-0.90		-0.03	-0.54
9/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/22/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/23/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
9/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/25/2023	0	0.00	0	0.00	0.00	0.00		-0.23	-4.14
9/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
9/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/28/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
9/29/2023	0	0.00	0.04	0.72	0.00	-0.72		-0.03	-0.54
9/30/2023	0.04	8.06	0	0.00	0.00	0.00		0.00	0.00
10/1/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/2/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/3/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/5/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/6/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/7/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/8/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/10/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/11/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/12/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/13/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/15/2023	0	0.00	0.06	1.08	0.00	-1.08		0.00	0.00
10/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/17/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/18/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/19/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/21/2023	0	0.00	0.05	0.90	0.00	-0.90		-0.03	-0.54
10/22/2023	0.04	8.06	0.06	1.08	0.00	-1.08		0.00	0.00
10/23/2023	0.05	10.07	0.03	0.54	0.00	-0.54		0.00	0.00
10/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/25/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
10/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
10/27/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/28/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/29/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/30/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
10/31/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/1/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/2/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/3/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/4/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/5/2023	0.03	6.04	0	0.00	0.00	0.00		0.00	0.00
11/6/2023	0.02	4.03	0	0.00	0.00	0.00		-0.60	-10.80
11/7/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/8/2023	0	0.00	0.03	0.54	0.00	-0.54		-0.03	-0.54
11/9/2023	0	0.00	0	0.00	0.00	0.00		-0.03	-0.54
11/10/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/11/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
11/12/2023	0	0.00	0	0.00	0.00	0.00		-0.03	-0.54
11/13/2023	0	0.00	0	0.00	0.00	0.00		-0.04	-0.72
11/14/2023	0	0.00	0.04	0.72	0.00	-0.72		-0.03	-0.54
11/15/2023	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
11/16/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/17/2023	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
11/18/2023	0.43	86.64	0.31	5.58	3.27	-2.31		0.00	0.00
11/19/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
11/20/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/22/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/23/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/24/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/27/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
11/28/2023	0	0.00	0.03	0.54	0.00	-0.54		-0.62	-11.16
11/29/2023	0.01	2.01	0.05	0.90	0.00	-0.90		-0.03	-0.54
11/30/2023	0	0.00	0.05	0.90	0.00	-0.90		-0.03	-0.54
12/1/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
12/2/2023	0	0.00	0.03	0.54	0.00	-0.54		-0.03	-0.54
12/3/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/4/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/5/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/6/2023	0.04	8.06	0	0.00	0.00	0.00		0.00	0.00
12/7/2023	0.16	32.24	0.04	0.72	0.05	-0.67		0.00	0.00
12/8/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/9/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/10/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/11/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/12/2023	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
12/13/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/14/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/15/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/16/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/17/2023	0.18	36.27	0.11	1.98	0.13	-1.85		0.00	0.00
12/18/2023	0.37	74.55	0.22	3.96	2.24	-1.72		-0.92	-16.56
12/19/2023	0.35	70.52	0.42	7.56	1.93	-5.63		0.00	0.00
12/20/2023	0.79	159.17	0.13	2.34	11.35	9.01		-0.56	-10.08
12/21/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/22/2023	0	0.00	0.05	0.90	0.00	-0.90		0.00	0.00
12/23/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/24/2023	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
12/25/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/26/2023	0	0.00	0	0.00	0.00	0.00		0.00	0.00
12/27/2023	0.55	110.82	0	0.00	5.66	5.66		-0.71	-12.78
12/28/2023	0	0.00	0.19	3.42	0.00	-3.42		0.00	0.00
12/29/2023	0.91	183.35	0.64	11.52	14.50	2.98		0.00	0.00
12/30/2023	0.44	88.65	0.93	16.74	4.07	-12.67		-1.31	-23.58
12/31/2023	0.02	4.03	0.13	2.34	0.00	-2.34		0.00	0.00
1/1/2024	0	0.00	0.06	1.08	0.00	-1.08		0.00	0.00
1/2/2024	0.41	82.61	0.16	2.88	2.91	0.03		-0.58	-10.44
1/3/2024	0.1	20.15	0.48	8.64	0.49	-8.15		-0.44	-7.92
1/4/2024	0	0.00	0.06	1.08	0.00	-1.08		0.00	0.00
1/5/2024	0	0.00	0.05	0.90	0.00	-0.90		0.00	0.00
1/6/2024	0.36	72.53	0.35	6.30	2.09	-4.21		0.00	0.00
1/7/2024	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
1/8/2024	0	0.00	0.06	1.08	0.00	-1.08		-0.98	-17.64
1/9/2024	0	0.00	0	0.00	0.00	0.00		0.00	0.00
1/10/2024	0.18	36.27	0.12	2.16	0.13	-2.03		0.00	0.00
1/11/2024	0	0.00	0.09	1.62	0.00	-1.62		0.00	0.00
1/12/2024	0	0.00	0	0.00	0.00	0.00		0.00	0.00

	PRECIP		INFLOW		MODELED	DIFF.		OUTFLOW	
DATE	(IN)	(AC-FT)	(FT)	(AC-FT)	(AC-FT)	(AC-FT)		(FT)	(AC-FT)
1/13/2024	0.01	2.01	0	0.00	0.00	0.00		0.00	0.00
1/14/2024	0.03	6.04	0.11	1.98	0.00	-1.98		0.00	0.00
1/15/2024	0	0.00	0	0.00	0.00	0.00		0.00	0.00
1/16/2024	0.18	36.27	0	0.00	0.13	0.13		0.00	0.00
1/17/2024	0.02	4.03	0.25	4.50	0.00	-4.50		-1.27	-22.86
1/18/2024	0	0.00	0.04	0.72	0.00	-0.72		0.00	0.00
1/19/2024	0.03	6.04	0	0.00	0.00	0.00		0.00	0.00
1/20/2024	0.23	46.34	0.14	2.52	0.48	-2.04		0.00	0.00
1/21/2024	0.18	36.27	0.18	3.24	0.13	-3.11		0.00	0.00
1/22/2024	0.28	56.42	0.57	10.26	0.99	-9.27		-0.85	-15.30
1/23/2024	0.02	4.03	0.05	0.90	0.00	-0.90		0.00	0.00
1/24/2024	0.44	88.65	0.48	8.64	3.45	-5.19		0.00	0.00
1/25/2024	0.02	4.03	0.1	1.80	0.00	-1.80		-0.82	-14.76
1/26/2024	0	0.00	0	0.00	0.00	0.00		0.00	0.00
1/27/2024	0	0.00	0.06	1.08	0.00	-1.08		-0.03	-0.54
1/28/2024	0	0.00	0.05	0.90	0.00	-0.90		-0.04	-0.72
1/29/2024	0	0.00	0.03	0.54	0.00	-0.54		0.00	0.00
1/30/2024	0	0.00	0	0.00	0.00	0.00		0.00	0.00
1/31/2024	1.09	219.62	0.1	1.80	19.47	17.67		-0.87	-15.66
2/1/2024	0.32	64.47	1.76	31.68	1.50	-30.18		-1.68	-30.24
2/2/2024	0.38	76.56	0.78	14.04	2.48	-11.56		-0.84	-15.12
2/3/2024	0.4	80.59	0.38	6.84	7.94	1.10		0.00	0.00
2/4/2024	0.95	191.41	1.33	23.94	34.64	10.70		-1.37	-24.66
2/5/2024	0.4	80.59	1.89	34.02	10.10	-23.92		-2.04	-36.72
2/6/2024	0	0.00	0.6	10.80	0.00	-10.80		-0.85	-15.30
2/7/2024	0.52	104.77	0.88	15.84	14.04	-1.80		-0.16	-2.88
2/8/2024	0.04	8.06	0.54	9.72	0.11	-9.61		-1.07	-19.26
2/9/2024	0	0.00	0.46	8.28	0.00	-8.28		0.00	0.00
2/10/2024	0	0.00	0.31	5.58	0.00	-5.58		0.00	0.00
2/11/2024	0	0.00	0.17	3.06	0.00	-3.06		0.00	0.00
2/12/2024	0	0.00	0.15	2.70	0.00	-2.70		-1.13	-20.34
2/13/2024	0	0.00	0.1	1.80	0.00	-1.80		0.00	0.00
2/14/2024	0.08	16.12	0.03	0.54	0.00	-0.54		0.00	0.00
Totals:	36.01	7255.41	71.59	1288.62	501.58	-787.04		-80.97	-1457.46
Percent of Precip:				17.8%	6.9%				
Scaling Factor:				2.57					

Precipitation is from NOAA Gage USW00023259, Monterey Airport
Basin Size is 2417.8 acres
Inflow and outflow estimated as change in lake level (ft) x 18 acre lake surface.

Lake El Estero Diversion

Table B-6: Estimated Runoff into Lake El Estero (acre-feet) - Updated

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1952	20	114	322	595	50	135	23	-	-	-	-	-	1,260
1953	-	71	207	36	-	24	34	-	-	-	-	-	373
1954	3	77	9	149	69	165	18	7	1	-	-	-	498
1955	-	35	99	220	40	-	18	6	-	-	-	-	417
1956	-	62	516	220	75	-	46	6	-	-	-	3	928
1957	7	-	13	138	87	16	29	75	-	-	-	1	367
1958	33	9	131	158	192	254	342	13	1	-	-	2	1,135
1959	-	3	4	267	265	0	2	-	-	-	-	173	715
1960	-	-	3	129	160	1	9	1	-	-	-	-	303
1961	-	51	12	33	19	62	33	3	-	-	-	-	212
1962	-	24	23	96	171	87	0	-	1	-	2	-	404
1963	50	2	78	136	117	163	-	-	-	-	-	-	547
1964	42	91	5	132	4	35	-	1	-	-	3	-	315
1965	9	96	369	58	18	60	43	-	-	-	-	-	653
1966	0	278	264	89	32	2	0	-	-	1	-	2	668
1967	-	124	305	269	3	284	274	3	38	-	-	-	1,299
1968	4	26	40	74	17	80	25	-	-	-	0	-	268
1969	0	82	48	645	308	23	82	-	0	-	-	-	1,189
1970	7	16	93	284	46	212	0	-	0	-	-	-	657
1971	1	478	161	10	3	56	14	3	-	-	-	7	732
1972	-	50	151	21	11	-	2	-	0	-	-	-	235
1973	72	326	18	180	214	103	-	-	-	-	-	0	913
1974	73	79	196	147	6	155	219	-	4	0	-	-	878
1975	40	4	56	22	74	86	15	-	-	-	7	-	304
1976	49	1	0	-	73	44	45	-	0	-	9	3	224
1977	16	10	106	94	10	46	-	9	-	-	-	9	301
1978	-	5	250	410	276	157	173	-	-	-	-	1	1,272
1979	-	63	30	140	95	127	4	1	-	4	-	-	464
1980	48	73	103	140	195	46	23	3	-	22	-	-	653
1981	-	-	46	367	30	86	20	-	-	-	-	-	548
1982	72	232	25	154	70	295	150	-	5	-	-	35	1,038
1983	84	301	164	457	144	591	165	1	-	-	-	47	1,953
1984	3	193	74	-	42	11	3	1	-	-	-	-	328
1985	71	136	35	9	53	84	13	0	2	-	-	0	403
1986	64	202	24	30	197	280	0	4	-	-	-	17	816
1987	-	0	22	73	111	60	7	-	-	-	-	-	274
1988	25	43	50	45	5	0	32	1	-	-	-	-	200
1989	-	70	95	31	74	50	11	0	-	-	-	18	348
1990	60	49	0	119	86	14	29	42	-	-	-	-	399
1991	0	12	26	11	55	307	1	-	-	-	-	-	412
1992	39	-	142	83	401	148	-	-	-	-	-	-	813
1993	8	0	276	656	413	90	14	3	7	-	-	-	1,467
1994	-	40	100	128	151	1	14	13	-	-	-	-	447
1995	2	32	40	529	6	283	30	4	41	-	-	-	968
1996	-	0	38	160	607	94	11	39	-	-	-	-	950
1997	13	118	395	486	-	-	2	-	-	-	1	-	1,015
1998	5	350	135	624	1,566	105	126	45	-	-	-	-	2,956
1999	17	56	9	48	90	39	57	-	-	-	-	4	319
2000	-	11	-	293	178	103	5	2	-	-	-	0	592
2001	126	-	-	92	104	28	29	-	-	-	-	-	380
2002	0	53	137	31	11	13	0	10	-	-	-	-	256
2003	-	72	277	15	38	17	12	2	-	-	-	-	435
2004	4	22	201	71	85	5	-	-	-	-	-	-	388
2005	124	11	268	192	131	125	15	4	1	-	-	-	871
2006	-	8	80	112	3	172	85	16	-	-	-	-	474
2007	-	11	48	8	62	5	13	-	-	-	-	2	150
2008	19	3	8	269	40	6	0	-	-	-	-	-	345
2009	0	14	52	66	137	52	1	0	-	-	-	0	323
2010	141	0	33	282	39	105	76	3	-	-	-	-	680
2011	4	37	80	66	211	237	-	6	11	-	-	-	651
2012	50	12	0	24	3	98	51	-	2	-	-	-	241
2013	3	116	138	5	12	7	-	-	-	-	-	-	281
2014	7	5	2	-	129	90	12	-	-	-	-	3	249
2015	65	24	746	-	11	0	12	0	-	-	-	-	858
2016	-	144	70	245	40	253	4	0	-	-	-	-	757
2017	96	16	22	405	273	45	9	-	-	-	-	-	866
2018	0	34	-	209	2	129	66	-	-	-	-	-	440
2019	0	100	-	76	405	40	0	52	-	-	-	-	675
2020	-	81	598	26	-	263	107	2	-	-	-	-	1,077
2021	-	1	4	215	1	15	-	-	-	-	-	-	236
2022	84	4	287	-	0	13	2	-	-	-	-	43	433
2023	-	65	321	174	101	151	-	2	0	-	-	-	814
2024	-	8	96	73	170								346
Average	23	68	120	162	122	96	37	5	2	0	0	5	639
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	150
Maximum	141	478	746	656	1,566	591	342	75	41	22	9	173	2,956
Statistics for period 1991-2020 (30-Year Climate)													
Average	24	46	131	174	173	95	25	7	2	-	0	0	678
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	150
Maximum	141	350	746	656	1,566	307	126	52	41	-	1	4	2,956

Lake El Estero Diversion

Table B-7: Estimated Transferable Runoff from Lake El Estero (acre-feet)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Type Year
1952	136	26	48	16	0	0	0	0	0	0	27	77	330	Wet
1953	18	0	16	16	0	0	0	0	0	0	16	4	70	Dry
1954	50	36	42	13	2	0	0	0	0	0	17	29	189	Normal
1955	69	16	0	2	0	0	0	0	0	0	16	86	188	Normal
1956	69	27	0	16	0	0	0	0	0	0	0	8	120	Dry
1957	66	44	7	16	16	0	0	0	0	20	0	49	218	Normal
1958	47	86	100	89	8	0	0	0	0	0	0	0	330	Wet
1959	65	93	0	0	0	0	0	0	32	0	0	0	190	Normal
1960	58	80	0	2	0	0	0	0	0	0	17	2	158	Normal
1961	19	8	16	16	0	0	0	0	0	0	15	13	87	Dry
1962	38	68	16	0	0	0	0	0	0	16	0	26	164	Normal
1963	32	45	43	0	0	0	0	0	0	18	59	0	197	Normal
1964	39	0	16	0	0	0	0	0	0	3	46	114	218	Normal
1965	25	8	24	24	0	0	0	0	0	0	99	94	273	Wet
1966	41	16	0	0	0	0	0	0	0	0	56	48	161	Normal
1967	74	0	69	123	0	16	0	0	0	0	15	18	315	Wet
1968	43	7	45	16	0	0	0	0	0	0	29	20	160	Normal
1969	165	87	8	19	0	0	0	0	0	2	11	39	330	Wet
1970	96	27	32	0	0	0	0	0	0	0	67	59	281	Wet
1971	2	0	29	4	0	0	0	0	2	0	32	71	140	Dry
1972	13	6	0	0	0	0	0	0	0	32	107	5	164	Normal
1973	69	104	52	0	0	0	0	0	0	25	37	53	340	Wet
1974	53	1	50	25	0	0	0	0	0	16	0	22	167	Normal
1975	10	45	48	7	0	0	0	2	0	32	0	0	144	Dry
1976	0	33	20	31	0	0	0	0	0	11	5	24	126	Dry
1977	44	5	16	0	0	0	0	0	4	0	0	51	121	Dry
1978	84	78	81	69	0	0	0	0	0	0	32	16	360	Wet
1979	48	49	40	0	0	0	0	0	0	28	39	32	236	Normal
1980	48	97	25	7	0	0	16	0	0	0	0	31	224	Normal
1981	81	17	40	13	0	0	0	0	0	20	84	15	269	Wet
1982	65	32	117	49	0	0	0	0	21	32	74	46	435	Wet
1983	96	91	134	63	0	0	0	0	16	0	95	31	527	Wet
1984	0	22	0	0	0	0	0	0	0	32	52	16	122	Dry
1985	0	16	49	8	0	0	0	0	0	16	76	13	177	Normal
1986	14	77	98	0	0	0	0	0	10	0	0	8	205	Normal
1987	41	16	34	2	0	0	0	0	0	16	27	31	167	Normal
1988	29	0	0	17	0	0	0	0	0	0	38	38	122	Dry
1989	16	23	27	6	0	0	0	0	12	16	16	0	115	Dry
1990	59	36	2	16	27	0	0	0	0	0	7	12	159	Normal
1991	6	35	114	0	0	0	0	0	0	16	0	23	193	Normal
1992	25	86	37	0	0	0	0	0	0	2	0	83	233	Normal
1993	170	106	46	4	0	0	0	0	0	0	18	31	375	Wet
1994	66	54	0	4	7	0	0	0	0	0	11	20	161	Normal
1995	156	0	96	14	0	16	0	0	0	0	0	20	301	Wet
1996	66	99	48	5	16	0	0	0	0	3	34	88	358	Wet
1997	114	0	0	0	0	0	0	0	0	0	95	39	247	Wet
1998	139	183	55	57	21	0	0	0	0	12	33	0	500	Wet
1999	26	20	20	28	0	0	0	0	0	0	6	0	100	Dry
2000	53	80	32	0	0	0	0	0	0	65	0	0	230	Normal
2001	53	70	17	18	0	0	0	0	0	0	28	54	239	Normal
2002	16	5	8	0	5	0	0	0	0	0	22	98	153	Normal
2003	5	16	12	1	0	0	0	0	0	0	8	44	86	Dry
2004	16	42	0	0	0	0	0	0	0	61	4	63	186	Normal
2005	54	56	39	1	0	0	0	0	0	0	0	47	196	Normal
2006	47	0	86	20	11	0	0	0	0	0	6	31	199	Normal
2007	1	42	0	6	0	0	0	0	0	12	0	0	61	Dry
2008	100	11	1	0	0	0	0	0	0	0	6	22	140	Dry
2009	32	57	30	0	0	0	0	0	0	16	0	17	152	Dry
2010	90	17	39	44	0	0	0	0	0	0	16	44	250	Wet
2011	38	80	92	0	0	6	0	0	0	31	0	0	246	Normal
2012	14	0	53	22	0	0	0	0	0	0	16	51	156	Normal
2013	0	6	0	0	0	0	0	0	0	2	0	0	8	Dry
2014	0	57	21	2	0	0	0	0	0	16	16	84	195	Normal
2015	0	0	0	4	0	0	0	0	0	0	47	36	87	Dry
2016	106	16	69	0	0	0	0	0	0	32	5	11	240	Normal
2017	101	58	20	0	0	0	0	0	0	0	16	0	195	Normal
2018	47	0	59	31	0	0	0	0	0	0	32	0	170	Normal
2019	44	161	18	0	20	0	0	0	0	0	45	66	354	Wet
2020	16	0	99	25	0	0	0	0	0	0	0	0	140	Dry
2021	25	0	7	0	0	0	0	0	0	32	0	91	154	Normal
2022	0	0	7	0	0	0	0	0	16	0	32	80	135	Dry
2023	67	39	60	0	0	0	0	0	0	0	3	46	214	Normal
2024	21	63												
25th Percentile	16	6	7	0	0	0	0	0	0	0	0	8	152	
50th Percentile	45	27	28	4	0	0	0	0	0	0	16	25	190	
75th Percentile	68	66	49	17	0	0	0	0	0	16	33	49	247	
Average	51	40	35	14	2	1	0	0	1	9	24	32	209	
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	8	
Maximum	170	183	134	123	27	16	16	2	32	65	107	114	527	

This is based on only runoff in excess of 5 acre-feet in one day being transferable.

A maximum of 16 acre-feet from one day of runoff may be transferred to the M1W system.

Water Year Type based on: Dry < 25th percentile, Wet > 75th percentile

Average by Type	
Wet	343
Normal	191
Dry	109

Statistics for period 1991-2020 (30-Year Climate)

Average	53	45	37	10	3	1	0	0	0	9	15	32	205
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	8
Maximum	170	183	114	57	21	16	0	0	0	65	95	98	500

Lake El Estero Diverion

Table B-8: Estimated Transferable Runoff from Lake El Estero using new connection to Monterey Pump Station (acre-feet)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1952	13	39	176	220	26	78	16	0	0	0	0	0	568
1953	0	41	128	24	0	19	24	0	0	0	0	0	235
1954	0	30	4	92	49	70	13	2	0	0	0	0	260
1955	0	25	43	111	29	0	2	0	0	0	0	0	209
1956	0	30	128	111	41	0	30	0	0	0	0	0	340
1957	0	0	8	98	55	7	19	30	0	0	0	0	217
1958	22	0	79	75	101	168	147	8	0	0	0	0	600
1959	0	0	0	118	161	0	0	0	0	0	0	60	339
1960	0	0	0	72	125	0	2	0	0	0	0	0	198
1961	0	31	2	19	8	30	26	0	0	0	0	0	116
1962	0	15	13	59	99	30	0	0	0	0	0	0	215
1963	30	0	40	60	73	71	0	0	0	0	0	0	274
1964	32	62	0	63	0	23	0	0	0	0	0	0	180
1965	3	63	183	39	8	38	26	0	0	0	0	0	359
1966	0	149	131	55	19	0	0	0	0	0	0	0	353
1967	0	77	82	129	0	111	154	0	30	0	0	0	582
1968	0	15	24	52	7	59	20	0	0	0	0	0	177
1969	0	43	20	272	142	8	33	0	0	0	0	0	518
1970	2	11	65	143	31	60	0	0	0	0	0	0	311
1971	0	106	101	2	0	43	4	0	0	0	0	2	257
1972	0	36	107	13	6	0	0	0	0	0	0	0	162
1973	46	167	5	111	128	70	0	0	0	0	0	0	527
1974	39	51	81	95	1	78	39	0	0	0	0	0	383
1975	29	0	31	10	48	53	7	0	0	0	2	0	182
1976	39	0	0	0	47	33	35	0	0	0	0	0	155
1977	11	5	38	72	5	30	0	0	0	0	0	4	166
1978	0	0	71	132	126	106	114	0	0	0	0	0	549
1979	0	47	17	82	50	68	0	0	0	0	0	0	264
1980	33	53	47	82	126	25	7	0	0	17	0	0	389
1981	0	0	36	143	17	54	13	0	0	0	0	0	262
1982	34	139	15	99	52	155	80	0	0	0	0	25	599
1983	60	120	74	180	96	204	90	0	0	0	0	30	854
1984	0	119	45	0	22	0	0	0	0	0	0	0	186
1985	55	68	23	0	30	49	8	0	0	0	0	0	232
1986	30	124	13	14	118	159	0	0	0	0	0	10	467
1987	0	0	8	47	30	40	2	0	0	0	0	0	127
1988	16	31	31	30	0	0	17	0	0	0	0	0	125
1989	0	54	52	16	37	27	6	0	0	0	0	12	203
1990	30	30	0	74	53	2	24	27	0	0	0	0	240
1991	0	7	12	6	35	176	0	0	0	0	0	0	234
1992	30	0	37	39	132	65	0	0	0	0	0	0	303
1993	2	0	135	283	153	62	4	0	0	0	0	0	640
1994	0	29	45	90	78	0	4	7	0	0	0	0	252
1995	0	11	22	231	0	142	14	0	30	0	0	0	450
1996	0	0	23	104	150	65	5	30	0	0	0	0	377
1997	3	49	126	187	0	0	0	0	0	0	0	0	365
1998	0	142	67	223	309	69	71	24	0	0	0	0	905
1999	12	40	0	29	34	22	41	0	0	0	0	0	178
2000	0	6	0	83	126	46	0	0	0	0	0	0	261
2001	90	0	0	65	72	17	19	0	0	0	0	0	263
2002	0	40	82	25	5	8	0	5	0	0	0	0	164
2003	0	36	143	5	28	12	1	0	0	0	0	0	225
2004	0	8	72	30	51	0	0	0	0	0	0	0	161
2005	79	4	105	69	79	53	1	0	0	0	0	0	389
2006	0	0	58	65	0	110	34	11	0	0	0	0	277
2007	0	6	35	1	42	0	6	0	0	0	0	0	89
2008	12	0	0	137	11	1	0	0	0	0	0	0	161
2009	0	6	35	50	90	34	0	0	0	0	0	0	215
2010	30	0	17	132	17	67	57	0	0	0	0	0	319
2011	0	22	52	51	136	148	0	0	6	0	0	0	413
2012	37	0	0	14	0	77	36	0	0	0	0	0	164
2013	0	30	73	0	6	0	0	0	0	0	0	0	110
2014	2	0	0	0	71	35	2	0	0	0	0	0	109
2015	30	19	140	0	0	0	4	0	0	0	0	0	193
2016	0	69	36	156	30	111	0	0	0	0	0	0	401
2017	60	5	11	148	100	20	0	0	0	0	0	0	344
2018	0	23	0	61	0	81	45	0	0	0	0	0	211
2019	0	60	0	56	261	19	0	30	0	0	0	0	426
2020	0	66	108	21	0	149	39	0	0	0	0	0	382
2021	0	0	0	39	0	7	0	0	0	0	0	0	46
2022	59	0	142	0	0	7	0	0	0	0	0	30	238
2023	0	48	150	97	67	81	0	0	0	0	0	0	443
2024	0	3	66	35	93								197
25th Percentile	0	0	8	24	6	7	0	0	0	0	0	0	186
50th Percentile	0	23	36	63	37	36	4	0	0	0	0	0	260
75th Percentile	30	49	79	111	93	70	25	0	0	0	0	0	383
Average	13	34	51	76	57	51	19	2	1	0	0	2	305
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	46
Maximum	90	167	183	283	309	204	154	30	30	17	2	60	905

This is based on only runoff in excess of 5 acre-feet in one day being transferable.
A maximum of 30 acre-feet from one day of runoff may be transferred to the M1W system.

Statistics for period 1991-2020 (30-Year Climate)

Average	13	23	48	79	67	53	13	4	1	0	0	0	299
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	89
Maximum	90	142	143	283	309	176	71	30	30	0	0	0	905

Table B-9: Figueroa Watershed Areas and Curve Numbers

Determination of available surface water for non-potable water supply

	Land Use	Soil Group	Curve Number (AMC II)	Area (acres)	Percent Impervious	Impervious Area (acres)	Pervious Area (acres)
1	LD	A	34	0	15%	0.0	0.0
2	UHD	A	34	0	90%	0.0	0.0
3	DV	B	43	98	0%	0.0	98.0
4	MD	B	48	0	30%	0.0	0.0
5	HD	B	48	0	50%	0.0	0.0
6	LD	B	48	98	15%	14.7	83.3
7	UHD	B	48	0	90%	0.0	0.0
8	DV	C	60	36	0%	0.0	36.0
9	HD	C	65	0	50%	0.0	0.0
10	LD	C	65	53	15%	8.0	45.1
11	UHD	C	65	0	90%	0.0	0.0
12	DV	D	66	230	0%	0.0	230.0
13	HD	D	70	198	50%	99.0	99.0
14	LD	D	70	273	15%	41.0	232.1
15	UHD	D	70	200	90%	180.0	20.0
16	Lake	n\a	100	0	100%	0.0	0.0
				1186		**343**	**843**

	Curve Number (AMC II)	Area (acres)	Curve Number (AMC I)	Curve Number (AMC III)
Pervious Area				
	34	0.0	18	54
	43	98.0	25	63
	48	83.3	29	68
	60	36.0	40	78
	65	45.1	45	82
	66	230.0	46	82
	70	351.1	51	85
		843		
Impervious Area				
	98	343	94	99

Scrub runoff curve numbers used for dense vegetation
Irrigated pasture runoff curve numbers used for pervious areas of all other land use

Curve numbers come from NRCS Pub TR-55
AMC values come from NRCS Pub NEH-4 (National Engineering Handbook, Part 630, Chapter 10)

Lake El Estero Diversion

Table B-10: Estimated Runoff from Figueroa Drainage Basin (acre-feet)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	
1952	7	40	115	213	18	48	8	-	-	-	-	-	449
1953	-	25	73	13	-	9	12	-	-	-	-	-	132
1954	1	27	3	53	24	58	6	3	0	-	-	-	176
1955	-	12	35	78	14	-	6	2	-	-	-	-	147
1956	-	22	192	78	27	-	16	2	-	-	-	1	338
1957	3	-	5	49	31	6	10	26	-	-	-	0	130
1958	12	3	46	56	68	90	122	4	0	-	-	1	403
1959	-	1	2	95	95	0	1	-	-	-	-	62	255
1960	-	-	1	46	57	0	3	0	-	-	-	-	108
1961	-	18	4	11	7	22	12	1	-	-	-	-	75
1962	-	8	8	34	61	31	0	-	0	-	1	-	143
1963	18	1	28	48	43	58	-	-	-	-	-	-	195
1964	15	32	2	47	2	13	-	0	-	-	1	-	112
1965	3	34	133	21	6	21	15	-	-	-	-	-	233
1966	0	100	97	31	11	1	0	-	-	0	-	1	241
1967	-	44	101	95	1	102	98	1	14	-	-	-	455
1968	2	9	14	26	6	28	9	-	-	-	0	-	95
1969	0	29	17	230	111	8	29	-	0	-	-	-	424
1970	2	6	33	101	16	73	0	-	0	-	-	-	232
1971	1	153	58	3	1	20	5	1	-	-	-	2	244
1972	-	18	54	7	4	-	1	-	0	-	-	-	84
1973	26	117	6	64	76	36	-	-	-	-	-	0	324
1974	26	28	69	53	2	55	78	-	1	0	-	-	313
1975	14	1	20	8	26	30	5	-	-	-	3	-	108
1976	17	0	0	-	26	15	16	-	0	-	3	1	79
1977	6	4	37	35	4	16	-	3	-	-	-	3	108
1978	-	2	92	134	98	55	61	-	-	-	-	0	442
1979	-	22	11	50	33	45	1	0	-	1	-	-	164
1980	17	26	37	50	71	16	8	1	-	8	-	-	233
1981	-	-	16	137	10	30	7	-	-	-	-	-	201
1982	25	84	9	54	25	105	54	-	2	-	-	12	371
1983	30	108	58	162	51	207	59	0	-	-	-	17	690
1984	1	68	26	-	15	4	1	0	-	-	-	-	116
1985	25	48	12	3	19	30	5	0	1	-	-	0	143
1986	23	73	8	10	72	102	0	1	-	-	-	6	295
1987	-	0	8	26	39	21	2	-	-	-	-	-	97
1988	9	15	18	16	2	0	11	0	-	-	-	-	71
1989	-	25	34	11	26	18	4	0	-	-	-	6	123
1990	21	17	0	42	30	5	10	15	-	-	-	-	141
1991	0	4	9	4	19	111	0	-	-	-	-	-	148
1992	14	-	50	29	133	52	-	-	-	-	-	-	279
1993	3	0	100	234	150	32	5	1	2	-	-	-	527
1994	-	14	35	45	53	0	5	4	-	-	-	-	158
1995	1	11	14	194	2	100	11	2	14	-	-	-	350
1996	-	0	13	57	201	33	4	14	-	-	-	-	322
1997	5	42	143	172	-	-	1	-	-	-	0	-	362
1998	2	126	48	217	488	37	46	16	-	-	-	-	979
1999	6	20	3	17	32	14	20	-	-	-	-	1	113
2000	-	4	-	102	63	36	2	1	-	-	-	0	208
2001	45	-	-	33	37	10	10	-	-	-	-	-	134
2002	0	19	49	11	4	5	0	4	-	-	-	-	90
2003	-	26	99	5	14	6	4	1	-	-	-	-	155
2004	1	8	71	27	30	2	-	-	-	-	-	-	139
2005	44	4	95	68	47	44	5	2	0	-	-	-	309
2006	-	3	28	40	1	61	30	6	-	-	-	-	168
2007	-	4	17	3	22	2	5	-	-	-	-	1	53
2008	7	1	3	96	14	2	0	-	-	-	-	-	123
2009	0	5	18	23	49	19	0	0	-	-	-	0	114
2010	50	0	12	102	14	37	27	1	-	-	-	-	244
2011	1	13	28	23	76	85	-	2	4	-	-	-	233
2012	18	4	0	8	1	35	18	-	1	-	-	-	85
2013	1	41	51	2	4	2	-	-	-	-	-	-	101
2014	2	2	1	-	46	33	4	-	-	-	-	1	90
2015	23	8	249	-	4	0	4	0	-	-	-	-	288
2016	-	51	25	87	14	92	1	0	-	-	-	-	271
2017	34	6	8	148	98	16	3	-	-	-	-	-	313
2018	0	12	-	75	1	46	23	-	-	-	-	-	157
2019	0	35	-	27	145	14	0	18	-	-	-	-	240
2020	-	29	188	9	-	95	38	1	-	-	-	-	359
2021	-	0	1	79	0	5	-	-	-	-	-	-	87
2022	30	2	103	-	0	4	1	-	-	-	-	15	154
2023	-	23	115	62	36	53	-	1	0	-	-	-	289
2024	-	3	34	26	62								124
Average	8	24	42	58	42	34	13	2	1	0	0	2	225
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	53
Maximum	50	153	249	234	488	207	122	26	14	8	3	62	979
Statistics for period 1991-2020 (30-Year Climate)													
Average	9	16	45	62	59	34	9	2	1	-	0	0	237
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	53
Maximum	50	126	249	234	488	111	46	18	14	-	0	1	979

Table B-12: Lake El Estero and Monterey Bay Water Quality

Stream	Location	Analyte Name	No. Samples	Units	Mean	Min	Max
Lake El Estero	4 samples, 5/25/2023	Bicarbonate Alkalinity (HCO3)	4	mg/L	243.63	187.0000	285.50
Lake El Estero	4 samples, 5/25/2023	Boron	4	mg/L	0.17	0.10	0.25
Lake El Estero	4 samples, 5/25/2023	Calcium	4	mg/L	103.3	89.0	109.0
Lake El Estero	4 samples, 5/25/2023	Nitrate as N	4	mg/L	0.0000	0.00	0.000
Lake El Estero	2 samples, 7/6/2009	E. Coli	2	#/100 ml	48	10	86
Lake El Estero	2 samples, 7/6/2009	Coliform, Total	2	#/100 ml	6,499	6,131	6,867
Lake El Estero	2 samples, 7/6/2009	Enterococcus	2	#/100 ml	31	31	31
Lake El Estero	4 samples, 5/25/2023	Sulfate	4	mg/L	155.3	140.0	165.0
Lake El Estero	4 samples, 5/25/2023	Dissolved Solids, Total	4	mg/L	967.5	844.0	1,032.0
Lake El Estero	4 samples, 5/25/2023	Total Suspended Solids	4	mg/L	16.0	7.0	23.0
Lake El Estero	4 samples, 5/25/2023	Chloride	4	mg/L	296.5	242.0	324.0
Lake El Estero	4 samples, 5/25/2023	Potassium	4	mg/L	5.0	4.2	5.6
Lake El Estero	4 samples, 5/25/2023	Magnesium	4	mg/L	34.3	30.4	36.0
Twin 51" Outfalls	below El Estero	Nitrate	14	mg/L	0.62	0.16	1.30
Twin 51" Outfalls	below El Estero	Phosporus	15	mg/L	0.40	0.00	0.97
Twin 51" Outfalls	below El Estero	Urea	16	ug/L	317.86	16.00	920.00
Twin 51" Outfalls	below El Estero	E. Coli	17	MPN/100 mL	61,240	50	229,170
Twin 51" Outfalls	below El Estero	Enteroccoccus	18	MPN/100 mL	54,199	125	227,516
Twin 51" Outfalls	below El Estero	Zinc	19	ug/L	142.0	20.0	385.0
Twin 51" Outfalls	below El Estero	Copper	20	ug/L	36.54	5.00	99.00
Twin 51" Outfalls	below El Estero	Lead	21	ug/L	9.85	0.00	44.00
Twin 51" Outfalls	below El Estero	Total Suspended Solids	22	mg/L	40.07	0.00	183.00
Don Dahvee Creek	above El Estero	Calcium	7	mg/L	68.57	14.00	130.00
Don Dahvee Creek	above El Estero	Coliform, Total	15	MPN/100 mL	43,024	104	241,960
Don Dahvee Creek	above El Estero	Copper	7	ug/L	84.3	28.0	143.0
Don Dahvee Creek	above El Estero	Escherichia coli	18	MPN/100 mL	11,674	6	141,361
Don Dahvee Creek	above El Estero	Lead	7	ug/L	88.75	11.00	283.00
Don Dahvee Creek	above El Estero	Magnesium	7	mg/L	17.75	7.00	27.00
Don Dahvee Creek	above El Estero	Nitrate as N	18	mg/L	0.43	0.01	1.31
Don Dahvee Creek	above El Estero	Oil and Grease	1	mg/L	0.00	0.00	0.00
Don Dahvee Creek	above El Estero	Orthophosphate as P	19	mg/L	0.10	0.01	0.25
Don Dahvee Creek	above El Estero	Oxygen, Dissolved	3	mg/L	7.17	6.00	8.00
Don Dahvee Creek	above El Estero	Total Dissolved Solids	15	mg/L	399.73	149.00	930.00
Don Dahvee Creek	above El Estero	Total Suspended Solids	7	mg/L	268.00	47.00	782.00
Don Dahvee Creek	above El Estero	Zinc	7	ug/L	318.50	116.00	456.00
Monterey Bay	South Coastline	Ammonia as N	11	mg/L	0.023636	0.02	0.04000
Monterey Bay	South Coastline	Chlordanes	3	ng/L	0.01	0.01	0.01
Monterey Bay	South Coastline	ColiformFecal	13	MPN/100 ml	2	2	2
Monterey Bay	South Coastline	ColiformTotal	12	MPN/100 ml	60	2	659
Monterey Bay	South Coastline	Enterococcus	12	MPN/100 ml	2	2	2
Monterey Bay	South Coastline	Nitrate as N	12	mg/L	0.04	0.01	0.16
Monterey Bay	South Coastline	Orthophosphate as P	12	mg/L	0.02	0.01	0.04
Monterey Bay	South Coastline	Silica	12	mg/L	0.51	0.17	1.20
Monterey Bay	South Coastline	Total Suspended Solids	12	mg/L	13.35	6.70	34.40
Monterey Bay	South Coastline	Urea as N	12	ug/L	0.01	0.01	0.01

Highlighted cells exceed objective / standards. See table B13
Min value of 0.00 = Not Detected.

Table B-13: Water Quality Objectives

Analyte Name	Units	Standard	Reference
Nitrate as N	mg/L	2.25	CCAMP Proposed
Orthophosphate as P	mg/L	0.12	CCAMP Proposed
E. coli	MPN/100 ml	400	EPA Ambient Water Quality Criteria
Enterococcus	MPN/100 ml	104	EPA Ambient Water Quality Criteria
Zinc	ug/L	200	Basin Plan Objective
Copper	ug/L	30	Basin Plan Objective
Lead	ug/L	30	Basin Plan Objective
Total Suspended Solids (TSS)	mg/L	500	Basin Plan Objective

Appendix C: Conceptual Diversion Facility

Figure 1: Lake El Estero Water Intake Alignments
Figure 2: Lake El Estero Water Intake, Elevation
Figure 3: Lake El Estero Water Intake, Pump Option
Figure 4: Pump House Detail
Table C-1: Gravity Option Head Calculations
Table C-2: Pump Option Head Calculations
Table C-3: Estimated Cost of Construction, Gravity Option
Table C-4: Estimated Cost of Construction, Pump Option

Figure 1 - Lake El Estero Water Intake Alignments

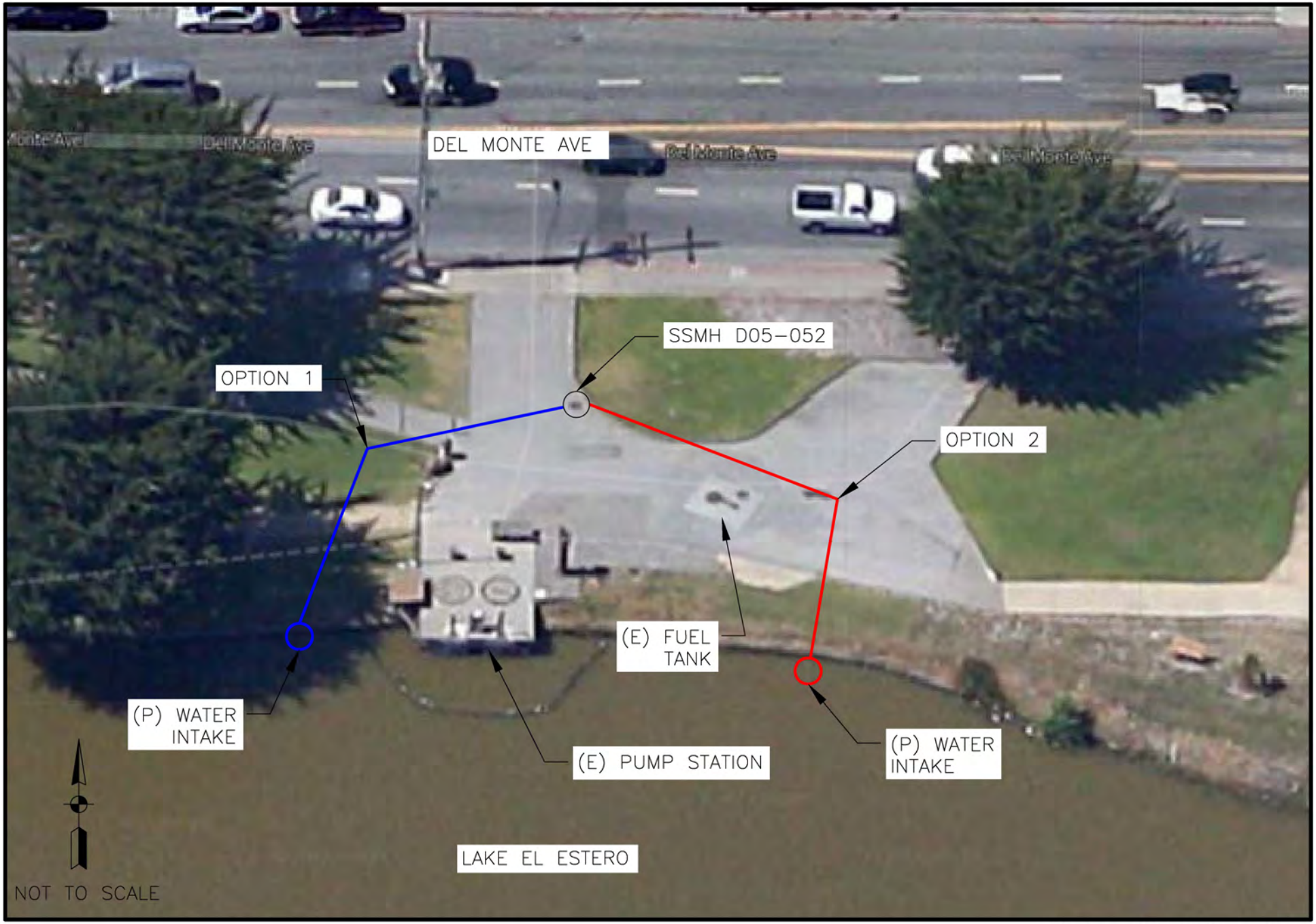


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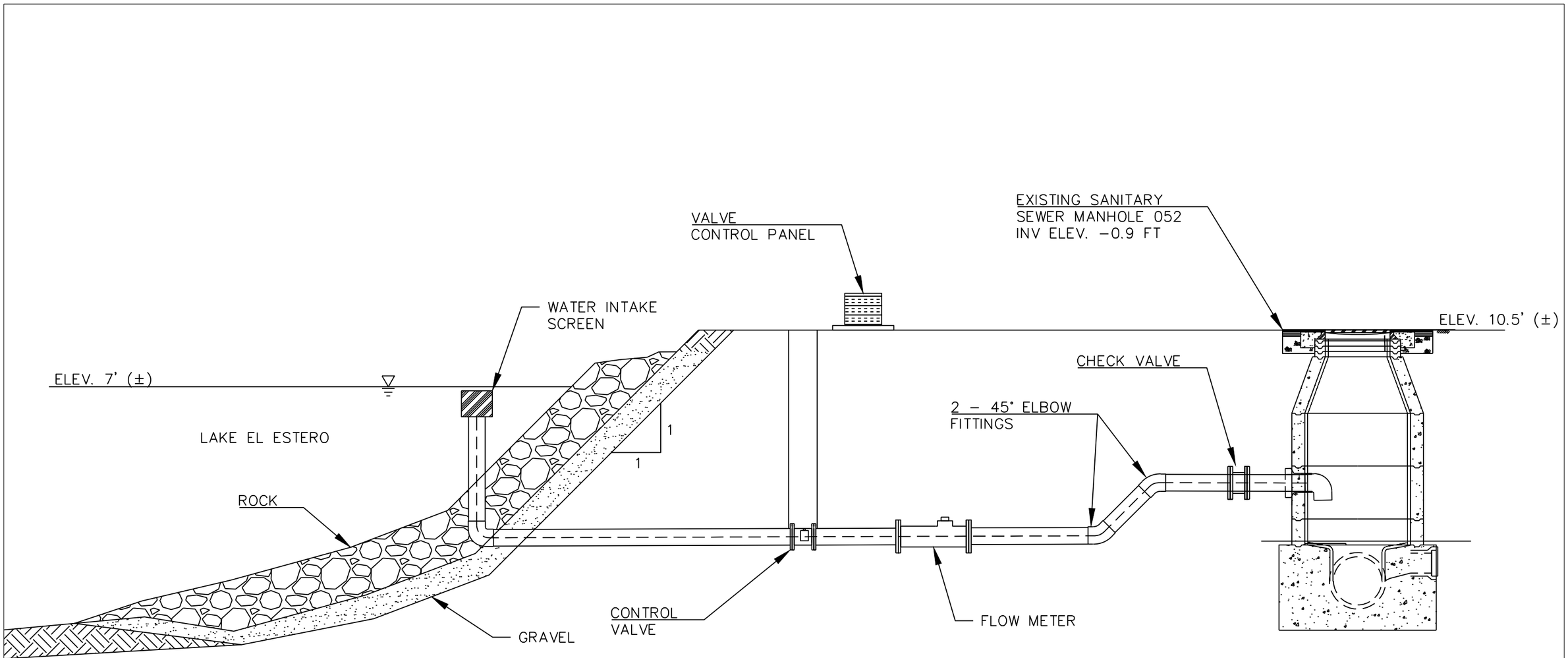
Figure 2 - Lake El Estero Water Intake -Elevation



NOT TO SCALE, DATUM PER 1967 PUMP STATION PLANS

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Figure 3 - Lake El Estero Water Intake Pump Option



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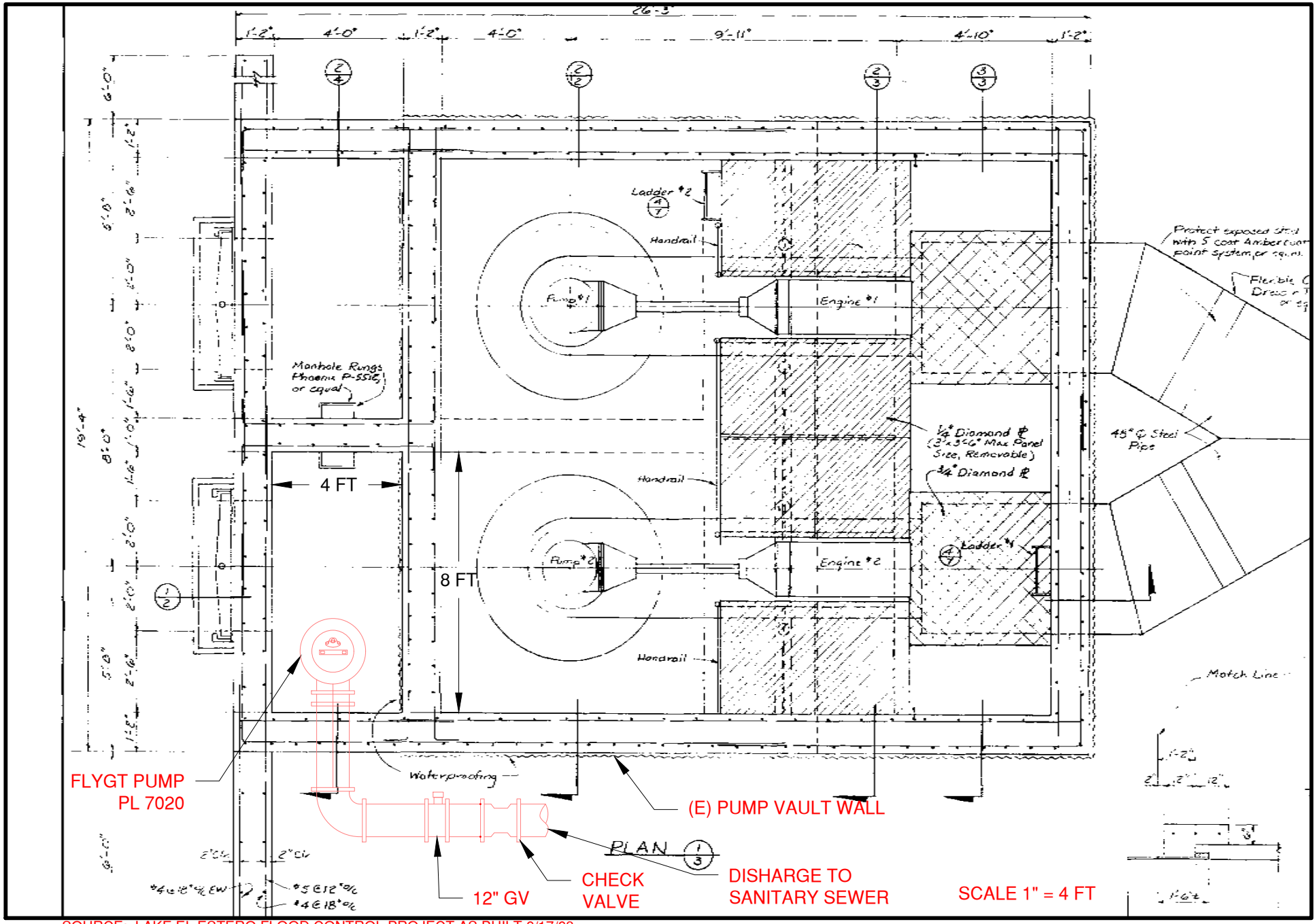
Figure 4 - Pump House Detail



SOURCE: LAKE EL ESTERO FLOOD CONTROL PROJECT AS BUILT 6/17/68

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Table C-1: Gravity Option

Estimate gravity flow potential from the lake to the SSMH.

Available head approx 5-ft for down-turned outlet.

Length	40	ft
Diameter	16	inch
Material	C900	PVC
Hazen-Williams	130	

Fitting	**K**
entrance	1.00
90-bend	0.30
gate valve	0.19
mag meter	0
swing check	2.50
45-bend	0.20
45-bend	0.20
exit	1.00
Total minor losses	5.39

Element	**Elevation**	
Pump Station Deck	10.5	ft
Lake Surface	7.0	ft
SSMH Rim	10.5	ft
SSMH Invert	-0.9	ft
SSMH Pipe Crown	0.9	ft
Diversion Outlet	1.9	ft
Static Head	5.2	ft

				Pipeline	Minor	Total		
	Q	Q	V	Loss	Losses	Losses		
	gpm	cfs	fps	ft	ft	ft	gpd	AF/day
	2000	4.456	3.19	0.09	0.85	0.94	2,880,000	8.84
	2050	4.568	3.27	0.09	0.90	0.99	2,952,000	9.06
	2100	4.679	3.35	0.10	0.94	1.04	3,024,000	9.28
	2150	4.791	3.43	0.10	0.99	1.09	3,096,000	9.50
	2200	4.902	3.51	0.11	1.03	1.14	3,168,000	9.72
	2250	5.013	3.59	0.11	1.08	1.19	3,240,000	9.94
	2300	5.125	3.67	0.12	1.13	1.24	3,312,000	10.16
	2350	5.236	3.75	0.12	1.18	1.30	3,384,000	10.39
	2400	5.348	3.83	0.13	1.23	1.35	3,456,000	10.61
	2450	5.459	3.91	0.13	1.28	1.41	3,528,000	10.83
	2500	5.570	3.99	0.14	1.33	1.47	3,600,000	11.05
	2550	5.682	4.07	0.14	1.39	1.53	3,672,000	11.27
	2600	5.793	4.15	0.15	1.44	1.59	3,744,000	11.49
	2650	5.905	4.23	0.15	1.50	1.65	3,816,000	11.71
	2700	6.016	4.31	0.16	1.55	1.71	3,888,000	11.93
	2750	6.127	4.39	0.16	1.61	1.77	3,960,000	12.15
	2800	6.239	4.47	0.17	1.67	1.84	4,032,000	12.37
	2850	6.350	4.55	0.17	1.73	1.90	4,104,000	12.60
	2900	6.462	4.63	0.18	1.79	1.97	4,176,000	12.82
	2950	6.573	4.71	0.18	1.85	2.04	4,248,000	13.04
	3000	6.684	4.79	0.19	1.92	2.11	4,320,000	13.26
	3050	6.796	4.87	0.20	1.98	2.18	4,392,000	13.48
	3100	6.907	4.95	0.20	2.05	2.25	4,464,000	13.70
	3150	7.019	5.03	0.21	2.11	2.32	4,536,000	13.92
	3200	7.130	5.11	0.21	2.18	2.40	4,608,000	14.14
	3250	7.242	5.19	0.22	2.25	2.47	4,680,000	14.36
	3300	7.353	5.27	0.23	2.32	2.55	4,752,000	14.58
	3350	7.464	5.35	0.23	2.39	2.62	4,824,000	14.81
	3400	7.576	5.43	0.24	2.46	2.70	4,896,000	15.03
	3450	7.687	5.51	0.25	2.54	2.78	4,968,000	15.25
	3500	7.799	5.59	0.25	2.61	2.86	5,040,000	15.47
	3550	7.910	5.67	0.26	2.69	2.95	5,112,000	15.69
	3600	8.021	5.74	0.27	2.76	3.03	5,184,000	15.91
	3650	8.133	5.82	0.27	2.84	3.11	5,256,000	16.13
Target Flow --->	3700	8.244	5.90	0.28	2.92	3.20	5,328,000	16.35

Table C2: Pump Option

Estimate pump size and pipeline diameter to move flow from the lake to the SSMH.

Maximum flow of 3,700 gpm.

Length	40	ft	Lake Lvl	7.0 ft
Diameter	12	inch	Discharge	4.0 ft
Material	C151	DIP	Static H	-3.0 ft
Hazen-Williams	120			

Fitting	**K**
entrance	1.00
tee-branch	1.80
gate valve	0.19
mag meter	0
swing check	2.50
90-bend	0.30
90-bend	0.30
exit	1.00
Total minor losses	7.09

	Q	Q	V	Pipeline Loss	Minor Losses	Static Lift	Total Losses			
	gpm	**cfs**	**fps**	**ft**	**ft**	**ft**	**ft**	**gpd**	**AF/day**	**HP**
	2500	5.57	7.09	0.64	5.54	-3	3.18	3,600,000	11.05	4.01
	2550	5.68	7.23	0.66	5.76	-3	3.42	3,672,000	11.27	4.41
	2600	5.79	7.38	0.69	5.99	-3	3.68	3,744,000	11.49	4.83
	2650	5.90	7.52	0.71	6.22	-3	3.93	3,816,000	11.71	5.26
	2700	6.02	7.66	0.74	6.46	-3	4.20	3,888,000	11.93	5.72
	2750	6.13	7.80	0.76	6.70	-3	4.46	3,960,000	12.15	6.20
	2800	6.24	7.94	0.79	6.95	-3	4.73	4,032,000	12.37	6.69
	2850	6.35	8.09	0.81	7.20	-3	5.01	4,104,000	12.60	7.21
	2900	6.46	8.23	0.84	7.45	-3	5.29	4,176,000	12.82	7.75
	2950	6.57	8.37	0.87	7.71	-3	5.58	4,248,000	13.04	8.31
	3000	6.68	8.51	0.89	7.97	-3	5.87	4,320,000	13.26	8.89
	3050	6.80	8.65	0.92	8.24	-3	6.16	4,392,000	13.48	9.50
	3100	6.91	8.79	0.95	8.52	-3	6.47	4,464,000	13.70	10.12
	3150	7.02	8.94	0.98	8.79	-3	6.77	4,536,000	13.92	10.77
	3200	7.13	9.08	1.01	9.07	-3	7.08	4,608,000	14.14	11.44
	3250	7.24	9.22	1.04	9.36	-3	7.40	4,680,000	14.36	12.14
	3300	7.35	9.36	1.07	9.65	-3	7.72	4,752,000	14.58	12.86
	3350	7.46	9.50	1.10	9.94	-3	8.04	4,824,000	14.81	13.60
	3400	7.58	9.65	1.13	10.24	-3	8.37	4,896,000	15.03	14.37
	3450	7.69	9.79	1.16	10.55	-3	8.70	4,968,000	15.25	15.17
	3500	7.80	9.93	1.19	10.85	-3	9.04	5,040,000	15.47	15.99
	3550	7.91	10.07	1.22	11.17	-3	9.39	5,112,000	15.69	16.83
	3600	8.02	10.21	1.25	11.48	-3	9.74	5,184,000	15.91	17.70
	3650	8.13	10.36	1.29	11.80	-3	10.09	5,256,000	16.13	18.60
Target Flow --->	3700	8.24	10.50	1.32	12.13	-3	10.45	5,328,000	16.35	19.52

HP calculation assumes 50% pump-motor efficiency

Table C-3 - Estimated Cost Of Construction of the Lake El Estero Diversion Structure

Gravity Option - Conceptual Design Cost Estimate

15-Mar-24

By: A. Sterbenz

Item of Work	Unit	Unit Cost	Quantity	Subtotal
Mobilization / Demobilization				
~ 5% of of project cost. This cost includes permits, fees, temporary structures, equipment rental and various misc. items				***$12,000***
Site Improvements				
Intake Screen	EA	$25,000.00	1	$25,000
16" PVC Pipe w/ Trenching and Backfill	LF	$300.00	80	$24,000
16" Butterfly Valve	EA	$20,000.00	1	$20,000
Motor Operator, 1 hp	EA	$5,000.00	1	$5,000
16" Magnetic Meter	EA	$20,000.00	1	$20,000
16" Check Valve, Flex-type	EA	$38,000.00	1	$38,000
De-watering & Site Preparation	LS	$60,000.00	1	$60,000
Tie-in to Existing SSMH	LS	$10,000.00	1	$10,000
Site Restoration	LS	$10,000.00	1	$10,000
Electrical Equipment				
Electrical Control Equipment	LS	$25,000.00	1	$25,000
ESTIMATED CONSTRUCTION COST				**$249,000**
INSPECTION AND TESTING (15%)				**$37,000**
CONSTRUCTION CONTINGENCY (20%)				**$50,000**
ESTIMATED TOTAL CONSTRUCTION COST				**$336,000**

This estimate of construction cost is a professional opinion, based upon the engineer's experience with the design and construction of similar projects. It is prepared only as a guide and is subject to change. Schaaf & Wheeler and its subconsultants make no warranty, whether expressed or implied, that the actual costs will not vary from these estimated costs, and assumes no liability for such variances. This estimate specifically excludes any costs associated with designing for handling and disposal of hazardous wastes and contaminated materials. Costs associated with land, right-of-way, or easement purchase are not included in this estimate.

ENR CCF for San Francisco: 15459

Table C-4 - Estimated Cost Of Construction of the Lake El Estero Diversion Structure

Pump Option - Conceptual Design Cost Estimate

15-Mar-24

By: A. Sterbenz

Item of Work	Unit	Unit Cost	Quantity	Subtotal
Mobilization / Demobilization				
~ 5% of of project cost. This cost includes permits, fees, temporary structures, equipment rental and various misc. items				***$13,000***
Pump				
Flygt Pump 7020 (20hp)	EA	$50,000.00	1	$50,000
Pump Column	LF	$500.00	10	$5,000
Site Improvements				
12" PVC Pipe w/ Trenching and Backfill	LF	$210.00	60	$12,600
12" Gate Vale	EA	$14,670.00	1	$14,670
12" Magnetic Meter	EA	$15,000.00	1	$15,000
12" Check Valve	EA	$15,330.00	1	$15,330
1" Air Release Valve	EA	$1,100.00	1	$1,100
De-watering & Site Preparation	LS	$50,000.00	1	$50,000
Tie-in to Existing SSMH	LS	$10,000.00	1	$10,000
Site Restoration	LS	$10,000.00	1	$10,000
Electrical Equipment				
Electrical and Control Equipment	LS	$75,000.00	1	$75,000
ESTIMATED CONSTRUCTION COST				**$271,700**
INSPECTION AND TESTING (15%)				**$41,000**
CONSTRUCTION CONTINGENCY (20%)				**$54,000**
ESTIMATED TOTAL CONSTRUCTION COST				**$367,000**

This estimate of construction cost is a professional opinion, based upon the engineer's experience with the design and construction of similar projects. It is prepared only as a guide and is subject to change. Schaaf & Wheeler and its subconsultants make no warranty, whether expressed or implied, that the actual costs will not vary from these estimated costs, and assumes no liability for such variances. This estimate specifically excludes any costs associated with designing for handling and disposal of hazardous wastes and contaminated materials. Costs associated with land, right-of-way, or easement purchase are not included in this estimate.

ENR CCF for San Francisco: 15459

Appendix D: Flow Monitoring

D1. Sanitary Sewer at Lake El Estero

The City of Monterey completed a Sewer System Master Plan Update in late 2020. This effort included flow monitoring at 12 manholes, whose locations varied from Cannery Row in Monterey to Grace Hopper Avenue near the Monterey Airport. The flow monitoring period was from 2/12/2020 to 3/26/2020. The metered flow data was used to calibrate the system model. One of the meters was installed in manhole D05-052, labeled FM-8 in the report, recording flows in the 21-inch pipe that connects El Estero Lake with the M1W Interceptor that heads towards the Monterey Pump Station. The average dry weather flow (ADWF) in February was 0.601 mgd, and the average dry weather flow in March was 0.566 mgd. The observed average wet weather flows (AWWF) in February was 0.892 mgd and the peak wet weather flow (PWWF) was 1.547 mgd. In March, the observed average wet weather flow was 0.724 mgd, and the peak wet weather flow 1.027 mgd. There was very little change to the average dry weather flows from February to March, despite the County issuing a Shelter-in-Place mandate[8] during the monitoring period. The surrounding area is predominantly residential with apartment complexes and single-family homes.

The observed peak dry weather flow (PDWF) was 0.884 mgd in March 2020. The PDWF peaking factor is approximately 1.5 x the ADWF. The observed PWWF is 1.8 x the PDWF, but for our analysis we will use 2.0 x PDWF to estimate the PWWF. For this sewer segment, the PWWF is 1.8 mgd, or 1300 gpm.

[8] During the calibration test period, there was a shelter-in-place mandate issued across the country due to the Covid-19 pandemic that occurred in early 2020.

D2. Figueroa Box Culvert

Schaaf & Wheeler conducted storm sewer flow monitoring in Pearl Street above Figueroa Street in Monterey. A depth monitor and data logger were installed in the storm drain downstream of Pearl Street. The gage was active from November 26, 2013, to March 28, 2014. During that period there was limited rainfall. The two-day storm of February 28 – March 1, 2014 was used as a calibration check for the runoff prediction model.

The data logger collected water depth at a one-minute time step. Depth was converted to flow using Manning's equation and the following parameters: Pipe roughness of n = 0.013, slope = 0.0071 ft/ft, box width 9-ft, box height 4.5-ft at center and 4.25-ft at sides (valley gutter at invert).

$$V = \left(\frac{1.486}{n}\right) R^{2/3} S^{1/2}$$

Where:

V= velocity in feet/second
n = roughness coefficient
R = hydraulic radius
S = slope of the pipeline

Cumulative flow was totaled and converted to acre-feet. Totals for the 2-day storm were compared to the modeled outputs:

Date	Precipitation (in)	Metered Flow (ac-ft)	Modeled Flow (ac-ft)
2/28/2014	1.38	23.1	23.7
3/1/2014	0.98	11.7	30.3

Modeled results for the first day were within 5% of the metered daily flow, which was better than expected. The modeled results for the second day were almost 300% of the metered flow. The majority of the flows on both days are from the hardscape. The difference between the two on 3/1/14 was due the model's adjustment of the curve numbers based on the cumulative precipitation in the preceding 5 days. The model applied below-average curve numbers for the condition on 2/28/14 and matched the observed flows. It applied above-average curve numbers for the condition on 3/1/14. This error does not affect the stormwater capture model, which by-passes peak flows. Therefore, the runoff model was not adjusted.

Attachments:

D-1, Monitoring Locations

D-2, Sanitary Sewer Flows, 2/12/2020 – 3/26/2020

Precipitation during Storm Drain Monitoring Period, 2014

Figueroa Box Culvert Flows, 2/26/2014 – 3/1/2014

Figure D-1: Flow Monitoring Locations for Lake El Estero

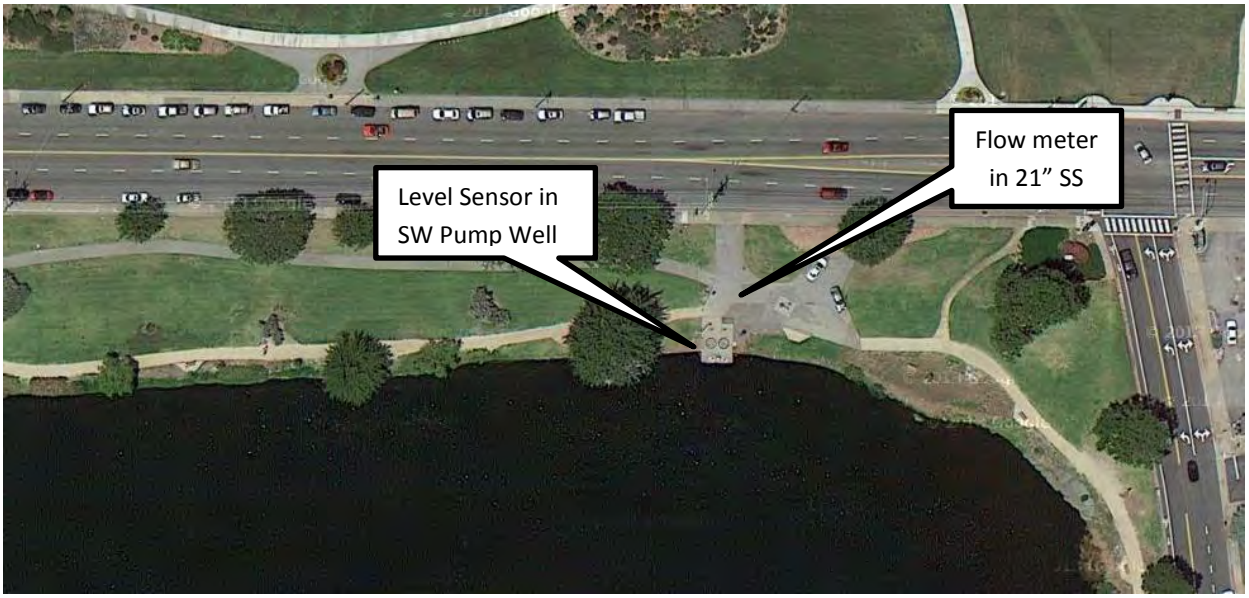




Table 2 Calibration Results Summary

Sewer System Master Plan
City of Monterey

PRELIMINARY

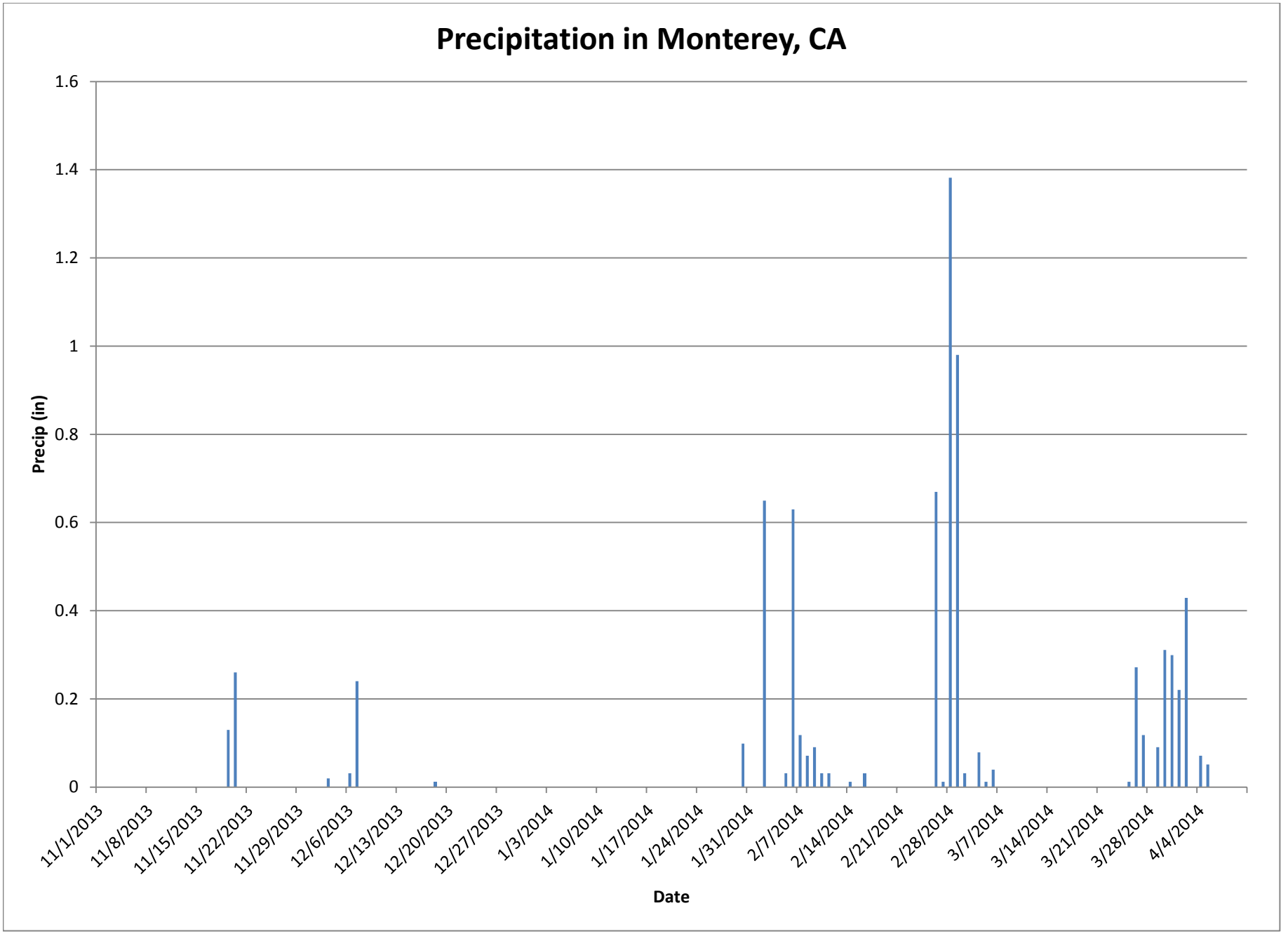
Flow Monitoring ID		Units	Pre-Shelter In Place Dry Period (Weekday)			Pre-Shelter In Place Dry Period (Weekend)			Post-Shelter In Place Dry Period (Weekday)			Post-Shelter In Place Dry Period (Weekend)			Wet Weather (Event 1) (March 13- March 17)			Wet Weather (Event 2) (March 20 - March 24)		
			Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
S-1	Flow Monitored	(mgd)	0.127	0.623	0.298	0.133	0.613	0.313	0.113	0.461	0.281	0.126	0.333	0.250	0.084	0.957	0.418	0.070	0.619	0.382
	Model	(mgd)	0.096	0.641	0.301	0.125	0.611	0.314	0.136	0.472	0.281	0.120	0.359	0.255	0.096	0.886	0.417	0.133	0.618	0.303
	Difference	(mgd)	-0.0316	0.0182	0.0021	-0.0087	-0.0023	0.0005	0.0233	0.0103	-0.0005	-0.0063	0.0266	0.0052	0.0116	-0.0711	-0.0010	0.0634	-0.0003	-0.0792
		(%)	**-24.82**	**2.92**	**0.70**	**-6.52**	**-0.37**	**0.15**	**20.54**	**2.23**	**-0.18**	**-4.96**	**7.98**	**2.07**	**13.71**	**-7.42**	**-0.25**	**91.00**	**-0.06**	**-20.73**
S-2	Flow Monitored	(mgd)	0.002	0.057	0.029	0.002	0.036	0.016	0.001	0.016	0.007	0.002	0.020	0.008	0.001	0.330	0.041	0.001	0.127	0.019
	Model	(mgd)	0.002	0.057	0.029	0.002	0.036	0.016	0.001	0.016	0.007	0.002	0.020	0.008	0.002	0.341	0.054	0.001	0.179	0.018
	Difference	(mgd)	0.0000	-0.0004	0.0000	0.0001	-0.0002	0.0000	0.0000	-0.0004	0.0000	0.0000	-0.0003	0.0000	0.0008	0.0108	0.0131	-0.0001	0.0513	-0.0014
		(%)	**1.66**	**-0.73**	**-0.08**	**6.88**	**-0.58**	**-0.05**	**-0.59**	**-2.38**	**0.03**	**1.06**	**-1.50**	**0.08**	**77.92**	**3.26**	**32.13**	**-7.30**	**40.25**	**-7.17**
S-3	Flow Monitored	(mgd)	0.002	0.007	0.004	0.002	0.002	0.002	0.001	0.004	0.003	0.001	0.002	0.002	0.001	0.012	0.003	0.001	0.012	0.002
	Model	(mgd)	0.002	0.007	0.004	0.002	0.002	0.002	0.001	0.004	0.003	0.001	0.002	0.002	0.002	0.010	0.004	0.001	0.005	0.002
	Difference	(mgd)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	0.0000	0.0001	0.0000	0.0000	0.0008	-0.0022	0.0004	0.0005	-0.0065	0.0004
		(%)	**1.39**	**-0.03**	**-0.04**	**-0.06**	**-0.25**	**0.08**	**2.72**	**-1.32**	**0.04**	**5.07**	**-0.97**	**-0.16**	**106.40**	**-18.47**	**12.64**	**67.47**	**-54.89**	**18.62**
S-4	Flow Monitored	(mgd)	0.010	0.076	0.044	0.010	0.081	0.045	0.011	0.082	0.049	0.011	0.083	0.048	0.010	0.149	0.074	0.025	0.119	0.072
	Model	(mgd)	0.010	0.075	0.044	0.010	0.079	0.045	0.011	0.082	0.049	0.011	0.082	0.048	0.010	0.153	0.080	0.011	0.105	0.061
	Difference	(mgd)	-0.0001	-0.0011	0.0000	-0.0002	-0.0017	0.0000	0.0001	-0.0007	0.0000	0.0002	-0.0013	0.0000	0.0007	0.0038	0.0060	-0.0137	-0.0134	-0.0106
		(%)	**-1.30**	**-1.44**	**0.00**	**-1.53**	**-2.07**	**-0.11**	**0.66**	**-0.87**	**-0.04**	**1.62**	**-1.63**	**0.04**	**7.52**	**2.56**	**8.09**	**-54.45**	**-11.32**	**-14.68**
S-5	Flow Monitored	(mgd)	0.001	0.017	0.007	0.001	0.014	0.007	0.000	0.003	0.001	0.000	0.002	0.001	0.000	0.017	0.004	0.000	0.010	0.001
	Model	(mgd)	0.001	0.016	0.007	0.001	0.014	0.007	0.000	0.003	0.001	0.000	0.002	0.001	0.001	0.018	0.008	0.000	0.008	0.001
	Difference	(mgd)	0.0000	-0.0002	0.0000	0.0000	-0.0006	0.0000	0.0001	-0.0003	0.0000	0.0000	-0.0002	0.0000	0.0009	0.0004	0.0042	0.0000	-0.0029	-0.0002
		(%)	**1.18**	**-1.09**	**0.03**	**3.91**	**-4.53**	**-0.05**	**86.60**	**-9.44**	**-0.08**	**1.26**	**-10.34**	**-0.09**	**3,733.37**	**2.28**	**116.61**	**44.62**	**-27.98**	**-10.78**
S-6	Flow Monitored	(mgd)	0.008	0.035	0.018	0.007	0.015	0.011	0.010	0.031	0.018	0.003	0.022	0.014	0.001	0.022	0.005	0.006	0.013	0.008
	Model	(mgd)	0.008	0.035	0.018	0.007	0.015	0.011	0.010	0.031	0.018	0.003	0.022	0.014	0.001	0.015	0.005	0.001	0.013	0.007
	Difference	(mgd)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0008	-0.0063	-0.0003	-0.0044	0.0002	-0.0007
		(%)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-59.52**	**-28.97**	**-6.56**	**-77.98**	**1.81**	**-9.31**
S-7	Flow Monitored	(mgd)	0.085	0.446	0.303	0.088	0.555	0.357	0.093	0.374	0.251	0.084	0.430	0.257	0.080	0.703	0.424	0.146	0.542	0.351
	Model	(mgd)	0.091	0.431	0.303	0.094	0.549	0.356	0.095	0.370	0.252	0.086	0.420	0.257	0.091	0.757	0.442	0.095	0.475	0.288
	Difference	(mgd)	0.0061	-0.0153	0.0001	0.0067	-0.0069	-0.0007	0.0018	-0.0042	0.0001	0.0021	-0.0096	0.0001	0.0109	0.0547	0.0187	-0.0513	-0.0670	-0.0635
		(%)	**7.19**	**-3.43**	**0.04**	**7.66**	**-1.24**	**-0.21**	**1.88**	**-1.13**	**0.04**	**2.54**	**-2.23**	**0.06**	**13.55**	**7.79**	**4.41**	**-35.07**	**-12.36**	**-18.09**
S-8	Flow Monitored	(mgd)	0.248	0.814	0.595	0.244	0.884	0.607	0.269	0.781	0.566	0.279	0.850	0.567	0.285	1.547	0.892	0.348	1.027	0.724
	Model	(mgd)	0.249	0.809	0.595	0.241	0.868	0.598	0.265	0.781	0.566	0.277	0.822	0.561	0.244	1.379	0.866	0.264	1.047	0.662
	Difference	(mgd)	0.0014	-0.0051	0.0002	-0.0031	-0.0166	-0.0089	-0.0041	-0.0001	0.0000	-0.0019	-0.0280	-0.0062	-0.0402	-0.1681	-0.0260	-0.0844	0.0198	-0.0620
		(%)	**0.56**	**-0.63**	**0.04**	**-1.28**	**-1.88**	**-1.47**	**-1.52**	**-0.01**	**-0.01**	**-0.70**	**-3.29**	**-1.10**	**-14.14**	**-10.86**	**-2.92**	**-24.24**	**1.93**	**-8.57**
S-9	Flow Monitored	(mgd)	0.271	0.925	0.685	0.282	1.045	0.689	0.287	0.890	0.651	0.272	0.961	0.648	0.214	1.832	1.000	0.381	1.260	0.858
	Model	(mgd)	0.260	0.963	0.685	0.269	1.089	0.696	0.280	0.902	0.650	0.282	0.922	0.635	0.260	1.671	1.019	0.276	1.324	0.749
	Difference	(mgd)	-0.0115	0.0388	0.0002	-0.0136	0.0433	0.0072	-0.0069	0.0126	-0.0006	0.0101	-0.0391	-0.0134	0.0459	-0.1605	0.0196	-0.1047	0.0644	-0.1082
		(%)	**-4.25**	**4.20**	**0.03**	**-4.81**	**4.14**	**1.05**	**-2.40**	**1.41**	**-0.09**	**3.73**	**-4.06**	**-2.07**	**21.46**	**-8.76**	**1.96**	**-27.48**	**5.11**	**-12.61**
S-10	Flow Monitored	(mgd)	0.088	0.455	0.299	0.090	0.498	0.289	0.087	0.437	0.270	0.106	0.448	0.249	0.085	0.609	0.367	0.113	0.543	0.288
	Model	(mgd)	0.093	0.449	0.299	0.093	0.475	0.283	0.098	0.415	0.270	0.111	0.451	0.261	0.093	0.577	0.350	0.098	0.509	0.284
	Difference	(mgd)	0.0051	-0.0054	0.0002	0.0035	-0.0232	-0.0066	0.0108	-0.0220	0.0001	0.0049	0.0024	0.0118	0.0079	-0.0324	-0.0170	-0.0156	-0.0336	-0.0042
		(%)	**5.83**	**-1.20**	**0.08**	**3.91**	**-4.65**	**-2.28**	**12.31**	**-5.04**	**0.05**	**4.65**	**0.53**	**4.75**	**9.23**	**-5.32**	**-4.63**	**-13.78**	**-6.18**	**-1.45**
S-11	Flow Monitored	(mgd)	0.025	0.114	0.068	0.025	0.111	0.067	0.025	0.117	0.070	0.024	0.126	0.075	0.029	0.335	0.095	0.036	0.142	0.093
	Model	(mgd)	0.026	0.113	0.068	0.025	0.111	0.067	0.026	0.115	0.070	0.025	0.124	0.074	0.026	0.172	0.085	0.025	0.133	0.078
	Difference	(mgd)	0.0011	-0.0016	0.0001	0.0000	-0.0006	-0.0001	0.0010	-0.0025	0.0000	0.0010	-0.0024	-0.0002	-0.0025	-0.1626	-0.0105	-0.0109	-0.0090	-0.0152
		(%)	**4.46**	**-1.40**	**0.11**	**-0.11**	**-0.58**	**-0.22**	**3.93**	**-2.16**	**-0.06**	**4.21**	**-1.90**	**-0.26**	**-8.93**	**-48.54**	**-11.02**	**-30.12**	**-6.33**	**-16.37**
S-12	Flow Monitored	(mgd)	0.053	0.279	0.175	0.053	0.311	0.183	0.073	0.276	0.187	0.079	0.245	0.170	0.058	0.531	0.285	0.184	0.488	0.306
	Model	(mgd)	0.053	0.277	0.174	0.054	0.310	0.182	0.078	0.274	0.186	0.081	0.243	0.170	0.053	0.493	0.275	0.125	0.534	0.317
	Difference	(mgd)	0.0009	-0.0029	-0.0006	0.0009	-0.0009	-0.0008	0.0047	-0.0020	-0.0008	0.0022	-0.0020	-0.0008	-0.0046	-0.0376	-0.0098	-0.0595	0.0452	0.0110
		(%)	**1.74**	**-1.03**	**-0.37**	**1.78**	**-0.28**	**-0.45**	**6.45**	**-0.73**	**-0.44**	**2.81**	**-0.80**	**-0.46**	**-7.86**	**-7.09**	**-3.45**	**-32.33**	**9.26**	**3.58**

AKEL ENGINEERING GROUP INC.

9/22/2020

Excerpt from City of Monterey, Sewer Master Plan, prepared by Akel Engineering Group

Sewer Flow Monitoring Results, Site S-8 is manhole D05-052


Precipitation in Monterey, CA
Precip (in)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
11/1/2013
11/8/2013
11/15/2013
11/22/2013
11/29/2013
12/6/2013
12/13/2013
12/20/2013
12/27/2013
1/3/2014
1/10/2014
1/17/2014
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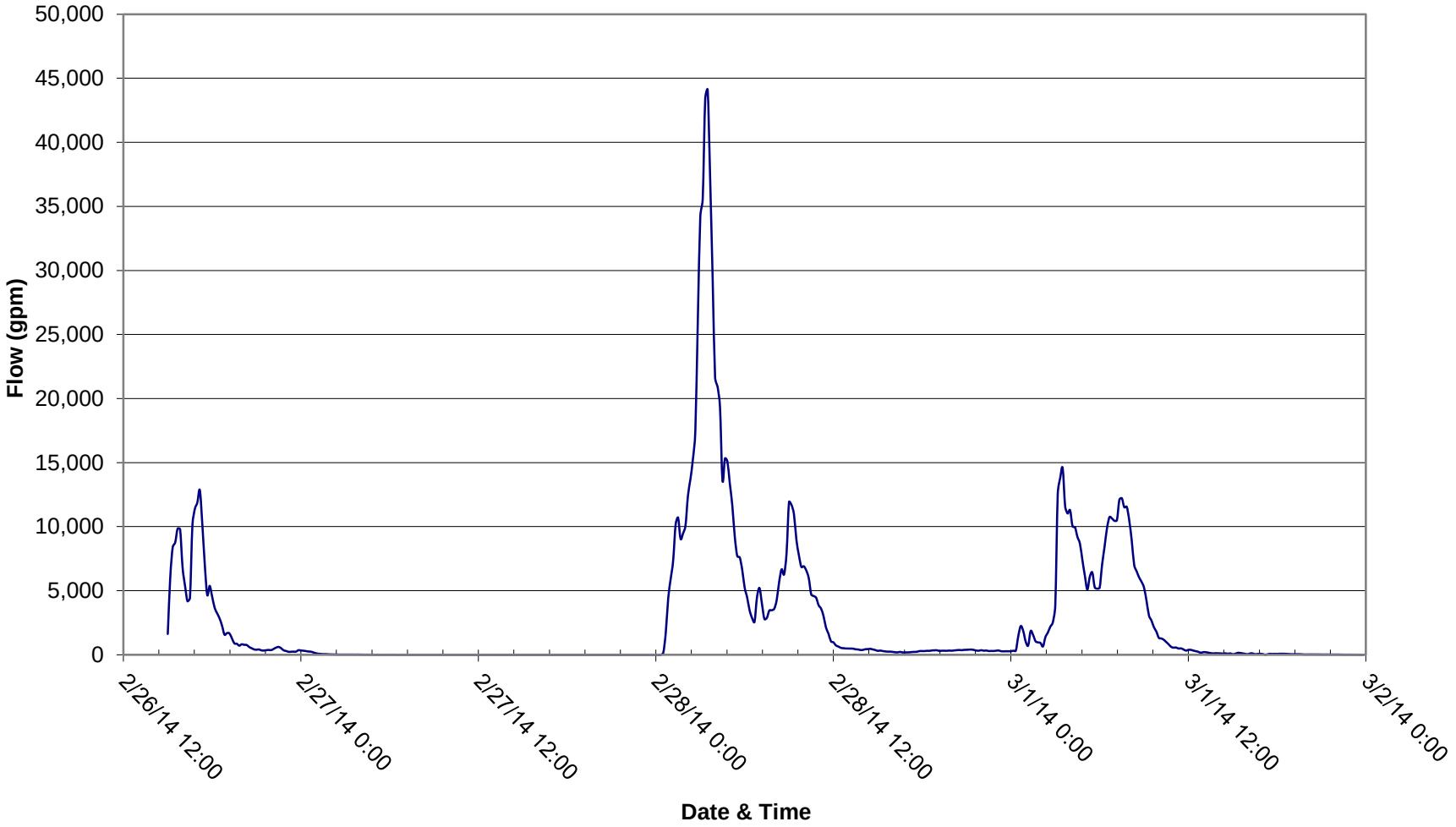
3/28/2014
4/4/2014
Date

Figureroa Box Culvert
February 26, 2014 to March 1, 2014
10-Minute Average



Appendix E: References

California Department of Water Resources:

California Irrigation Management Information System (CIMIS) website, www.cimis.water.gov

California State Water Resources Control Board

eWRIMS, Electronic Water Rights Information System (on-line database)

Section 303(d) Listing of Impaired Water Bodies, 2020-22

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Appendix F: Memoranda

Memorandum: Sea Level Rise analysis for the Lake El Estero Diversion Project

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

3 Quail Run Circle, Suite 101
Salinas, CA 93907
t. 831-883-4848
f. 831-758-6328
asterbenz@swsv.com

MEMORANDUM

TO:	Kevin Anderson, City of Monterey PW	DATE:	September 30, 2024
FROM:	Andrew Sterbenz, PE and Arturo Jarvio, EIT	JOB#:	DD&A.09.22
SUBJECT:	Sea Level Rise Analysis for the Lake El Estero Diversion		

The purpose of this memorandum is to provide the projected future sea levels and wave inundation heights for the Lake EL Estero Diversion Project. The project is located next to the City of Monterey's Lake El Estero stormwater pump station at the northeast corner of the lake (Lat 36.599617 N, Long 121.884263 W), as shown on the aerial photo below. The project would divert winter stormwater from the lake into the sanitary sewer system as a source of supply for recycled water production. Lake levels are maintained for aesthetics and recreation, and excess stormwater inflows are pumped to a discharge point on Del Monte Beach.



Figure 1, Lake El Estero Diversion Location[1]

The existing stormwater pump station is a concrete structure constructed in 1968. The original design elevations are given in Figure A1, attached). The top deck of the pump station is at elevation 10-ft (+/-) on the NAVD 1988 datum. The lake is separated from the ocean by Del Monte Blvd and the coastal

[1] Google Earth, Imagery date 4/12/2023

dunes along Del Monte Beach. The City's storm water system map shows a gravity outlet at the northwest corner of the lake consisting of two 30-inch pipes, but the status of those pipes is unknown and assumed to be closed. The City relies on the pump station to remove excess stormwater from the lake.

The California Coastal Commission has adopted guidance for coastal planning with respect to sea level rise. The guidance document provides three levels of projected sea level changes over a 100-year planning period (years 2000 to 2100). The scenarios are classified as Low Risk Aversion (projected levels with a 17% chance of being exceeded), Medium-High Risk Aversion (levels with a 0.5% chance of being exceeded) and Extreme Risk Aversion (the maximum probable single occurrence). Projections are provided in 10-year time steps, as provided in Table 1, below.

Table 1, Monterey Bay Sea Level Rise Projections (in feet, relative to 2000 levels)[2]

Year	Low Risk Aversion	Medium-High Risk Aversion	Extreme Risk Aversion
2030	0.5	0.8	1.0
2040	0.8	1.2	1.7
2050	1.1	1.9	2.7
2060	1.4	2.6	3.8
2070	1.8	3.4	5.1
2080	2.3	4.4	6.6
2090	2.8	5.5	8.2
2100	3.3	6.9	10.1

Current tidal levels for the Monterey Bay were obtained from the NOAA website[3] on the NAVD 1988 datum (see Figure 2). Future tidal ranges are then calculated by adding the projected sea level rise, as provided in Tables A1, A2 and A3 (attached). For context, the tides for 4/12/2023 were also obtained (the date of the image in Figure 1). The sea level in that image is from 0- to 2-ft on the NAVD 88 datum.

Table 2, below, provides the projected future mean high water (MHW) elevations for the Monterey Bay. Lake El Estero is maintained between elevations 7- and 8-ft. Under the medium-high risk scenario, the MHW level will exceed the current lake level by the year 2070. Seawater could potentially back-feed into the lake through the gravity storm drain system, if the existing outlet is not disconnected as currently assumed. The existing outfall should already be equipped with a flap gate, and if not, one would be needed earlier than 2070 to prevent back-feeding from periodic higher high tides.

[2] Excerpt from Table G-6 of the California Coastal Commission Sea Level Rise Policy Guidance
[3] tidesandcurrents.noaa.gov, Station 9413450, Monterey, CA

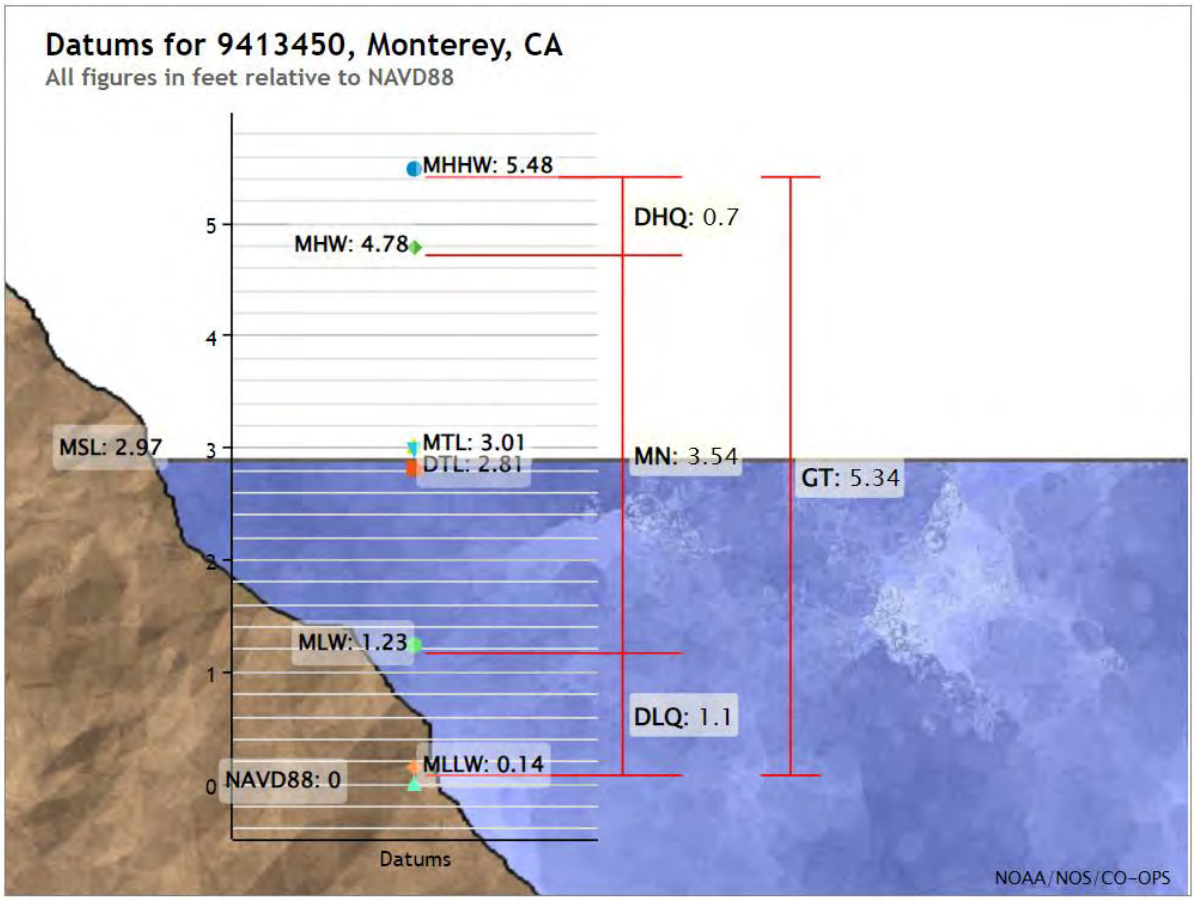

Figure 2, Monterey Bay Tide Data, NAVD 88

Table 2, Potential Mean High Water Elevations (ft, NAVD 88)

Year	Low Risk Aversion	Medium-High Risk Aversion	Extreme Risk Aversion
Current	4.78	4.78	4.78
2030	5.28	5.58	5.78
2040	5.58	5.98	6.48
2050	5.88	6.68	7.48
2060	6.18	7.38	8.58
2070	6.58	8.18	9.88
2080	7.08	9.18	11.38
2090	7.58	10.28	12.98
2100	8.08	11.68	14.88

The most recent FEMA Flood Insurance Study places the site in Zone AE with a Base Flood Elevation (BFE) of 11-ft, and adjacent to Zone VE along Del Monte Beach (see the attached FIRMette). The site is

at coastal transect 26[4], which has a Base Flood Elevation of 13.0-ft, a 1% Annual Chance Total Water Elevation of 13.4-ft, and a 0.2% Annual Chance Total Water Elevation of 14.1-ft. The total water elevation reflects the FEMA wave run-up analysis, not a standing water level. The 1% total water level is included in Tables A1, A2 and A3. The projected total water elevations for the site under all scenarios are presented in Table 3.

Table 3, Potential Wave Run-Up Elevations (ft, NAVD 88)

	Low Risk Aversion			Medium-High Risk Aversion			Extreme Risk Aversion		
FEMA Case Year	**BFE**	**1% Annual**	**0.2% Annual**	**BFE**	**1% Annual**	**0.2% Annual**	**BFE**	**1% Annual**	**0.2% Annual**
Current	13.0	13.4	14.1	13.0	13.4	14.1	13.0	13.4	14.1
2030	13.5	13.9	14.6	13.8	14.2	14.9	14.0	14.4	15.1
2040	13.8	14.2	14.9	14.2	14.6	15.3	14.7	15.1	15.8
2050	14.1	14.5	15.2	14.9	15.3	16.0	15.7	16.1	16.8
2060	14.4	14.8	15.5	15.6	16.0	16.7	16.8	17.2	17.9
2070	14.8	15.2	15.9	16.4	16.8	17.5	18.1	18.5	19.2
2080	15.3	15.7	16.4	17.4	17.8	18.5	19.6	20.0	20.7
2090	15.8	16.2	16.9	18.5	18.9	19.6	21.2	21.6	22.3
2100	16.3	16.7	17.4	19.9	20.3	21.0	23.1	23.5	24.2

Storm-driven waves are currently blocked by the dune along Del Monte Beach, which ranges from 14- to 16-ft in elevation. Pedestrian paths between the dunes are at 10- to 12-ft. Waves are projected to exceed the dune height under all three future scenarios. Water passing inland of the dune will cause flooding on Del Monte Blvd before reaching Lake El Estero.

For the purposes of the stormwater diversion study, we will disregard the effects of wave run-up. We assume that the dunes will be artificially raised at some point to protect Del Monte Blvd and the adjacent structures. The projected mean high water elevation is not projected to exceed the Zone AE base flood elevation of 11-ft for the next 50-years, so that elevation will be used for designing electrical equipment protection.

[4] Elevations from FEMA FIS 06053V002B, Table 17

Attachments:

Table A1, Monterey Bay Levels, Low Risk Aversion
Table A2, Monterey Bay Levels, Medium-High Risk Aversion
Table A3, Monterey Bay Levels, Extreme Risk Aversion
Monterey Bay Tide Gage 9413450, Tides for 4/12/2023 – 4/14/2023.
Figure A1, Lake El Estero Pump Station Elevations
National Flood Hazard Layer FIRMette, Lake El Estero Vicinity

References:

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Federal Emergency Management Agency, Flood Insurance Study Number 06053CV002B, Monterey County, California and Incorporated Areas, Version Number 2.3.2.1, Volume 2, revised June 21, 2017

NOAA Tide Gage Station 9413450, Monterey, CA

Table A1, Current and Projected Monterey Bay Levels, Low Risk Aversion Scenario

Monterey Bay Levels		Current	2030	2040	2050	2060	2070	2080	2090	2100
(feet, NAVD 88)	SLR --->		0.5	0.8	1.1	1.4	1.8	2.3	2.8	3.3
Storm Surge (FEMA FIS 2017)		13.40	13.90	14.20	14.50	14.80	15.20	15.70	16.20	16.70
Mean Higher High Water	MHHW	5.45	5.95	6.25	6.55	6.85	7.25	7.75	8.25	8.75
Mean High Water	MHW	4.78	5.28	5.58	5.88	6.18	6.58	7.08	7.58	8.08
Mean Sea Level	MSL	2.97	3.47	3.77	4.07	4.37	4.77	5.27	5.77	6.27
Mean Low Water	MLW	1.23	1.73	2.03	2.33	2.63	3.03	3.53	4.03	4.53
Mean Lower Low Water	MLLW	0.14	0.64	0.94	1.24	1.54	1.94	2.44	2.94	3.44

Table A2, Current and Projected Monterey Bay Levels, Medium-High Risk Aversion Scenario

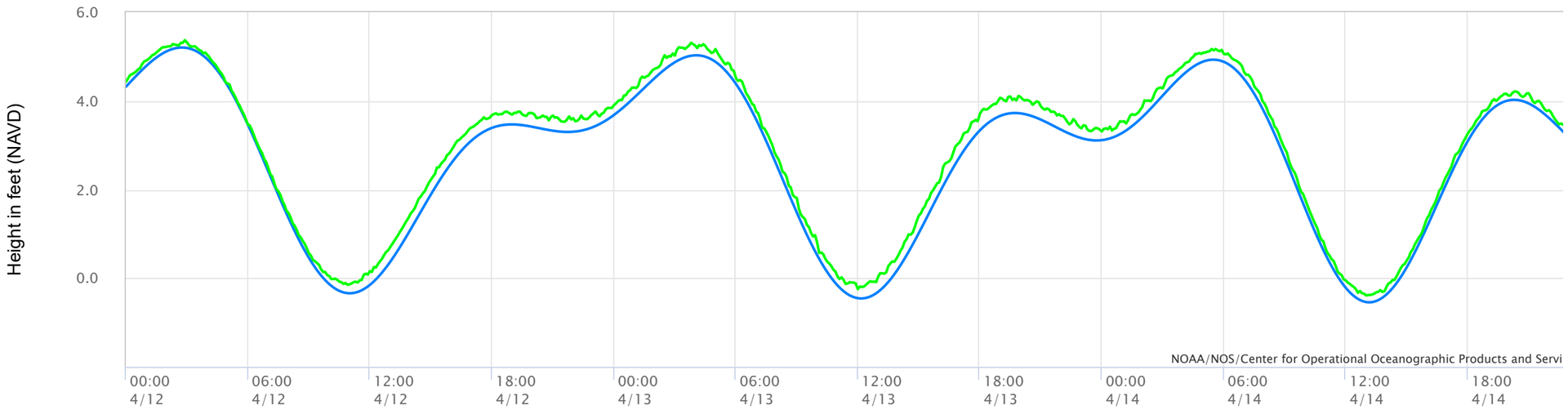
Monterey Bay Levels		Current	2030	2040	2050	2060	2070	2080	2090	2100
(feet, NAVD 88)	SLR --->		0.8	1.3	1.9	2.6	3.5	4.5	5.6	6.9
Storm Surge (FEMA FIS 2017)		13.40	14.20	14.70	15.30	16.00	16.90	17.90	19.00	20.30
Mean Higher High Water	MHHW	5.45	6.25	6.75	7.35	8.05	8.95	9.95	11.05	12.35
Mean High Water	MHW	4.78	5.58	6.08	6.68	7.38	8.28	9.28	10.38	11.68
Mean Sea Level	MSL	2.97	3.77	4.27	4.87	5.57	6.47	7.47	8.57	9.87
Mean Low Water	MLW	1.23	2.03	2.53	3.13	3.83	4.73	5.73	6.83	8.13
Mean Lower Low Water	MLLW	0.14	0.94	1.44	2.04	2.74	3.64	4.64	5.74	7.04

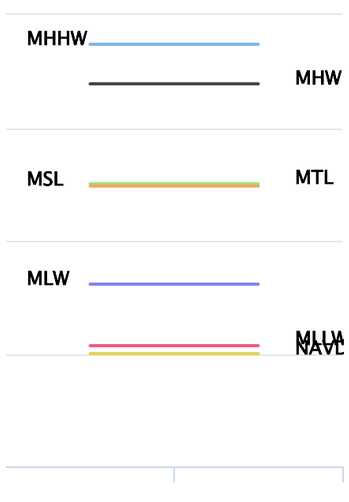
Table A3, Current and Projected Monterey Bay Levels, Extreme Risk Aversion Scenario

Monterey Bay Levels		Current	2030	2040	2050	2060	2070	2080	2090	2100
(feet, NAVD 88)	SLR --->		1.0	1.7	2.7	3.8	5.1	6.6	8.2	10.1
Storm Surge (FEMA FIS 2017)		13.40	14.40	15.10	16.10	17.20	18.50	20.00	21.60	23.50
Mean Higher High Water	MHHW	5.45	6.45	7.15	8.15	9.25	10.55	12.05	13.65	15.55
Mean High Water	MHW	4.78	5.78	6.48	7.48	8.58	9.88	11.38	12.98	14.88
Mean Sea Level	MSL	2.97	3.97	4.67	5.67	6.77	8.07	9.57	11.17	13.07
Mean Low Water	MLW	1.23	2.23	2.93	3.93	5.03	6.33	7.83	9.43	11.33
Mean Lower Low Water	MLLW	0.14	1.14	1.84	2.84	3.94	5.24	6.74	8.34	10.24

NOAA is monitoring water levels and winds for Hurricane Helene (https://tidesandcurrents.noaa.gov/inundationdb/cidstorm.html?stormname=Helene)**. Click to view real-time water level and meteorologica data.** ×

NOAA/NOS/CO-OPS
Observed Water Levels at 9413450, Monterey CA
From 2023/04/12 00:00 LST/LDT to 2023/04/14 23:59 LST/LDT





Options for
9413450 Monterey

From:
Apr 12 2023

To:
Apr 14 2023

Units
Standard

Timezone
LST/LDT

Datum (datum_options.html)
NAVD

Shift dates
Back 1 Day | Forward 1 Day

Interval
6 min | 1 hr | H/L | Day | Month

Update
Plot | Data Only

Show Data Listing

Show nearby stations

Products available at 9413450 Monterey, CA

TIDES/WATER LEVELS

Water Levels (/waterlevels.html?id=9413450)

NOAA Tide Predictions (/noaatidepredictions.html?id=9413450)

Harmonic Constituents (/harcon.html?id=9413450)

Sea Level Trends (/sltrends/sltrends_station.shtml?id=9413450)

Datums (/datums.html?id=9413450)

Bench Mark Sheets (/benchmarks.html?id=9413450)

Extreme Water Levels (/est/est_station.shtml?stnid=9413450)

Reports (/reports.html?id=9413450)

METEOROLOGICAL/OTHER

Meteorological Observations (/met.html?id=9413450)

Water Temp/Conductivity

PORTS®

This station is not a member of PORTS®

OPERATIONAL FORECAST SYSTEMS

West Coast (/ofs/wcofs/wcofs.html)

OFS product page for Monterey (/ofs/ofs_station.html?stname=Monterey&ofs=wc&stnid=9413450&subdomain=sca)

INFORMATION

Station Home Page (/stationhome.html?id=9413450)

Data Inventory (/inventory.html?id=9413450)

Measurement Specifications (/measure.html)

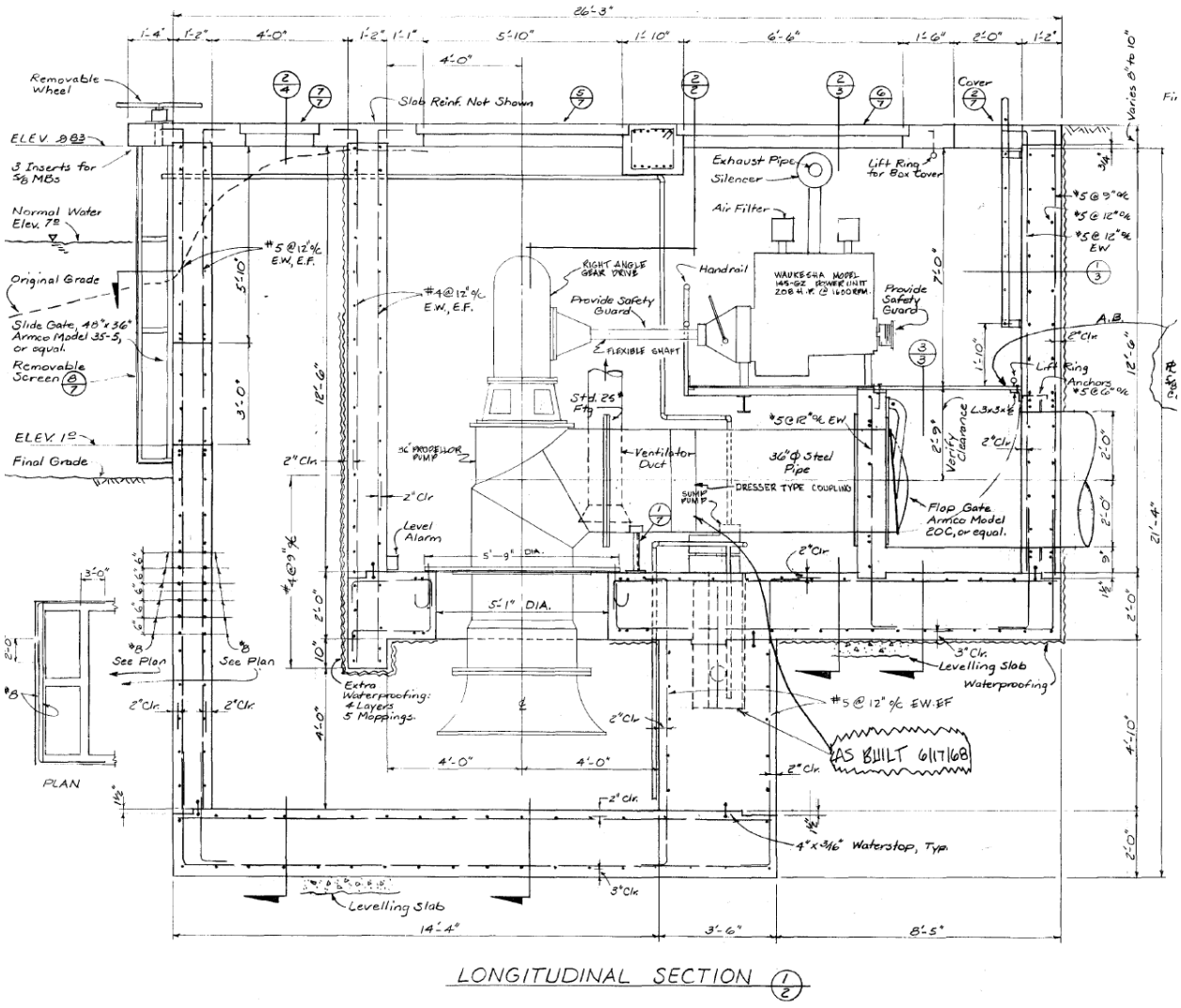


Figure A1. El Estero Pump Station Elevations

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/7/2022 at 2:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix C – City of Monterey Detention Basin Management Project Biological Resource Report and Wetland Delineation

DETENTION BASIN MAINTENANCE PROJECT

BIOLOGICAL RESOURCES REPORT

JUNE 5, 2017



PREPARED BY:

Denise Duffy & Associates, Inc.
Contact: Josh Harwayne
947 Cass St. Suite 5
Monterey, California 93940

PREPARED FOR:

City of Monterey
580 Pacific Street, Room 7
Monterey California, 93940

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APPENDIX C: SPECIAL-STATUS SPECIES TABLE

APPENDIX D: WETLAND DELINEATION

APPENDIX E: DD&A 2016 WILDLIFE SURVEY REPORT

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Table 1: Approximate acreage of wetlands mapped at each project site and approximate acreage of wetlands impacted by the proposed project in year 1. 28

INTRODUCTION

Denise Duffy & Associates, Inc. (DD&A) was contracted by the City of Monterey (City) to prepare a Biological Resources Report for the Detention Basin Management Project (proposed project), located within Monterey, California (Figure 1). The City is proposing maintenance activities for six man-made stormwater detention basins (detention basins or project sites) located within the City of Monterey (Figure 2). The emphasis of this study is to describe existing biological resources within and surrounding the project sites, identify any special-status species and sensitive habitats within the project sites, assess potential impacts that may occur to biological resources, and recommend appropriate avoidance, minimization, and mitigation measures necessary to reduce/avoid those impacts.

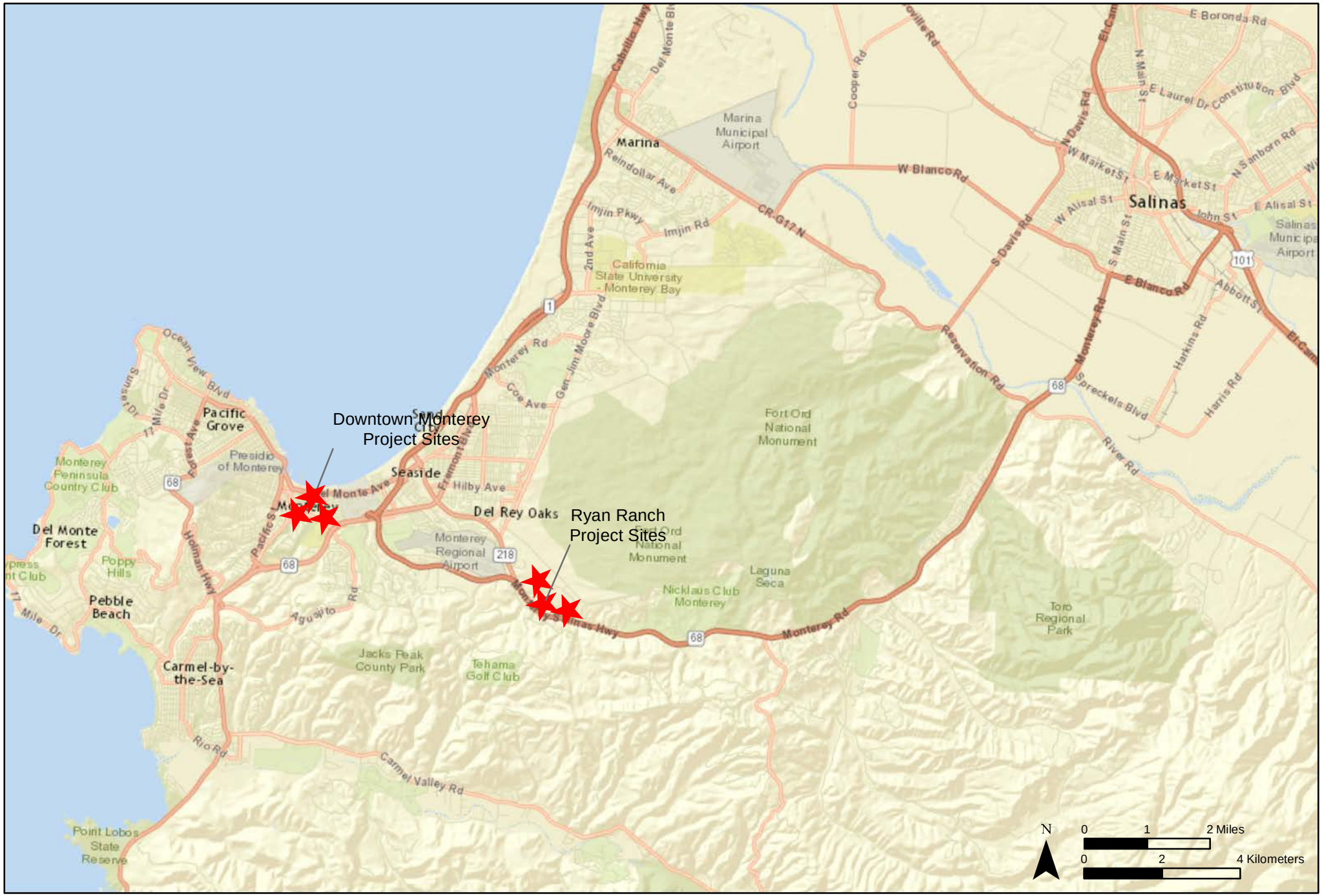
Summary of Results

A number of special-status wildlife species have the potential to occur at some or all of the project sites. Nesting raptors and other migratory birds, protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code, may nest within trees located within or immediately adjacent to the project sites. The proposed project will not result in the removal of any trees. The California tiger salamander (*Ambystoma californiense,* CTS), listed under the California Endangered Species Act (CESA) and Federal Endangered Species Acts (ESA), has the potential to occur at the Harris and Lower Ragsdale project sites. The California red-legged frog (*Rana Draytonii,* CRLF), listed under ESA, and the tricolored blackbird (*Agelaius tricolor*), a candidate for listing under the CESA, both have the potential to occur at all of the project sites. However, protocol surveys conducted for CRLF and tricolored blackbird in 2016 at the project sites resulted in negative findings. Additional special-status wildlife species including the Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*) and the coast horned lizard (*Phrynosoma coronatum*), have the potential to occur at a number of the project sites. A number of special-status plant species have the potential to occur at some or all of the project sites. Protocol level surveys for special-status plant species are underway at the project sites. It was identified that three focused botanical surveys would be required to cover the appropriate blooming period of the special-status plant species that were identified as having the potential to occur at the project sites. At this time two of the three botanical surveys have been completed and the final survey is scheduled for summer 2017. Any special-status plant species found during the botanical surveys will be avoided. Potentially jurisdictional wetlands and other waters of the U.S. are present at all of the project sites. Impacts to wetlands as a result of the proposed project will be temporary as sediment will continue to enter the project sites in-between dredging events, resulting in the formation of new wetlands, replacing those that have been removed via maintenance activities. Mitigation measures are included to reduce all potentially significant impacts to a less-than-significant level in accordance with the California Environmental Quality Act (CEQA).

Project Description

The proposed project includes maintenance activities for six detention basins (project sites) located in the City of Monterey: Lake El Estero[1], Washerwoman's Pond, Lagunita Mirada Sediment Basin, Lower Ragsdale Detention Basin (Lower Ragsdale), Harris Detention Basin (Harris), and Wilson Detention Basin (Wilson) (Figure 2). The six detention basins identified as part of the proposed project capture and store stormwater runoff from surrounding areas. The capacity and function of these detention basins have been reduced by the presence of emergent vegetation and the accumulation of sediment. Additionally, some of the detention basins have associated infrastructure that requires upkeep and occasional repairs to function as intended. The proposed project involves management and maintenance activities by the City

[1] Lake El Estero is not strictly a detention basin as it has additional function and value in regard to recreation and esthetics. However, for the purposes of this document, it is included as one of six basins within the City that require maintenance because they retain sediment and associated vegetation over time.





Title:

Detention Basin Management Project Location Map

Date: April 15, 2016

Scale: 1 inch = 1.97 miles

Project: 2013-65 760

Monterey | San Jose

Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 1

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Assessment\Figure 1 - 8x11 Location 20160415.mxd





Title:

Detention Basin Management Project
Project Site Map

Date: April 15, 2016

Scale: 1 inch = 0.46 miles

Project: 2013-65 760

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947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
2

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Assessment\Figure 2 - 8x11 Project Sites 20160415.mxd

that would allow the intended function and capacity of these detention basins to be restored and maintained over a period of 15 years.

The Lower Ragsdale, Harris, and Wilson sites are located in the Ryan Ranch development (Figure 3). Improvement plans for the Ryan Ranch Industrial Park from 1982 show the designed depths for these basins. Lake El Estero, Washerwoman's Pond and Lagunita Mirada Sediment Basin project sites are located in the downtown area of the City of Monterey (Figure 4). Plans were prepared and executed in 1984 as part of the El Estero Lake Restoration Project, indicating their designed depths. Earthwork exhibits recently prepared by the City show the current depths within the detention basins (Appendix A).[2]

The proposed project activities include dredging of all of the basins except Lake El Estero to restore their design depths. Washerwoman's Pond and Lagunita Mirada Sediment Basin would be drained for maintenance activities, to work at the pipe inlets and the outlet head-walls. Proposed maintenance activities at all of the basins would include: vegetation management/removal; trash removal; and inspection and repair of infrastructure as needed.[3] In addition, installation of specific erosion control structures are proposed at Lake El Estero as described below. Sediment, trash, and green waste generated by the proposed project would be disposed of properly at the Marina Dump. Project activities are discussed in more detail in the text below.

Sediment Removal

Sediment removal would consist of a few different approaches and equipment types. Where access is available, sediment shall be removed by an excavator or drag bucket from the bank of the detention basin. Alternatively, detention basins may be dredged by floating equipment. For the majority of the basins the dredging would occur with water in the pond. However, for the initial work in year 1, Washerwoman's Pond and Lagunita Mirada Sediment Basin will be drained prior to the dredging, and then graded with heavy equipment to match the original design depths. Draining of the two detention basins referenced above for sediment removal purposes will occur only once, in year 1. All dredged materials shall be hauled off-site and deposited at the Marina Dump.

Vegetation Management

Vegetation management shall include removal of emergent vegetation within the detention basins. Vegetation shall be removed with a combination of hand equipment, when necessary around and adjacent to sensitive infrastructure, and heavy equipment such as a backhoe. As the vast majority of the emergent vegetation within the detention basins is rooted in accumulated sediment, the vast majority of the vegetation removal will occur concurrently with the sediment removal as described above and will be a byproduct of that activity. Vegetation removal in the first year (year 1) will include removal of 50% of the vegetation at all of the detention basins except Washerwoman's Pond and Lagunita Mirada Sediment Basin; these two detention basins will be drained and regraded in the first year, resulting in the removal of all of the existing wetland vegetation at those two project sites. In subsequent years, only 50% of the vegetation would be removed every two years at all of the detention basins. Additional trimming and mowing shall occur in adjacent uplands when the basins are in park or urban settings. All vegetation removed will be hauled off site and disposed of at the Marina Landfill.

[2] Lake El Estero is not included in Appendix A because no dredging is being proposed at that location.

[3] The water surface elevation at Washerwoman's Pond and Lagunita Mirada Sediment Basin may be lowered or drained on occasion to facilitate the proposed project activities, including the inspection and repair of infrastructure.





Title:

Detention Basin Management Project
Ryan Ranch Project Sites

Date: March 10, 2017

Scale: 1 inch = 0.13 miles

Project: 2013-65 760

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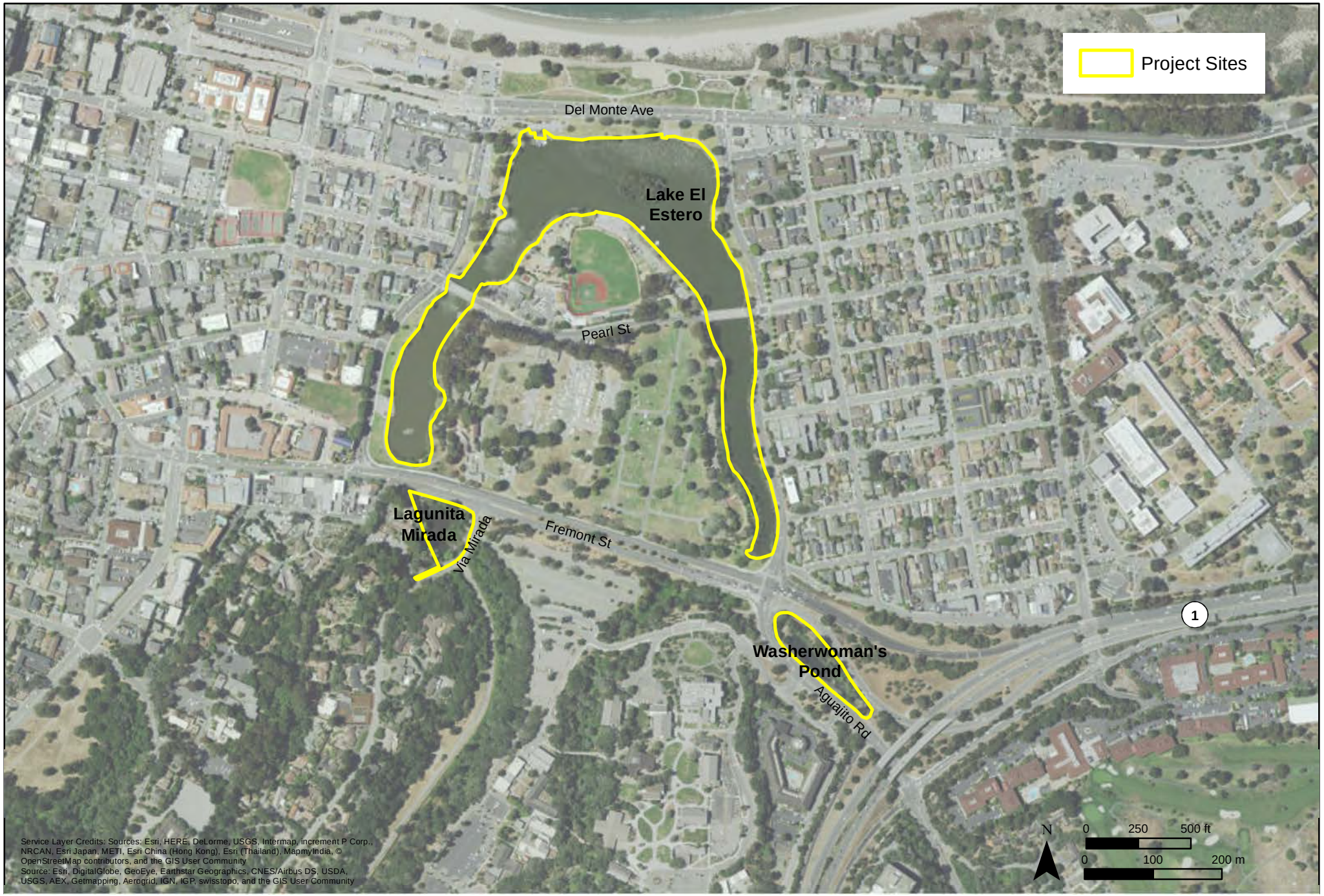
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 3

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Assessment\Figure 3 - 8x11 Ryan Ranch Project Sites 20170310.mxd





Title:

Detention Basin Management Project
Downtown Area Project Sites

Date: March 10, 2017

Scale: 1 inch = 0.11 miles

Project: 2013-65 760

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Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 4

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Assessment\Figure 4 - 8x11 Downtown Area Project Sites 20160415.mxd

Lake El Estero

The Lake El Estero project site is located in the City of Monterey in an area between Del Monte Avenue and Fremont Street (Figure 4). Lake El Estero is the largest project site, at approximately 19.5 acres, and holds water year round. Maintenance activities at Lake El Estero differ from the other proposed project sites. Annual maintenance at Lake El Estero would consist of the following activities:

- Removal of emergent vegetation[4]
- Management of erosion as needed along the eastern shore of the east finger through the installation of gabion cages (less than 200 feet per year)
- Trash removal and maintenance of vegetation in upland areas around the lake
- Any necessary repairs to aeration system (e.g. replacing broken sections)
- Dropping the elevation of the lake 3 to 4 feet in preparation of large storm events
- Dropping the elevation of the lake 3 to 4 feet, as needed, to conduct maintenance on utilities that run under the Pearl Street bridges and to work on any of the inlets that come into the lake, the lake edge walls, or gabion cages
- Inspection of existing infrastructure and conducting repairs as necessary
- Inspection of existing areas of rock wall around the perimeter of the lake and repairing/replacing as necessary

During the first year of maintenance activities vegetation removal would occur to unblock stormwater drainage inlets. Consistent with the 1984 El Estero Lake Restoration Plans, the City would preserve two large areas (approximately 0.36 acres) of emergent vegetation, one patch in the west lake near the playground and another on the western bank of the east finger (Figure 5). In years following the initial maintenance activities, emergent vegetation removal would consist of maintaining these preserved areas of emergent vegetation. Emergent vegetation outside of the preserved areas would be removed from Lake El Estero using a barge-mounted backhoe attachment and a standard backhoe operated from the shore as needed. Trash removal and maintenance of vegetation in upland areas around the lake would occur throughout the year, on a weekly basis.

Erosion can be an issue along portions of the perimeter of the lake and maintenance activities would include addressing/managing erosion as needed. Management of erosion along the east side of the east finger of the lake would consist of extending existing areas of gabion cages along the bank at a rate of approximately less than 200 hundred feet per year. Installation of these cages would involve removing emergent vegetation that may be present within the installation area and creating a shelf in the soil on which the gabion cage would sit. The gabion cage would be entirely submerged, and not visible above the water surface. The gabion cages would be installed on an as-needed basis and only if significant erosion was identified. Additional erosion management activities would include maintaining existing areas of rock wall. Maintenance of the rock wall would consist of repairing or, if necessary, replacing sections as needed to maintain the intended function of the wall. Additional activities include inspection and maintenance of utilities that run under the Pearl Street bridges and inlets to the lake. Materials removed as part of these maintenance activities would be stockpiled off-site and then disposed of at a landfill or other appropriate off-site location. The surface elevation of the lake would be reduced, as needed, by no more than four feet to enable the maintenance activities described above.

Dropping the water surface level in the lake would occur prior to large rain events. The number of times the lake level would be dropped in preparation of a large rain event will vary between years. A number of

[4] A minimum of approximately 0.36 acres of emergent vegetation will be maintained within Lake El Estero for the duration of the proposed project.





Title: Lake El Estero Detention Basin Areas of Emergent Vegetation to be Preserved

Date: March 29, 2016

Scale: 1 inch = 0.06 miles

Project: 2013-65 760

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Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 5

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Assessment\Figure 5 - 8x11 Lake El Estero 20160415.mxd

factors including intensity of rainfall events, timing of rainfall events, and the condition of soils prior to the rain event (i.e. saturation level), would affect the number of times the water level would need to be dropped each year.

Inspections and repairs of the pump inlet and gravity inlet located in the forebay of Lake El Estero would also occur as part of the proposed project. As the pump inlet and the inlet to the gravity line are submerged, the inspection and repairs of these inlets would be completed using a cofferdam.[5] The cofferdam allows for a dry area in which the inspection and any necessary repairs could occur. The dewatering would occur twice, once to conduct the inspection and then once to conduct the repairs, as the cofferdam would be allowed to refill with water while materials for the repairs are being fabricated. Gravel to a depth of two feet would be placed on the bottom of the dry side of the cofferdam. Once the water has been dropped by the initial dewatering, the dry side of the cofferdam would be maintained by a sump pump that would pump out the water collecting in the gravel. It is estimated that repairs would take approximately a week to complete once the materials were available. During repairs, the dry side would be maintained by the sump pump running continuously. For both the initial dewatering and the water removed by the sump pump the water would be pumped into a sanitary sewer line by way of a manhole located in a parking lot area, approximately 40-feet from the Lake El Estero pump structure. Each initial dewatering event would divert approximately 35,900 gallons of water. Operation of the sump pump at approximately 3 gallons/minute for a week (the expected duration of the repairs) would result in the diversion of approximately 30,000 gallons of water. As the pump inlet and inlet to the gravity line are located in different sections of the forebay, the cofferdam would be installed within the lake at each location no more than once every five years. All non-native materials temporarily placed on the dry side of the cofferdam would be removed prior to the removal of the cofferdam.

METHODS

Personnel and Survey Dates

Reconnaissance-level biological surveys were conducted at the project sites in January through May of 2016 by DD&A Environmental Scientists. Survey methods included walking the survey area and using aerial maps and GPS to identify general habitat types, potential sensitive habitats, and appropriate habitat for special-status species. Available reference materials were reviewed prior to conducting the field survey, including the California Department of Fish and Wildlife's (DFW) California Natural Diversity Database (CNDDB) occurrence reports (DFW, 2017), the U.S. Fish and Wildlife Service (USFWS) list of Federally Listed Threatened and Endangered Species that May Occur in Monterey County (USFWS, 2015), and aerial photographs of the project site (see "Data Sources" below). Data collected during the surveys was used to assess the environmental conditions of the project site and its surroundings, evaluate environmental constraints at the site and within the local vicinity, and provide a basis for recommendations to minimize and avoid impacts.

Special-Status Species

Special-status species are those plants and animals that have been formally listed or proposed for listing as Endangered or Threatened, or are Candidates for such listing under ESA or CESA. Listed species are afforded legal protection under the ESA and CESA. Species that meet the definition of Rare or Endangered under the CEQA Section 15380 are also considered special-status species. State species of special concern meet this definition and are typically provided management consideration through the CEQA process, although they are not legally protected under the ESA or CESA. Additionally, the DFW also includes some animal species that are not assigned any of the other status designations in the CNDDB "Special Animals" list. The DFW considers the taxa on this list to be those of greatest conservation need, regardless of their legal or protection status.

[5] Please see Appendix B for plans illustrating the installation of the cofferdams.

Plants listed as rare under the California Native Plant Protection Act (CNPPA) or on the California Native Plant Society (CNPS) lists are also treated as special-status species. In general, the DFW considers plant species with a California Rare Plant Rank (CRPR) 1 (CRPR 1A [Plants Presumed Extirpated in California] and CRPR 1B [Plants Rare, Threatened, or Endangered in California and Elsewhere]), or CRPR 2 (CRPR 2A [Plants Presumed Extirpated in California, But Common Elsewhere] and CRPR 2B [Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere]) of the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2017) as qualifying for legal protection under this CEQA provision. In addition, species of vascular plants, bryophytes, and lichens listed as having special-status by the DFW are considered special-status plant species (DFW, 2017).

Raptors (e.g., eagles, hawks, and owls) and their nests are protected under both federal and state laws and regulations. The MBTA and California Fish and Game Code Section 3513 prohibit killing, possessing, or trading migratory birds except in accordance with regulation prescribed by the Secretary of the Interior. Birds of prey are protected in California under Fish and Game Code Section 3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy the nest or eggs of any such bird except otherwise provided by this code or any regulation adopted pursuant thereto." In addition, fully protected species under the Fish and Game Code Section 3511 (birds), Section 4700 (mammals), Section 5515 (fish), and Section 5050 (reptiles and amphibians) are also considered special-status animal species. Species with no formal special-status designation but thought by experts to be rare or in serious decline are also considered special-status animal species (DFW, 2017).

Sensitive Habitats

Sensitive habitats include riparian corridors, wetlands, habitats for legally protected species, areas of high biological diversity, areas supporting rare or special-status wildlife habitat, and unusual or regionally restricted habitat types. Habitat types considered sensitive include those listed on the CNDDB's working list of high priority and rare natural communities (i.e., those habitats that are rare or endangered within the borders of California) (DFW, 2010), those that are occupied by species listed under the ESA or are critical habitat in accordance with ESA. Sensitive habitats also include those that are defined as Environmentally Sensitive Habitat Areas (ESHA) under the California Coastal Act. Specific habitats may also be identified as sensitive in City or County General Plans or ordinances. Sensitive habitats are regulated under federal regulations (such as the Clean Water Act and Executive Order 11990 – Protection of Wetlands), state regulations (such as the CEQA and the DFW Streambed Alteration Program), or local ordinances or policies (such as City or County tree ordinances, Habitat Management Plan [HMP] areas, and General Plan elements).

Data Sources

The primary literature and data sources reviewed in order to determine the occurrence or potential for occurrence of special-status species at the project site are as follows: current agency status information from the USFWS and DFW for species Listed, proposed for listing, or Candidates for listing as Threatened or Endangered under ESA or CESA, and those considered DFW "species of special concern" (2017); the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2015) and CNDDB occurrence reports (DFW, 2017). The Monterey and Seaside United States Geological Survey (USGS) quadrangles and the six surrounding USGS quadrangles (Carmel Valley, Marina, Mt. Carmel, Salinas, Soberanes Point, and Spreckles) from the CNDDB were also reviewed for documented special-status species occurrences in the vicinity of the project site.

From these resources, a list of special-status plant and wildlife species known or with the potential to occur in the vicinity of the proposed project was created (Appendix C). The list presents these species along with their legal status, habitat requirements, and a brief statement of the likelihood to occur.

Botany

The generalized vegetation classification schemes for California described by Holland (1986) and Sawyer et al. (2009) were consulted in classifying the vegetation of the project site. The final classification and characterization of the vegetation of the project site is based on field observations and the List of Vegetation Alliances and Associations (or Natural Communities List) (Sawyer et al., 2009). Although this list replaces all other lists of terrestrial natural communities and vegetation types developed for the CNDDB, the more commonly used terrestrial communities derived from Holland are used in this report for ease of reference.

Information regarding the distribution and habitats of local and State vascular plants was also reviewed (Howitt and Howell, 1964 and 1973; Munz and Keck, 1973; Hickman, 1993; Matthews and Mitchell, 2015; Jepson Flora Project, 2011). Scientific nomenclature for plants in this report follows Hickman (1993) and common names follow Matthews and Mitchell (2015).

Wildlife

The following literature and data sources were reviewed: DFW reports on special-status wildlife (Remsen, 1978; Williams, 1986; Jennings and Hayes, 1994; Thelander, 1994); California Wildlife Habitat Relationships Program species-habitat models (DFW, 2008; Zeiner et al., 1988; and Zeiner et al., 1990); and general wildlife references (Stebbins, 1985).

Regulatory Setting

The following regulatory discussion describes the major laws that may be applicable to the Detention Basin Management Project.

Federal Regulations

Federal Endangered Species Act

Provisions of the ESA of 1973 (16 USC 1532 et seq., as amended) protect federally Listed Threatened or Endangered species and their habitats from unlawful take. Listed species include those for which proposed and final rules have been published in the Federal Register. The ESA is administered by the USFWS or National Oceanic and Atmospheric Administration Marine Fisheries Service (NOAA Fisheries). In general, NOAA Fisheries is responsible for the protection of ESA-Listed marine species and anadromous fish, whereas other listed species are under USFWS jurisdiction.

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as Endangered. Take, as defined by ESA, is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit take of federally listed plants on sites not under federal jurisdiction. If there is the potential for incidental take of a federally Listed fish or wildlife species, take of Listed species can be authorized through either the Section 7 consultation process for federal actions or a Section 10 incidental take permit process for non-federal actions. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits).

Migratory Bird Treaty Act

The MBTA of 1918 prohibits killing, possessing, or trading migratory birds except in accordance with regulation prescribed by the Secretary of the Interior. Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. The USFWS is responsible for overseeing compliance with the MBTA.

State Regulations

California Environmental Quality Act
The CEQA was enacted in 1970 and was modeled after the National Environmental Policy Act (NEPA). CEQA encourages the protection of all aspects of the environment, requiring State and local agencies to prepare multi-disciplinary environmental impact analyses and make decisions based on those studies' findings regarding the environmental effects of the proposed action. CEQA applies to all discretionary activities proposed to be carried out or approved by California public agencies, including State, regional, county, and local agencies, unless an exemption applies. CEQA also applies to private activities that require discretionary government approvals.

California Endangered Species Act
The CESA was enacted in 1984. The California Code of Regulations (Title 14, §670.5) lists animal species considered Endangered or Threatened by the State. Section 2090 of CESA requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. Section 2080 of California Fish and Game Code prohibits "take" of any species that the commission determines to be an Endangered species or a Threatened species. "Take" is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." It does not include habitat destruction in the definition of take. A Section 2081 Incidental Take Permit from the DFW may be obtained to authorize "take" of any State Listed species.

California Fish and Game Code
Birds: Section 3503 of the California Fish and Game Code prohibits the killing, possession, or destruction of bird eggs or bird nests. Section 3503.5 and 3513 prohibit the killing, possession, or destruction of all nesting birds (including raptors and passerines). Section 3503.5 states that it is "unlawful to take, possess, or destroy the nest or eggs of any such bird except otherwise provided by this code or any regulation adopted pursuant thereto." Section 3513 prohibits the take or possession of any migratory nongame birds designated under the federal MBTA. Section 3800 prohibits take of nongame birds.

Species of Special Concern: As noted above, the DFW also maintains a list of animal "species of special concern." Although these species have no legal status, the DFW recommends considering these species during analysis of project impacts to protect declining populations and avoid the need to list them as Endangered in the future.

Native Plant Protection Act
The CNPPA of 1977 directed the DFW to carry out the legislature's intent to "preserve, protect and enhance rare and Endangered plants in the State." The CNPPA prohibits importing rare and Endangered plants into California, taking rare and Endangered plants, and selling rare and Endangered plants. The CESA and CNPPA authorized the DFW Commission to designate endangered, threatened and rare species and to regulate the taking of these species (§2050-2098, California Fish and Game Code). Plants listed as rare under the CNPPA are not protected under CESA.

Local Regulations

Monterey County Code
Title 16, Chapter 16.60, Monterey County Code, provides for the preservation of oaks and other protected tree species within the unincorporated areas of the County. As defined in Chapter 16.60.040 C, removal of more than three protected trees on a lot in a one-year period requires a Forest Management Plan (FMP) and approval of a Use Permit by the Monterey County Planning Commission. The FMP must be prepared by a qualified forester selected from the County's list of consultants. Chapter 16.060.040 D requires that the applicant relocate or replace each removed tree on a one-to-one ratio. This ratio may be varied upon showing

that such a requirement will create a special hardship in the use of the site or such a replacement would be detrimental to the long-term health and maintenance of the remaining habitat.

RESULTS

The project sites Lake El Estero, Washerwoman's Pond, and Lagunita Mirada Sediment Basin are located in the downtown area of the City of Monterey. These project sites are surrounded by urban development. The elevation at these project site ranges from 6 to 15 feet above sea level. The project sites Lower Ragsdale, Harris, and Wilson are located in the Ryan Ranch development area. Habitats adjacent to these project sites include non-native grassland, oak woodland, oak savanna, and developed. None of the project sites occur within the Coastal Zone. The following discussion describes the habitat types observed within the evaluation area for each basin.

Lake El Estero

Lake El Estero is located in El Estero Park, in the City of Monterey. The upland area consists of maintained park that includes some development. The edge of the lake is well defined and includes some emergent vegetation (please refer to Appendix D for additional information). Wetland habitat present at the site consists of emergent vegetation on the fringe of the open water habitat at the toe of the steep banks of the lake. Emergent vegetation present at the site includes California bulrush (*Schoenoplectus californicus*) and yellow flag iris (*Iris pseudacorus*). Wildlife observed during field visits included, mallards, herons, raccoons (*Procyon* sp.), fish, and bullfrogs (*Lithobates catesbeianus*).

Approximately 1.2 acres of wetland habitat is present at Lake El Estero (Figure 6). Additionally, approximately 0.6 acres of developed area consisting of roads and building not associated with the park setting, and approximately 2.3 acres of maintained park/developed habitat occurs within the assessment area. A small vegetated island, present in the middle of Lake El Estero, was excluded from the biological assessment area as no proposed project activities would occur on the island; however, the island does provide potential nesting habitat for avian species.

Washerwoman's Pond

Washerwoman's Pond is a silt pond for Lake El Estero. The water level in Washerwoman's Pond is controlled by a gate valve. Washerwoman's Pond is in an urban setting and is largely surrounded by paved roads. The upland portion of the site consists of disturbed/planted habitat between the pond and adjacent roads. The pond boundary is well defined with steep banks. Wetland habitat is present along the fringe of the basin at the toe of the bank. Dominant plant species present within the wetland area include California bulrush, common rush (*Juncus effusus*), horsetail (*Equisetum* sp.), willows (*Salix sp.*), smartweed (*Persicaria sp.*), dock (*Rumex* sp.), and cut-leaved water parsnip (*Berula erecta*). Aquatic habitat is also present at this site.

Non-native weed species are the dominant vegetation in the disturbed/planted habitat. Species present in this habitat include soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus)*, French broom (*Genista monspessulana*), barley (*Hordeum marinum*), cut-leaved plantain (*Plantago coronopus*), English plantain (*Plantago lanceolata*), rattail sixweeks grass (*Festuca myuros*), Bermuda buttercup (*Oxalis per-caprae*), sweet-clover (*Melilotus* sp.), bur-clover (*Medicago* sp.), and cheeseweed (*Malva parviflora*). Some native species are present, including dock, California blackberry (*Rubus ursinus*), and Monterey cypress (*Hesperocyparis macrocarpa*).

Approximately 0.3 acres of wetland habitat is present at Washerwoman's Pond (Figure 7). Additionally, approximately 1 acres of disturbed/planted habitat occurs in the assessment area.





Title:

Lake El Estero Habitat Map

Date: April 15, 2016

Scale: 1 inch = 0.05 miles

Project: 2013-65 760

Monterey | San Jose

Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

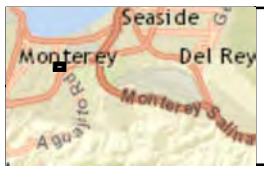
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure

6

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Maps\Figure 6 - 8x11 Portrait Lake El Estero 20160415.mxd





Title:

Washerwoman's Pond Habitat Map

Date: April 15, 2016

Scale: 1 inch = 0.02 miles

Project: 2013-65 760

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Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 7

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Maps\Figure 7 - 8x11 Washerwoman's Pond 20160415.mxd

Lagunita Mirada Sediment Basin

Lagunita Mirada Sediment Basin is a maintained open water pond in an urban setting, adjacent to the Monterey Museum of Art and paved roads. The upland area that surrounds the detention basin area consists of a maintained park habitat with a path. Non-native or horticultural species are dominant in this habitat type. Species present in the maintained park habitat include, pride of Madera (*Echium* sp.), greater periwinkle (*Vinca major*), scarlet pimpernel (*Lysimachia arvensis*), ripgut grass, bur-clover, rattail sixweeks grass, french broom, hottentot fig (*Carpobrotus edulis*), dock, plectritis (*Plectritis* sp.), milk thistle (*Silybum marianum*), and english ivy (*Hedera helix*). Developed habitat present within the site includes a section of sidewalk, street curb, and a section a trail that goes through the park area.

At Lagunita Mirada Sediment Basin, the detention basin is well defined with steep banks in most places. A small fringe of wetland habitat is present along the edge of the basin at the toe of the bank. The wetland habitat is approximately six inches wide, but expands where the slope is less steep between the upland and the pond, and where emergent vegetation occurs. The vegetation present within the wetland area includes large patches of yellow flag iris and cattails (*Typha* sp.). Alder trees (*Alnus* sp.), willows, and cottonwoods (*Populus* sp.) are also present along the edges of the detention basin. Wildlife observed during the field visit included fish and a green heron (*Butorides virescens*).

Approximately 0.3 acres of wetland habitat are present at Lagunita Mirada Sediment Basin (Figure 8). Additionally, approximately 0.8 acres of maintained park habitat and 0.1 acres of developed habitat occur within the assessment area.

Lower Ragsdale Detention Basin

The evaluation area at the Lower Ragsdale detention basin consists of a silt basin and adjacent upland area. The Lower Ragsdale project site is located between Lower Ragsdale Rd. and Highway 68 in Ryan Ranch. The upland area that surrounds the project site consists of an oak savanna with a non-native grass understory. Plant species present in the upland area of the project site includes non-native upland grasses, Italian thistle, dove's foot geranium (*Geranium molle*), red-stemmed filaree (*Erodium cicutarium*), bur-clover, poison hemlock (*Conium maculatum*), and cut-leaved plantain (*Plantago coronopus*). Developed habitat present within the project site includes a cement wall with a rock face that separates the silt basin from a basin located downstream of the project site.

Vegetation present within the silt basin includes pale spikerush (*Eleocharis macrostachya*), tall cyperus (*Cyperus eragrostis*), dock, and spreading rush (*Juncus patens*). Tree frogs and birds were observed in and around the project site. A small portion of a channel that conveys water from Lower Ragsdale Road to the silt basin is included in the project site.

Approximately 0.2 acres of wetland habitat is present at the Lower Ragsdale project site (Figure 9). Additionally, approximately 0.4 acres of oak savanna, less than 0.01 acres of developed habitat, and less than 0.01 acres of additional aquatic habitat are present within the assessment area.





Title:

Lagunita Mirada Sediment Basin Habitat Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 8

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Title:

Lower Ragsdale Detention Basin Habitat Map

Date: April 3, 2017

Scale: 1 inch = 0.02 miles

Project: 2013-65 760

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947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 9

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Harris Detention Basin

The Harris project site was dug in an upland area. The Harris detention basin contains emergent, submergent, and riparian vegetation. The southeastern portion of the detention basin is sparsely vegetated. The upland area around the Harris detention basin consists of a maintained disk golf course in an oak savanna with a non-native grassland understory.

Stormwater runoff from the adjacent areas is conveyed to the detention basin as surface runoff or through two urban inlets, one on the north corner and one in the east corner of the Harris detention basin. Water surface elevation in this site is controlled by an outlet located in the south-eastern corner of the detention basin. A hole in the base of the outfall structure is present at the lowest point in the detention basin. Due to the configuration of the outlet, the distribution of wetland habitat within the detention basin is driven by the topography and the location of the inlets. Toad and tree frog larvae were present in the ponded water during the survey. Vegetation consisting of a willow and a patch of cattails is present in a depression located along the northern and eastern sides of the detention basin, and is included in the wetland habitat. Sandmat manzanita (*Arctostaphylos pumila*) was observed adjacent to the Harris project site.

Approximately 0.2 acres of wetland habitat is present at Harris Detention Basin (Figure 10). Approximately 0.9 acres of oak savanna is also present in the assessment area.

Wilson Detention Basin

The Wilson project site is located within disturbed oak woodland and is an instream feature. A creek flows into the site from on the eastern end of the project site, and an outfall is present on the western end of the project site. The water surface elevation in the detention basin is controlled by the outfall. Vegetation along the water margin on the north-eastern portion of the detention basin consists mostly of California bulrush. Tall cyperus with patches of bulrush and cattail is the dominant vegetation present within the site.

Approximately 0.2 acres of wetland habitat is present at Wilson detention basin. Approximately 0.5 acres of disturbed oak woodland is also present in the assessment area (Figure 11).



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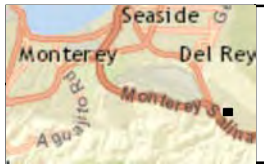

Title:

Harris Detention Basin Habitat Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
10

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Maps\Figure 10 - 8x11 Harris 20160415.mxd





Title:

Wilson Detention Basin Habitat Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 11

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Maps\Figure 11 - 8x11 Wilson 20160415.mxd

SENSITIVE HABITATS

Wetlands and other waters of the U.S. were present at all of the project sites assessed and will be impacted by the proposed project. The wetlands present within the project sites are likely jurisdictional under the Clean Water Act. Please refer to Appendix D, *City of Monterey Detention Basin Management Project; Wetland Delineation* for additional information. The United States Army Corps of Engineers (Corps) is the primary federal agency responsible for regulating wetlands and other waters of the U.S. The Corps regulates the placement of dredge and fill material, including activities such as operating heavy equipment inside the detention basins. No riparian habitat or other sensitive habitats were mapped within the evaluation area.

SPECIAL-STATUS SPECIES

Published occurrence data within the proposed project areas and surrounding USGS quadrangles were evaluated to compile a table of special-status species known to occur in the vicinity of the project sites (Appendix C).[6] Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the project sites. The special-status species that are known to or have been determined to have the potential to occur within or immediately adjacent the project site are discussed below. All other species within the table are assumed "unlikely to occur" or have a low potential to occur at the project sites for the species-specific reason presented in Appendix C. Additionally, focused surveys were conducted at the project sites for a number of special-status wildlife species with the potential to occur (Appendix E).

Special-Status Wildlife Species

Raptors and Other Migratory Bird Species

As with other migratory bird species, raptors and their nests (including hawks, eagles, falcons, kestrels, and owls) are protected under the MBTA and California Fish and Game Code. While the life histories of these species vary, overlapping nesting similarities (approximately from mid-March to August 1) allows their concurrent discussion. Most raptors are breeding residents throughout the wooded portions of the state. Raptors can be found from sea level to above 9,000 feet. Stands of live oak, riparian deciduous, or other forest habitats, as well as open grasslands, are used most frequently. Nesting also occurs in isolated stands of trees adjacent to foraging habitat. Most species nest in tree crotches 10 to 80 feet, but usually 20 to 50 feet, above ground. Breeding occurs between March and August, with peak activity May through July. Many raptor species hunt in open woodland and habitat edges and often in agricultural fields.

Suitable habitat exists at all of the project sites for nesting raptors and other migratory bird species. However, no trees will be removed as a result of the project.

Tricolored Blackbirds

Tricolored blackbirds are a riparian avian species are protected by the MBTA and California Fish and Game Code. The tricolored blackbird is protected by the DFW. Riparian and wetland habitats have some of the highest diversity of land birds of any terrestrial habitat type in the western United States.

Tricolored blackbirds breed near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose and tall herbs, which also serve as their preferred nesting habitat. Nests are built of mud and plant materials over or near fresh water, especially in

[6] The USGS quadrangles in which published CNDDB data was searched included, Carmel Valley, Marina, Monterey, Mt. Carmel, Salinas, Seaside, Soberanes Point, and Spreckles.

emergent wetlands. This species is highly colonial and the minimum nesting colony size is about 50 pairs (Grinnell and Miller 1944).

Suitable habitat for tricolored blackbirds exists at all of the project sites. However, focused surveys were conducted in the spring of 2016 at the project sites for tricolored blackbirds (Appendix E). No individuals or nesting colonies of tricolored blackbirds were detected at any of the project sites and none are expected to occur.

Coast Horned Lizard

The coast horned lizard is a DFW species of special concern. Coast horned lizards occur in valley-foothill hardwood, conifer, and riparian habitats, as well as in pine-cypress, juniper, chaparral, and annual grass habitats. This species generally inhabits open country, especially sandy areas, washes, flood plains, and wind-blown deposits in a wide variety of habitats. Coast horned lizards rely on camouflage for protection and will often lay motionless when approached. Coast horned lizards often bask in the early morning on the ground or on elevated objects such as low boulders or rocks. Predators and extreme heat are avoided by burrowing into loose soil. Periods of inactivity and winter hibernation are spent burrowed into the soil or under surface objects. Little is known about the habitat requirements for breeding and egg-laying of this species. Prey species include ants, beetles, wasps, grasshoppers, flies, and caterpillars. Coast horned lizards have the potential to occur in the grasslands within the project sites.

Suitable habitat for this species is present at all of the project sites assessed. Coast horned lizard is known to occur throughout Monterey County. This species has a moderate potential to occur within the project sites.

California Tiger Salamanders

The CTS was listed as a federally threatened species on August 4, 2004 (69 FR 47211-47248). Critical habitat was designated for CTS on August 23, 2005 (70 FR 49379-49458), and went into effect on September 22, 2005. Additionally, CTS was listed as a state threatened species on March 3, 2010.

The CTS is a large, stocky salamander most commonly found in annual grassland habitat, but also occurring in the grassy understory of valley-foothill hardwood and chaparral habitats, and uncommonly along stream courses in valley-foothill riparian habitats (USFWS, 2004). Adults spend most of their lives underground, typically in burrows of ground squirrels and other animals (USFWS, 2004). The CTS has been eliminated from an estimated 55 percent of its documented historic breeding sites. Currently, about 150 known populations of CTS remain. The CTS persists in disjunct remnant vernal pool complexes in Sonoma County and Santa Barbara County, in vernal pool complexes and isolated stockponds scattered along a narrow strip of rangeland on the fringes of the Central Valley from southern Colusa County south to northern Kern County, and in sag ponds and human-maintained stockponds in the coast ranges from the San Francisco Bay Area south to the Temblor Range.

Above-ground migratory and breeding activity may occur under suitable environmental conditions from mid-October through May. Adults may travel long distances between upland and breeding sites; adults have been found more than two kilometers (1.24 miles) from breeding sites (USFWS, 2004). Breeding occurs from November to February, following relatively warm rains (Stebbins, 2003). The CTS breeds and lays eggs primarily in vernal pools and other temporary rainwater ponds. Permanent human-made ponds are sometimes utilized if predatory fishes are absent; streams are rarely used for reproduction. Eggs are laid singly or in clumps on both submerged and emergent vegetation and on submerged debris in shallow water (Stebbins, 1972; Jennings and Hayes, 1994). Males typically spend 6-8 weeks at breeding ponds, while females typically spend only 1-2 weeks (Loredo et al., 1996). Eggs hatch within 10-14 days (USFWS, 2004) and a minimum of 10 weeks is required to complete development through metamorphosis (Jennings and Hayes, 1994), although the larval stage may last up to six months and some

larvae in Contra Costa and Alameda Counties may remain in their breeding sites over the summer (USFWS, 2004).

CTS have a moderate potential to occur at the Harris and Lower Ragsdale project sites. There is appropriate CTS breeding and upland habitat at the Harris and Lower Ragsdale project sites. Additionally, there are three CTS occurrences located within 2 kilometers (the known dispersal distance for CTS) of Harris and Lower Ragsdale.

CTS are unlikely to occur at Lake El Estero, Lagunita Mirada Sediment Basin, Washerwoman's Pond, and Wilson. While there are four occurrences of CTS within the known dispersal distance of the Wilson, there is no appropriate habitat within or directly adjacent to the Wilson project site. There are no CTS occurrences reported within five-kilometers of the Lake El Estero, Washerwoman's Pond, or Lagunita Mirada Sediment Basin project sites and CTS are not expected to occupy these project sites due to a lack of upland habitat, highly developed and disturbed landscape, presence of non-native predators, and proximity to the coast.

California Red-Legged Frog

The CRLF was listed as a federally Threatened species on June 24, 1996 (61 FR 25813-25833) and is also a DFW species of special concern. The CRLF is the largest native frog in California (44-131 mm snout-vent length) and was historically widely distributed in the central and southern portions of the state (Jennings and Hayes, 1994). Adults generally inhabit aquatic habitats with riparian vegetation, overhanging banks, or plunge pools for cover, especially during the breeding season (Jennings and Hayes, 1988). They may take refuge in small mammal burrows, leaf litter, or other moist areas during periods of inactivity or to avoid desiccation (Rathbun et al., 1993; Jennings and Hayes, 1994). Radiotelemetry data indicates that adults engage in straight-line breeding season movements irrespective of riparian corridors or topography and they may move up to two miles between non-breeding and breeding sites (Bulger et al., 2003). During the non-breeding season, a wider variety of aquatic habitats are used including small pools in coastal streams, springs, water traps, and other ephemeral water bodies (USFWS, 1996). CRLF may also move up to 300 feet from aquatic habitats into surrounding uplands, especially following rains, where individuals may spend days or weeks (Bulger et al., 2003).

This species requires still or slow-moving water during the breeding season where it can deposit large egg masses, which are most often attached to submergent or emergent vegetation. Breeding typically occurs between December and April depending on annual environmental conditions and locality. Eggs require 6 to 12 days to hatch and metamorphosis generally occurs after 3.5 to 7 months, although larvae are also capable of over-wintering. Following metamorphosis, generally between July and September, juveniles are 25-35 mm in size. Juvenile CRLF appear to have different habitat needs than adults. Jennings and Hayes (1988) recorded juvenile frogs mostly from sites with shallow water and limited shoreline or emergent vegetation. Additionally, it was important that there be small one-meter breaks in the vegetation or clearings in the dense riparian cover to allow juveniles to sun themselves and forage, but to also have close escape cover from predators. Jennings and Hayes also noted that tadpoles have different habitat needs and that in addition to vegetation cover, tadpoles use mud. It is speculated that CRLF larvae are algae grazers, however, foraging larval ecology remains unknown (Jennings et al., 1993).

It has been shown that occurrences of CRLF are negatively correlated with presence of non-native bullfrogs (Moyle, 1973; Jennings and Hayes, 1986 and 1988), although both species are able to persist at certain locations, particularly in the coastal zone. It is estimated that CRLF has disappeared from approximately 75% of its former range and has been nearly extirpated from the Sierra Nevada, Central Valley, and much of southern California (USFWS, 1996).

Suitable habitat is present at all of the project sites. However, no CNDDB occurrences are recorded within a 1-mile radius of any of the project sites and protocol level surveys for CRLF were conducted at the project sites in 2016 with a negative result (Appendix E).

Western Pond Turtle

The DFW recognizes the western pond turtle (*Actinemys marmorata*) as consisting of two subspecies, the northwestern pond turtle (*A. m. marmorata*) and the southwestern pond turtle (*A. m. pallida*), and has identified both subspecies as species of special concern. For the purposes of this report the western pond turtle will be discussed on a species level and not at the DFW-recognized subspecies level and both subspecies and all clades will be considered special-status and species of special concern as designated by DFW.

Western pond turtles are uncommon to common in permanent or nearly permanent aquatic resources in a wide variety of habitats throughout California, west of the Sierra-Cascade crest and are absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Elevation range extends from near sea level to 1430 meters (4690 feet). Western pond turtles require basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. The home range of western pond turtles is typically quite restricted; however, ongoing research indicates that in many areas, turtles may leave the watercourse in late fall and move into upland habitats where they burrow into duff and/or soil and overwinter (Holland, 1994). Western pond turtles remain active year-round and may move several times during the course of overwintering. The time spent in the terrestrial habitat appears highly variable; in southern California western pond turtles may remain in these sites for only a month or two. In pond and lake habitats, however, some turtles remain in the pond during the winter (Holland, 1994). Additionally, during the spring or early summer, females move overland for up to 100 meters (325 feet) to find suitable sites for egg-laying. Nests are typically excavated in compact, dry soils in areas characterized by sparse vegetation, usually short grasses or forbs (Holland, 1994). Three to 11 eggs are laid from March to August depending on local conditions (Ernst and Barbour, 1972). The western pond turtle is not known to be territorial, but aggressive encounters, including gesturing and physical combat (Bury and Wolfheim, 1973), are common and may function to maintain spacing on basking sites and to settle disputes over preferred spots. This species is considered omnivorous and food sources include aquatic plant material, beetles, and a wide variety of aquatic invertebrates. Fishes, frogs, and carrion have also been reported among their food (Stebbins, 1972).

Suitable habitat for this species is present at Lake El Estero, Lagunita Mirada Sediment Basin, Washerwoman's Pond, Lower Ragsdale, and Wilson detention basins. However, habitat at these project sites has been degraded due to the proximity to developed environments and human disturbance. This species is unlikely to occur at Harris Detention Basin as this resource does not provide permanent or nearly permanent water.

Focused surveys were conducted at the project sites by DD&A biologist in spring of 2016 (Appendix E). An unidentified turtle with the potential to be a western pond turtle was observed at Lagunita Mirada Sediment Basin. While the turtle was not observed long enough for a positive identification, it is assumed that it was a western pond turtle; therefore, this species is assumed present at Lagunita Mirada Sediment Basin. Western pond turtles were not observed any other detention basin during the 2016 surveys.

Coast Range Newt

The coast range newt, a subspecies of the California newt (*Taricha torosa*), is a DFW species of special concern within all portions of their range south of the Salinas River in Monterey County. This species was historically distributed in coastal drainages from the vicinity of Sherwoods (central Mendocino County) in the North Coast Ranges, south to Boulder Creek, in San Diego County (DFG, 2008). Populations in southern California appear to be highly fragmented, even historically. This species has

been depleted by large-scale historical commercial exploitation coupled with the loss and degradation of stream habitats, particularly in Los Angeles, Orange, Riverside, and San Diego Counties. The records of Slevin (1928) for Baja California are thought to be erroneous (Stebbins, 1951). The known elevation range of this species extends from near sea-level to 1830 meters (Stebbins, 1985). In central California, breeding appears to occur in two waves, the first in January or February and the second in March or April (Stebbins, 1951; Miller and Robbins, 1954), although coast range newts may enter ponds as early as December. Larvae take approximately three to six months to reach metamorphosis and subsist largely on aquatic invertebrates and also conspecifics. Adult coast range newts eat a wide variety of aquatic and terrestrial invertebrates (earthworms, insects, snails, beetles, stoneflies, etc.) as well as egg masses, larvae, and carrion.

Breeding and egg-laying occur in intermittent streams, rivers, permanent and semi-permanent ponds, lakes and large reservoirs. Eggs are laid in small clusters on the submerged portion of emergent vegetation, on submerged vegetation, and on the underside of rocks off the bottom. Coast range newt eggs contain toxic glands which repel many predators. However, coast range newt larvae may represent a significant seasonal food for newborn individuals of certain snakes, including California red-sided garter snake (*Thamnophis sirtalis*) and the Endangered San Francisco garter snake (*T. s. tetraenia*) (DFG, 2008).

Suitable habitat for this species is present at all of the project sites. Habitat for this species at Washerwoman's Pond, Lagunita Mirada Sediment Basin, and Lake El Estero is degraded by the proximity to urban development and disturbance associated with the uses adjacent to these project sites.

Monterey Dusky-Footed Woodrat

The Monterey dusky-footed woodrat is a DFW species of special concern. This is a subspecies of the dusky-footed woodrat *(Neotoma macrotis)*, which is common to oak woodlands throughout California. Dusky-footed woodrats are frequently found in forest habitats with moderate canopy cover and a moderate to dense understory; however, they may also be found in chaparral communities. Relatively large nests are constructed of grass, leaves, sticks, and feathers and are built in protected spots, such as rocky outcrops or dense brambles of blackberry (*Rubus* sp.) and/or poison oak (*Toxicodendron diversilobum*). Typical food sources for this species include leaves, flowers, nuts, berries, and truffles. Dusky-footed woodrats may be a significant food source for small- to medium-sized predators. Populations of this species may be limited by the availability of nest material. Within suitable habitat, nests are often found in close proximity to each other.

Suitable habitat for this species is present at all of the project sites assessed. Monterey dusky-footed woodrat is known to occur throughout Monterey County. This species has a moderate potential to occur within the project sites.

Special-Status Plant Species

Two of three protocol plant surveys have been completed at all of the detention basins. A third protocol plant survey will be conducted in the summer of 2017. The following special-status plant species have been determined to occur or have the potential to occur at the project sites:

Sandmat Manzanita

Sandmat manzanita is a CNPS List 1B species in the Ericaceae family. This perennial evergreen shrub is associated with closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub at elevations of 3-205 meters. This species was observed adjacent to the Harris project site.

Monterey Cypress
Monterey cypress is a CNPS List 1B species in the Cupressaceae family. This evergreen tree is associated with closed-cone coniferous forest at elevations of 10-30 meters. This species natively occurs only at Cypress Point in Pebble Beach and Point Lobos State Park, but is widely planted and naturalized elsewhere.

Monterey Cypress trees were present in the upland area at the Washerwoman's Pond project site. As the study area is outside of the few naturally occurring native stands of Monterey cypress, it is likely that individuals present within the study area were planted. No tree removal is planned as part of the proposed project. No impacts to Monterey cypress are expected to occur as a result of the proposed project.

Pink Johnny-Nip
Pink johnny-nip (*Castilleja ambigua var. insalutata*) is a CNPS List 1B species in the Orobanchaceae family. This annual herb is found in coastal prairie and coastal dunes at elevations of 0-100 meters. The blooming period is from May to August. Marginal habitat for this species is present at Harris and Lower Ragsdale detention basins.

Hickman's Cinquefoil
Hickman's cinquefoil (*Potentilla hickmanii*) is a federal and state endangered, and CNPS List 1B species in the Rosaceae family. This perennial herb is found in coastal bluff scrub, closed-cone coniferous forest, vernally mesic meadows and seeps, and freshwater marshes and swamps at elevations of 10-149 meters. The blooming period is from April-August. Suitable habitat is present at all project sites evaluated.

Marsh Microseris
Marsh microseris (*Microseris paludosa*) is a CNPS List 1B species. This perennial herb in the Asteraceae family is found in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grasslands. The elevation range for marsh microseris is 5-300 meters and the blooming period is from April to July. Suitable habitat for this species is present at Harris, Lower Ragsdale, and Wilson detention basins. Marginal habitat for this species is present at Washerwoman's Pond.

California Screw Moss
California screw moss (*Tortula californica*) is a CNPS List 1B species in the Pottiaceae family. This moss is found in chenopod scrub, or valley and foothill grasslands on sandy soils at elevations of 10-1460 meters. Suitable habitat is present at Harris and Lower Ragsdale detention basins.

IMPACTS AND MITIGATION

Construction activities associated with the proposed project could result in significant impacts to sensitive habitats and several special-status species. Mitigation measures have been provided below to reduce these potential impacts.

Sensitive Habitats

Impact 1: Fringe wetlands are present at all of the project sites evaluated and have the potential to be impacted by the proposed project. Wetlands within the majority of the project sites occur as thin bands of vegetation on the fringe of the basins at the tow of the slope of a steep bank. The project sites are all either man-made or are historic resources that have been significantly modified over the last century. All of the project sites have experienced dredging and vegetation removal over the years. Impacts to wetlands in the first year will include removal of 50% of the vegetation at all of the basins except Washerwoman's Pond and Lagunita Mirada Sediment Basin; these two basins will be drained and regraded in the first year (year 1), resulting in the removal of all of the existing wetland. In subsequent years, only 50% of the

vegetation would be removed every two years at all of the basins. The maximum acres of wetland that would be impacted by the proposed project during year 1 are presented in Table 1. Impacts to wetlands in subsequent years (2-15) would very likely total less than 0.10 acre per year averaged over that time period for all of the project sites combined. This depends on the amount of sediment and subsequent establishment of fringe wetlands over time. Some detention basins collect more sediment than others and it may be that dredging and associated vegetation removal will not be needed more than twice throughout the 15 year permit period at each site, depending on sedimentation rates.

Table 1: Approximate acreage of wetlands mapped at each project site and approximate acreage of wetlands impacted by the proposed project in year 1.

Project Site	Area of Wetlands Mapped (Acres)	Area of Wetlands Impacted in Year 1 (Acres)
Lake El Estero	~1.22	~0.61
Washerwoman's Pond	~0.31	~0.31
Lagunita Mirada Sediment Basin	~0.34	~0.34
Lower Ragsdale Detention Basin	~0.24	~0.12
Harris Detention Basin	~0.22	~0.11
Wilson Detention Basin	~0.17	~0.09
Total	***~2.50***	***~1.58***

Impacts resulting from the proposed project will include removal of vegetation and sediment that form wetlands within the project sites. This impact will temporarily reduce the existing wetland habitat within the project sites. As sediment continues to enter the project sites in-between dredging events, new wetlands will form and replace those that have been removed via maintenance activities. No permanent changes to wetlands will result from the proposed project. The following mitigation measure has been provided below to reduce these potential impacts to a less-than-significant level.

***Mitigation Measure BIO-1*:** Subsequent to the initial dredging and vegetation removal scheduled for year 1 as described above, vegetation removal will occur no more than once every two years at each basin and include the removal of no more that 50% of the emergent vegetation to minimize the scope and scale of the temporary loss of wetland function and value.

Special-Status Wildlife Species

Impact 2: Impacts to coast horned lizard and coast range newt may include direct mortality of individuals as a result of construction activities within the project site, as well as indirect impacts associated with construction noise and ground disturbance. Mitigation is presented below to reduce the potential for impacts to coast horned lizard and coast range newt to a less-than-significant level.

***Mitigation Measure BIO-2*:** Prior to construction activities, the project proponent shall retain a qualified biologist to conduct an Employee Education Program for the construction crew. The biologist shall meet with the construction crew at the project site at the onset of construction to educate the construction crew on the following: 1) a review of the project boundaries; 2) all special-status species that may be present,

their habitat, and proper identification; 3) the specific mitigation measures that will be incorporated into the construction effort; 4) the general provisions and protections afforded by the regulatory agencies; and 5) the proper procedures if a special-status animal is encountered within the project site. A fact sheet or other supporting materials containing this information will be prepared and distributed. Upon completion of Employee Education Program, employees will sign a form stating that they attended the training and understand all the conservation and protection measures. Educational programs will be conducted for new personnel before they join construction activities. The crew foreman will be responsible for ensuring that all crew members comply with the guidelines.

Impact 3: Nesting raptors and other migratory bird species are protected by the MBTA and California Fish and Game Code. If construction occurs during the nesting season (February 15 to August 1), there is the potential to impact nesting raptors and other migratory bird species. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the DFW and is considered a significant impact. This impact can be reduced to a less-than-significant level with the implementation of the mitigation measure identified below in combination with mitigation measure BIO-2 above.

Mitigation Measure BIO-3: To avoid and reduce impacts to nesting raptors and other migratory bird species construction activities can be timed to avoid the nesting season, after September 1 and before January 31 to avoid impacts to these species. Alternatively, if avoidance of the nesting season is not feasible, pre-construction surveys shall be conducted for nesting raptors and other migratory bird species within 300-feet of proposed construction activities if construction is to be initiated between February 1 and August 1. Pre-construction surveys shall be conducted no more than 14 days prior to the start of construction. If nesting raptors and other migratory bird species are identified during the pre-construction surveys, an appropriate no-disturbance buffer shall be imposed within which no construction activities or disturbance shall take place until the young of the year have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.

Impact 4: Potential breeding and upland habitat for CTS exists within two of the project sites assessed, Lower Ragsdale and Harris detention basins. If CTS are present at these project sites, implementation of the proposed project has the potential to impact CTS. Project construction activities could result in individual mortality and habitat destruction. Implementation of the following mitigation measures in combination with measure BIO-2 above will avoid take and reduce impacts to CTS to a less-than-significant level.

Mitigation Measure BIO-4A: The project proponent shall prepare a habitat assessment for CTS in accordance with USFWS protocol. This biological report and the site assessment shall be submitted to the USFWS and DFW for review and a request for concurrence that the project is not likely to result in take of CTS from both agencies. If it is determined by either of these agencies that take is likely, incidental take authorizations will be acquired prior to the initiation of construction at these project sites.

Mitigation Measure BIO-4B: All ground disturbing construction activities will occur in September, after any CTS larva, if present, would have transformed and exited the basins.

Mitigation Measure BIO-4C: All ground disturbing activity would be restricted to within the basins. No grading will occur outside of the basins for access or staging.

Mitigation Measure BIO-4D: Before ground disturbing work activities begin each day, a biological monitor will inspect under construction equipment and materials to look for California tiger salamanders. If a California tiger salamander is found during these checks or during construction, construction

activities will cease until USFWS and DFW is consulted and appropriate actions are taken to allow project activities to continue.

Mitigation Measure BIO-4E: A qualified biologist will monitor all ground disturbing construction activity. After ground disturbing project activities are complete, the qualified biologist will train an individual to act as the on-site construction monitor. The on-site monitor will have attended the training described above. Both the qualified biologist and the construction monitor will have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The qualified biologist and construction monitor will complete a daily log summarizing activities and environmental compliance.

Mitigation Measure BIO-4F: To prevent inadvertent entrapment of California tiger salamanders during the proposed project, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the close of each working day with plywood or similar materials. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.

Potential Impact 5: Western pond turtles are assumed to be present at Lagunita Mirada Sediment Basin following the observation of a turtle during the 2016 spring surveys. Maintenance of the Lagunita Mirada Sediment Basin detention basin could result in impacts to western pond turtles, a DFW species of special concern. Implementation the mitigation measures identified below in combination with the implementation of mitigation measure BIO-2 above will reduce impacts to western pond turtles to a less-than-significant level.

Mitigation Measure BIO-5A: A qualified biologist shall conduct trapping of turtles consistent with *USGS Western Pond Turtle (Emys marmorata) Trapping Survey Protocol for the Southcoast Ecoregion* (USGS, 2006) at the Lagunita Mirada Sediment Basin detention basin no more than 48 hours prior to the initiation of draining. The biologist shall relocate the western pond turtle the shortest distance possible to a location that contains suitable habitat and would not be affected by activities associated with the detention basin maintenance.

Mitigation Measure BIO-5B: If a nest of eggs is encountered during the trapping effort or maintenance activities, a buffer of no disturbance will be established by the qualified biologist to protect the eggs from impacts. Maintenance can be reinitiated within the no-disturbance buffer subsequent to the eggs hatching.

Impact 6: Suitable habitat for Monterey dusky-footed woodrat is present at all of the project sites assessed and implementation of the proposed project has the potential to impact this species. Project construction activities could result in individual mortality, noise disturbance, and habitat destruction. Implementation of the mitigation measure identified below in combination with implementation of mitigation measure BIO-2 above will reduce potential impacts to Monterey dusky-footed woodrats to a less-than-significant level.

Mitigation Measure BIO-6: To avoid and reduce impacts to the Monterey dusky-footed woodrat, the project proponents shall retain a qualified biologist to conduct pre-construction surveys in suitable habitat proposed for construction, ground disturbance, or staging within three days prior to construction for woodrat nests with the potential to be impacted by the project. All woodrat nests shall be flagged for avoidance of direct construction impacts and protection during construction, where feasible. Nests that cannot be avoided shall be manually deconstructed prior to land clearing activities to allow animals to escape harm. If a litter of young is found or suspected, nest material shall be replaced, and the nest left alone for 2-3 weeks before a re-check to verify that young are capable of independent survival before proceeding with nest dismantling.

Special-Status Plant Species

Impact 7: Special-status plant species have the potential to occur at all of the project sites. Sandmat manzanita has been observed adjacent to Harris. If special-status plant species do occur within the project sites, construction activities associated with the project, including vegetation removal could result in impacts to this species. Implementation of the mitigation measure identified below in combination with implementation measure of mitigation measure BIO-2 above will to reduce this impact to a less-than-significant level.

***Mitigation Measure BIO-7*:** To reduce and avoid impacts to special-status plant species focused rare plant surveys shall be conducted by a qualified botanist during the appropriate blooming periods, prior to the initiation of construction activities. If any special-status plant species are identified within the area of potential impact, they shall be avoided. If avoidance is not possible, the individual plants can be transplanted to appropriate areas in or adjacent to the project site prior to the initiation of constriction activities and monitored annually for three years. If the transplanted species fail to survive during this monitoring period, they shall be replaced at a ratio of 1:1 and the three-year monitoring period shall re-commence. If the plants cannot be transplanted to another portion of the property, an alternate location near the project site may be utilized with permission of the Landowner. Alternatively, seeds can be collected and used to grow individuals on-site at a 1:1 ratio.

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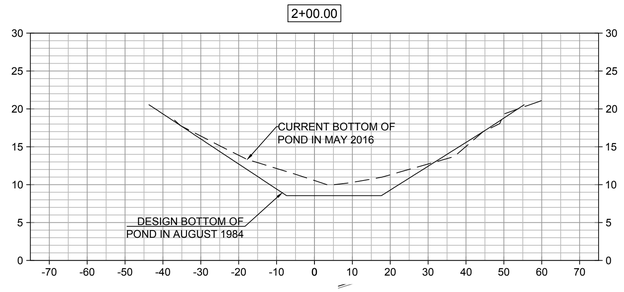
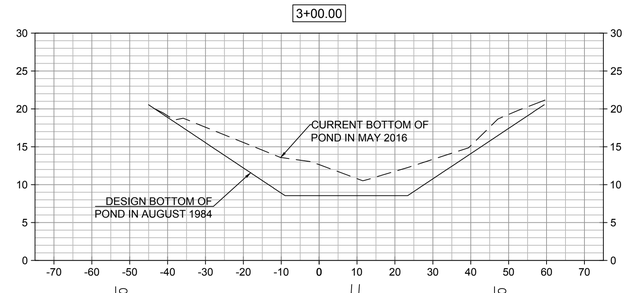
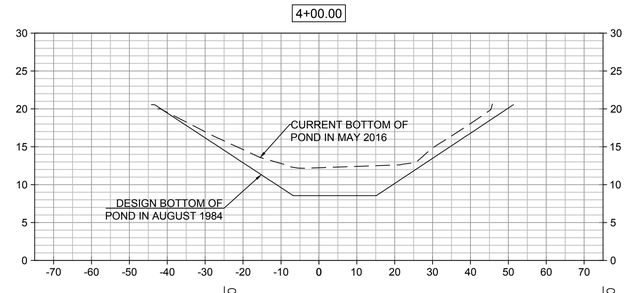
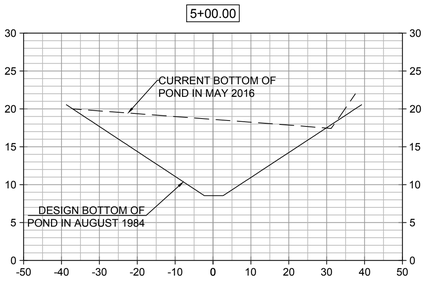
APPENDIX A

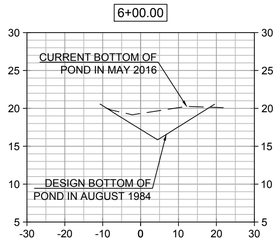
City of Monterey Detention Basin Management Project
Current Earthwork Exhibits for the Project Sites

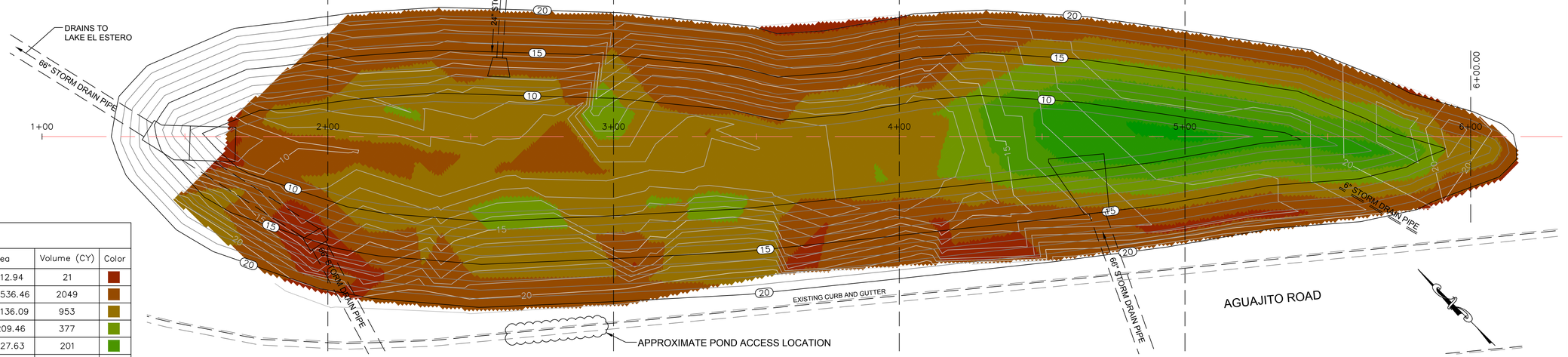












GRAPHIC SCALE: 1" = 20'

20 0 20 40

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Area	Volume (CY)	Color
1	−2.00	0.00	1412.94	21	
2	0.00	2.00	14536.46	2049	
3	2.00	4.00	13136.09	953	
4	4.00	6.00	3209.46	377	
5	6.00	8.00	2127.63	201	
6	8.00	10.00	1537.04	59	
7	10.00	12.00	125.37	0	

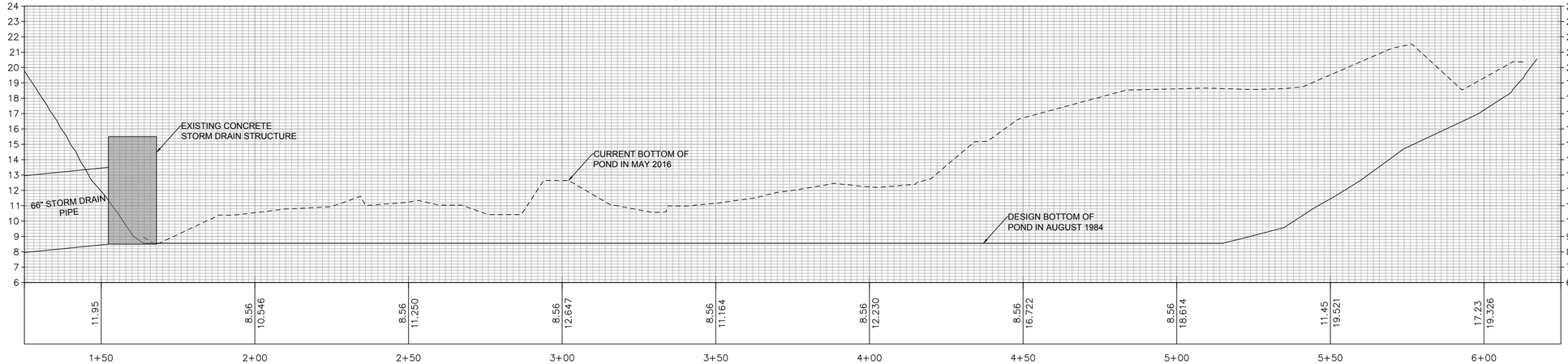
Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Vol_02	full	1.000	1.000	36085.00	21.48	3639.10	3617.62<Fill>

Totals

	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total	36085.00	21.48	3639.10	3617.62<Fill>

* Value adjusted by cut or fill factor other than 1.0



WASHERWOMAN CENTERLINE PROFILE

SCALE H: 1" = 20'
V: 1" = 4'

Know what's below. Call 811 before you dig.

CITY OF MONTEREY
DEPARTMENT OF PLANS AND PUBLIC WORKS
580 PACIFIC STREET, MONTEREY, CA 93940
TEL: 831.646.3921 WEBSITE: WWW.MONTEREY.ORG

DESIGNED BY:	STAFF
DRAWN BY:	STAFF
CHECKED BY:	STAFF
CAD DWG NAME:	FILE NAME

NO.	DATE	REVISION

WASHERWOMAN DETENTION POND
(33C1554 MEASURE P)
SEDIMENT REMOVAL EXHIBIT

SCALE: 1"= 20'
DATE: FEBRUARY 15, 2017
SHEET: C-5
SHEET 5 OF 5

FULL SCALE PLOT SIZE: 22" X 34"

REV 09/01/2015

WASHERWOMAN DETENTION POND

S:\800-Pub-Works\807-CIP\807-02-CIP-Projects\CNCIP Current\33c1554 Washerwoman-Laguna Detention Basins\Design\Plans\Dwgs\BasesNts\WasherwomanEarthwork.dwg, 2/15/2017 10:56:25 AM, DWG To PDF.pc3

Elevations Table					
Number	Minimum Elevation	Maximum Elevation	Area	Volume (CY)	Color
1	−6.00	−4.00	3.46	0	
2	−4.00	−2.00	3961.38	69	
3	−2.00	0.00	9401.71	600	
4	0.00	2.00	15868.04	1680	
5	2.00	4.00	12522.45	655	
6	4.00	6.00	2775.33	65	
7	6.00	8.00	18.60	0	
8	8.00	10.00	0.03	0	
9	10.00	12.00	0.50	0	

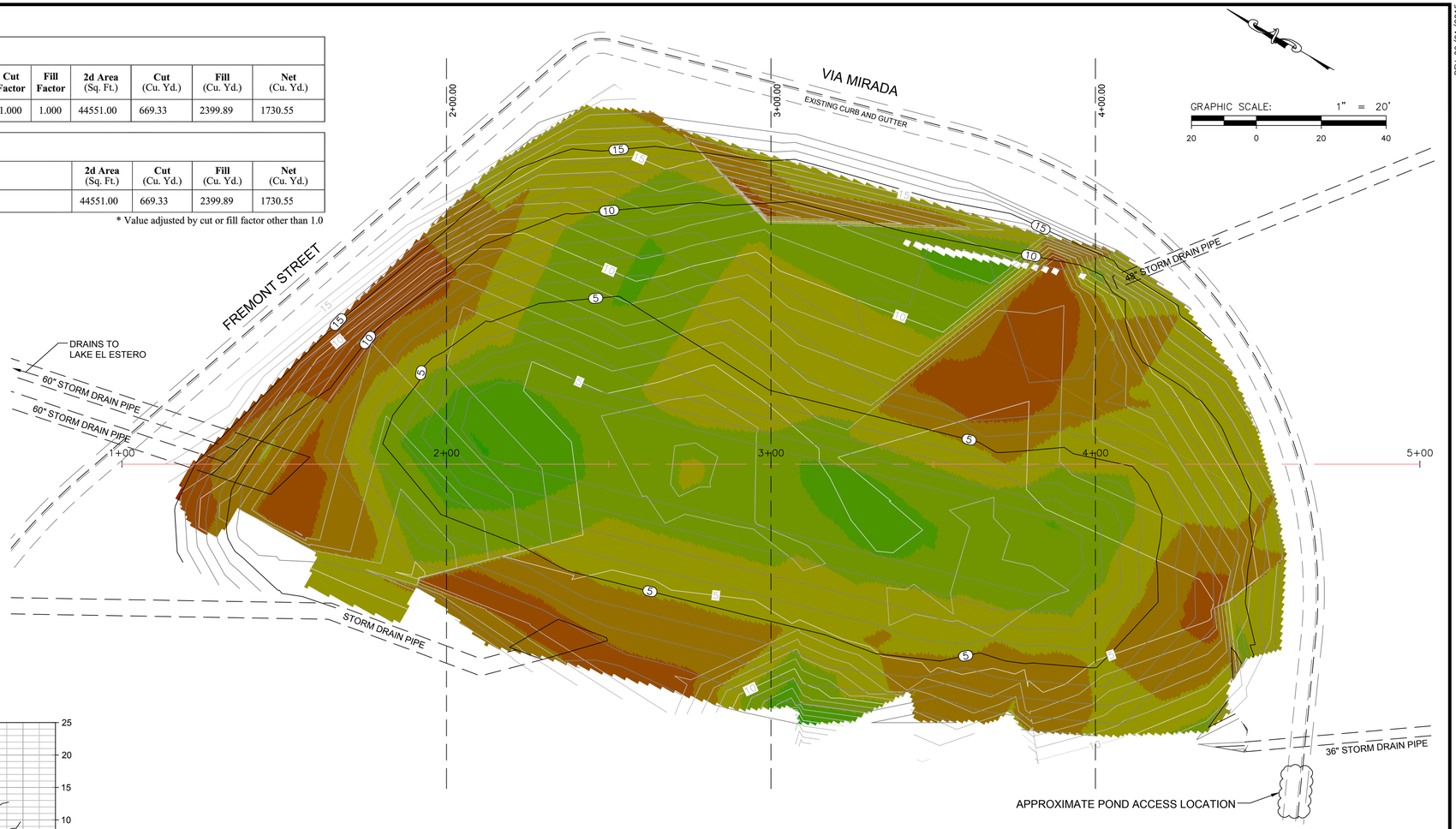
Volume Summary

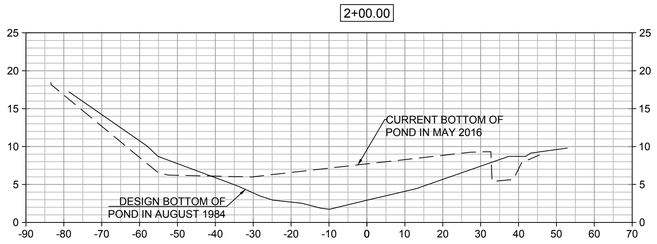
Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Vol_02	full	1.000	1.000	44551.00	669.33	2399.89	1730.55

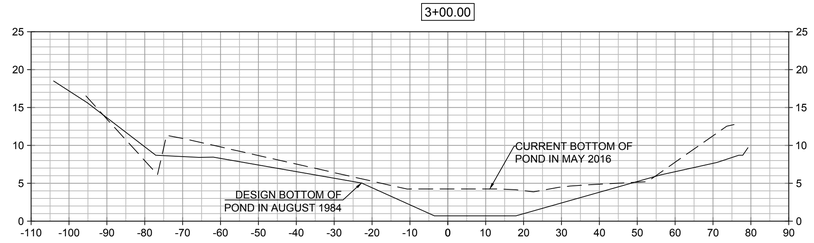
Totals

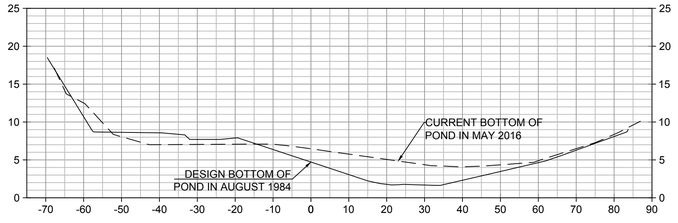
	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total	44551.00	669.33	2399.89	1730.55

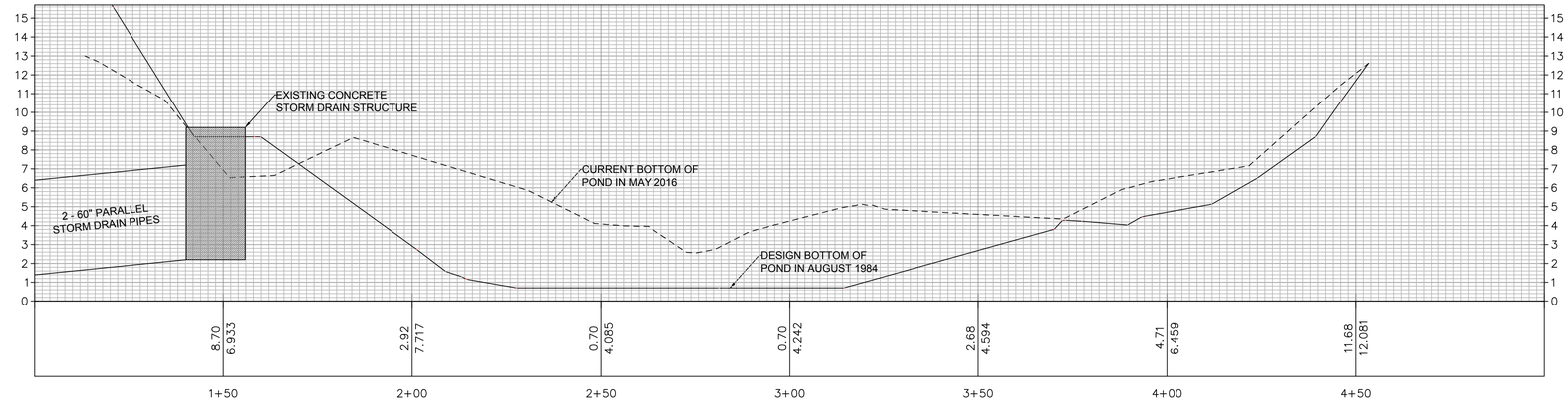
* Value adjusted by cut or fill factor other than 1.0











LAGUNITA MIRADA CENTERLINE PROFILE

SCALE H: 1" = 20'
V: 1" = 4'

Know what's below. Call 811 before you dig.

CITY OF MONTEREY
DEPARTMENT OF PLANS AND PUBLIC WORKS
580 PACIFIC STREET, MONTEREY, CA 93940
TEL: 831.646.3921 WEBSITE: WWW.MONTEREY.ORG

DESIGNED BY:	NO.	DATE	REVISION
STAFF			
DRAWN BY:			
STAFF			
CHECKED BY:			
STAFF			
CAD DWG NAME:			
FILE NAME			

LAGUNITA MIRADA DETENTION POND
(33C1554 MEASURE P)
SEDIMENT REMOVAL EXHIBIT

SCALE: 1"= 20'
DATE: FEBRUARY 15, 2017
SHEET: C-4
SHEET 4 OF 5

FULL SCALE PLOT SIZE: 22" X 34"

REV 09/01/2015

WASHERWOMAN DETENTION POND

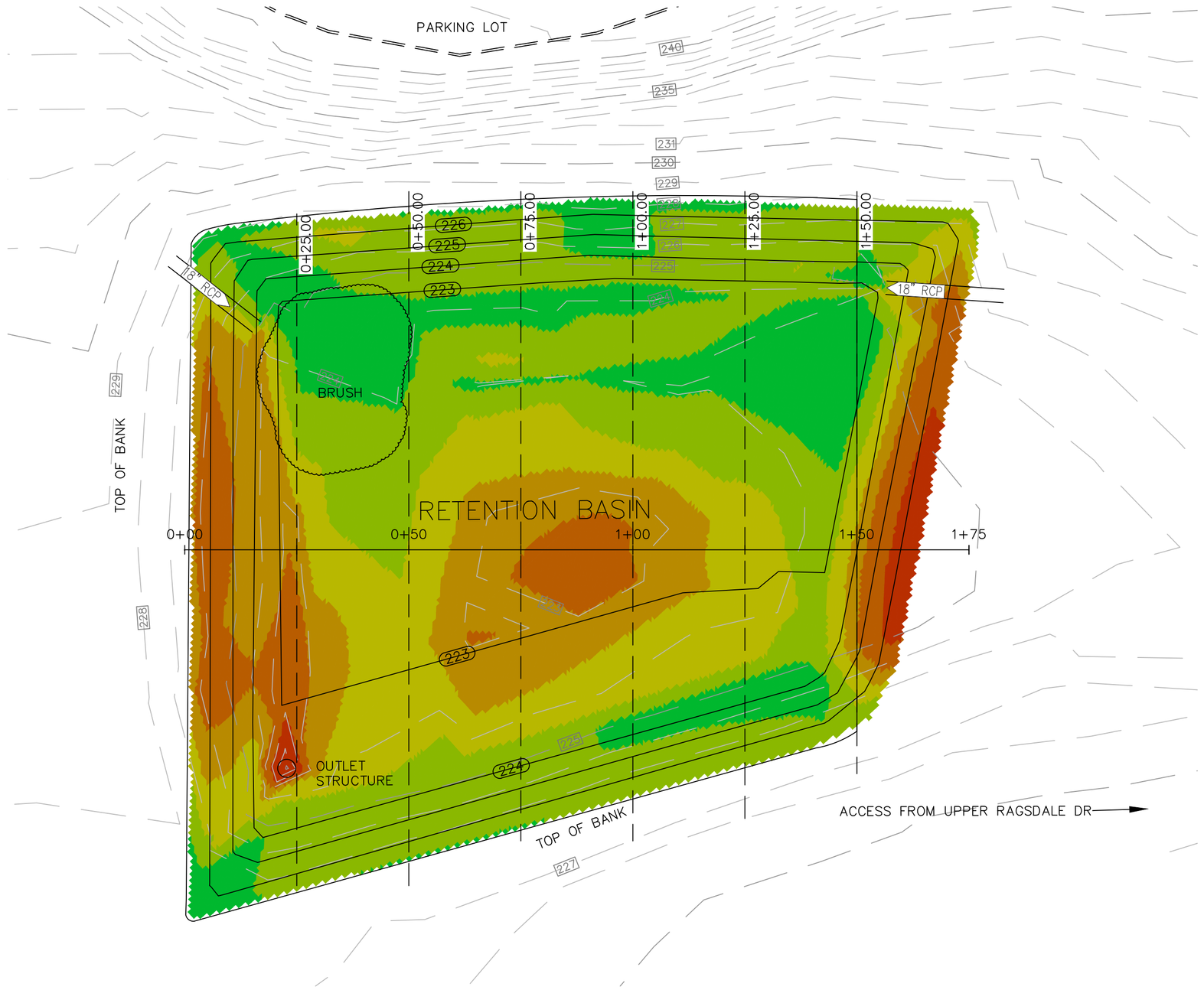
REV 09/01/2015

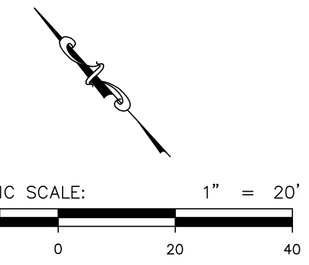
Volume Summary							
Name	**Type**	**Cut Factor**	**Fill Factor**	**2d Area** (Sq. Ft.)	**Cut** (Cu. Yd.)	**Fill** (Cu. Yd.)	**Net** (Cu. Yd.)
Harris Ret Vol	full	1.000	1.000	22348.00	768.28	35.06	733.23<Cut>

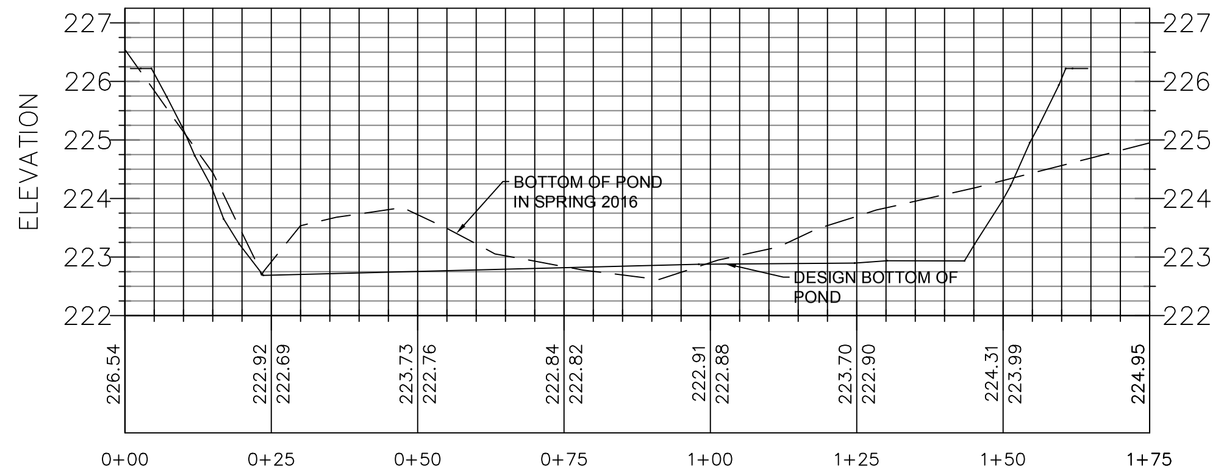
Totals				
	2d Area (Sq. Ft.)	**Cut** (Cu. Yd.)	**Fill** (Cu. Yd.)	**Net** (Cu. Yd.)
Total	22348.00	768.28	35.06	733.23<Cut>

* Value adjusted by cut or fill factor other than 1.0

ELEVATIONS TABLE					
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA (SF)	VOL (CY)	COLOR
1	−2.73	−1.50	3610.85	31	
2	−1.50	−1.00	8043.41	138	
3	−1.00	−0.50	4645.39	263	
4	−0.50	0.00	3810.89	336	
5	0.00	1.00	1906.50	30	
6	1.00	3.09	330.95	5	

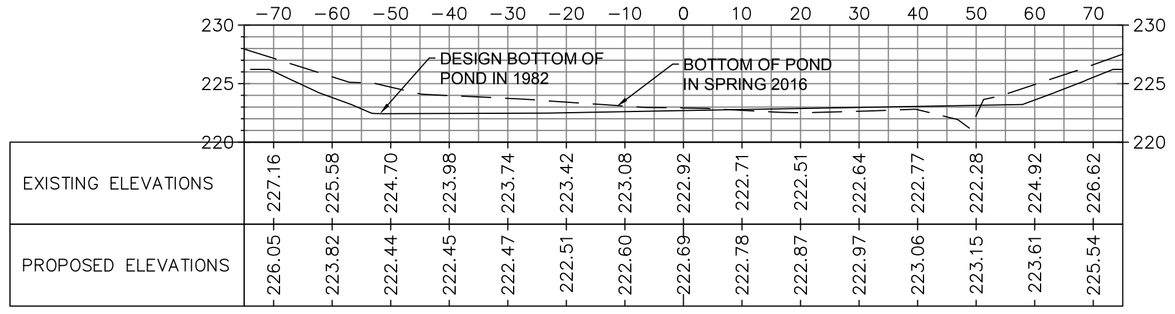






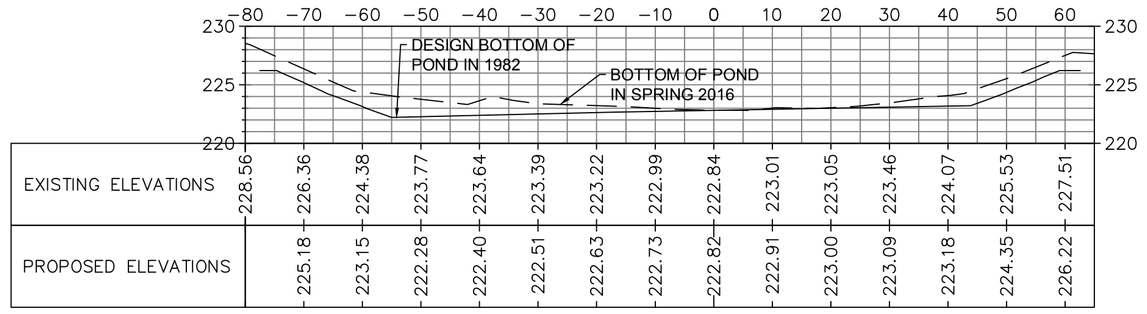
HARRIS RETENTION PROFILE

SCALE: H 1" = 20'
V 1" = 2'



CROSS SECTION STA 0+25

SCALE: H 1" = 20'
V 1" = 10'



CROSS SECTION STA 0+75

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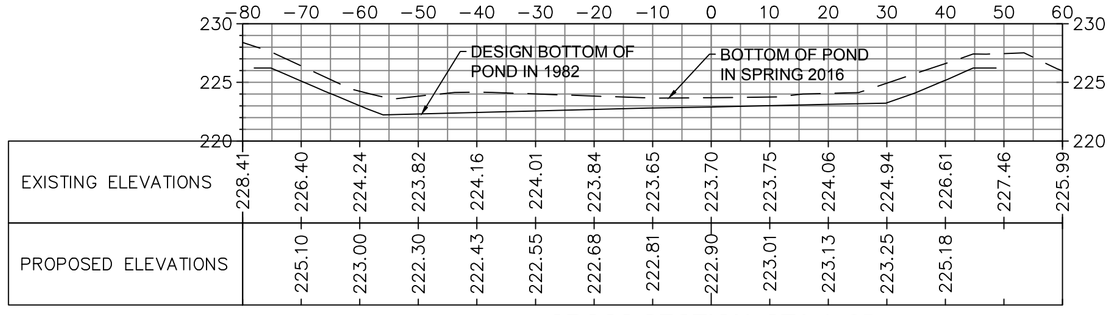
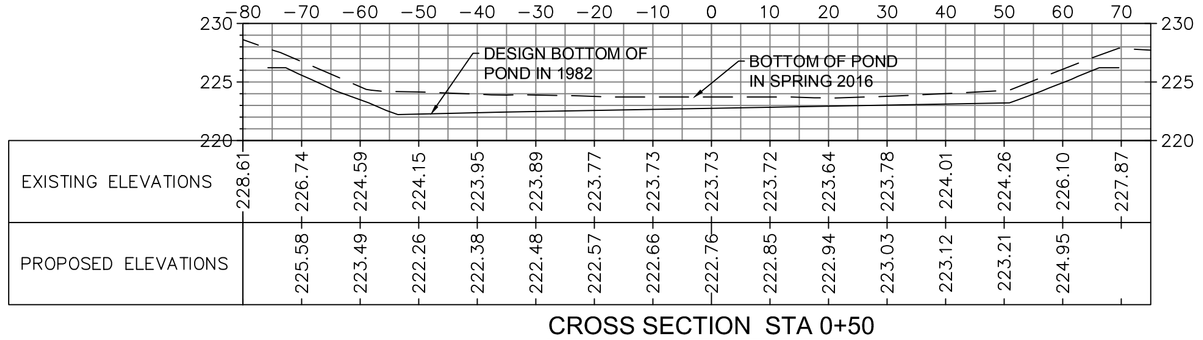
V 1" = 10'



CROSS SECTION STA 1+25

SCALE: H 1" = 20'
V 1" = 10'



CROSS SECTION STA 0+50

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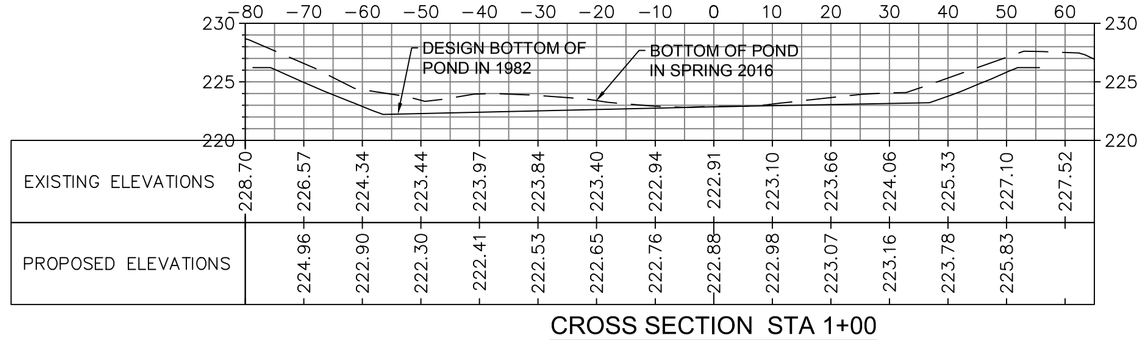
V 1" = 10'



CROSS SECTION STA 1+00

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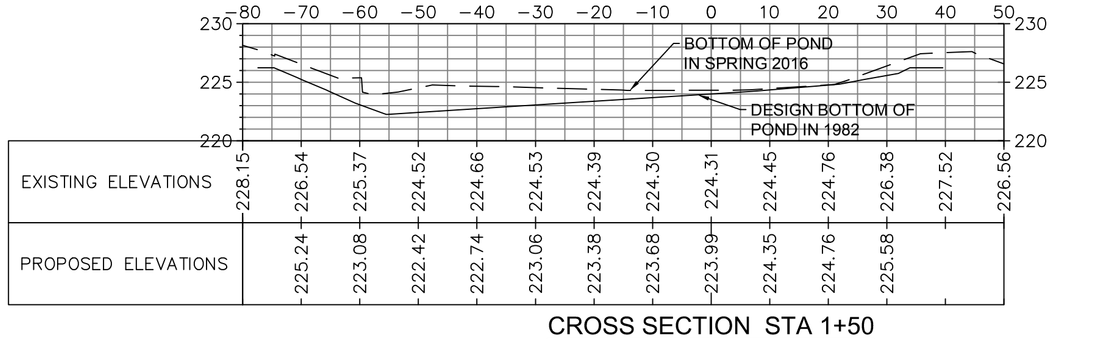
V 1" = 10'



CROSS SECTION STA 1+50

SCALE: H 1" = 20'
V 1" = 10'

CITY OF MONTEREY
DEPARTMENT OF PLANS AND PUBLIC WORKS

580 PACIFIC STREET, MONTEREY, CA 93940
TEL: 831.646.3921 WEBSITE: WWW.MONTEREY.ORG

DESIGNED BY:	NO.	DATE	REVISION
STAFF			
DRAWN BY: STAFF			
CHECKED BY: STAFF			
CAD DWG NAME: Ryan Ranch Basins.dwg			

HARRIS RETENTION POND

(33C1319)

SEDIMENT REMOVAL EXHIBIT

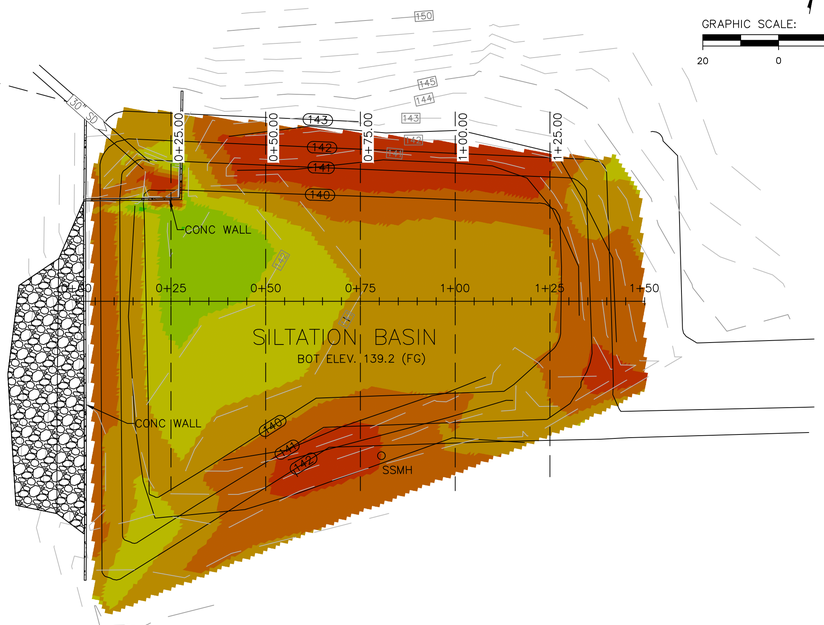
SCALE: 1"= 20'
DATE: FEB 15, 2017
SHEET: C-2
SHEET 2 OF 5

FULL SCALE PLOT SIZE: 22" X 34"

REV 09/01/2015

ELEVATIONS TABLE					
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA (SF)	VOL (CY)	COLOR
1	−5.00	−4.00	2.62	0	
2	−4.00	−3.00	793.58	11	
3	−3.00	−2.00	2264.76	65	
4	−2.00	−1.00	5570.40	209	
5	−1.00	0.00	3923.69	400	
6	0.00	1.00	1688.68	26	

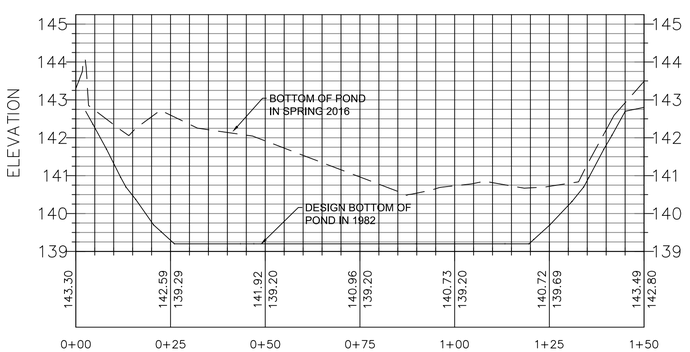
RETENTION BASIN



GRAPHIC SCALE: 1" = 20'
20 0 20 40

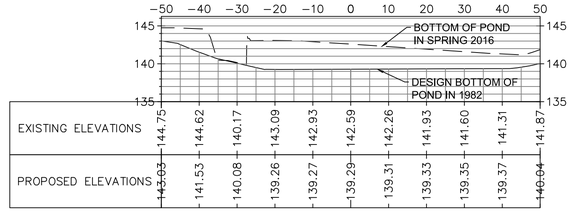
APPROX. BOUNDARY OF RETENTION BASIN

ACCESS FROM HWY 68



LOWER RAGSDALE PROFILE

SCALE: H 1" = 20'
V 1" = 2'



CROSS SECTION STA 0+25

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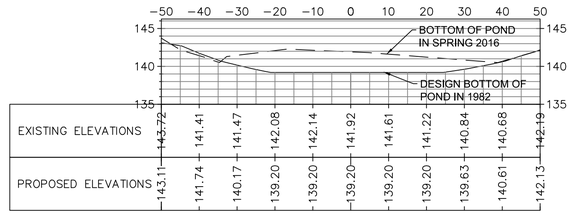
V 1" = 10'



CROSS SECTION STA 0+50

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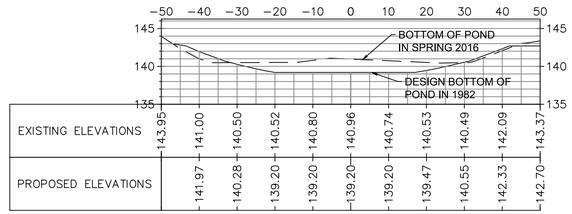
V 1" = 10'



CROSS SECTION STA 0+75

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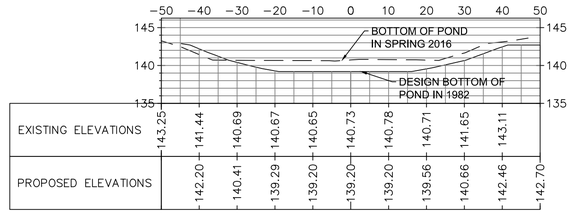
V 1" = 10'



CROSS SECTION STA 1+00

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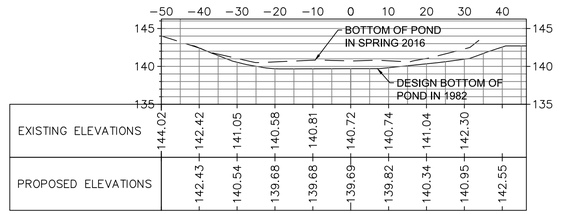
V 1" = 10'



CROSS SECTION STA 1+25

SCALE: H 1" = 20'
V 1" = 10'

Volume Summary							
Name	**Type**	**Cut Factor**	**Fill Factor**	**2d Area** (Sq. Ft.)	**Cut** (Cu. Yd.)	**Fill** (Cu. Yd.)	**Net** (Cu. Yd.)
Lower ragsdale	full	1.000	1.000	14245.00	685.40	26.43	658.97<Cut>

Totals				
	2d Area (Sq. Ft.)	**Cut** (Cu. Yd.)	**Fill** (Cu. Yd.)	**Net** (Cu. Yd.)
Total	14245.00	685.40	26.43	658.97<Cut>

* Value adjusted by cut or fill factor other than 1.0

CITY OF MONTEREY
DEPARTMENT OF PLANS AND PUBLIC WORKS
580 PACIFIC STREET, MONTEREY, CA 93940
TEL: 831.646.3921 WEBSITE: WWW.MONTEREY.ORG

DESIGNED BY:	STAFF
DRAWN BY:	STAFF
CHECKED BY:	STAFF
CAD DWG NAME:	Ryan Ranch Basins.dwg

NO.	DATE	REVISION

LOWER RAGSDALE SILTATION BASIN

(33C1319)

SEDIMENT REMOVAL EXHIBIT

SCALE: 1"= 20'
DATE: FEB 15, 2017
SHEET: C-1
SHEET 1 OF 5

FULL SCALE PLOT SIZE: 22" X 34"

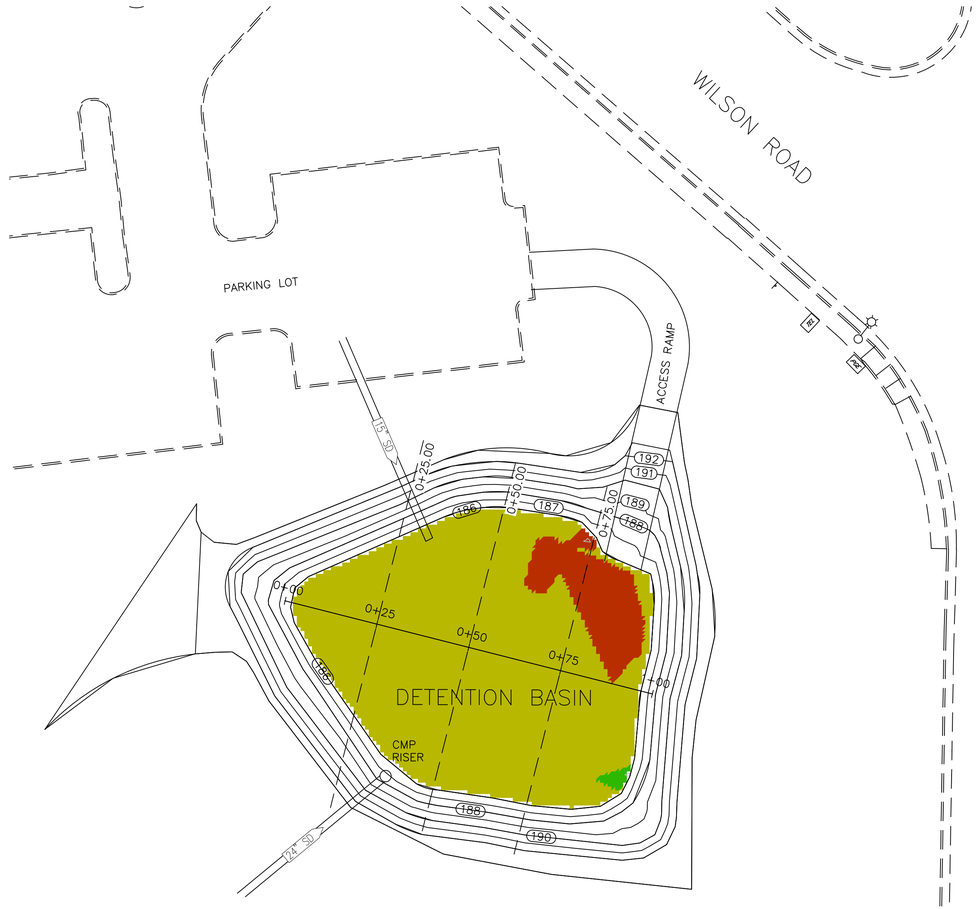
REV 09/01/2015

Volume Summary							
Name	**Type**	**Cut Factor**	**Fill Factor**	**2d Area (Sq. Ft.)**	**Cut (Cu. Yd.)**	**Fill (Cu. Yd.)**	**Net (Cu. Yd.)**
Wilson Vol	full	1.000	1.000	5514.00	77.91	0.00	77.91<Cut>

Totals				
	2d Area (Sq. Ft.)	**Cut (Cu. Yd.)**	**Fill (Cu. Yd.)**	**Net (Cu. Yd.)**
Total	5514.00	77.91	0.00	77.91<Cut>

* Value adjusted by cut or fill factor other than 1.0

ELEVATIONS TABLE					
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA (SF)	VOL (CY)	COLOR
1	−1.01	−0.67	29.70	0	
2	−0.67	−0.33	4890.64	11	
3	−0.33	0.00	593.51	67	



WILSON DETENTION PROFILE

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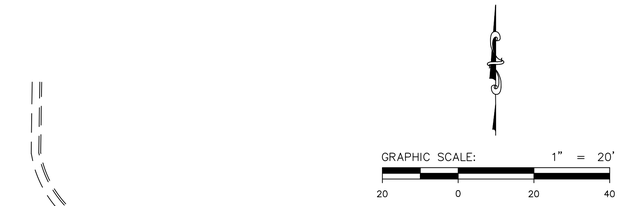
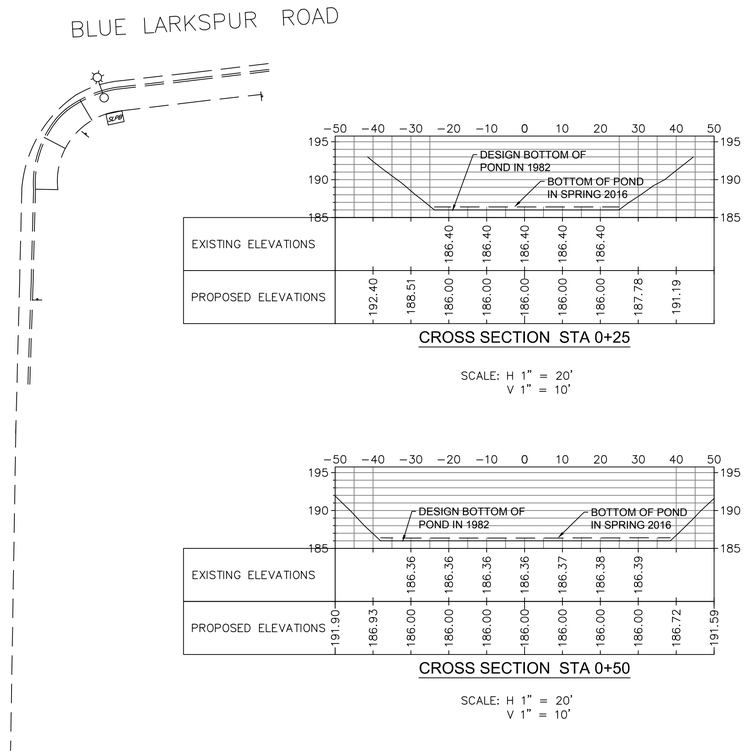
V 1" = 2'



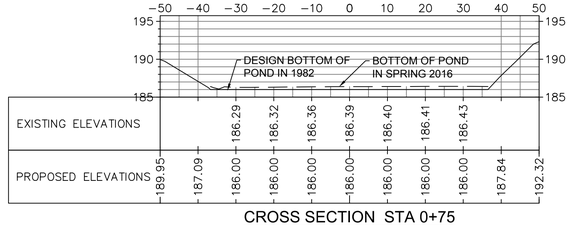


CROSS SECTION STA 0+25

SCALE: H 1" = 20'
V 1" = 10'

CROSS SECTION STA 0+50

SCALE: H 1" = 20'
V 1" = 10'



CROSS SECTION STA 0+75

SCALE: H 1" = 20'
V 1" = 10'

CITY OF MONTEREY
DEPARTMENT OF PLANS AND PUBLIC WORKS

580 PACIFIC STREET, MONTEREY, CA 93940
TEL: 831.646.3921 WEBSITE: WWW.MONTEREY.ORG

DESIGNED BY:	STAFF
DRAWN BY:	STAFF
CHECKED BY:	STAFF
CAD DWG NAME:	Ryan Ranch Basins.dwg

NO.	DATE	REVISION

WILSON DETENTION BASIN

(33C1319)

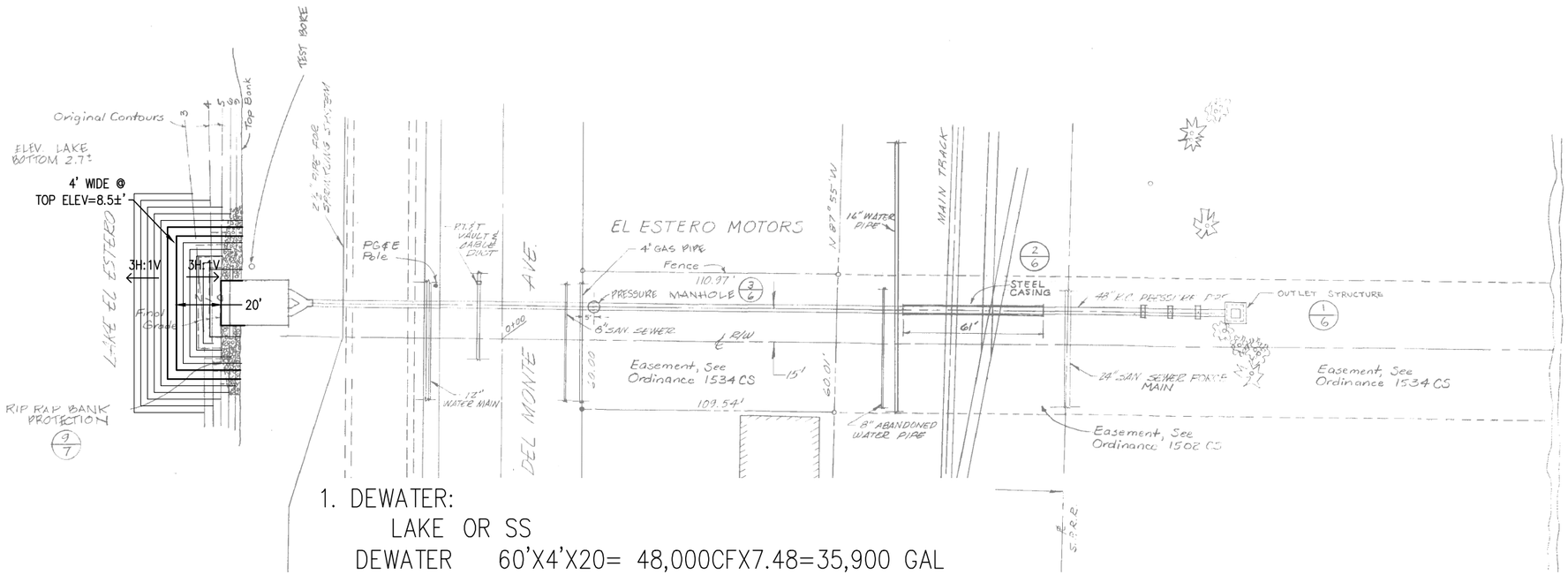
SEDIMENT REMOVAL EXHIBIT

SCALE:	1"= 20'
DATE:	FEB 15, 2017
SHEET:	C-3
	SHEET 3 OF 5

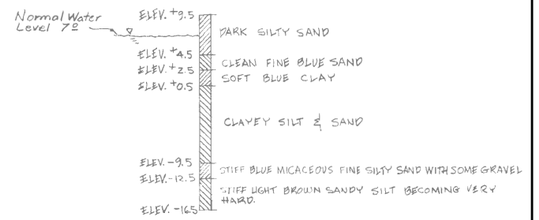
FULL SCALE PLOT SIZE: 22" X 34"

APPENDIX B

City of Monterey Detention Basin Management Project
Plans for Installation of Cofferdams at Lake El Estero



TEST BORING



SHEET INDEX

SHT. #	TITLE
1	PLAN & PROFILE
2	LONG. & TRAN. SECTIONS
3	PLAN & SECTION
4	ROOF PLAN & SECTIONS
5	FUEL, WATER & ELECTRICAL SYSTEMS
6	PIPE CASING & PRESSURE M.H. DTLS.
7	ROCK BANK PROTECTION & MISC. DTLS.

1. DEWATER:

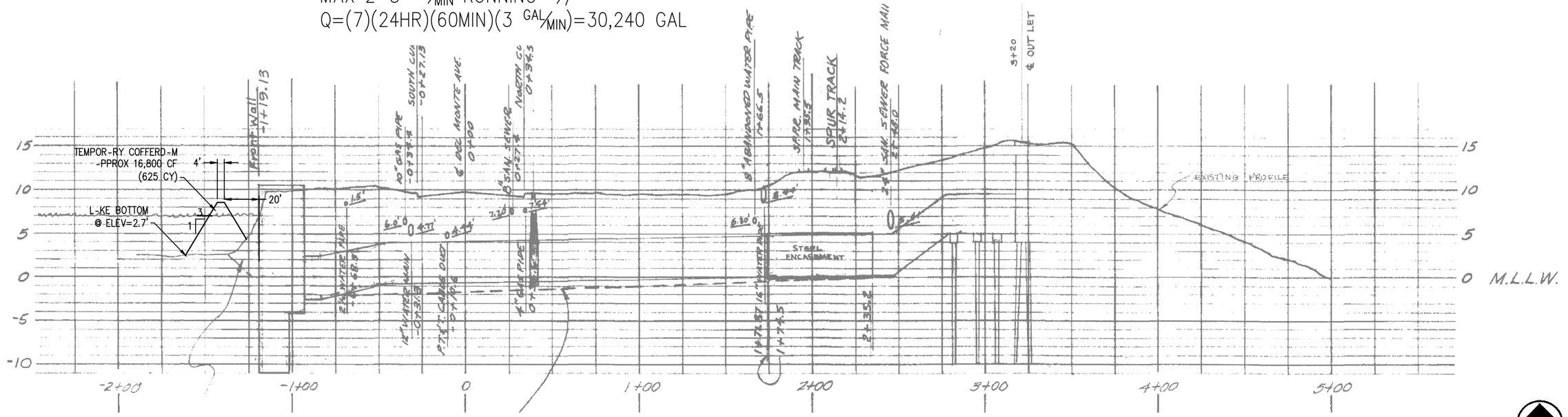
LAKE OR SS

DEWATER 60'X4'X20= 48,000CFX7.48=35,900 GAL

35,900/100=6 HRS

MAX 2-5 $^{GAL}/_{MIN}$ RUNNING $^{24}/_{7}$

Q=(7)(24HR)(60MIN)(3 $^{GAL}/_{MIN}$)=30,240 GAL



CITY OF MONTEREY DEPARTMENT OF PLANS AND PUBLIC WORKS 580 PACIFIC STREET, MONTEREY, CA 93940 TEL: 831.646.3921 WEBSITE: WWW.MONTEREY.ORG	DESIGNED BY: RFL DRAWN BY: RFL CHECKED BY: JK CAD DWG NAME: DEWATERING.DWG	EL ESTERO LAKE EDGE RESTORATION EXHIBIT	SCALE: 1"= 20' DATE: MAR 2017 SHEET: EXH EXH 1

APPENDIX C

City of Monterey Detention Basin Management Project
Special-Status Species Table

Special Status Species

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
MAMMALS			
Corynorhinus townsendii Townsend's big-eared bat	-- / CSC / --	Found primarily in rural settings from inland deserts to coastal redwoods, oak woodland of the inner Coast Ranges and Sierra foothills, and low to mid-elevation mixed coniferous-deciduous forests. Typically roost during the day in limestone caves, lava tubes, and mines, but can roost in buildings that offer suitable conditions. Night roosts are in more open settings and include bridges, rock crevices, and trees.	**Unlikely** No maternity roosting habitat present at any of the project sites assessed.
Lasiurus cinereus Hoary bat	-- / -- / --	Prefers open habitats or habitat mosaics with access to trees for cover and open areas or edge for feeding. Generally roost in dense foliage of trees; does not use buildings for roosting. Winters in California and Mexico and often migrates towards summer quarters in the north and east during the spring. Young are born and reared in summer grounds, which is unlikely to occur in California.	**Unlikely** Not known to breed in California. A historic CNDDB occurrence from 1907 encompasses Lake El Estero, Lagunita Mirada, and Washerwoman's Pond.
Neotoma macrotis luciana Monterey dusky-footed woodrat	-- / CSC / --	Forest and oak woodland habitats of moderate canopy with moderate to dense understory. Also occurs in chaparral habitats.	**High** There is a high potential for this species to occur at all project sites.
Reithrodontomys megalotis distichlis Salinas harvest mouse	-- / CNDDB / --	Known only to occur from the Monterey Bay region. Occurs in fresh and brackish water wetlands and probably in the adjacent uplands around the mouth of the Salinas River.	**Unlikely** The project sites are not located near the Salinas River.
Taxidea taxus American badger	-- / CSC / --	Dry, open grasslands, fields, pastures savannas, and mountain meadows near timberline are preferred. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated grounds.	**Low** Given the proximity of the project sites assessed to developed areas, this species is unlikely to occur.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
BIRDS			
Agelaius tricolor Tricolored blackbird (nesting colony)	-- / SC / --	Nest in colonies in dense riparian vegetation, along rivers, lagoons, lakes, and ponds. Forages over grassland or aquatic habitats.	**Not Present** Surveys were conducted at the project sites by a DD&A biologist in spring of 2016. No tricolored blackbirds were detected during these surveys.
Athene cunicularia Burrowing owl (burrow sites & some wintering sites)	-- / CSC / --	Year round resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. Frequent open grasslands and shrublands with perches and burrows. Use rodent burrows (often California ground squirrel) for roosting and nesting cover. Pipes, culverts, and nest boxes may be substituted for burrows in areas where burrows are not available.	**Unlikely** This species is unlikely to occur in the grassland area adjacent to Harris Detention Basin as the area is heavily impacted by pedestrian traffic. This species is unlikely to occur at Lake El Estero, Lagunita Mirada, Washerwoman's pond, Wilson Detention Basin, and Lower Ragsdale Detention Basin due to a lack of suitable habitat.
Buteo regalis Ferruginous hawk (wintering)	-- / WL/ --	An uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges and a fairly common winter resident of grassland and agricultural areas in southwestern California. Frequent open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. Does not breed in California.	**Low** Suitable habitat is present at Harris and Lower Ragsdale Detention Basins; however, this species is an irregular winter residence along the coast. No suitable habitat is present at Lake El Estero, Lagunita Mirada, Washerwoman's Pond, and Wilson.
Charadrius nivosus nivosus Western snowy plover (nesting)	FT / CSC / --	Sandy beaches on marine and estuarine shores, also salt pond levees and the shores of large alkali lakes. Requires sandy, gravelly or friable soil substrate for nesting.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Cypseloides niger Black swift (nesting)	-- / CSC / --	Regularly nests in moist crevice or cave on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats.	**Unlikely** No suitable habitat is present at the project sites evaluated.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Eremophila alpestris actia California horned lark	-- / CNDDB / --	Variety of open habitats, usually where large trees and/or shrubs are absent. Found from grasslands along the coast to deserts at sea-level and alpine dwarf-shrub habitats are higher elevations. Builds open cup-like nests on the ground.	**Low** Suitable habitat present at Harris and Lower Ragsdale Detention Basins; however this species is uncommon in Monterey Peninsula proper.
Falco mexicanus Prairie falcon (nesting)	-- / CNDDB / --	Associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Uses open terrain for foraging; nests in open terrain with canyons, cliffs, escarpments, and rock outcrops.	**Unlikely** No suitable nesting habitat is present at the project sites assessed.
Oceanodroma homochroa Ashy storm-petrel (nesting colony)	-- / CSC / --	Tied to land only to nest, otherwise remains over open sea. Nests in natural cavities, sea caves, or rock crevices on offshore islands and prominent peninsulas of the mainland.	**Unlikely** No suitable nesting habitat is present at the project sites evaluated.
Pelecanus occidentalis californicus California brown pelican (nesting colony & communal roosts)	-- / CFP / --	Found in estuarine, marine subtidal, and marine pelagic waters along the California coast. Usually rests on water or inaccessible rocks, but also uses mudflats, sandy beaches, wharfs, and jetties.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Riparia riparia Bank swallow (nesting)	-- / ST / --	Nest colonially in sand banks. Found near water; fields, marshes, streams, and lakes.	**Unlikely** No suitable nesting habitat is present at the project sites assessed.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
REPTILES AND AMPHIBIANS			
Ambystoma californiense California tiger salamander	FT / ST /--	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Need underground refuges and vernal pools or other seasonal water sources.	**Moderate** There are three CTS occurrences located within 2 kilometers (the known dispersal distance) of these project sites. There is appropriate CTS breeding and upland habitat at the Harris and Lower Ragsdale project sites. As a result, CTS have the potential to occupy both the Harris and Lower Ragsdale project sites. While there are four occurrences of CTS within the known dispersal distance of the Wilson project site, there is no appropriate habitat within or directly adjacent to this project site. There are no CTS occurrences reported within 5 km of the Lake El Estero, Washerwoman's Pond, or Lagunita Mirada Sediment Basin project sites and CTS are not expected to occupy these project sites due to a lack of upland habitat, highly developed and disturbed landscape, presence of non-native predators and proximity to the coast.
Anniella pulchra California legless lizard (includes *A. p. nigra* and *A. p. pulchra* as recognized by the Department)	-- / CSC / --	Requires moist, warm habitats with loose soil for burrowing and prostrate plant cover, often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas.	**Low** Poor quality habitat is present at Lake El Estero, Lagunita Mirada, Washerwoman's Pond, Wilson Detention Basin, and Lower Ragsdale Detention Basin. No suitable habitat is present at Harris Detention Basin. All of the project sites assessed are included in a non-specific CNDDB occurrence that consists of the entire USGS quadrangle.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Emys marmorata Western pond turtle (includes *E. m. pallida* and *E. m. marmorata* as recognized by the Department)	-- / CSC / --	Associated with permanent or nearly permanent water in a wide variety of habitats including streams, lakes, ponds, irrigation ditches, etc. Require basking sites such as partially submerged logs, rocks, mats of vegetation, or open banks.	**Present** Suitable habitat is present at Lake El Estero, Lagunita Mirada, Washerwoman's Pond, Lower Ragsdale, and Wilson Detention Basins. However, habitat at these sites has been degraded due to the proximity of these project sites to developed environments and human disturbance associated with the use of the areas adjacent to the project sites. This species is unlikely to occur at Harris Detention Basin as this resource does not provide permanent or nearly permanent water. Surveys were conducted at the project sites by DD&A biologist in spring of 2016. An unidentified turtle with the potential to be a western pond turtle was observed at Lagunita Mirada. While the turtle was not observed long enough for a positive identification, it is assumed that it was a western pond turtle; therefore, this species is assumed present at Lagunita Mirada. Western Pond Turtles were not observed any other detention basin during the surveys.
Phrynosoma blainvillii Coast horned lizard	-- / CSC / --	Associated with open patches of sandy soils in washes, chaparral, scrub, and grasslands.	**High** Suitable habitat is present at all project sites.
Rana draytonii California red-legged frog	FT / CSC / --	Lowlands and foothills in or near permanent or late-season sources of deep water with dense, shrubby, or emergent riparian vegetation. During late summer or fall adults are known to utilize a variety of upland habitats with leaf litter or mammal burrows.	**Not Present** Suitable habitat is present at all of the project sites evaluated. Protocol level CRLF surveys were conducted at the project sites by DD&A biologist in spring of 2016. No CRLF were detected at the project sites during these surveys.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Taricha torosa Coast Range newt	-- / CSC / --	Occurs mainly in valley-foothill hardwood, valley-foothill hardwood-conifer, coastal scrub, and mixed chaparral but is known to occur in grasslands and mixed conifer types. Seek cover under rocks and logs, in mammal burrows, rock fissures, or man-made structures such as wells. Breed in intermittent ponds, streams, lakes, and reservoir.	**High** Suitable habitat is present at all project sites; however, habitat at Washerwoman's Pond, Lagunita Mirada, and Lake El Estero is degraded by the proximity to urban development and the disturbance associated with the used adjacent to these project sites.
Thamnophis hammondii Two-striped garter snake	-- / CSC / --	Associated with permanent or semi-permanent bodies of water bordered by dense vegetation in a variety of habitats from sea level to 2400m elevation.	**Low** There is a low potential for this species to occur at Lower Ragsdale and Wilson Detention Basins as suitable habitat is present within these project sites. There is only one CNDDB occurrence reported in the USGS quadrangles searched. This occurrence is approximately 10 miles from Wilson, and more than 10 miles from the other project sites. This occurrence is on the border of the Salinas Valley, in the Spreckles quadrangle. There are no occurrences of this species on the Monterey Peninsula proper. There is a low potential for this species to occur at Lake El Estero, Lagunita Mirada, Washerwoman's pond, and Harris Detention Basin. Vegetation at Lake El Estero is managed. The vegetated area around Washerwoman's Pond and Lagunita Mirada is surrounded by urban development and likely do not provide enough area to support this species. No suitable habitat is present at Harris Detention Basin.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
FISH			
Eucyclogobius newberryi Tidewater goby	FE / CSC / --	Brackish water habitats, found in shallow lagoons and lower stream reaches. Tidewater gobies appear to be naturally absent (now and historically) from three large stretches of coastline where lagoons or estuaries are absent and steep topography or swift currents may prevent tidewater gobies from dispersing between adjacent localities. The southernmost large, natural gap occurs between the Salinas River in Monterey County and Arroyo del Oso in San Luis Obispo County.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Oncorhynchus mykiss irideus Steelhead (south/central California coast DPS)	FT / -- / --	Cold headwaters, creeks, and small to large rivers and lakes; anadromous in coastal streams.	**Unlikely** No suitable habitat is present at the project sites evaluated.
INVERTEBRATES			
Coelus globosus Globose dune beetle	-- / CNDDB / --	Coastal dunes. These beetles are primarily subterranean, tunneling through sand underneath dune vegetation.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Danaus plexippus Monarch butterfly	-- / CNDDB / --	Overwinters in coastal California using colonial roosts generally found in Eucalyptus, pine and acacia trees. Overwintering habitat for this species within the Coastal Zone represents ESHA. Local ordinances often protect this species as well.	**Unlikely** No suitable roosting habitat is present at the project sites evaluated.
Euphilotes enoptes smithi Smith's blue butterfly	FE / -- / --	Most commonly associated with coastal dunes and coastal sage scrub plant communities in Monterey and Santa Cruz Counties. Plant hosts are *Eriogonum latifolium* and *E. parvifolium*.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Linderiella occidentalis California linderiella (fairy shrimp)	-- / CNDDB / --	Ephemeral ponds with no flow. Generally associated with hardpans.	**Unlikely** No suitable habitat is present at the project sites evaluated as these resources experience flow during storm events.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
PLANTS			
Agrostis Lacuna-vernalis Vernal pool bent grass	--/--/1B	Vernal pool mima mounds at elevations of 115-145 meters. Annual herb in the Poaceae family; blooms April-May. Known only from Butterfly Valley and Machine Gun Flats of Ft. Ord National Monument.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. Additionally, the project sites are outside of the elevation range for this species.
Allium hickmanii Hickman's onion	-- / -- / 1B	Closed-cone coniferous forests, maritime chaparral, coastal prairie, coastal scrub, and valley and foothill grasslands at elevations of 5-200 meters. Bulbiferous perennial herb in the Alliaceae family; blooms March-May.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Arctostaphylos edmundsii Little Sur manzanita	-- / -- / 1B	Coastal bluff scrub and chaparral on sandy soils at elevations of 30-105 meters. Evergreen shrub in the Ericaceae family; blooms November-April.	**Not Present** This species was not observed by DD&A Environmental Scientist during field visits to the project sites.
Arctostaphylos hookeri ssp. *hookeri* Hooker's manzanita	-- / -- / 1B	Closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub on sandy soils at elevations of 85-536 meters. Evergreen shrub in the Ericaceae family; blooms January-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during field visits to the project sites.
Arctostaphylos montereyensis Toro mazanita	-- / -- / 1B	Maritime chaparral, cismontane woodland, and coastal scrub on sandy soils at elevations of 30-730 meters. Evergreen shrub in the Ericaceae family; blooms February-March.	**Not Present** This species was not observed by DD&A Environmental Scientist during field visits to the project sites.
Arctostaphylos pajaroensis Pajaro manzanita	-- / -- / 1B	Chaparral on sandy soils at elevations of 30-760 meters. Evergreen shrub in the Ericaceae family; blooms December-March.	**Not Present** This species was not observed by DD&A Environmental Scientist during field visits to the project sites.
Arctostaphylos pumila Sandmat manzanita	-- / -- / 1B	Openings of closed-cone coniferous forests, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub on sandy soils at elevations of 3-205 meters. Evergreen shrub in the Ericaceae family; blooms February-May.	**Present** This species was observed by DD&A Environmental Scientist adjacent to the Harris project site during field visits.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
Astragalus tener var. *tener* Alkali milk-vetch	-- / -- / 1B	Playas, valley and foothill grassland on adobe clay, and vernal pools on alkaline soils at elevations of 1-60 meters. Annual herb in the Fabaceae family; blooms March-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. Additionally, no suitable habitat is present at the project sites evaluated.
Astragalus tener var. *titi* Coastal dunes milk-vetch	FE / SE / 1B	Sandy soils in coastal bluff scrub, coastal dunes, coastal prairie (mesic); elevation 3-164 feet. Annual herb in the Fabaceae family; blooms March-May.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. No suitable habitat is present at the project sites evaluated.
Bryoria spiralifera Twisted horsehair lichen	-- / -- / 1B	California North Coast coniferous forest at elevations of 0–30 meters. Often found on conifers, including *Picea sitchensis*, *Pinus contorta* var. *contorta*, *Pseudotsuga menziesii*, *Abies grandis*, and *Tsuga heterophylla*. Fruticose lichen in the Parmeliaceae family.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Castilleja ambigua var. insalutata Pink johnny-nip	-- / -- / 1B	Coastal prairie and coastal scrub at elevations of 0-100 meters. Annual herb in the Orobanchaceae family; blooms May-August.	**Moderate** Marginal habitat is present at Harris and Lower Ragsdale Detention Basins. The nearest CNDDB occurrences are approximately 3.5 miles from Harris and 3.6 miles from Lower Ragsdale. No habitat is present within the Washerwoman's Pond, Lagunita Mirada, and Lake El Estero project sites. There is a historic CNDDB occurrence for this species, from 1962, within the Lake El Estero study area. Given the current maintained park setting of Lake El Estero, it is unlikely that this species would occur in the project study area. No suitable habitat is present at the Wilson Detention Basin.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
Centromadia parryi ssp. *congdonii* Congdon's tarplant	-- / -- / 1B	Valley and foothill grassland on heavy clay, saline, or alkaline soils at elevations of 0-230 meters. Annual herb in the Asteraceae family; blooms May-November.	**Low** Poor quality habitat is present at Lower Ragsdale and Harris detention basin as the grassland present lacks the appropriate soil types. No habitat is present at Lake El Estero, Lagunita Mirada, Washerwoman's Pond, and Wilson detention basin.
Chorizanthe pungens var. *pungens* Monterey spineflower	FT / -- / 1B	Maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland on sandy soils at elevations of 3-450 meters. Annual herb in the Polygonaceae family; blooms April-July.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Clarkia jolonensis Jolon clarkia	-- / -- / 1B	Cismontane woodland, chaparral, riparian woodland, and coastal scrub at elevations of 20-660 meters. Annual herb in the Onagraceae family; blooms April-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Collinsia multicolor San Francisco collinsia	-- / -- / 1B	Closed-cone coniferous forest and coastal scrub, sometimes on serpentinite soils, at elevations of 30-250 meters. Annual herb in the Plantaginaceae family; blooms March-May.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Cordylanthus rigidus ssp. *littoralis* Seaside bird's-beak	-- / SE / 1B	Closed-cone coniferous forests, maritime chaparral, cismontane woodlands, coastal dunes, and coastal scrub on sandy soils, often on disturbed sites, at elevations of 0-425 meters. Annual hemi-parasitic herb in the Orobanchaceae family; blooms April-October.	**Low** Poor quality habitat is present at Lower Ragsdale, Washerwoman's Pond and Wilson. The nearest CNDDB occurrences are approximately 1.1 miles from Lower Ragsdale, 1.8 miles from Wilson, and 0.3 miles from Washerwoman's pond. This species is unlikely to occur at Lagunita Mirada, Lake El Estero, and Harris as no suitable habitat is present at these project sites.
Delphinium californicum ssp. interius Hospital Canyon California larkspur	-- / -- / 1B	Openings in chaparral, coastal scrub, and mesic areas of cismontane woodland at elevations of 230-1095 meters. Perennial herb in the Ranunculaceae family; blooms April-June.	**Unlikely** The project sites are outside of the elevation range for this species.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Delphinium hutchinsoniae Hutchinson's larkspur	-- / -- / 1B	Broadleaved upland forest, chaparral, coastal scrub, and coastal prairie at elevations of 0-427 meters. Perennial herb in the Ranunculaceae family; blooms March-June.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Delphinium umbraculorum Umbrella larkspur	-- / -- / 1B	Cismontane woodland at elevations of 400-1600 meters. Perennial herb in the Ranunculaceae family; blooms April-June.	**Unlikely** The project sites are outside of the elevation range for this species.
Ericameria fasciculata Eastwood's goldenbush	-- / -- / 1B	Openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub on sandy soils at elevations of 30-275 meters. Evergreen shrub in the Asteraceae family; blooms July-October.	**Not Present** This species was not observed by DD&A Environmental Scientist during field visits to the project sites.
Eriogonum nortonii Pinnacles buckwheat	-- / -- / 1B	Chaparral and valley and foothill grassland on sandy soils, often on recent burns, at elevations of 300-975 meters. Annual herb in the Polygonaceae family; blooms May-September.	**Unlikely** The project sites are outside of the elevation range for this species.
Erysimum ammophilum Sand-loving wallflower	-- / -- / 1B	Openings in maritime chaparral, coastal dunes, and coastal scrub on sandy soils at elevations of 0-60 meters. Perennial herb in the Brassicaceae family; blooms February-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Erysimum menziesii Menzies' wallflower	FE / SE / 1B	Coastal dunes at elevations of 0-35 meters. Perennial herb in the Brassicaceae family; blooms March-September.	**Unlikely** No habitat is present within the project sites.
Fritillaria liliacea Fragrant fritillary	-- / -- / 1B	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often serpentinite, at elevations of 3-410 meters. Bulbiferous perennial herb in the Liliaceae family; blooms February-April.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. No suitable habitat is present at the project sites evaluated. No serpentinite soils are present.
Gilia tenuiflora ssp. *arenaria* Monterey gilia	FE / ST / 1B	Openings in maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub on sandy soils at elevations of 0-45 meters. Annual herb in the Polemoniaceae family; blooms April-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
Hesperocyparis goveniana Gowen cypress	FT / -- / 1B	Closed-cone coniferous forest and maritime chaparral at elevations of 30-300 meters. Evergreen tree in the Cupressaceae family. Natively occurring only at Point Lobos near Gibson Creek and the Huckleberry Hill Nature Preserve near Highway 68.	**Not Present** No suitable habitat is present at Harris, Lower Ragsdale, and Wilson Detention Basins. Washerwoman's Pond, Lagunita Mirada, and Lake El Estero project sites are outside of the elevation range for this species.
Hesperocyparis macrocarpa Monterey cypress	-- / -- / 1B	Closed-cone coniferous forest at elevations of 10-30 meters. Evergreen tree in the Cupressaceae family. Natively occurring only at Cypress Point in Pebble Beach and Point Lobos State Park; widely planted and naturalized elsewhere.	**Species Present** This species is present at some of the project sites; however, no Project Site is located within the known native stands. Monterey cypress present within the study area was likely planted.
Horkelia cuneata ssp. sericea Kellogg's horkelia	-- / -- / 1B	Openings of closed-cone coniferous forests, maritime chaparral, coastal dunes, and coastal scrub on sandy or gravelly soils at elevations of 10-200 meters. Perennial herb in the Rosaceae family; blooms April-September.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Horkelia marinensis *Point Reyes horkelia*	-- / -- / 1B	Coastal dunes, coastal prairie, and coastal scrub on sandy soils at elevations of 5-350 meters. Perennial herb in the Rosaceae family; blooms May-September.	**Low** Suitable habitat is present at Harris. The nearest CNDDB occurrence is approximately 7 miles from Harris detention basin. This species is unlikely to occur at Lagunita Mirada Sediment Basin, Lake El Estero, Washerwoman's Pond, Lower Ragsdale, and Wilson as no suitable habitat is present at these project sites.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Lasthenia conjugens Contra Costa goldfields	FE / -- / 1B	Mesic areas of valley and foothill grassland, alkaline playas, cismontane woodland, and vernal pools at elevations of 0-470 meters. Annual herb in the Asteraceae family; blooms March-June.	**Not Present** Suitable habitat is present at Harris, Lower Ragsdale, and Wilson Detention Basins. This species was not observed by DD&A Environmental Scientist during field visits to the project sites. This species is unlikely to occur at Washerwoman's Pond, Lagunita Mirada Sediment Basin, and Lake El Estero as no suitable habitat is present at these project sites.
Layia carnosa Beach layia	FE / SE / 1B	Coastal dunes and coastal scrub on sandy soils at elevations of 0-60 meters. Annual herb in the Asteraceae family; blooms March-July.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. Additionally, no suitable habitat is present at the project sites evaluated.
Legenere limosa Legenere	--/--/1B	Vernal pools and wetlands at elevations of 1-880 meters. Annual herb in the Campanulaceae family; blooms April- June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Lupinus tidestromii Tidestrom's lupine	FE / SE / 1B	Coastal dunes at elevations of 0-100 meters. Perennial rhizomatous herb in the Fabaceae family; blooms April-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. Additionally, no suitable habitat is present at the project sites evaluated.
Malacothamnus palmeri var. *involucratus* Carmel Valley bush-mallow	-- / -- / 1B	Chaparral, cismontane woodland, and coastal scrub at elevations of 30-1100 meters. Perennial deciduous shrub in the Malvaceae family; blooms May-October.	**Not Present** This species was not observed by DD&A Environmental Scientist during field visits to the project sites.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Malacothrix saxatilis var. *arachnoidea* Carmel Valley malacothrix	-- / -- / 1B	Chaparral and coastal scrub on rocky soils at elevations of 25-1036 meters. Perennial rhizomatous herb in the Asteraceae family; blooms June-December.	**Unlikely** No suitable habitat is present at the project sites evaluated. Additionally, Washerwoman's Pond, Lagunita Mirada, and Lake El Estero project sites are outside of the elevation range of this species.
Meconella oregana Oregon meconella	-- / -- / 1B	Coastal prairie and coastal scrub at elevations of 250-620 meters. Annual herb in the Papaveraceae Family; blooms March-April.	**Unlikely** project sites are outside of the elevation range for this species.
Microseris paludosa Marsh microseris	-- / -- /1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland at elevations of 5-300 meters. Perennial herb in the Asteraceae family; blooms April-July.	**Moderate** Suitable habitat is present at Harris, Lower Ragsdale, and Wilson Detention Basins. The nearest CNDDB occurrence to these project sites is an occurrence from 1997. This occurrence is approximately 0.6 miles from Lower Ragsdale, 0.9 miles from Harris, and 1 mile from Wilson Detention Basins. Marginal Habitat is present at Washerwoman's Pond. This species is unlikely to occur at Lagunita Mirada and Lake El Estero as no suitable habitat is present at these project sites.
Monardella sinuata ssp. *nigrescens* Northern curly-leaved monardella	-- / -- /1B	Chaparral, coastal dunes, coastal scrub, and lower montane coniferous forest (ponderosa pine sandhills) on sandy soils at elevations of 0-300 meters. Annual herb in the Lamiaceae family; blooms April-September.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Monolopia gracilens Woodland wollythreads	-- / -- / 1B	Openings of broadleaved upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland on serpentinite soils at elevations of 100-1200 meters. Annual herb in the Asteraceae family; blooms February-July.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites. Additionally, the project sites are outside of the elevation range for this species.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
Pinus radiata Monterey pine	-- / -- / 1B	Closed-cone coniferous forest and cismontane woodland at elevations of 25-185 meters. Evergreen tree in the Pinaceae family. Only three native stands in CA at Ano Nuevo, Cambria, and the Monterey Peninsula; introduced in many areas.	**Not Present** Lake El Estero, Washerwoman's Pond, and Lagunita Mirada are located within the CNDDB occurrence of the estimated historic range of the Monterey Pine in the area. CNDDB occurrences of this species are within the local vicinity of Harris, Lower Ragsdale, and Wilson Detention Basins. No Monterey Pine trees were observed within the study areas of the project sites assessed during field visits.
Piperia yadonii Yadon's rein orchid	FE / -- / 1B	Sandy soils in coastal bluff scrub, closed-cone coniferous forest, and maritime chaparral at elevations of 10-510 meters. Annual herb in the Orchidaceae family; blooms February-August.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcorn-flower	-- / -- / 1B	Mesic areas of chaparral, coastal prairie, and coastal scrub at elevations of 15-160 meters. Annual herb in the Boraginaceae family; blooms March-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Plagiobothrys uncinatus Hooked popcorn-flower	-- / -- / 1B	Chaparral, cismontane woodlands, and valley and foothill grasslands on sandy soils at elevations of 300-760 meters. Annual herb in the Boraginaceae family; blooms April-May.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Potentilla hickmanii Hickman's cinquefoil	FE / SE / 1B	Coastal bluff scrub, closed-cone coniferous forests, vernally mesic meadows and seeps, and freshwater marshes and swamps at elevations of 10-149 meters. Perennial herb in the Rosaceae family; blooms April-August.	**Moderate** Suitable habitat is present at all of the project sites. Lake El Estero, Washerwoman's Pond, and Lagunita Mirada are included in the boundary of a historic CNDDB occurrence from 1900. This historic occurrence is also the nearest occurrence to other project sites. This CNDDB occurrence is approximately 3.2 miles from Harris, 3.3 miles from Lower Ragsdale, and 4 miles from Wilson Detention Basins.

Species	**Status** (Service/ Department/CNPS)	**General Habitat**	**Potential Occurrence within Project Vicinity**
Ramalina thrausta Angel's hair lichen	-- / -- / 2B	North coast coniferous forest on dead twigs and other lichens. Epiphytic fructose lichen in the Ramalinaceae family. In northern CA it is usually found on dead twigs, and has been found on *Alnus rubra*, *Calocedrus decurrens*, *Pseudotsuga menziesii*, *Quercus garryana*, and *Rubus spectabilis*. In Sonoma County it grows on and among dangling mats of *R. menziesii* and *Usnea* spp.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Rosa pinetorum Pine rose	-- / -- / 1B	Closed-cone coniferous forest at elevations of 2-300 meters. Perennial shrub in the Rosaceae family; blooms May-July. Possible hybrid of *R. spithamea*, *R. gymnocarpa*, or others; further study needed.	**Unlikely** No suitable habitat is present at the project sites evaluated.
Sidalcea malachroides Maple-leaved checkerbloom	-- / -- / 4	Broadleaved upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, and riparian woodlands, often in disturbed areas, at elevations of 2-730 meters. Perennial herb in the Malvaceae family; blooms March-August.	**Low** Suitable habitat is present at all of the project sites. The nearest CNDDB occurrence to the project sites is a historic occurrence from 1881 on the Monterey Peninsula.
Stebbinsoseris decipiens Santa Cruz microseris	-- / -- / 1B	Broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and openings in valley and foothill grassland, sometimes on serpentinite, at elevations of 10-500 meters. Annual herb in the Asteraceae family; blooms April-May.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.

Species	Status (Service/ Department/CNPS)	General Habitat	Potential Occurrence within Project Vicinity
Tortula californica California screw moss	-- / -- / 1B	Valley and foothill grassland and chenopod scrub on sandy soils at elevations of 10-1460 meters. Moss in the Pottiaceae family.	**Moderate** Suitable habitat is present at Harris and Lower Ragsdale Detention Basins. Only one CNDDB occurrence was reported within the USGS quadrangles searched. This occurrence is located more than 10 miles from the project sites. This species is unlikely to occur at Washerwoman's Pond, Lagunita Mirada, Lake El Estero, and Wilson Detention Basin as no suitable habitat is present at these project sites.
Trifolium buckwestiorum Santa Cruz clover	-- / -- / 1B	Gravelly margins of broadleaved upland forest, cismontane woodland, and coastal prairie at elevations of 105-610 meters. Annual herb in the Fabaceae family; blooms April-October.	**Unlikely** The project sites are outside of the elevation range for this species.
Trifolium hydrophilum Saline clover	-- / -- / 1B	Marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools at elevations of 0-300 meters. Annual herb in the Fabaceae family; blooms April-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Trifolium polyodon Pacific Grove clover	-- / SR / 1B	Mesic areas of closed-cone coniferous forest, coastal prairie, meadows and seeps, and valley and foothill grassland at elevations of 5-120 meters. Annual herb in the Fabaceae family; blooms April-July.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.
Trifolium trichocalyx Monterey clover	FE / SE / 1B	Sandy openings and burned areas of closed-cone coniferous forest at elevations of 30-240 meters. Annual herb in the Fabaceae family; blooms April-June.	**Not Present** This species was not observed by DD&A Environmental Scientist during botanical surveys the project sites.

STATUS DEFINITIONS

Federal

FE	= listed as Endangered under the federal Endangered Species Act
FT	= listed as Threatened under the federal Endangered Species Act
FC	= Candidate for listing under the federal Endangered Species Act
--	= no listing

State

SE	= listed as Endangered under the California Endangered Species Act
ST	= listed as Threatened under the California Endangered Species Act
SR	= listed as Rare under the California Endangered Species Act
SC	= Candidate for listing under the California Endangered Species Act
CSC	= California Department of Fish and Wildlife Species of Concern
CFP	= California Fully Protected Animal
WL	= California Department of Fish and Wildlife Watch List
--	= no listing

California Native Plant Society

1B	= California Rare Plant Rank 1B species; rare, threatened, or endangered in California and elsewhere
2B	= California Rare Plant Rank 2B species; rare, threatened, or endangered in California, but more common elsewhere
4	= California Rare Plant Rank 4 Limited distribution (CNPS Watch List)
--	= no listing

POTENTIAL TO OCCUR

Present	= known occurrence of species within the site; presence of suitable habitat conditions; or observed during field surveys
High	= known occurrence of species in the vicinity from the CNDDB or other documentation; presence of suitable habitat conditions
Moderate	= known occurrence of species in the vicinity from the CNDDB or other documentation; presence of marginal habitat conditions within the site
Low	= species known to occur in the vicinity from the CNDDB or other documentation; lack of suitable habitat or poor quality
Unlikely	= species not known to occur in the vicinity from the CNDDB or other documentation, no suitable habitat is present within the site
Not Present	= species was not observed during surveys

APPENDIX D

City of Monterey Detention Basin Management Project
Wetland Delineation

DETENTION BASIN MAINTENANCE PROJECT

WETLAND DELINEATION

JUNE 5, 2017



PREPARED BY:

Denise Duffy & Associates, Inc.
Contact: Josh Harwayne
947 Cass St. Suite 5
Monterey, California 93940

PREPARED FOR:

City of Monterey
580 Pacific Street, Room 7
Monterey California, 93940

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INTRODUCTION

DENISE DUFFY & ASSOCIATES, INC. (DD&A) has been contracted by the City of Monterey (City) to prepare a wetland delineation for the Monterey Detention Basin Maintenance Project (proposed project), Monterey, California (Figure 1). The purpose of this wetland delineation is to map wetlands and other waters of the United States (waters) within the evaluation area of the proposed project, which have the potential to be under the jurisdiction of the U.S. Army Corps of Engineers (ACOE).

Project Description

The proposed project includes maintenance activities for six detention basins (project sites) located in the City of Monterey: Lake El Estero[1], Washerwoman's Pond, Lagunita Mirada Sediment Basin, Lower Ragsdale Detention Basin, Harris Detention Basin, and Wilson Detention Basin (Figure 2). The six detention basins identified as part of the proposed project capture and store stormwater runoff from surrounding areas. The capacity and function of these detention basins have been reduced by the presence of emergent vegetation and the accumulation of sediment. Additionally, some of the detention basins have associated infrastructure that requires upkeep and occasional repairs to function as intended. The proposed project involves management and maintenance activities by the City that would allow the intended function and capacity of these detention basins to be restored and maintained over a period of 15 years.

The Lower Ragsdale, Harris, and Wilson sites are located in the Ryan Ranch development (Figure 3). Improvement plans for the Ryan Ranch Industrial Park from 1982 show the designed depths for these basins. Lake El Estero, Washerwoman's Pond and Lagunita Mirada Sediment Basin project sites are located in the downtown area of the City of Monterey (Figure 4). Plans were prepared and executed in 1984 as part of the El Estero Lake Restoration Project, indicating their designed depths.

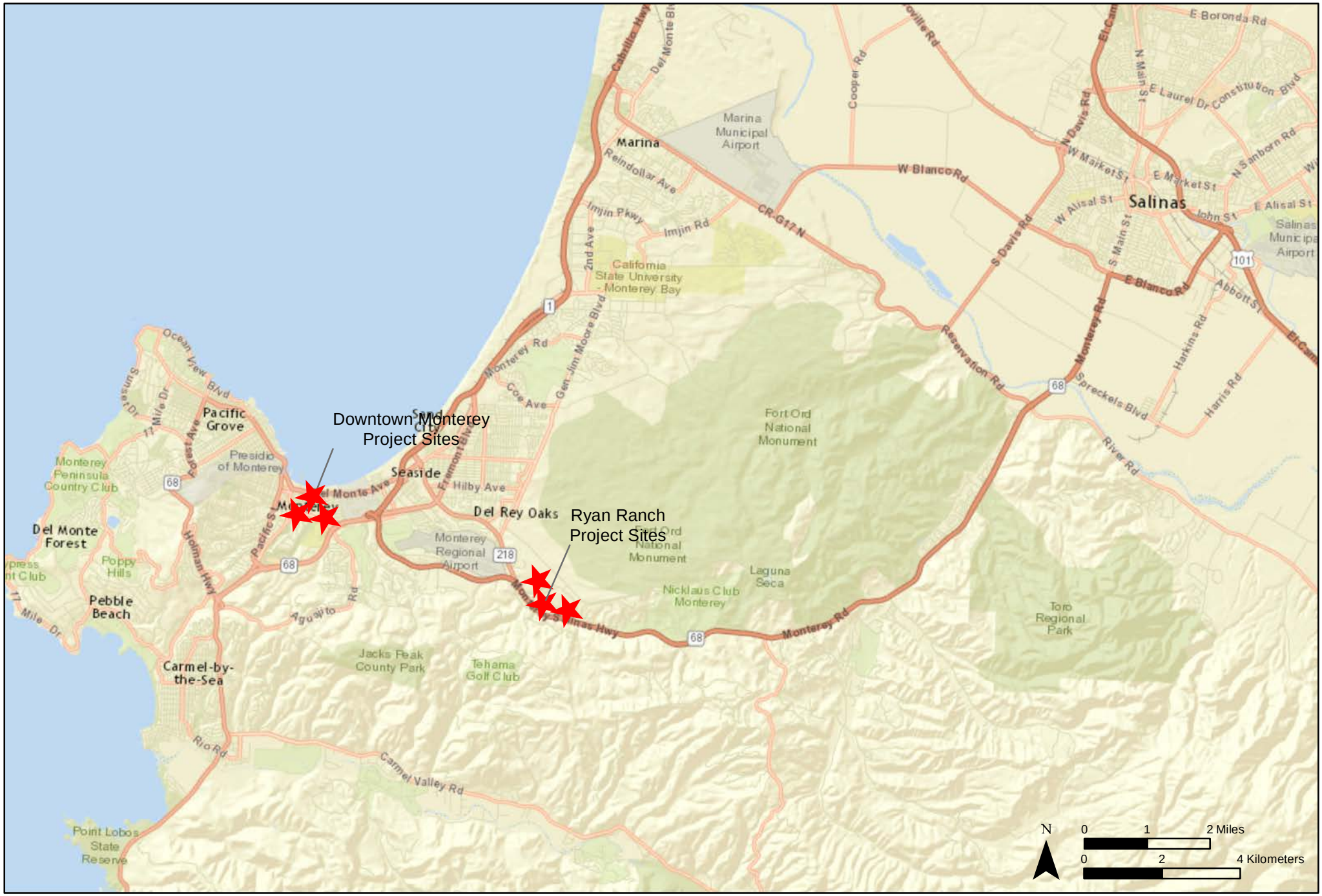
The proposed project activities include dredging of all of the basins except Lake El Estero to restore their design depths. Washerwoman's Pond and Lagunita Mirada Sediment Basin would be drained for maintenance activities, to work at the pipe inlets and the outlet head-walls. Proposed maintenance activities at all of the basins would include: vegetation management/removal; trash removal; and inspection and repair of infrastructure as needed.[2] In addition, installation of specific erosion control structures are proposed at Lake El Estero as described below. Sediment, trash, and green waste generated by the proposed project would be disposed of properly at the Marina Dump. Project activities are discussed in more detail in the text below.

Sediment Removal

Sediment removal would consist of a few different approaches and equipment types. Where access is available, sediment shall be removed by an excavator or drag bucket from the bank of the detention basin. Alternatively, detention basins may be dredged by floating equipment. For the majority of the basins the dredging would occur with water in the pond. However, for the initial work in year 1, Washerwoman's Pond and Lagunita Mirada Sediment Basin will be drained prior to the dredging, and then graded with heavy equipment to match the original design depths. Draining of the two detention basins referenced above for sediment removal purposes will occur only once, in year 1. All dredged materials shall be

[1] Lake El Estero is not strictly a detention basin as it has additional function and value in regard to recreation and esthetics. However, for the purposes of this document, it is included as one of six basins within the City that require maintenance because they retain sediment and associated vegetation over time.

[2] The water surface elevation at Washerwoman's Pond and Lagunita Mirada Sediment Basin may be lowered or drained on occasion to facilitate the proposed project activities, including the inspection and repair of infrastructure.





Title:

Detention Basin Management Project Location Map

Date: April 15, 2016

Scale: 1 inch = 1.97 miles

Project: 2013-65 760

Monterey | San Jose

Denise Duffy and Associates, Inc.

Environmental Consultants Resource Planners

947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 1

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Title:

Detention Basin Management Project
Project Site Map

Date: April 15, 2016

Scale: 1 inch = 0.46 miles

Project: 2013-65 760

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Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure
2

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Title:

Detention Basin Management Project
Ryan Ranch Project Sites

Date: March 10, 2017

Scale: 1 inch = 0.13 miles

Project: 2013-65 760

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Monterey, CA 93940
(831) 373-4341

Figure 3

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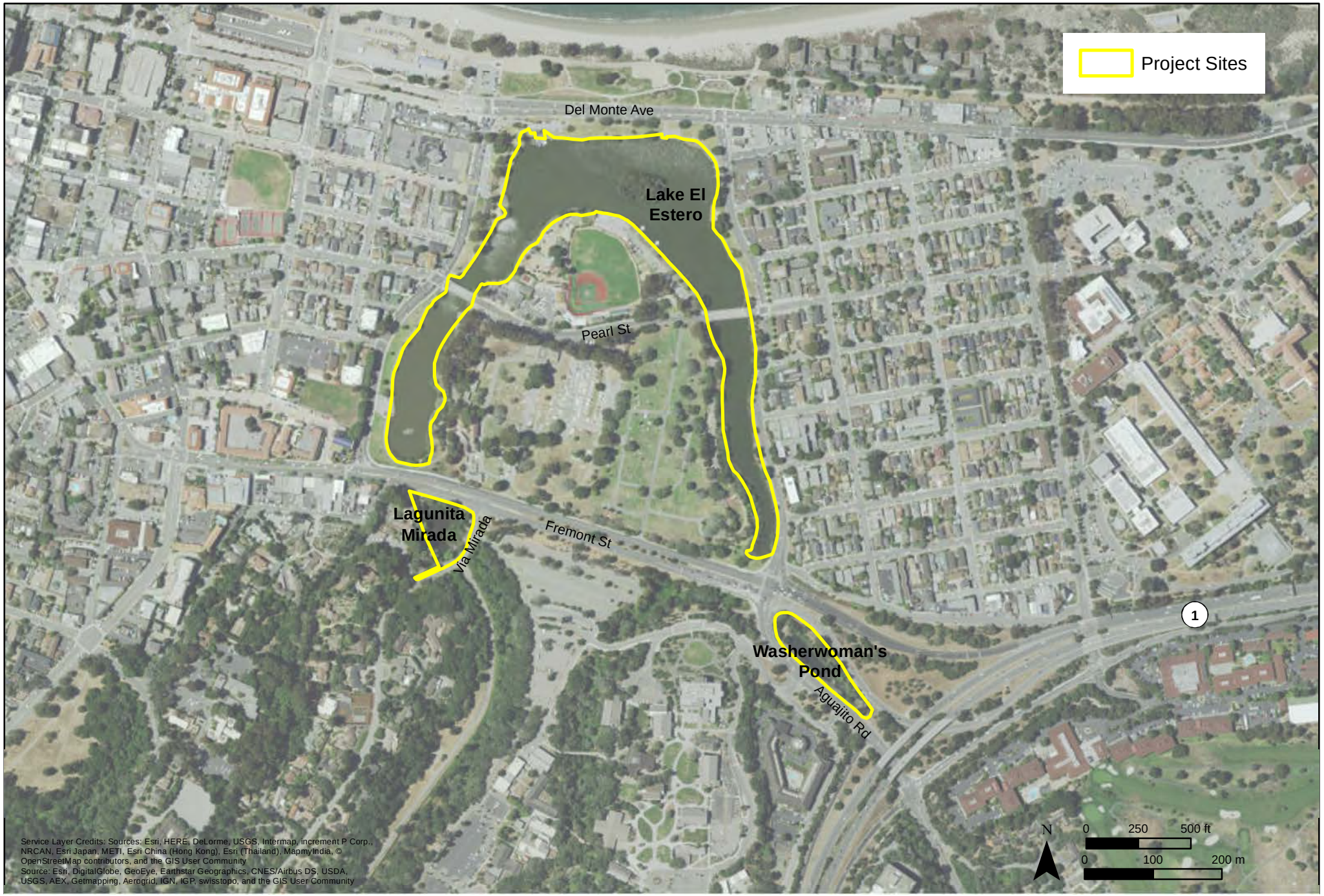



Title:

Detention Basin Management Project
Downtown Area Project Sites

Date: March 10, 2017

Scale: 1 inch = 0.11 miles

Project: 2013-65 760

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947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 4

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Habitat Assessment\Figure 4 - 8x11 Downtown Area Project Sites 20160415.mxd

hauled off-site and deposited at the Marina Dump.

Vegetation Management

Vegetation management shall include removal of emergent vegetation within the detention basins. Vegetation shall be removed with a combination of hand equipment, when necessary around and adjacent to sensitive infrastructure, and heavy equipment such as a backhoe. As the vast majority of the emergent vegetation within the detention basins is rooted in accumulated sediment, the vast majority of the vegetation removal will occur concurrently with the sediment removal as described above and will be a byproduct of that activity. Vegetation removal in the first year (year 1) will include removal of 50% of the vegetation at all of the detention basins except Washerwoman's Pond and Lagunita Mirada Sediment Basin; these two detention basins will be drained and regraded in the first year, resulting in the removal of all of the existing wetland vegetation at those two project sites. In subsequent years, only 50% of the vegetation would be removed every two years at all of the detention basins. Additional trimming and mowing shall occur in adjacent uplands when the basins are in park or urban settings. All vegetation removed will be hauled off site and disposed of at the Marina Landfill.

Lake El Estero

The Lake El Estero project site is located in the City of Monterey in an area between Del Monte Avenue and Fremont Street (Figure 4). Lake El Estero is the largest project site, at approximately 19.5 acres, and holds water year round. Maintenance activities at Lake El Estero differ from the other proposed project sites. Annual maintenance at Lake El Estero would consist of the following activities:

- Removal of emergent vegetation[3]
- Management of erosion as needed along the eastern shore of the east finger through the installation of gabion cages (less than 200 feet per year)
- Trash removal and maintenance of vegetation in upland areas around the lake
- Any necessary repairs to aeration system (e.g. replacing broken sections)
- Dropping the elevation of the lake 3 to 4 feet in preparation of large storm events
- Dropping the elevation of the lake 3 to 4 feet, as needed, to conduct maintenance on utilities that run under the Pearl Street bridges and to work on any of the inlets that come into the lake, the lake edge walls, or gabion cages
- Inspection of existing infrastructure and conducting repairs as necessary
- Inspection of existing areas of rock wall around the perimeter of the lake and repairing/replacing as necessary

During the first year of maintenance activities vegetation removal would occur to unblock stormwater drainage inlets. Consistent with the 1984 El Estero Lake Restoration Plans, the City would preserve two large areas (approximately 0.36 acres) of emergent vegetation, one patch in the west lake near the playground and another on the western bank of the east finger (Figure 5). In years following the initial maintenance activities, emergent vegetation removal would consist of maintaining these preserved areas of emergent vegetation. Emergent vegetation outside of the preserved areas would be removed from Lake El Estero using a barge-mounted backhoe attachment and a standard backhoe operated from the shore as needed. Trash removal and maintenance of vegetation in upland areas around the lake would occur throughout the year, on a weekly basis.

Erosion can be an issue along portions of the perimeter of the lake and maintenance activities would include addressing/managing erosion as needed. Management of erosion along the east side of the east finger of the lake would consist of extending existing areas of gabion cages along the bank at a rate of

[3] A minimum of approximately 0.36 acres of emergent vegetation will be maintained within Lake El Estero for the duration of the proposed project.





Title: Lake El Estero Detention Basin Areas of Emergent Vegetation to be Preserved

Date: March 29, 2016
Scale: 1 inch = 0.06 miles
Project: 2013-65 760

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Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 5

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approximately less than 200 hundred feet per year. Installation of these cages would involve removing emergent vegetation that may be present within the installation area and creating a shelf in the soil on which the gabion cage would sit. The gabion cage would be entirely submerged, and not visible above the water surface. The gabion cages would be installed on an as-needed basis and only if significant erosion was identified. Additional erosion management activities would include maintaining existing areas of rock wall. Maintenance of the rock wall would consist of repairing or, if necessary, replacing sections as needed to maintain the intended function of the wall. Additional activities include inspection and maintenance of utilities that run under the Pearl Street bridges and inlets to the lake. Materials removed as part of these maintenance activities would be stockpiled off-site and then disposed of at a landfill or other appropriate off-site location. The surface elevation of the lake would be reduced, as needed, by no more than four feet to enable the maintenance activities described above.

Dropping the water surface level in the lake would occur prior to large rain events. The number of times the lake level would be dropped in preparation of a large rain event will vary between years. A number of factors including intensity of rainfall events, timing of rainfall events, and the condition of soils prior to the rain event (i.e. saturation level), would affect the number of times the water level would need to be dropped each year.

Inspections and repairs of the pump inlet and gravity inlet located in the forebay of Lake El Estero would also occur as part of the proposed project. As the pump inlet and the inlet to the gravity line are submerged, the inspection and repairs of these inlets would be completed using a cofferdam. The cofferdam allows for a dry area in which the inspection and any necessary repairs could occur. The dewatering would occur twice, once to conduct the inspection and then once to conduct the repairs, as the cofferdam would be allowed to refill with water while materials for the repairs are being fabricated. Gravel to a depth of two feet would be placed on the bottom of the dry side of the cofferdam. Once the water has been dropped by the initial dewatering, the dry side of the cofferdam would be maintained by a sump pump that would pump out the water collecting in the gravel. It is estimated that repairs would take approximately a week to complete once the materials were available. During repairs, the dry side would be maintained by the sump pump running continuously. For both the initial dewatering and the water removed by the sump pump the water would be pumped into a sanitary sewer line by way of a manhole located in a parking lot area, approximately 40-feet from the Lake El Estero pump structure. Each initial dewatering event would divert approximately 35,900 gallons of water. Operation of the sump pump at approximately 3 gallons/minute for a week (the expected duration of the repairs) would result in the diversion of approximately 30,000 gallons of water. As the pump inlet and inlet to the gravity line are located in different sections of the forebay, the cofferdam would be installed within the lake at each location no more than once every five years. All non-native materials temporarily placed on the dry side of the cofferdam would be removed prior to the removal of the cofferdam.

Regulatory Background

The ACOE is the primary federal agency responsible for regulating wetlands and waters.

Wetlands

The ACOE and the Environmental Protection Agency (EPA) jointly define wetlands as:

> "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (ACOE 1982; EPA 1980).

ACOE provides technical guidelines on wetland delineation in *The Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual* (Wetland Manual) (Wetland Training Institute, 2002). The Wetland

Manual describes the three environmental parameters used in delineating jurisdictional wetlands. The three parameters are:

1. *Vegetation*. The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in the definition of a wetland above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow effectively, compete, reproduce, and/or persist in anaerobic soil conditions;
2. *Soil*. Soils are present and have been classified as hydric or they possess characteristics that are associated with reducing soil conditions; and
3. *Hydrology*. The area is inundated either permanently or periodically at mean water depths of ≤ 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

For an area to be considered a wetland under ACOE guidelines, all three parameters (vegetation, soils, or hydrology, as defined by the ACOE) must be met. However, climatic and hydrologic conditions in the Arid West often make it difficult to identify wetland indicators. The 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Supplement) (ACOE, 2008) provides indicators for each parameter that are specific to the Arid West region and is used in conjunction with the Wetland Manual.

Waters

Waters are defined as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All "other waters" such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs [1-4] of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs [1-6] of this section (ACOE, 1982).

As noted above, "other waters," including lakes, ponds, and streams, are subject to ACOE jurisdiction. "Other waters" are characterized by an ordinary high water (OHW) mark, which is defined as:

> "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (ACOE, 1982).

In the field, "other waters" are identified by the presence of a defined river or stream bed, a bank, and evidence of the flow of water.

U.S. Army Corps of Engineers Jurisdiction

On June 5, 2007, the ACOE and the EPA developed a Memorandum Regarding *Clean Water Act Jurisdiction Following Rapanos v. United States* which states that the agencies will assert jurisdiction over the following categories of water bodies:

- TNWs [traditional navigable waters] and wetlands adjacent to TNWs and
- Non-navigable tributaries of TNWs that are relatively permanent (i.e., the tributaries typically flow year-round or have continuous flow at least seasonally) and wetlands that directly abut such tributaries

In addition, the following waters will also be found jurisdictional based on a fact-specific analysis that they have a significant nexus with a TNW:

- Non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally;
- Wetlands adjacent to such tributaries; and
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands" (ACOE & EPA, 2007).

The term "navigable waters of the U.S." is defined to include:
"all those waters that are subject to the ebb and flow of the tide, and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (ACOE, 1982).

METHODS

This wetland and waters delineation was conducted in accordance with the requirements set forth in both the Wetland Manual and the Supplement, as appropriate. Prior to conducting field surveys, available reference materials were reviewed, including the National Wetlands Inventory Wetland Mapper (Service 2015), the Soil Survey for Monterey County (USDA-NRCS 1978), the list of Hydric Soils of the United States (USDA 2014), the Web Soil Survey (USDA-NRCS 2016), and aerial photographs of the site.

Six (6) detention basins were assessed. Delineations were conducted between January and April, 2016 by DD&A Environmental Scientists. The methods for delineating wetlands and waters are described in detail below.

The delineation of potential federal wetlands and waters within Lake El Estero, Washerwoman's Pond, Lagunita Mirada Sediment Basin, and Wilson Detention Basin were prepared using aerial images during extensive field visits to the project sites. It was determine in the field that the boundaries of these features were sufficiently evident to the experienced delineators to preclude the need for field data related to soils, hydrology, and vegetation beyond detailed visual assessment. In fact, due to the steepness of the banks of these man-made and maintained basins, data collection was precluded in many locations and would have

resulted in points in open water or upland cut banks. In all situations, if there was any question as to the presence of potential wetlands, the areas were included and mapped as potentially jurisdiction.

Field Methods

For Harris Detention Basin and Lower Ragsdale Detention Basin the data collected during the field surveys were recorded on Wetland Determination Data Forms for the Arid West Region (Attachment B) provided in the Supplement. Data collected at each sampling point was analyzed to determine if wetlands and other waters under the jurisdiction of ACOE were potentially present. Vegetation, soils, and hydrology were assessed following the guidelines detailed in the Wetland Manual and Supplement. For an area to be considered a wetland under ACOE guidelines, all three parameters must be met. Indicators described in the Wetland Manual and Supplement, used to make wetland determinations at each sampling point are discussed below.

Vegetation

The Wetland Manual defines "hydrophytic vegetation" as:

> "…the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present."

Vegetation was broken into four strata for evaluation: tree, sapling/shrub, herb, and woody vines. Dominant plant species and approximate percent cover were recorded for each stratum. Plant species were identified using *The Plants of Monterey County; an Illustrated Field Guide – Second Edition* (Matthews and Mitchell, 2015), and were assigned a wetland status according to the *Arid West 2014 Regional Wetland Plant List* (ACOE, 2014). This wetland classification system is based on the expected frequency of occurrence in wetlands as described in Table 2-1.

Table 1: Wetland Vegetation Classification System

Symbol	Indicator Category	Definition	Frequency of Occurrences
OBL	Obligate Wetland Plants	Always found in wetlands	>99%
FACW	Facultative Wetland Plants	Most often occur in wetlands	67-99%
FAC	Facultative Plants	Equal likelihood of occurring in wetlands and non-wetlands	33-67%
FACU	Facultative Upland Plants	Most often occur in non-wetlands	1-33%
UPL	Obligate Upland Plants	Always found in non-wetlands	<1%
NL	Not Listed (Assumed Upland)		

The "dominance test", as described in the Supplement, was applied for each survey point. If greater than 50 percent of the dominant plant species across all strata were rated OBL, FACW, or FAC, then the plant community "passed" the dominance test and the vegetation was determined to be hydrophytic. Neither the prevalence test nor morphological adaptation indicators were used, as the conditions described in the manual for each were absent (i.e., plant community failing the dominance test with presence of both hydric soil and wetland hydrology).

Soils

The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as:

> "A soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (USDA-NRCS 1995).

The soil at each survey point was evaluated by digging a 18-inch hole, when possible, and identifying soil horizons, color, and texture, as well as any hydric soil indicators (as described in the Supplement). Soil color was evaluated by comparing a small wetted piece of soil to Munsell Soil Color Charts (Munsell 2009). The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with 0 for neutral grays and increasing at equal intervals to a maximum of about 20. Munsell values for each soil sample were compared to the requirements for Soil Indicators specific to the Supplement to determine if hydric soils were present at the sampling point.

Hydrology

The Wetland Manual defines "wetland hydrology" as:

> "Encompassing all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions."

Each sampling point was evaluated for wetland hydrology using the indicators described in the Supplement. Evidence of one Primary Indicator sufficiently identified wetland hydrology. Two or more Secondary Indicators were necessary to identify wetland hydrology if no Primary Indicators were observed.

In the Arid West, the lack of a hydrologic indicator does not always signify the absence of wetland hydrology. As stated in the Supplement, the Arid West is characterized by extended dry seasons in most years and by extreme temporal and special variability in rainfall, causing many wetlands in the region to be dry for much of the year. During the extended dry season, hydrology indicators may be lacking altogether at a difficult or problematic site. Guidance is provided in the Supplement for difficult wetland situations such as this.

RESULTS

Harris Detention Basin

A total of 10 sampling points were taken at Harris Detention Basin.

Vegetation

The upland area around the Harris Detention Basin consisted of a maintained disk golf course in an oak savanna with a non-native grassland understory. The basin contained emergent and submergent vegetation. This site was evaluated January 27, 2016. It was too early in the growing season to identify grasses present within the site.

Riparian vegetation consisting of a willow (*Salix sp.*) was present in a depression located along the northern and eastern sides of the detention basin. A patch of cattails (*Typha* sp.) was also present in the depression. Hydrophytic vegetation was present at sampling points 1, 3, 5, 6, and 9 (Figure 6). Vegetation within the wetland area of the detention basin included tall cyperus (*Cyperus eragrostis*, FACW), brown-headed rush (*Juncus phaeocephalus*, FACW), baltic rush (*Juncus balticus*, FACW), dock (*Rumex* sp.), rye grass (*Festuca perennis,* FAC), and cut-leaved plantain (*Plantago coronopus*, FACW). Where water was ponded at the time of the evaluation area, sample point 8, vegetation present included an unknown submerged species, cut-leaved plantain, and manna grass (*Glyceria* sp.).

The southeastern portion of the basin and the upland area directly adjacent to most of the basin was sparsely vegetated. Vegetation present in the sparsely vegetated areas included cut-leaved plantain, white-stemmed filaree (*Erodium moschatum*, NL), and common toad rush (*Juncus bufonius*, FACW).

Soils

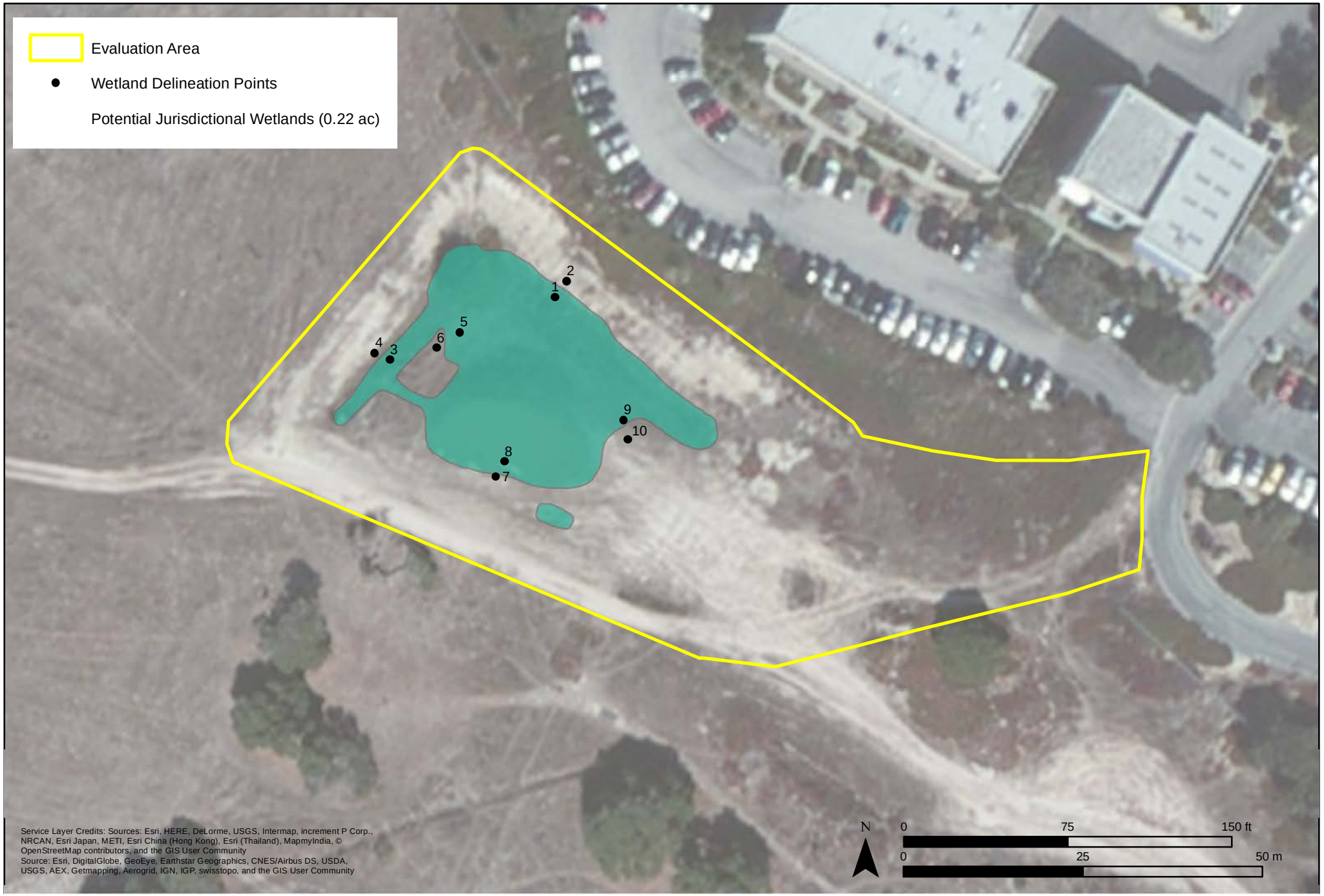
The Web Soil Survey (USDA-NRCS 2016) identified one soil mapping unit within the Harris Detention Basin evaluation area (Figure 7). An abbreviated description of the soil type is presented below.

> Narlon Loamy Fine Sand, 2 to 9 Percent Slopes
> These soils are a gently to moderately sloping soil on dissected marine terraces. In a representative profile, the surface layer is a gray, medium acidic, loamy, fine sand about three inches thick. The subsurface layer is a white, mottled, slightly to medium acidic, loamy, fine sand approximately 10 inches thick. The subsoil is an approximately 40-inch thick light brownish gray to light gray, mottled, very strongly acidic clay. This soil is classified as hydric for Monterey County.

The soils present at the Harris Detention Basin were problematic and significantly disturbed. The basin was dug in an upland area. The hardness of the soil made it difficult to dig at some of the sampling locations. Orange inclusions from sedimentation of the parent material were present. Soils at sampling point 8 were not assessed to avoid disturbing amphibian eggs present in the standing water. Soil texture present within the site included silty sand, organic silt, and bed rock.

Hydrology

Harris Detention Basin is a basin dug in an upland area. This detention basin likely supports standing surface water only during the wet season in normal years and only during storm events in dryer years. Stormwater runoff from the adjacent areas is conveyed to the basin as surface runoff or through two inlets, one on the north corner and one in the east corner of the basin. Water surface elevation in this detention basin was controlled by an outlet located in the south-eastern corner of the basin. A hole in the base of the outfall structure was present at the lowest point in the basin. Due to the configuration of the outlet, the distribution of wetland habitat present within the basin was driven by the topography of the basin and the location of the inlets. A small area surrounded by wetland, characterized by point 6, lacked wetland hydrology (Figure 6).





Title:

Harris Detention Basin
Wetland Delineation Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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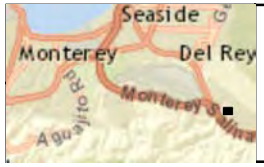
Figure

6

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Wetland Maps\Figure 6 - 8x11 Harris 20160415.mxd





Title:

Harris Detention Basin Soils Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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Figure 7

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Soils Map\Figure 7 - 8x11 Harris 20160415.mxd

Lower Ragsdale Detention Basin

A total of six sampling points were taken within the Lower Ragsdale Detention Basin evaluation area. The evaluation area at the Lower Ragsdale Detention Basin consists of a silt basin and adjacent upland area.

Vegetation

The upland area within the evaluation area consists of an oak savanna with a non-native grass understory. Plant species present in the upland area included non-native upland grasses, Italian thistle, dove's foot geranium (*Geranium molle*, NL), red-stemmed filaree (*Erodium cicutarium*, NL), bur-clover (*Medicago polymorpha*, FACU), poison hemlock (*Conium maculatum*, FACW), and cut-leaved plantain (*Plantago coronopus*, FACW). Sample points 17, 19, and 21 were collected in the upland portion of the evaluation area (Figure 8).

Vegetation present within the silt basin included pale spikerush (*Eleocharis macrostachya*), tall cyperus (*Cyperus eragrostis*), dock, and spreading rush (*Juncus patens*, FACW). A small portion of a channel that conveys water from Lower Ragsdale Road to the silt basin is included in the evaluation area.

Soils

The Web Soil Survey (USDA-NRCS 2016) identified one soil mapping unit within the Lower Ragsdale Detention Basin evaluation area (Figure 9). An abbreviated description of the soil type is presented below.

Santa Ynez Fine Sandy Loam, 15 to 30 Percent Slopes

A hilly soil found on dissected terraces. In a typical profile for this soil type the top layer is 16 inches thick and is made up of grayish brown and gray, medium acidic fine sandy loam. The subsurface layer is 2 inches thick and consists of light brownish gray, medium acid fine sandy loam. The subsoil 25 inches thick and is gray and grayish brown, medium acid to mild alkaline clay and clay loam. The runoff rate is rapid, and the erosion hazard is high. This soil is not classified as hydric for Monterey County.

Soils at this site had a high potential to be disturbed, as the site is a managed detention basin. Soils with low chroma were observed at sampling points 21 and 22. Soil textures found at the site included silty sand, sandy loam, and silty loam.

Hydrology

Lower Ragsdale Detention Basin is part of the City of Monterey stormwater system. A drop system is used to convey water from culverts near Lower Ragsdale Rd. down the steep terrain to the silt basin. Water flows from the silt basin within the evaluation area to a basin located downstream. The silt basin within the evaluation area is separated from the downstream basin by a concrete wall and exposed rock. Hydrological indicators present at sampling points within the site included the presence of a high water table and/or saturation. Wetland hydrology was identified at sampling points 18, 20, 21, and 22 (Figure 8).





Title:

Lower Ragsdale Detention Basin Wetland Delineation Map

Date: April 15, 2016

Scale: 1 inch = 0.02 miles

Project: 2013-65 760

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Figure 8

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Wetland Maps\Figure 8 - 8x11 Lower Ragsdale 20170406.mxd





Title:

Lower Ragsdale Detention Basin Soils Map

Date: April 15, 2016

Scale: 1 inch = 0.02 miles

Project: 2013-65 760

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Figure 9

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Soils Map\Figure 9 - 8x11 Lower Ragsdale 20170406.mxd

Wilson Detention Basin

Vegetation

Wilson Detention Basin was located within disturbed oak woodland (Figure 10). French broom (*Genista monspessulana*) was the dominant vegetation in the understory and the top of bank. Sediment and vegetation present within the detention basin was generally present at the same elevation as the water surface. Vegetation along the water margin on the north-eastern portion of the detention basin consisted mostly of California bulrush (*Schoenoplectus californicus*). Tall cyperus with patches of bulrush and cattails were the dominant vegetation present within the detention basin.

Soils

The Web Soil Survey (USDA-NRCS 2016) identified one soil mapping unit within the Wilson Detention Basin evaluation area (Figure 11). An abbreviated description of the soil type is presented below.

Elder Very Fine Sandy Loam, 2 to 9 Percent Slopes

This well drained soil formed in alluvium resulting from granitic and sedimentary rock. In a representative profile the surface layer is grayish brown, slightly acid and dark brown, neutral sandy loam about 37 inches thick. The underlying material is yellowish brown, mildly alkaline stratified fine gravely sandy loam and fine gravely loamy course sand. Sandstone or shale is present at a depth of 40 to 72 inches. This soil is not classified as hydric for Monterey County.

Hydrology

Wilson Detention Basin is an instream feature. A creek flows into the detention basin from on the eastern end of the pond, and an outfall is present on the western end of the pond. The water surface elevation in the pond was controlled by the outfall. Wilson Detention Basin is part of the City of Monterey stormwater system.

Lake El Estero

Vegetation

The upland area at Lake El Estero consisted of maintained park that includes some development (Figure 12). The edge of the lake was well defined with some emergent vegetation. Wetland habitat present at the site consisted of emergent vegetation bordering the open water of the lake. Emergent vegetation present at the site included bulrush and yellow flag iris (*Iris pseudacorus*).

Soils

The Web Soil Survey (USDA-NRCS 2016) identified two soil mapping units within the Lake El Estero evaluation area (Figure 13). Abbreviated descriptions of each soil type are presented below.

Narlon Loamy Fine Sand, 2 to 9 Percent Slopes

Please see soil description provided for Harris Detention Basin above.

Baywood Sands, 2 to 15 Percent Slopes

This somewhat excessively drained soil was formed in stabilized sand dunes. In a representative profile of this soil, the surface layer is approximately 21 inches thick, grayish brown and brown, slightly acidic and medium acid sand. Baywood sand is not classified as a hydric soil for Monterey County.

Hydrology

Water flows from Lake El Estero to Monterey Bay through pipe culverts. Lake El Estero is fed by four tributary streams and a portion of the City of Monterey's stormwater system (including Lagunita Mirada Sediment Basin and Washerwoman's Pond) (Schaaf & Wheeler, 2014).





Title:

Wilson Detention Basin Wetland Delineation Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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Figure 10

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Wetland Maps\Figure 10 - 8x11 Wilson 20160415.mxd





Title:

Wilson Detention Basin Soils Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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Figure 11

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Soils Map\Figure 11 - 8x11 Wilson 20160415.mxd





Title:

Lake El Estero Wetland Delineation Map

Date: April 15, 2016

Scale: 1 inch = 0.05 miles

Project: 2013-65 760

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Figure

12

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Wetland Maps\Figure 12 - 8x11 Portrait Lake El Estero 20160415





Title:

Lake El Estero Soils Map

Date: April 15, 2016

Scale: 1 inch = 0.05 miles

Project: 2013-65 760

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Figure 13

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Soils Map\Figure 13 - 8x11 Portrait Lake El Estero 20160415.mxd

Washerwoman's Pond

Vegetation

Washerwoman's Pond is in an urban setting and is largely surrounded by paved roads (Figure 14). The detention basin is surrounded by a disturbed/planted habitat, which creates an upland buffer area between the detention basin and roads. At Washerwoman's Pond, the detention basin was well defined with steep banks. Fringe wetlands were present along the edge of the detention basin. Dominant plant species present within the fringe wetland areas include bulrush, common rush (*Juncus effusus*), horsetail (*Equisetum* sp.), willows (*Salix* sp.), smartweed (*Persicaria* sp.), dock, and cut-leaved water parsnip (*Berula erecta*). A large stand of bulrush, was also present in a portion of the detention basin.

Non-native weed species were the dominant vegetation in the upland area. Species present included soft chess (*Bromus hordeaceus*), ripgut grass, French broom, barley (*Hordeum marinum*), cut-leaved plantain (*Plantago coronopus*), English plantain (*Plantago lanceolata*), rattail sixweeks grass (*Festuca myuros*), Bermuda buttercup (*Oxalis per-caprae*), sweet-clover (*Melilotus sp.*), bur-clover, and cheeseweed (*Malva parviflora*). Some native species are present in the upland, including dock, California blackberry, and Monterey cypress (*Hesperocyparis macrocarpa*).

Soils

The Web Soil Survey (USDA-NRCS 2016) identified two soil mapping units within the Washerwoman's Pond evaluation area (Figure 15). Abbreviated descriptions of each soil type are presented below.

Baywood Sand, 2 to 15 Percent Slopes

Please see soil description provided for Lake El Estero above.

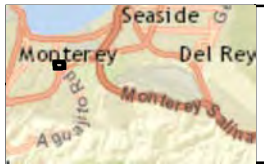
Xerothents, Loamy

This soil type is well drained. A steep soil typically found on bluffs and bank along major rivers, on escarpments of terraces, on fans or alluvial plains, and along drainages. These soils are loams, silt loams, clay loams, and clays. The runoff rate and potential erosion hazard vary for this soil type. This soil is not classified as hydric for Monterey County.

Hydrology

The outlet structure controlled the water surface elevation in the detention basin. Washerwoman's Pond is a silt pond for lake El Estero. Water from Washerwoman's Pond is conveyed under the street to Lake El Estero. Two tributaries feed into Washerwoman's Pond. Washerwoman's Pond is part of the City of Monterey storm water system.





Title:

Washerwoman's Pond Wetland Delineation Map

Date: April 15, 2016

Scale: 1 inch = 0.02 miles

Project: 2013-65 760

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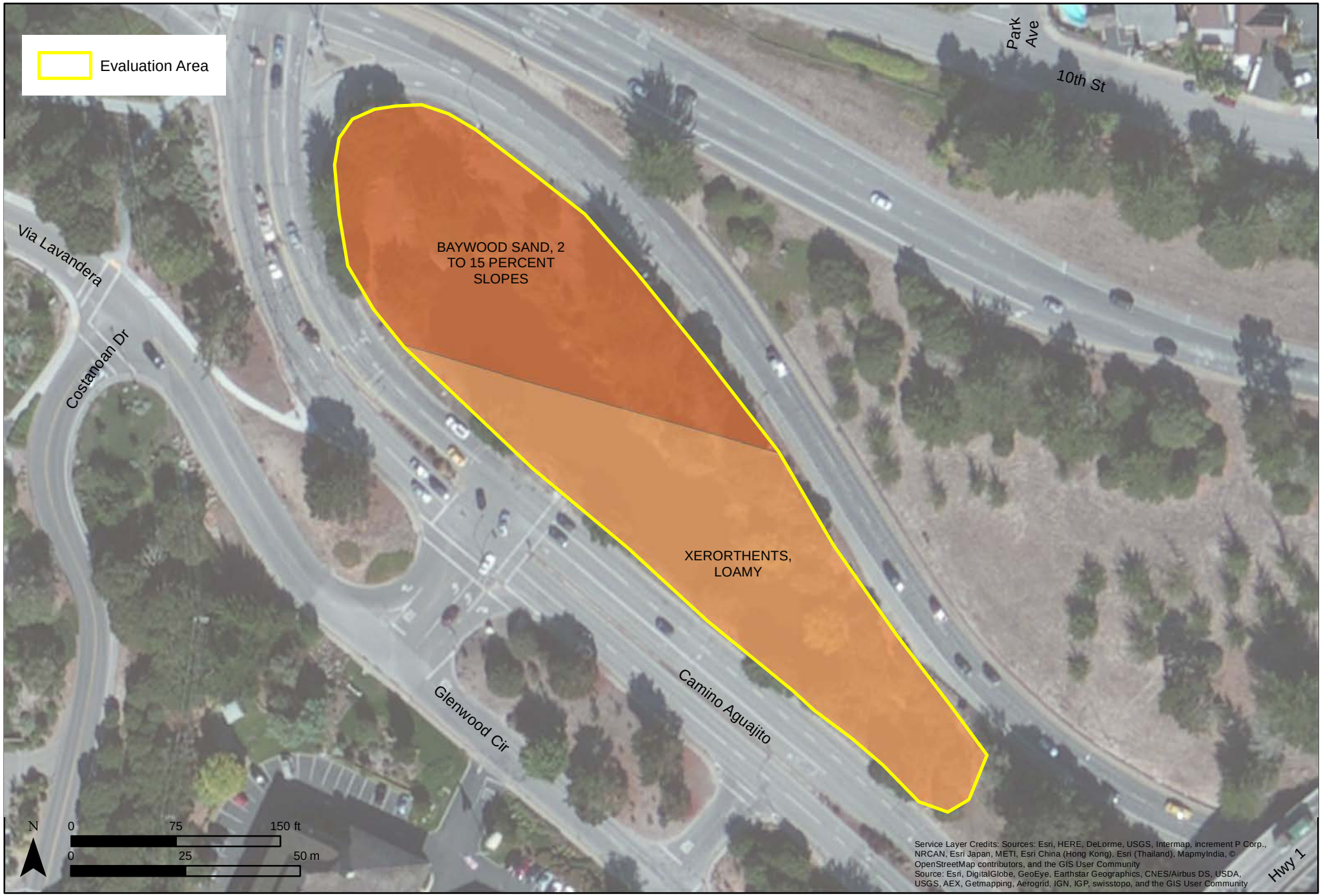
Figure

14

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Wetland Maps\Figure 14 - 8x11 Washerwoman's Pond 20160415.mxd





Title:

Washerwoman's Pond Soils Map

Date: April 15, 2016

Scale: 1 inch = 0.02 miles

Project: 2013-65 760

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Figure 15

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Soils Map\Figure 15 - 8x11 Washerwoman's Pond 20160415.mxd

Lagunita Mirada Sediment Basin

Vegetation

Lagunita Mirada Sediment Basin is in an urban setting and is adjacent to the Monterey Museum of Art and paved roads (Figure 16). The upland area surrounding the detention basin area consisted of a park like setting with a path, and non-native or horticultural species were dominant in open areas. Species present in the upland area included, pride of Madera (*Echium* spp.), greater periwinkle (*Vinca major*), scarlet pimpernel, rip-gut grass, bur-clover, rattail sixweeks grass, french broom, hottentot fig (*Carpobrotus edulis*), dock, plectritis (*Plectritis* sp.), milk thistle (*Silybum marianum*), and english ivy (*Hedera helix*).

At Lagunita Mirada Sediment Basin, the detention basin was well defined with steep banks in most places. A small band of fringe wetlands were present along the edge of the detention basin. These wetlands were approximately six inches wide, but expand where the slope is less steep between the upland and the pond, and where emergent vegetation occurred. The fringe wetland areas included large patches of yellow flag iris and cattails (*Typha* sp.), as well as alder trees (*Alnus* sp.), willows, and cottonwood (*Populus* sp.). The pond was impacted by sediment deposits which are colonized by emergent vegetation. Sediment deposition within the detention basin was allowing the fringe wetland area to expand.

Soils

The Web Soil Survey (USDA-NRCS 2016) identified two soil mapping units within the Lagunita Mirada Sediment Basin evaluation area (Figure 17). Abbreviated descriptions of each soil type are presented below.

Narlon Loamy Fine Sand, 2 to 9 Percent Slopes
Please see soil description provided for Harris Detention Basin above.

Xerorthents, Loamy
Please see soil description provided for Washerwoman's Pond above.

Hydrology

Lagunita Mirada Sediment Basin is a maintained open water pond. A creek flows into Lagunita Mirada Sediment Basin. The banks of the detention basin were steep and well defined in most places. The outlet structure controlled the water surface elevation in the detention basin. Water from Lagunita Mirada Sediment Basin is conveyed under the street to Lake El Estero. Lagunita Mirada Sediment Basin is part of the City of Monterey stormwater system.





Title:

Lagunita Mirada Sediment Basin Wetland Delineation Map

Date: April 15, 2016

Scale: 1 inch = 0.01 miles

Project: 2013-65 760

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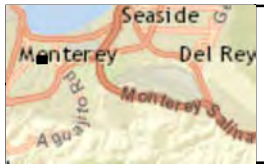
Figure 16

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Wetland Maps\Figure 16 - 8x11 Lagunita Mirada 20160415.mxd





Title: Lagunita Mirada Sediment Basin Soils Map

Date: April 15, 2016
Scale: 1 inch = 0.01 miles
Project: 2013-65 760

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Figure 17

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Soils Map\Figure 17 - 8x11 Lagunita Mirada 20160415.mxd

CONCLUSION

Portions of each evaluation area were identified as having wetlands and/or other waters. Approximately 2.5 acres of wetlands and approximately 17.93 acres of other waters of the U.S. potentially under the jurisdiction of the ACOE were identified within the evaluation areas (Table 2).

Table 2: Approximate acreage of potentially jurisdiction wetlands and other waters mapped within the evaluation areas.

Project Site	Wetlands (Acres)	Other Waters of the U.S. (Acres)
Lake El Estero	~1.22	~17.21
Washerwoman's Pond	~0.31	~0.44
Lagunita Mirada Sediment Basin	~0.34	~0.28
Lower Ragsdale Detention Basin	~0.24	>0.01
Harris Detention Basin	~0.22	--
Wilson Detention Basin	~0.17	--
Total	***~2.50***	***~17.93***

Impacts

Construction activities associated with the proposed project would result in impacts to potentially jurisdictional wetlands and waters present within the evaluation areas. Impacts to wetlands in the first year will include removal of 50% of the vegetation at all of the basins except Washerwoman's Pond and Lagunita Mirada Sediment Basin; these two basins will be drained and regraded in the first year (year 1), resulting in the removal of all of the existing wetland. In subsequent years, only 50% of the vegetation would be removed every two years at all of the basins. The proposed project would result in temporary impacts to approximately 1.58 acres of wetland habitat. The maximum acres of wetland that would be impacted by the proposed project during year 1 are presented in Table 3. Impacts to wetlands in subsequent years (2-15) would very likely total less than 0.10 acre per year averaged over that time period for all of the project sites combined. This depends on the amount of sediment and subsequent establishment of fringe wetlands over time. Some detention basins collect more sediment than others and it may be that dredging and associated vegetation removal will not be needed more than twice throughout the 15 year permit period at each site, depending on sedimentation rates.

Table 3: Approximate acreage of potentially jurisdiction wetlands and other waters within the evaluation areas that would be impacted by the proposed project in year 1.

Project Site	Area of Wetlands Impacted in Year 1 (Acres)	Other Waters of the U.S. Impacted (Acres)
Lake El Estero	~0.61	--
Washerwoman's Pond	~0.31	--
Lagunita Mirada Sediment Basin	~0.34	--
Lower Ragsdale Detention Basin	~0.12	--
Harris Detention Basin	~0.11	--
Wilson Detention Basin	~0.09	--
Total	***~1.58***	--

Impacts resulting from the proposed project will include removal of vegetation and sediment that form wetlands within the project sites. This impact will temporarily reduce the existing wetland habitat within the project sites. As sediment continues to enter the project sites in-between dredging events, new wetlands will form and replace those that have been removed via maintenance activities. No permanent changes to wetlands will result from the proposed project. The following mitigation measure has been provided below to reduce these potential impacts to a less-than-significant level.

Mitigation Measure WD-1: Subsequent to the initial dredging and vegetation removal scheduled for year 1 as described above, vegetation removal will occur no more than once every two years at each basin and include the removal of no more that 50% of the emergent vegetation to minimize the scope and scale of the temporary loss of wetland function and value.

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ATTACHMENT A

Wetland Delineation Datasheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-605 7160 Harris Detention Basin City/County: Monterey, Monterey Sampling Date: 1-27-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 1

Investigator(s): S. Hession, J. Harwayne Section, Township, Range: _____

Landform (hillslope, terrace, etc.): man-made basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Narlon Loamy Fine Sand, 2 to 9% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil Yes, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil Yes, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: The site is a detention basin dug in an upland area. Soils at the site are problematic. El Niño year, year four of a State wide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Cyperus eragrostis	10		FACW
2. Juncus phaeocephalus	30	yes	FACW
3. Juncus balticus	30	yes	FACW
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Only herb Stratum present

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10yr 3/2	100					Organic Silt	Emergent Roots
3-6	10yR 4/1	100					Silt	
6-18	2.5yR 5/2	100					Rock Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks: Basin area in upland area, soils are problematic but veg & hydrology are both present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65, 760 Harris Detention Basin City/County: Monterey, Monterey Sampling Date: 1-27-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 2

Investigator(s): S. Hession, J Hairwayne Section, Township, Range: _____

Landform (hillslope, terrace, etc.): man-made basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Narlon loamy fine sand, 2 to 9 % slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks: The site is a detention basin dug in upland soils at the site are problematic El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Plantago coronopus	5		FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 95 % % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)	(B)	

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: veg is sparse at this location

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10yr5/3	100					Sandy silt	
3-12	2.5yr4/1	50					Sandy silt	
3-12	5yr5/6	50					Sandy silt	
12-							Rocky	parent material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock, unable to dig further

Depth (inches): 12"

Hydric Soil Present? Yes _____ No _____

Remarks: Basin drug in upland area from 3-12 inches 2 descriptions provided because there are no redox features, just 2 colors from parent material.. Lacks hydro indicators & veg is very sparse

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, but no saturation observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65 360 Detention Basin Harris City/County: Monterey, Monterey Sampling Date: 1-27-2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 3

Investigator(s): S. Hession, J. Hanwacker Section, Township, Range: _____

Landform (hillslope, terrace, etc.): man-made basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Narlon Loamy Fine Sand, 2 to 9 % Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil Yes, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil Yes, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: The site is a detention basin dug in upland soils at the site are problematic El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus balticus	20	yes	FACW
2. Juncus phaeocephalus	40	yes	FACW
3. Festuca perennis	20	yes	FAC
4. Geranium dissectum	2		UPL
5. Lotus sp.	3		
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					Silty organic	Emergent Roots
3-6	10YR 5/2	100					Silty Sand	
6-18	10YR 3/2	100					Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks: Basin dug in upland area as a detention basin, soils are problematic hydrology & wetland veg are present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-05, 7100 Detention Basin Trains City/County: Monterey / Monterey (CA) Sampling Date: 1-27-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 4

Investigator(s): S. Wessel, J. Hannah Section, Township, Range: _____

Landform (hillslope, terrace, etc.): mountain basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Narlon loamy Fine Sand, 2 to 9% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil Y, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks: The site is a detention basin dug in an upland area. Soils at the site are problematic. El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Plantago coronopus	1		FACW
2. Erodium moschatum	1		
3.			
4.			
5.			
6.			
7.			
8.			
	2 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 96 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: Sparse vegetation

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0							Solid Rock	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Solid Rock

Depth (inches): 0

Hydric Soil Present? Yes ____ No X

Remarks: unable to dig at this location

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65, 7160 Detention Basin (Harris) City/County: Monterey/Monterey (H) Sampling Date: 1-27-2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 5

Investigator(s): Hession, J Hamilton Section, Township, Range:

Landform (hillslope, terrace, etc.): Man-made Basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Narlon Loamy Fine Sand, 2 to 9% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil Yes, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil Yes, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: The site is a detention basin dug in an upland area. Soils are problematic.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus phaeocephalus	20	yes	FACW
2. Plantago coronopus	10		FACW
3. Cyperus eragrostis	1		FACW
4. Rumex crispus	3		FAC
5. Geranium molle	10		UPL
6. Unknown grass	50	yes	
7.			
8.			
	94 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

50%: 47
10%: 19

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ≠ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: Too early in the growing season to identify unknown grass to species level. Unknown grass is a dominant species, however, unable to identify indicator status. Assumed unknown grass assuming FAC or wetter. Wetland hydrology is present, soils are disturbed.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	100					Silty Sand	
8-18	10YR 4/2	90					Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks: Basin clay in upland area
Orange inclusions from sedimentation of parent material are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 6"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65, 7LW Detention Basin Harris City/County: Monterey / Monterey CA Sampling Date: 1-27-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 6

Investigator(s): S. Hession, J. Hanwayne Section, Township, Range: _____

Landform (hillslope, terrace, etc.): man made Basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Nacimiento loamy fine Sand, 2 to 9% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil Y, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks: The site is a detention basin dug in an upland area Soils at the site are problematic

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus butonius	50	yes	FACW
2. Juncus xiphioides	1		OBL
3. Plantago coronopus	20	yes	FACW
4. Geranium molle	5		UPL
5.			
6.			
7.			
8.			
	76 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10yr 4/2	100					Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks: Basin dug in upland area orange inclusions from sedimentation of parent material are present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65, 7160 Detention Basin Harris City/County: Monterey / Monterey Sampling Date: 1-27-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 7

Investigator(s): S. Hession, J. Hawley Section, Township, Range: _____

Landform (hillslope, terrace, etc.): man-made basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Narlon loamy fine sand, 2 to 9% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks: The site is a detention basin dug in an upland area. Soils are problematic. El Niño year, year four of a state wide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Plantago coronopus	1		FACW
2. Juncus cotonis	1		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	2 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 96 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

Sparse veg

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Sandy	Rock
6+		100					Solid	Rock

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 6"

Hydric Soil Present? Yes ____ No ____

Remarks: Basin aug in upland area only able to dig 6" down in the soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indicators present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65 760 Detention Basin Hall/S City/County: Monterey / Monterey CA Sampling Date: 1-27-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 8

Investigator(s): S Hobson, S Harnaly Section, Township, Range:

Landform (hillslope, terrace, etc.): manmade Basin Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Mediterranean CA (LRR C) Lat: Long: Datum:

Soil Map Unit Name: Narlon loamy fine sand, 2 to 9% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: The site is a detention basin dug in an upland area. Soils were not assessed at this point, as not to disturb amph. eggs. Surface inundation used as primary indication of wetland hydrology. El Niño year, year 4 of statewide drought.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Glyceria declinata	10		FACW
2. Plantago coronopus	10		FACW
3. unknown submerged veg	10		
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

Unknown submerged veg assumed FACW or wetter

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks: no hole was dug to assess soils at this point as standing water with amphibian egg masses was present - Point located approx. 3 feet from water's edge

HYDROLOGY

Soil problematic at site in general as it is a basin dug in upland wetland hydrology and veg present

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Approx. 4 inches of standing water present. Water level is static as it is controlled by a semi-fixed eroded channel. Surface inundation used as primary indication of the distribution of wetland.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65, TMD Detention Basin City/County: Harris Monterey / Monterey, CA Sampling Date: 1-27-2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 9

Investigator(s): S Hession, J. Harwayne Section, Township, Range:

Landform (hillslope, terrace, etc.): man-made Basin Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Mediterranean CA (LRR C) Lat: Long: Datum:

Soil Map Unit Name: Narlon Loamy Fine Sand, 2 to 9% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: The site is a detention basin dug in an upland area. Soils at the site are problematic. El Niño year, year four of a state wide drought.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Cotula coronopifolia	20	yes	OBL
2. Erodium moschatum	10	no	UPL
3. Plantago coronopus	10	no	FACW
4. lotus sp.	10	no	
5. unknown grass	30	yes	
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Too early in the growing season to identify unknown grass to species level. Unknown grass is a dominant species; however, unable to identify indicator status. Unknown grass assumed to be FAC or wetter.

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 3/2	100					Silty Sand	
4-18	10yr 5/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks: Basin dug in upland area, Soils are problematic wetland hydrology and vegetation are present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 6"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated Soils present at a depth of 6 inches

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 2013-65, 7100 Detention Basin Harris City/County: Monterey / Monterey CA Sampling Date: 1-27-2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 10

Investigator(s): S. Hendon, C. Hardwidge Section, Township, Range: _____

Landform (hillslope, terrace, etc.): man-made Basin Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Marion Loamy Fine Sand, 2 to 9% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil ✓, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: The site is a detention basin dug in an upland area. Soils at the site are problematic. 2nd Nino year, year four of a statewide drought.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/a)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Gradium muschatum	20	yes	UPL
2. Polypogon sp.	2		
3. Unknown tabaceae	10		
4. Plantago coronopus	10		FACW
5. Unknown Grass	5		
6.			
7.			
8.			
	47 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Too early in the growing season to identify some of the plants present to species level

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	100					Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Basin dug in upland area, soils problematic Orange inclusions from sedimentation of parent material are present. Wetland hydrology & VEG lacking

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Detention Basin/Lower Roadside City/County: Monterey/Monterey Sampling Date: 2/15/2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 17

Investigator(s): J. Hatwayne Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Santa Ynez fine sandy loam, 15-30% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Sample point taken in a managed detention basin. Soils are likely disturbed. El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Cutleaf plantain	20	UPS	FACW
2. Red-stemmed filaree	20	UPS	UPL
3. Downy foot geranium	20	UPS	UPL
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Silty-Loam	
6-18	10YR 4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Detention Basin / Lower Ragsdale City/County: Monterey / Monterey Sampling Date: 2/5/2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 18

Investigator(s): J. Hardbarger Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Santa Ynez Fine Sandy Loam, 15-30% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks: Point taken in managed detention basin. Soils were disturbed on the edge of detention basin paired with data point on spillway to retention basin. El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. nut sedge (Cyperus eragrostis)	5		FACW
2. Lyons fruit	50	yes	FAC
3. Spikerush	20	yes	FACW
4. Italian thistle	10		UPL
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 3/2	100					Silty-Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks: Sampling Point taken in a managed detention basin. Soils are likely disturbed Wetland hydrology and vegetation are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes X No ____ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Detention Basin / Lower Ragsdale City/County: Monterey/Monterey Sampling Date: 2-5-2014

Applicant/Owner: City of Monterey State: CA Sampling Point: 19

Investigator(s): J. Hathaway Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Santa Ynez fine sandy loam, 15-30% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:
~~Q: edge of detention basin – paired with the data point on the~~ ~~flat spillway to the retention basin.~~ South side of detention basin.

VEGETATION – Use scientific names of plants.

El Niño year, year four of state wide drought

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Conium maculatum	10		FACW
2. Doves foot geranium	10		UPL
3. Italian thistle	10		UPL
4. Unknown grass	70	yes	FAC*
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
assuming the unknown grass is Legmus triticodes*

SOIL

Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					Sandy - Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Sampling point taken in managed detention basin; large possibility soils are disturbed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Detention Basin - Lower Ragsdale City/County: Monterey / Monterey Sampling Date: 2-5-2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 20

Investigator(s): J. Harwayne Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): Mediterranean CA Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Santa Ynez Fine Sandy loam, 15-20% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Sampling Point taken in managed detention Basin, at edge of detention basin. Soils are likely disturbed El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2. Rumex crispus	10		FAC
3. Juncus patens	60	yes	FACW
4. Spike rush	20	yes	FACW
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC. _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 2D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Silty Sand	
10-18	10YR 3/2	80	2.5YR 4/6	20			Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Mottles in lower 8 inches

Sample point in managed detention basin, Soils may be disturbed. Indicators of wetland hydrology & veg present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes X No ____ Depth (inches): 16

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Detention Basins, Lower Recreation City/County: Monterey/Monterey Sampling Date: 2-5-2014
Applicant/Owner: City of Monterey State: CA Sampling Point: 21
Investigator(s): J. Harvayne Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): Mediterranean CA (LRR C) Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Santa Ynez fine Sandy loam, 15-30% Slopes NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
North side of detention basin. Sample point in managed detention basin. Soils are likely disturbed. El Niño year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Upland grass 1	70	yes	UPL*
2. Medicago Polymorpha	10		UPL
3. Upland grass 2	10		UPL*
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
Total Number of Dominant Species Across All Strata: _____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
Too early in growing season to determine species of upland grasses present, but indicator status of upland* was assumed

SOIL

Sampling Point: 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Soils at this sampling point have a low chroma. Point taken in a managed retention basin, Soils likely disturbed. Indicators of wetland hydrology present, but vegetation consists of of only upland species.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 10

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Detention Basin, Lower Rockdale City/County: Monterey / Monterey Sampling Date: 2-5-2016

Applicant/Owner: City of Monterey State: CA Sampling Point: 22

Investigator(s): J. Hardgrave Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Mediterranean CA (LRR C) Lat: Long: Datum:

Soil Map Unit Name: Santa Ynez Fine Sandy Loam, 15-30% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes ? No ____	
Wetland Hydrology Present?	Yes ? No ____	

Remarks: Sampling point taken in a managed detention basin. There is a high potential soils are disturbed. El Nino year, year four of a statewide drought

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2. Eleocharis palustris	100	yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1						Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks: Soils have low chroma
Sample point taken in a managed detention basin they are disturbed.
While there is a wetland hydrology & vegetation present
Indicators of

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 6

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX E

City of Monterey Detention Basin Management Project
DD A 2016 Wildlife Survey Report

Denise Duffy & Associates, Inc.

PLANNING AND ENVIRONMENTAL CONSULTING

November 10, 2016

Subject: Results of Wildlife Surveys for the City of Monterey Detention Basins

Introduction

Denise Duffy Associates, Inc. DD A) was contracted to conduct protocol-level presence/absence surveys in accordance with the United States Fish and Wildlife Service (USFWS *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog Rana draytonii* (CRLF (USFWS 2005 . DD A was also contracted to survey for and evaluate the aquatic resources for suitable habitat for western pond turtle *Emys marmorata* WPT) and tricolored blackbird *Agelaius tricolor*). The Project site includes six detention basins within the City of Monterey (City , California **Figure 1**).

Methodology

California Red-Legged Frog Surveys

Targeted, non-random surveys to detect adult, subadult, and/or larval CRLF were conducted by DD A biologists within all portions of the six identified detention basins. Senior Environmental Scientist, Matthew Johnson was the lead biologist for all surveys. Shaelyn Hession and Patric Krabacher, Assistant Environmental Scientists, assisted Mr. Johnson on multiple survey efforts.

Protocol-level surveys for CRLF consisted of at least four 4 daytime and two 2) nighttime surveys during the breeding season (October 1-June 30 , at each detention basin. A complete list of survey dates, location, and survey times is detailed below in **Table 1**. Surveys were not conducted outside of the breeding season July 1-September 30 . Site visits during the day consisted of both passive surveying (listening for calls) and actively walking each detention basin while looking for adult, subadult, and/or larval CRLF and other herpetofauna . Nighttime site visits were generally conducted one hour after true sunset determined via National Oceanic and Atmospheric Administration website). Nighttime visits consisted of listening for frog calls periodically and walking along the edge of each detention basin. DD A biologists used flashlights and headlamps in search of eye-shine. Binoculars, with at least 8X42 magnifications, were also utilized to search for herpetofauna and would have been used to assist in species identification, if necessary.

Data collected during CRLF surveys included survey date, surveyors, times, visit number, precipitation, cloud cover, wind speed, weather, and other appropriate comments. All data were recorded on CRLF Survey Data Sheets included with the survey protocol (**Appendix A** .

Table 1. Summary of CRLF Protocol-Level Survey Effort

Survey Number	Date	Detention Basins Surveyed*	Surveyor s	Time Begin (24 HR	Time End (24 HR
1N	3/24/2016	LM, WW, LE	M. Johnson S. Hession	20:00	22:00
1D	3/31/2016	HP, LR, WP	M. Johnson P. Krabacher	9:45	11:50
1N	3/31/2016	HP, LR, WP	M. Johnson P. Krabacher	20:15	21:40
2N	3/31/2016	LM, WW, LE	M. Johnson P. Krabacher	21:47	23:15
3N	4/7/2016	LM, WW, LE	M. Johnson S. Hession	20:15	21:45
2N	4/7/2016	HP, LR, WP	M. Johnson S. Hession	22:05	24:10
4N	4/14/2016	LM, WW, LE	M. Johnson P. Krabacher	20:20	21:45
3N	4/14/2016	HP, LR, WP	M. Johnson P. Krabacher	22:05	23:25
4N	4/21/2016	HP, LR, WP	M. Johnson S. Hession	20:20	21:55
5N	4/21/2016	LM, WW, LE	M. Johnson S. Hession	22:05	23:20
2D	4/28/2016	HP, LR, WP	M. Johnson	11:15	13:40
1D	4/28/2016	LM, WW, LE	M. Johnson	13:50	15:55
2D	6/15/2016	LM, WW, LE	M. Johnson	09:20	11:10

N Night Survey, D Day Survey
LM=Lagunita Mirada, WW=Washerwoman Pond, LE Lake El Estero, WP Wilson Pond, HP Harris Pond, LR Lower Ragsdale

Western Pond Turtle

USFWS and/or California Department of Fish and Wildlife CDFW) approved survey protocol for WPT did not exist at the time of the surveys were conducted by DD A. In an effort to create a comprehensive and reliable presence/absence survey methodology, DD A reviewed the United States Geological Survey *USGS Western Pond Turtle Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion* (USGS 2006a). This protocol outlined standard visual survey techniques for southern populations of the WPT, Santa Barbara south to the Mexican border. Survey protocol for a geographic area including the City was not available at the time of the survey. The purpose of the protocol was to provide standard guidelines for determining WPT presence and relative abundance.

Surveys for WPT were conducted concurrently with the CRLF and tricolored blackbird surveys at the detention basins. Following the framework of the USGS survey protocol, visual surveys were conducted to determine WPT presence and to make an assessment of habitat quality. WPT are habitat generalists and can occupy a wide range of aquatic habitats, thus the most limiting factor of habitat suitability is the presence of water. Based on literature Bury 1972; Holland 1991; Jennings Hayes 1994; Reese 1996; Reese & Welsh 1998b; Hays et al., 1999), WPT favor habitats with deep pools and slow moving water. In addition, the following general characteristics are associated with WPT habitat: 1) basking sites, 2 aquatic refugia, 3) streamside refugia, and 4) upland nesting habitat. The detention basins were evaluated

for these characteristics during the survey effort. Visual surveys were initiated by slowly walking around the detention basin adjacent to the water. Aquatic habitat was searched with binoculars for the presence of basking or underwater pond turtles. During initial survey efforts potential basking areas were identified. These areas were re-examined for WPT presence during subsequent survey efforts by first observing from a distance and then approaching slowly and quietly to help prevent disturbance. While conducting visual surveys, biologists also listened for the splash of water, indicating possible unseen turtles entering the water. If a splash was heard, additional time was spent observing the area for a turtle to resurface.

Tricolored Blackbird

USFWS or CDFW approved survey protocol for tricolored blackbird did not exist at the time of the surveys were conducted by DD A. In an effort to create a comprehensive and reliable presence/absence survey methodology, DD A reviewed the surveying protocol of the 2014 statewide tricolored blackbird survey, conducted by Dr. Bob Meese, for the USFWS (Meese 2014).

Surveys for nesting tricolored blackbirds were conducted concurrently with the CRLF and WPT surveys at the detention basins. Surveys were conducted by actively searching and passively assessing ("birding by ear") all suitable nesting habitat within and adjacent to the detention basins. Nikon 8X42 binoculars and an Eagle Optics 70mm spotting scope were used to search for birds and/or nests. As identified in the surveying protocol, it is best to avoid any disturbance of nesting birds and colonies should be surveyed from a distance at which the birds are unaffected by the surveyor's presence. Without prior knowledge of the presence of tricolored blackbirds at each detention basin, it was assumed that tricolored blackbirds could be present at each location, and caution was taken not to disturb potential colonies during survey efforts. Upon arrival to the site, the biologist surveyed passively for approximately 15 minutes from a distance that would not disturb any potential colonies. Following the passive survey effort, DD A biologists would slowly walk entirely around each detention basin, when possible, to visually scan for the presence of nests, nesting habitat, and/or nesting behavior. Particular attention and survey effort were provided for any sounds or behavior suggesting the presence of a nearby nest (i.e., nestlings/fledglings begging for food, nest arrival calls by adults, territorial/alarm calls, food bearing adults, territoriality, etc.). According to the 2014 survey protocol, during incubation even occupied sites may appear to be unoccupied. The protocol recommends at least 15 minutes at each location. Therefore, survey effort was at least 15 minutes at each location and, in general, considerably longer at Lake El Estero, due to the amount of suitable habitat. Observations of tricolored blackbirds and/or suitable habitat were recorded in field notebooks.

Results

California Red-Legged Frog

Suitable aquatic breeding habitat and upland habitat for CRLF exist at all of the detention basins. Suitable aquatic breeding habitat consists of wetlands and open water associated with each detention basin. Suitable upland habitat consists of maintained parkland, landscaped/planted areas, oak woodland, and oak savanna, adjacent to each detention basin. No CRLF, at any life stage, were observed during the 2016 survey effort. Pacific chorus frog *Pseudacris regilla* adults and larvae were observed at five 5 of the detention basins, bullfrogs *Rana catesbeiana*) adults were observed at two 2) detention basins, and western toads *Anaxyrus boreas*) were observed at three 3) of the detention basins surveyed. A summary of all amphibians observed and/or heard is detailed below in **Table 2**.

Table 2. CRLF Protocol-Level Survey Results

Date	Survey Type	Detention Basin	Survey Results Larvae L), Adult (A Observed O *, Heard (H		
			Pacific chorus frog *Pseudacris regilla*	American bullfrog *Rana catesbeiana*	Western Toad *Anaxyrus boreas*
3/24/2016	Day	LM	AH	--	--
		WW	--	--	--
		LE	--	--	--
3/31/2016	Day	HP	AH	--	--
		WP	AO	--	--
		LR	LO, AO	--	--
	Night	HP	LO, AO	--	LO
		WP	AO	--	--
		LR	LO, AO	--	--
		LM	--	--	--
		WW	AH	--	--
		LE	--	--	--
4/7/2016	Night	HP	AO	--	LO
		WP	AO	--	--
		LR	AO, LO	--	--
		LM	AH	--	--
		WW	AH	--	--
		LE	--	AO	--
4/14/2016	Night	HP	AH	AO	LO
		WP	AO, LO	--	LO
		LR	AO	--	--
		LM	--	--	--
		WW	AO	--	--
		LE	--	--	--
4/21/2016	Night	HP	AO	--	--
		WP	AH	--	--
		LR	AO	--	LO
		LM	AH	--	--
		WW	AH	--	--
		LE	--	--	--
4/28/2016	Day	HP	LO	--	LO
		WP	--	--	--
		LR	AO, LO	--	--
		LM	--	--	--
		WW	--	--	--
		LE	--	--	--
6/15/2016	Day	LM	--	--	--
		WW	--	--	--
		LE	--	--	--

LM Lagunita Mirada, WW Washerwoman Pond, LE=Lake El Estero, WP Wilson Pond, HP Harris Pond, LR Lower Ragsdale

Amphibians observed may have also been heard.

Western Pond Turtle
Suitable habitat for WPT is present at Lake El Estero, Lagunita Mirada, Washerwoman's Pond, Lower Ragsdale, and Wilson detention basins. Established tule mats and semi-submerged rocks and logs represent suitable basking sites. Open water associated with the detention basins provides suitable aquatic refugia. Suitable upland habitat consists of maintained parkland, landscaped/planted areas, oak woodland, and oak savanna, adjacent to each detention basin. Western painted turtles *Chrysemys picta*) were observed at Lake El Estero. In addition, an unidentified turtle was observed underwater at Lagunita Mirada detention basin. The external morphology of the turtle, including the lack of yellow stripes on the neck and limbs, olive color, and low carapace, are all indications of WPT. While the turtle was not observed long enough for a positive identification, it is assumed that it was a WPT.

WTP are unlikely to occur at Harris Detention Basin as this resource does not provide permanent or nearly permanent water. No turtles were observed at Harris detention basin during the survey effort.

Tricolored Blackbird
Suitable nesting habitat for tricolored blackbirds, consisting of stands of tule *Schoenoplectus acutus var. occidentalis*), cattail *Typha* sp.), and/or bulrush *Schoenoplectus* sp.), exists at all of the detention basins. Although suitable nesting habitat is present at all of the detention basins, no tricolored blackbird colonies or individuals were observed during the survey effort and none are expected to occur.

Conclusion
Surveys for CRLF, WPT and tricolored blackbird were conducted concurrently at all six of the detention basins. No CRLF, of any life stage, were observed during the survey effort and none are expected to occur. No additional surveys are recommended to determine presence/absence of CRLF at the detention basins.

A WPT was observed at the Lagunita Mirada detention basin. If a WPT were injured or killed as a result of the project it would be a significant impact under the California Environmental Quality Act (CEQA . Mitigation is provided below which would reduce impacts to WPT to a less-than-significant impact. WPT were not observed at the other five detention basins and are not expected to occur, no additional survey effort is recommended at these basins.

No tricolored blackbird colonies or individuals were observed during the survey effort and none are expected to occur. No additional surveys are recommended to determine presence of tricolored blackbirds at the detention basins.

Mitigation
Maintenance of the Lagunita Mirada detention basin could result in impacts to WPT, a CDFW Species of Special Concern. The following Mitigation Measures should be implemented to reduce the potential for impacts to this species.

1. A qualified biologist shall prepare an instructional pamphlet that includes the following information: photographs and identifying characteristics of WPT, description of suitable habitat, the general provisions and protections afforded by the CDFW, and the proper procedures if a WPT is encountered within the project site. Instructional pamphlets will be supplied to all personnel involved with maintenance of the Lagunita Mirada detention basin.

2. A qualified biologist shall conduct trapping of turtles consistent with *USGS Western Pond Turtle Emys marmorata Trapping Survey Protocol for the Southcoast Ecoregion*

(USGS, 2006b) at the Lagunita Mirada detention basin no more than 48 hours prior to the draining of the basin. The biologist shall relocate the WPT the shortest distance possible to a location that contains suitable habitat and would not be affected by activities associated with the detention basin maintenance.

3. If a nest of eggs is encountered during the trapping effort or draining activities, a buffer of no disturbance will be established by the qualified biologist to protect the eggs from impacts. Maintenance can be reinitiated within the no-disturbance buffer subsequent to the eggs hatching.

Citations

Bury, R. B. 1972. Habits and home range of the Pacific pond turtle, *Clemmys marmorata*, in a stream community. PhD dissertation, University of California, Berkeley, CA. 205 pp.

Hays, D. W., K. R. McAllister, S. A. Richardson, and D. W. Stinson. 1999. Washington State recovery plan for the western pond turtle. Washington Department of Fish and Wildlife, Olympia, WA. 66 pp.

Holland, D. 1991. A synopsis of the ecology and status of the western pond turtle *Clemmys marmorata* in 1991. Report to National Ecological Research Center. United States Fish and Wildlife Service, San Simeon, CA. 38 pp.

Jennings, M. R. and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Report prepared for California Department of Fish and Game, Rancho Cordova, CA. 255 pp.

Meese, B. 2014. 2014 Tricolored Blackbird Statewide Survey. Conducted for the United States fish and Wildlife Service. Information available online at: http://tricolor.ice.ucdavis.edu/content/2014-statewide-survey

Reese, D. A. 1996. Comparative demography and habitat use of western pond turtles in northern California: The effects of damming and related habitat alterations. PhD dissertation, University of California Berkeley, Berkeley, CA. 253 pp.

Reese, D. A. and H. H. Welsh, Jr. 1998a. Habitat use by western pond turtles in the Trinity River, California. Journal of Wildlife Management 62:842-853.

USFWS. 2005. Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog.

USGS. 2006a. USGS Western Pond Turtle *Emys marmorata* Visual Survey Protocol for the Southcoast Ecoregion. USGS survey protocol. Sacramento, CA. 56 pp.

USGS. 2006b. USGS Western Pond Turtle *Emys marmorata*) Trapping Survey Protocol for the Southcoast Ecoregion. USGS survey protocol. Sacramento, CA. 30 pp.





Detention Basin Management Project Location Map

Date: 7/19/2016
Scale: 1 inch = 0.5 miles
Project: 2013-65 760

Monterey | Truckee | San Jose
Denise Duffy and Associates, Inc.
Environmental Consultants Resource Planners
947 Cass Street, Suite 5
Monterey, CA 93940
(831) 373-4341

Figure 1

Document Path: C:\GIS\GIS_Projects\2013-65 City of Monterey On-Call\Detention Basin\Vicinity and Location\CRLF Report Location 20160719.mxd

Appendix A. CRLF Protocol-Level Survey Datasheets

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/24/2016 (mm/dd/yyyy) **Survey Biologist:** _____ Matthews (Last name) (first name)

Survey Biologist: Hession Shelly (Last name) (first name)

Site Location: Laguna Mirada
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)**

Proposed project name: Moore City Detention Basin
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): **1** **2** **3** **4** **5** **6** **7** **8**

Begin Time: 20:00 **End Time:** _____

Cloud cover: 30% **Precipitation:** NO

Air Temperature: 59.5 **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** clear

Moon phase: full **Humidity:** 79%

Description of weather conditions: marine layer, 30% cover, 0 rain in the past 24 hours

Brand name and model of light used to conduct surveys: Pelican - Lads up 2640 w/ 4D cell batteries, packs

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: NIKON 10x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree frog	UK	H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Green heron, tree frog (calling)

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/24/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: Hasson Marilyn (Last name) (first name)

Site Location: Water Works pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: City of Monterey Detention Basin
Brief description of proposed action:

Type of Survey (circle one): **DAY** NIGHT **BREEDING** NON-BREEDING

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 2100 **End Time:** 2145

Cloud cover: 97% **Precipitation:** ND

Air Temperature: 55.4 **Water Temperature:** 62

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: full **Humidity:** 85%

Description of weather conditions: No rain in the past 24 hours
marine layer - 97% cover

Brand name and model of light used to conduct surveys: Pelican Headsup 2640 with 4D cell battery pack

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Nikon 10x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree frogs		H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Crayfish

Other notes, observations, comments, *etc.*

Drop outlet w/ large screen

Mallards

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/24/2016 (m/m/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: Hession Shannon (Last name) (first name)

Site Location: Lake El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)**

Proposed project name: City of Monterey Detention Basins
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 2200 **End Time:** 2315

Cloud cover: 97% **Precipitation:** NO

Air Temperature: 55° **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: full **Humidity:** 85%

Description of weather conditions: No rain in the last 24 hours, marine layer ≈ 97% cover

Brand name and model of light used to conduct surveys: Delicon Headsup 2640 with 4D cell battery pack

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Nikon 10x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/2016 (mm/dd/yyyy)

Survey Biologist: Johnson Matthew (Last name) (first name)

Survey Biologist: Kratochvil Patrick (Last name) (first name)

Site Location: Monterey County; Harris Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): (DAY) NIGHT (BREEDING) NON-BREEDING

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 9:45 **End Time:** 10:15

Cloud cover: 60% **Precipitation:** None

Air Temperature: 52°F **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: Waning gibbous **Humidity:** 77%

Description of weather conditions: Partly Sunny

Brand name and model of light used to conduct surveys: Pelican Headsup 2640

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Nikon 8x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog		O	Adult		Yes
Toad larvae	>100	O	Larvae		Yes
					-

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/2016 (mm/dd/yyyy)

Survey Biologist: M. Johnson (Last name) (first name)

Survey Biologist: P. Krabacher (Last name) (first name)

Site Location: Monterey County Wilson Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): ~~DAY~~ **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 10:25 **End Time:** 10:50

Cloud cover: 60 % **Precipitation:** none

Air Temperature: 52°F **Water Temperature:** _____

Wind Speed: 1 mph **Visibility Conditions:** Clear

Moon phase: Waning gibbous **Humidity:** 69 %

Description of weather conditions: Partly Sunny

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree frog	1	O	Adult		Yes

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 3/31/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: Monterey County lower Ragsdale
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): (DAY) NIGHT (BREEDING) NON-BREEDING

Survey number (circle one): (1) 2 3 4 5 6 7 8

Begin Time: 11.05 **End Time:** 11.50

Cloud cover: 5% **Precipitation:** none

Air Temperature: 56° **Water Temperature:** _____

Wind Speed: 1 mph **Visibility Conditions:** Clear

Moon phase: Waning gibbous **Humidity:** 69%

Description of weather conditions: Sunny

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog	>100	O	larvae		Yes
Tree Frog	>100	O	Adult		Yes
Tree frog	>100	O	Y O Y		Yes

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

- Water merky
- Wood rat nest bottom pond near north edge

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/16 (mm/dd/yyyy)

Survey Biologist: Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: Monterey County Harris
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING** (NON-BREEDING)

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 8:15 **End Time:** 8:30

Cloud cover: 60% **Precipitation:** none

Air Temperature: 55°f **Water Temperature:** _____

Wind Speed: 5 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
~~Bullfrog~~ Toad	>~~500~~ 100	O	larvae		Yes
Tree Frog	1	O	Adult		Yes
Tree Frog	2	H	Adult		Yes
Tree Frog	<50	O	larvae		Yes
~~Pacific Tree Frog~~					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher5 (Last name) Patric (first name)

Site Location: Monterey County Wilson
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING NON-BREEDING**

Survey number (circle one): **1** (2) **3 4 5 6 7 8**

Begin Time: 9:25 **End Time:** 9:40

Cloud cover: 0 % **Precipitation:** none

Air Temperature: 54°f **Water Temperature:** _____

Wind Speed: 5 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog	1	O/H	Adult		Yes

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 3/31/16 (mm/dd/yyyy)

Survey Biologist: Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher (Last name) Patrice (first name)

Site Location: Monterey County lower Ragsdale
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **(NIGHT)** **(BREEDING)** **NON-BREEDING**

Survey number (circle one): **1** **(2)** **3** **4** **5** **6** **7** **8**

Begin Time: 8:45 **End Time:** 9:15

Cloud cover: 20 % **Precipitation:** none

Air Temperature: 55° **Water Temperature:** _____

Wind Speed: 6 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: same

Were binoculars used for the surveys (circle one)? **(YES)** **NO**
Brand, model, and power of binoculars: same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog	>100	O/H	Adult		Yes
Tree Frog	>100	O/	Young of year		Yes
~~Bullfrog~~ Tree frog	>100	O	larvae		Yes

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/16 (mm/dd/yyyy)

Survey Biologist: Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: Monterey County Laguna Seca

(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____

Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ **BREEDING** **NON-BREEDING**

Survey number (circle one): **1** **(2)** **3** **4** **5** **6** **7** **8**

Begin Time: 9:47 PM **End Time:** 10:00 PM

Cloud cover: 0 % **Precipitation:** none

Air Temperature: 54 °f **Water Temperature:** _____

Wind Speed: 6 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **(YES)** **NO**

Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher (Last name) Patrie (first name)

Site Location: Monterey County Wagner Women
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): 1 2 3 4 5 6 7 8

Begin Time: 10:05 **End Time:** 10:35

Cloud cover: 0% **Precipitation:** None

Air Temperature: 55° **Water Temperature:** _____

Wind Speed: 6 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog		H	Adult		Yes

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 03/31/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matt (first name)

Survey Biologist: Krabacher (Last name) Patrice (first name)

Site Location: Monterey County Lake El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING NON-BREEDING**

Survey number (circle one): 1 (2) 3 4 5 6 7 8

Begin Time: 10:40 **End Time:** ~~11:05~~ 11:15

Cloud cover: 0% **Precipitation:** none

Air Temperature: 54° **Water Temperature:** _____

Wind Speed: 6e mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/07/2010 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: Hession Shellyn (Last name) (first name)

Site Location: Washerwoman's Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): **1** **2** **3** **4** **5** **6** **7** **8**

Begin Time: 2105 **End Time:** 2120

Cloud cover: 100% **Precipitation:** None

Air Temperature: 100°F **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: No Moon **Humidity:** 77%

Description of weather conditions: No precip in past 24 hrs

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree frogs ?		H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/07/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) (first name)

Survey Biologist: Hess (Last name) (first name)

Site Location: Harris
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** (NIGHT) **BREEDING NON-BREEDING**

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 2205 **End Time:** 2225

Cloud cover: 100% **Precipitation:** None

Air Temperature: 62° **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** No Fog

Moon phase: No Moon **Humidity:** 77%

Description of weather conditions: Overcast, calm

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog		H	Adult		
Toad		O	Larval		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 4/7/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) (first name)

Survey Biologist: Hession (Last name) (first name)

Site Location: Wilson
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ ~~BREEDING~~ **NON-BREEDING**

Survey number (circle one): **1 2 3 4 5 6 7 8**

Begin Time: 2315 **End Time:** 2330

Cloud cover: 100% **Precipitation:** None

Air Temperature: 57° **Water Temperature:** _____

Wind Speed: None **Visibility Conditions:** Clear

Moon phase: None **Humidity:** 77%

Description of weather conditions: Overcast, calm

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		O/H	Adult		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/07/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Mathew (Last name) (first name)

Survey Biologist: Hession Shaelyn (Last name) (first name)

Site Location: Lower Ragsdale
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **(NIGHT)** **(BREEDING)** **NON-BREEDING**

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: 2030 **End Time:** 2410

Cloud cover: 100% **Precipitation:** None

Air Temperature: 57° **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: No Moon **Humidity:** 77%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **(YES)** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog	<50	O/H	Adult		
Treefrog	<50	O	Larval		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/07/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: Hession Shaelyn (Last name) (first name)

Site Location: Lawsonita Vivada
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): **1** **2** **3** **4** **5** **6** **7** **8**

Begin Time: 2130 **End Time:** 2145

Cloud cover: 100% **Precipitation:** None

Air Temperature: 60°F **Water Temperature:** _____

Wind Speed: 0 **Visibility Conditions:** Clear

Moon phase: No moon **Humidity:** 77%

Description of weather conditions: _____
No precip in past 24 hrs

Brand name and model of light used to conduct surveys: same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree frog	12	H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/07/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Mathews (Last name) (first name)

Survey Biologist: Hession Sheaylyn (Last name) (first name)

Site Location: El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): 1 2 (3) 4 5 6 7 8

Begin Time: ~~8:15~~ 20:15 **End Time:** 9^ 20.55

Cloud cover: 100% **Precipitation:** None

Air Temperature: 60°F **Water Temperature:** _____

Wind Speed: ~~6~~ **Visibility Conditions:** Clear

Moon phase: NO moon **Humidity:** 77%

Description of weather conditions: Cool, breezy
No precip in past 24hrs

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Bull Frog	1	O	Adult		100%

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/14/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)
Survey Biologist: Kruboshar Patric (Last name) (first name)

Site Location: Harris
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** (NIGHT) (BREEDING) **NON-BREEDING**

Survey number (circle one): 1 2 3 (4) 5 6 7 8

Begin Time: 2305 **End Time:** 2325

Cloud cover: Clear **Precipitation:** None

Air Temperature: 50.6°F **Water Temperature:** 58.0F

Wind Speed: 22mph **Visibility Conditions:** Clear

Moon phase: Half Moon **Humidity:** 77%

Description of weather conditions: Clear, slight wind, cool

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		H	Adult		
Toad		O	Larvae		
Bullfrog	1	O	Adult		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/14/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)

Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: Wilson
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): 1 2 3 (4) 5 6 7 8

Begin Time: 2205 **End Time:** 2285

Cloud cover: Clear **Precipitation:** None

Air Temperature: 54.7°F **Water Temperature:** 62°F

Wind Speed: 2 mph **Visibility Conditions:** Clear

Moon phase: Half Moon **Humidity:** 71%

Description of weather conditions: Cool, clear

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog	2	O/H	Adult		X
Treefrog	>50	O	Larvae		
Toad	>15	O	Larvae		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/14/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)

Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: Lower Ragsdale
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ **BREEDING** ~~NON-BREEDING~~

Survey number (circle one): 1 2 3 (4) 5 6 7 8

Begin Time: 2035 **End Time:** 2500

Cloud cover: Clear **Precipitation:** None

Air Temperature: 51° F **Water Temperature:** 55°F

Wind Speed: 2 mph **Visibility Conditions:** Clear

Moon phase: 1st/F Moon **Humidity:** 77%

Description of weather conditions: Clear, cool

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog	10	O/A	Adult		X

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/14/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Matt (Last name) (first name)

Survey Biologist: Krabacher Patric (Last name) (first name)

Site Location: Laguna Mirada
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **(NIGHT)** **(BREEDING)** **NON-BREEDING**

Survey number (circle one): 1 2 3 (4) 5 6 7 8

Begin Time: 2020 **End Time:** 20:40

Cloud cover: 0 **Precipitation:** None

Air Temperature: 56° **Water Temperature:** _____

Wind Speed: 19 mph **Visibility Conditions:** Clear

Moon phase: Half Moon **Humidity:** 77%

Description of weather conditions: Windy, cold, clear

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **(YES)** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
—	—	—	—	—	—

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Mosquito fish

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/14/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)
Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ **BREEDING** ~~NON-BREEDING~~

Survey number (circle one): 1 2 3 (4) 5 6 7 8

Begin Time: 2115 **End Time:** 2145

Cloud cover: Clear **Precipitation:** None

Air Temperature: 54.3°F **Water Temperature:** 66.3°F

Wind Speed: 3.1 MPH **Visibility Conditions:** Clear

Moon phase: Half Moon **Humidity:** 77%

Description of weather conditions: Clear, cool

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
—	—	—	—	—	—

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Raccoons, Black & White Night heron, Coot, Canadian geese

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/14/2006 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)

Survey Biologist: Krabacher (Last name) Patric (first name)

Site Location: Washerwoman
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ (BREEDING) **NON-BREEDING**

Survey number (circle one): 1 2 3 (4) 5 6 7 8

Begin Time: 20:45 **End Time:** 21:10

Cloud cover: Clear **Precipitation:** None

Air Temperature: 54° **Water Temperature:** 61.4

Wind Speed: 18MPH **Visibility Conditions:** Clear

Moon phase: Half Moon **Humidity:** 77%

Description of weather conditions: Windy, Cool, Clear

Brand name and model of light used to conduct surveys: None

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree frog	1	O/H	Adult		yes

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/21/16 (mm/dd/yyyy)

Survey Biologist: Johnson Matthew (Last name) (first name)

Survey Biologist: Hession Shaelyn (Last name) (first name)

Site Location: Harris Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ ~~BREEDING~~ **NON-BREEDING**

Survey number (circle one): 1 2 3 4 (5) 6 7 8

Begin Time: 21:30 **End Time:** 21:55

Cloud cover: Clear **Precipitation:** No

Air Temperature: 58.4°F **Water Temperature:** 64.3°F

Wind Speed: 2.2 mph **Visibility Conditions:** Clear

Moon phase: Full **Humidity:** 90%

Description of weather conditions: Clear, breezy

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		O/H	Larvae		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/21/16 (mm/dd/yyyy)

Survey Biologist: Johnson Matthew (Last name) (first name)

Survey Biologist: Hession Shaelyn (Last name) (first name)

Site Location: Wilson Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **(NIGHT)** **(BREEDING)** **NON-BREEDING**

Survey number (circle one): 1 2 3 4 (5) 6 7 8

Begin Time: 2020 **End Time:** 2040

Cloud cover: 10% **Precipitation:** None

Air Temperature: 64°F **Water Temperature:** 64°F

Wind Speed: 0.0 mph **Visibility Conditions:** Clear

Moon phase: Full **Humidity:** 80%

Description of weather conditions: Clear, calm, warm

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **(YES)** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Tree Frog		H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/21/16 (mm/dd/yyyy)

Survey Biologist: Johnson Matthew (Last name) (first name)

Survey Biologist: Hession Shaelyn (Last name) (first name)

Site Location: Lower Ragsdale
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ **BREEDING** ~~NON-BREEDING~~

Survey number (circle one): 1 2 3 4 (5) 6 7 8

Begin Time: 2050 **End Time:** 2125

Cloud cover: 10% **Precipitation:** None

Air Temperature: 60°F **Water Temperature:** 66.3°F

Wind Speed: 0.0 mph **Visibility Conditions:** Clear

Moon phase: Full **Humidity:** 80%

Description of weather conditions: Clear, calm, warm

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
TreeFrog		O/H	Adult/larvae		
Toad ~~Frog~~		O	Larvae		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/21/16 (mm/dd/yyyy)

Survey Biologist: Johnson (Last name) Matthew (first name)

Survey Biologist: Hession (Last name) Shaelyn (first name)

Site Location: Laguna Mirada
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ **BREEDING NON-BREEDING**

Survey number (circle one): 1 2 3 4 (5) 6 7 8

Begin Time: 2255 **End Time:** 2320

Cloud cover: Clear **Precipitation:** None

Air Temperature: 60°F **Water Temperature:** _____

Wind Speed: 0.0 mph **Visibility Conditions:** Clear

Moon phase: Full **Humidity:** 80%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/21/16 (mm/dd/yyyy)

Survey Biologist: Johnson (Last name) Matthew (first name)

Survey Biologist: Hessian (Last name) Shaelyn (first name)

Site Location: Washerwoman
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): 1 2 3 4 (5) 6 7 8

Begin Time: 2205 **End Time:** 2225

Cloud cover: Clear **Precipitation:** None

Air Temperature: 59°f **Water Temperature:** 63.8

Wind Speed: 0.0 mph **Visibility Conditions:** Clear

Moon phase: Full **Humidity:** 80%

Description of weather conditions: Clear Calm

Brand name and model of light used to conduct surveys: Same

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		H			

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/21/16 (mm/dd/yyyy)

Survey Biologist: Johnson (Last name) Matthew (first name)

Survey Biologist: Hession (Last name) Shaelyn (first name)

Site Location: El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY** ~~NIGHT~~ ~~BREEDING~~ **NON-BREEDING**

Survey number (circle one): **1 2 3 4 (5) 6 7 8**

Begin Time: 2230 **End Time:** 2250

Cloud cover: None **Precipitation:** None

Air Temperature: 59.8°F **Water Temperature:** 70.7°F

Wind Speed: 0.0mph **Visibility Conditions:** Clear

Moon phase: Full **Humidity:** 80%

Description of weather conditions: Clear, Calm

Brand name and model of light used to conduct surveys: Garrel

Were binoculars used for the surveys (circle one)? **(YES) NO**
Brand, model, and power of binoculars: Garrel

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 4/28/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)

Survey Biologist: _____ (Last name) _____ (first name)

Site Location: Harris Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): (DAY) NIGHT (BREEDING) NON-BREEDING

Survey number (circle one): 1 2 3 4 5 (6) 7 8

Begin Time: 1115 **End Time:** 1205

Cloud cover: 10% **Precipitation:** None

Air Temperature: 57.2°F **Water Temperature:** 75.2°F

Wind Speed: 4.4 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** _____

Description of weather conditions: Breezy, Clear, Sunny

Brand name and model of light used to conduct surveys: NA.

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Nikon 10X42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		O	Larvae		
Western Toad		O	Larvae		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Cliff swallows observed collecting mud/water

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 4/28/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)

Survey Biologist: _____ (Last name) _____ (first name)

Site Location: Wilson Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): ~~DAY~~ **NIGHT** (BREEDING) **NON-BREEDING**

Survey number (circle one): **1 2 3 4 5 (6) 7 8**

Begin Time: 1206 **End Time:** 12:45

Cloud cover: 20% **Precipitation:** None

Air Temperature: 63°F **Water Temperature:** 70.9°F

Wind Speed: 00 mph **Visibility Conditions:** Clear

Moon phase: (Waning Crescent) **Humidity:** 58%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same as 4-26

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 04/28/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Matthew (first name)

Survey Biologist: _____ (Last name) _____ (first name)

Site Location: Lower Ragsdale
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): ~~DAY~~ **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): **1 2 3 4 5 (6) 7 8**

Begin Time: 18:05 **End Time:** 19:40

Cloud cover: 100% **Precipitation:** None

Air Temperature: 58.9° F **Water Temperature:** 65.3°F

Wind Speed: 3.8mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 60%

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: Same as 4-28

Were binoculars used for the surveys (circle one)? **(YES)** **NO**
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
Treefrog		O	larvae, yoy		

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 4/26/16 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthews (Last name) (first name)

Survey Biologist: _____ (Last name) (first name)

Site Location: El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): ~~DAY~~ NIGHT ~~BREEDING~~ NON-BREEDING

Survey number (circle one): 1 2 3 4 5 (6) 7 8

Begin Time: 1350 **End Time:** 1510

Cloud cover: 100% **Precipitation:** None

Air Temperature: 60.8°F **Water Temperature:** _____

Wind Speed: 4.5 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 58%

Description of weather conditions: Cloudy, breezy, cool

Brand name and model of light used to conduct surveys: Same as 4-26

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
N/A					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Turtles observed basking on tule mats (western bank Eastern arm
later id'd as Chrysemys picta

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 4/29/16 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: _____ (Last name) (first name)

Site Location: Laguna Mirada
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): (DAY) NIGHT (BREEDING) NON-BREEDING

Survey number (circle one): 1 2 3 4 5 (6) 7 8

Begin Time: 16:20 **End Time:** 15:35

Cloud cover: 100% **Precipitation:** None

Air Temperature: 60°F **Water Temperature:** _____

Wind Speed: 00 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 42%

Description of weather conditions: Overcast, cool

Brand name and model of light used to conduct surveys: Same as 4-28

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
N/A					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 4/28/16 (mm/dd/yyyy) **Survey Biologist:** Johnson (Last name) Mathew (first name)

Survey Biologist: _____ (Last name) _____ (first name)

Site Location: Vasco Woods
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): ~~1~~ 2 3 4 5 (6) 7 8

Begin Time: 15:40 **End Time:** 15:55

Cloud cover: 100% **Precipitation:** None

Air Temperature: 58.0°F **Water Temperature:** 62.5°F

Wind Speed: 1 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 60%

Description of weather conditions: Overcast, cool

Brand name and model of light used to conduct surveys: Same as 4.26

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Same

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
N/A					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____

_____

_____

_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 06/15/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: _____ (Last name) (first name)

Site Location: Wagner Women Pond
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): (DAY) NIGHT (BREEDING) NON-BREEDING

Survey number (circle one): 1 2 3 4 5 6 (7) 8

Begin Time: 1020 **End Time:** 1540

Cloud cover: 30% **Precipitation:** None

Air Temperature: 56°F **Water Temperature:** _____

Wind Speed: 8 mph **Visibility Conditions:** Clear

Moon phase: Waning Gibbous **Humidity:** 71%

Description of weather conditions: Partly Sunny, Slight wind

Brand name and model of light used to conduct surveys: Same as 4.28

Were binoculars used for the surveys (circle one)? (YES) NO
Brand, model, and power of binoculars: Nikon 10x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
N/A					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Crayfish

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Survey: 06/15/16 (mm/dd/yyyy)

Survey Biologist: Johnson Matthew (Last name) (first name)

Survey Biologist: _____ (Last name) (first name)

Site Location: El Estero
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): ~~DAY~~ **NIGHT** **BREEDING** **NON-BREEDING**

Survey number (circle one): **1 2 3 4 5 6 (7) 8**

Begin Time: 0920 **End Time:** 1020

Cloud cover: 30% **Precipitation:** None

Air Temperature: 54°F **Water Temperature:** _____

Wind Speed: 7 mph **Visibility Conditions:** Clear

Moon phase: Waxing Gibbous **Humidity:** 77%

Description of weather conditions: Partly sunny, humid

Brand name and model of light used to conduct surveys: Same as 4/28

Were binoculars used for the surveys (circle one)? **YES** **NO**
Brand, model, and power of binoculars: Nikon 10 x 42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
N/A					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: F'b observed

Other notes, observations, comments, *etc.*

Chrysemys picta observed on tule mats on western bank of eastern arm.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: 06/15/2016 (mm/dd/yyyy) **Survey Biologist:** Johnson Matthew (Last name) (first name)

Survey Biologist: _____ (Last name) (first name)

Site Location: Laguna Mirada
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

ATTACH A MAP (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): DAY NIGHT BREEDING NON-BREEDING

Survey number (circle one): 1 2 3 4 5 6 7 8

Begin Time: 10:40 **End Time:** 11:20

Cloud cover: 30% **Precipitation:** None

Air Temperature: 56°F **Water Temperature:** _____

Wind Speed: 8 mph **Visibility Conditions:** Clear

Moon phase: Waxing Gibbous **Humidity:** 71%

Description of weather conditions: Partly Sunny, slight wind

Brand name and model of light used to conduct surveys: Same as 4/28

Were binoculars used for the surveys (circle one)? YES NO
Brand, model, and power of binoculars: Nikon 10x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification
N/A					

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

Other notes, observations, comments, *etc.*

Saw [illegible] turtle observed [illegible] in the surface. Low carapace, olive color. Lack of yellow stripes on neck. Did not surface.

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations